ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Insulation Piercing Connector
Melbye As

EPD HUB, HUB-6170

Published on 07.05.2026, last updated on 07.05.2026, valid until 07.05.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Melbye As
Address	Prost Stabels Vei 22, 2019 Skedsmokorset, Norway
Contact details	kontakt@melbye.no
Website	https://melbye.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Manufactured product
Category of EPD	Third party verified EPD
Parent EPD number	
Scope of the EPD	Cradle to gate with options, A5, and modules C1-C4, D
EPD author	Aditya Dharmendra Nishad
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Yazan Badour as an authorized verifier for EPD Hub

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Insulation Piercing Connector
Additional labels	
Product reference	
Place(s) of raw material origin	France
Place of production	38 Quai de l'Oise, 60870 Rieux, France
Place(s) of installation and use	Norway
Period for data	1st January 2023 - 31st December 2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	8.4%, 3.8%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	1.76

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
Mass of packaging	0.3 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	7.83
GWP-total, A1-A3 ($kgCO_2e$)	6.94
Secondary material, inputs (%)	10.8
Total energy use, A1-A3 (kWh)	38.3
Net freshwater use, A1-A3 (m^3)	0.08

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Melbye As is one of Norway's oldest family-owned companies, with a history dating all the way back to 1907. We have a proud tradition of technical innovation and trade, and today, we are a leading provider of forward-thinking products and system solutions for critical infrastructure. We have expertise in transmission and utilities, fiber, ducts and chambers and safety.

We serve customers throughout the Nordic region and the United Kingdom, engage with stakeholders across Europe, and collaborate with around 200 partners and suppliers.

While our headquarters are located just outside Oslo, Norway, we also have offices at multiple locations in Norway, Sweden, and the United Kingdom, as well as representatives in Finland, India and China. Together, we are more than 120 co-workers who share the company's core values: Innovation, teamwork, and professionalism.

With advanced expertise spread across our core areas and a dedication to long-term operation and future-oriented development, we stand at the forefront of addressing future challenges. We take pride in contributing to the development of critical infrastructure that will shape tomorrow's society.
Note: Melbye As is a distributor and not the original manufacturer of the product

PRODUCT DESCRIPTION

This EPD represents an average environmental profile for a range of insulation piercing connectors (IPCs) used in low-voltage (≤1 kV) distribution networks. The product group includes multiple IPC variants with differences in conductor capacity, geometry, and material mass, while maintaining the same design principle, installation method, and manufacturing process. All connectors consist of an insulating polymer body with aluminum contact elements and use a shear-head bolt for controlled tightening.
The variability within the product range is primarily driven by conductor size, resulting in corresponding differences in connector dimensions and weight. Smaller variants contain less material, while larger variants have higher mass due to increased current-carrying requirements. Despite this, all products have comparable material composition and identical functional performance.
The LCA results are based on an average product representative of the full range, assuming consistent production, installation, and end-of-life scenarios across all variants.
Further information can be found at:

https://melbye.com/

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	51.8	France
Minerals	0	
Fossil materials	48.2	France
Bio-based materials		

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	
Biogenic carbon content in packaging, kg C	0.23

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg
Functional unit	
Reference service life	

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	ND	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Not declared = ND.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.
The manufacturing stage includes raw material processing, injection molding of glass-fiber reinforced plastic components, and in-house mechanical assembly and quality control of insulation piercing connectors. All non-molded components are supplied ready-to-use and assembled without further material processing. Electricity consumption represents a conventional energy source.
Actual transport distances provided by the supplier are used for all raw materials, packaging, and ancillary materials. Production losses are 3% for glass fiber reinforced plastic and 5% for rubber. All manufacturing processes are performed in-house at a single facility. The facility operates on grid electricity conventional energy sources. Products are packaged in corrugated boxes placed on wooden pallets, both sourced externally. Manufacturing waste (≈1% of input) is sent for recycling and landfill; end-of-life treatment assumes 34% recycling, 41% incineration and 25% landfill, transported 50 km by truck.

INSTALLATION (A5)

No significant material loss occurs during installation of the insulation piercing disconnector, as the process involves direct mechanical fastening without removal of conductor or insulation material. The device is installed using standard manual or low-power mechanical tools, ensuring minimal waste generation. A reference installation energy consumption of approximately 0.01 kWh/kg is assumed, representing typical tool operation under standard field conditions.
A5 – Packaging Waste Management:
Packaging waste mainly consists of cardboard and plastic film. Based on typical Scandinavian waste treatment practices (reference: Eurostat 2023, national waste statistics for Norway/Sweden), the following end-of-life assumptions are applied:

Wood packaging: 32% recycled 30% incinerated and 38% landfill.
Cardboard packaging: 83% recycled, 8% incinerated and 9% landfill.

PRODUCT END OF LIFE (C1-C4, D)

C1 – Deconstruction / Demolition

Insulation piercing connectors are manually removed at the end of their service life, typically during dismantling or renewal of overhead/underground distribution lines. A standard energy consumption of 0.01 kWh/kg is assumed for manual removal activities, consistent with typical practices for small electrical connectors.

C2 – Transport to Waste Processing

After removal, insulation piercing connectors are transported to either recycling facilities or landfill sites. The average assumed distances are 250 km to recycling facilities and 50 km to landfill.

Transportation is carried out using lorries (16–32 metric tons, EURO 6 standard), reflecting common waste logistics in regions where the product is mainly used.

C3 – Waste Processing

Insulation piercing connectors contain aluminium, copper, and polymer components.

Metals (aluminium and copper): primarily directed to recycling, involving sorting and preparation for remelting.

Plastic/insulation materials (glass fiber reinforced plastic and polymeric housing): sent to either recycling (where facilities exist) or

landfill/incineration if contaminated.

All recycling processes are assumed to take place within Europe, utilizing the region's established infrastructure for electrical component end-of-life management.

C4 – Disposal

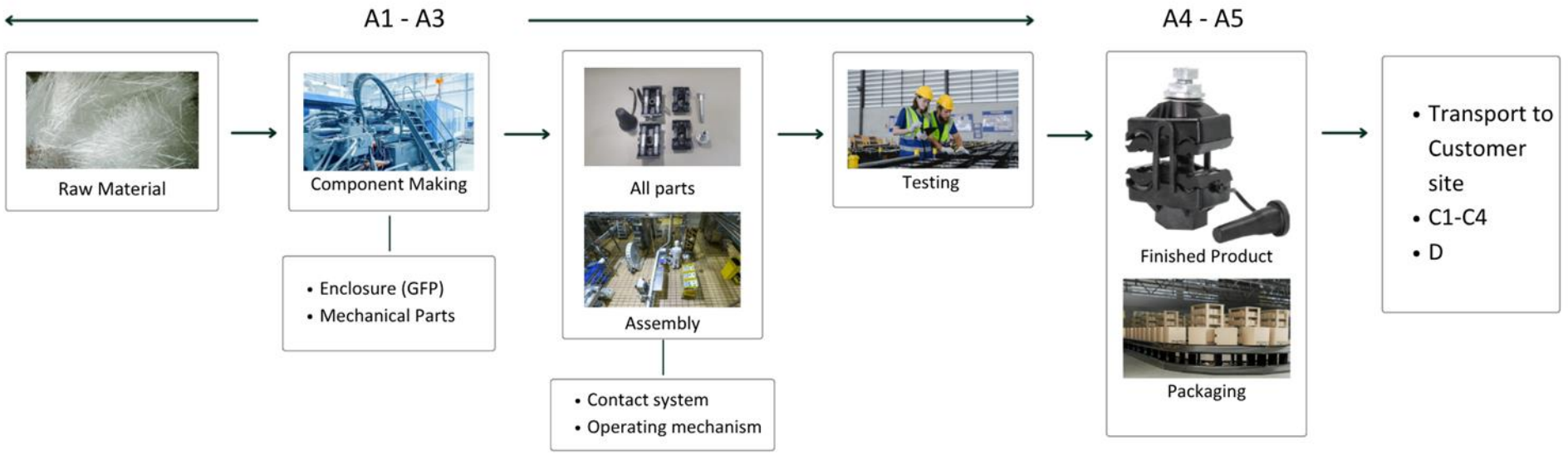
The portion of insulation piercing connectors that cannot be recycled (e.g., degraded or contaminated polymer parts, minor residues) is sent to landfill. Environmental impacts from this fraction are modeled based on standard disposal practices for plastics and non-recyclable composites in European landfills.

D – Benefits and Loads Beyond the System Boundary

Metal recycling (aluminium and copper): generates significant avoided burdens due to substitution of primary metal production.

Packaging waste (cardboard cartons and untreated wood pallets): assumed to be treated at end of life. Cardboard is recycled, while untreated wood is incinerated with energy and heat recovery, credited according to the EU waste packaging scenario.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on average results of product group - by total volume
Variation in GWP-fossil for A1-A3, %	8.4%, 3.8%

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.5. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

EN 15804 + A2:2019 – Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
EPD Hub General Programme Instructions (GPI), (2023)
EPD Hub Product Category Rules (PCR): Electrification Components and Systems, Version 1.0 (2023)
Ecoinvent v3.9 (2023) – Life Cycle Inventory database used for background data.
ISO 14040:2006 – Environmental management – Life cycle assessment – Principles and framework.
ISO 14044:2006 – Environmental management – Life cycle assessment – Requirements and guidelines.
Manufacturer primary data (2023) – Material composition, energy consumption, packaging, transport distances, and waste treatment provided by the manufacturer.
Eurostat (2023) – Recycling and waste management statistics for Norway and Sweden used for end-of-life assumptions.
European Commission JRC (2021) – Electricity and heat mix data for substitution modelling.

ENVIRONMENTAL IMPACT DATA

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

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	7.55E+00	3.91E-02	-6.47E-01	6.94E+00	ND	4.79E-01	ND	ND	ND	ND	ND	ND	ND	3.61E-03	2.82E-02	8.98E-01	1.85E-02	-1.10E-02
GWP – fossil	kg CO_2e	7.52E+00	3.90E-02	2.70E-01	7.83E+00	ND	1.38E-02	ND	ND	ND	ND	ND	ND	ND	3.60E-03	2.82E-02	8.98E-01	1.85E-02	-3.48E-02
GWP – biogenic	kg CO_2e	2.06E-02	6.14E-06	-9.18E-01	-8.98E-01	ND	4.65E-01	ND	ND	ND	ND	ND	ND	ND	3.68E-07	6.22E-06	-3.57E-05	-1.32E-05	2.39E-02
GWP – LULUC	kg CO_2e	4.84E-03	1.75E-05	2.16E-03	7.02E-03	ND	1.42E-05	ND	ND	ND	ND	ND	ND	ND	3.69E-07	1.25E-05	2.18E-05	3.62E-06	-5.45E-05
Ozone depletion pot.	kg CFC-$_{11}$e	1.13E-07	5.76E-10	9.47E-08	2.08E-07	ND	2.11E-10	ND	ND	ND	ND	ND	ND	ND	5.52E-11	4.00E-10	3.46E-10	1.16E-10	-4.30E-10
Acidification potential	mol H^+e	4.59E-02	1.33E-04	1.14E-03	4.71E-02	ND	8.63E-05	ND	ND	ND	ND	ND	ND	ND	3.25E-05	9.46E-05	2.48E-04	2.60E-05	-2.19E-04
EP-freshwater[2)]	kg Pe	2.15E-01	3.04E-06	6.83E-05	2.15E-01	ND	2.75E-06	ND	ND	ND	ND	ND	ND	ND	1.04E-07	2.20E-06	8.90E-06	4.87E-07	-2.16E-05
EP-marine	kg Ne	7.23E-03	4.37E-05	4.25E-04	7.69E-03	ND	7.62E-05	ND	ND	ND	ND	ND	ND	ND	1.51E-05	3.08E-05	8.82E-05	1.34E-04	-3.33E-05
EP-terrestrial	mol Ne	1.06E-01	4.76E-04	3.53E-03	1.10E-01	ND	3.79E-04	ND	ND	ND	ND	ND	ND	ND	1.65E-04	3.35E-04	8.90E-04	9.39E-05	-3.28E-04
POCP ("smog")[3)]	kg NMVOCe	1.79E-02	1.96E-04	9.94E-04	1.91E-02	ND	1.21E-04	ND	ND	ND	ND	ND	ND	ND	4.93E-05	1.34E-04	2.40E-04	3.75E-05	-1.06E-04
ADP-minerals & metals[4)]	kg Sbe	1.92E-03	1.09E-07	6.03E-07	1.92E-03	ND	3.47E-08	ND	ND	ND	ND	ND	ND	ND	1.29E-09	8.92E-08	7.39E-07	9.79E-09	-4.45E-08
ADP-fossil resources	MJ	1.10E+02	5.67E-01	2.92E+00	1.14E+02	ND	1.84E-01	ND	ND	ND	ND	ND	ND	ND	4.72E-02	3.99E-01	2.69E-01	9.37E-02	-5.75E-01
Water use[5)]	m^3e depr.	3.42E+00	2.80E-03	6.97E+00	1.04E+01	ND	3.80E-03	ND	ND	ND	ND	ND	ND	ND	1.18E-04	1.88E-03	3.68E-02	9.69E-04	-1.11E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	4.18E-07	3.91E-09	2.61E-08	4.48E-07	ND	1.85E-09	ND	ND	ND	ND	ND	ND	ND	9.25E-10	2.39E-09	2.41E-09	4.94E-10	-1.85E-09
Ionizing radiation[6)]	kBq U235e	1.93E-01	4.93E-04	2.73E+00	2.92E+00	ND	4.32E-04	ND	ND	ND	ND	ND	ND	ND	2.09E-05	3.30E-04	1.44E-03	1.19E-04	-1.11E-02
Ecotoxicity (freshwater)	CTUe	4.86E+01	8.01E-02	1.66E+01	6.53E+01	ND	1.20E-01	ND	ND	ND	ND	ND	ND	ND	2.60E-03	6.14E-02	9.24E-01	1.15E+01	-6.85E-02
Human toxicity, cancer	CTUh	1.75E-08	6.44E-12	4.05E-10	1.79E-08	ND	5.73E-12	ND	ND	ND	ND	ND	ND	ND	3.71E-13	4.76E-12	3.16E-11	2.57E-12	-7.24E-12
Human tox. non-cancer	CTUh	7.58E-08	3.67E-10	2.35E-09	7.85E-08	ND	2.98E-10	ND	ND	ND	ND	ND	ND	ND	5.87E-12	2.52E-10	1.40E-09	4.70E-10	-2.94E-10
SQP[7)]	-	8.56E+00	5.71E-01	1.95E+01	2.86E+01	ND	1.27E-01	ND	ND	ND	ND	ND	ND	ND	3.30E-03	2.81E-01	3.44E-01	1.33E-01	-2.07E-01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	8.23E+00	7.76E-03	-4.93E-01	7.75E+00	ND	-4.39E+00	ND	ND	ND	ND	ND	ND	ND	2.99E-04	5.48E-03	3.16E-02	1.68E-03	6.80E-01
Renew. PER as material	MJ	0.00E+00	0.00E+00	3.07E+00	3.07E+00	ND	-3.07E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E-01
Total use of renew. PER	MJ	8.23E+00	7.76E-03	2.58E+00	1.08E+01	ND	-7.46E+00	ND	ND	ND	ND	ND	ND	ND	2.99E-04	5.48E-03	3.16E-02	1.68E-03	8.92E-01
Non-re. PER as energy	MJ	1.10E+02	5.67E-01	1.96E+01	1.30E+02	ND	1.84E-01	ND	ND	ND	ND	ND	ND	ND	4.72E-02	3.99E-01	-1.20E+01	-4.86E+00	-5.75E-01
Non-re. PER as material	MJ	5.22E+00	0.00E+00	-2.47E-01	4.97E+00	ND	-1.89E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-1.19E+00	-3.78E+00	6.70E-02
Total use of non-re. PER	MJ	1.15E+02	5.67E-01	1.94E+01	1.35E+02	ND	1.82E-01	ND	ND	ND	ND	ND	ND	ND	4.72E-02	3.99E-01	-1.32E+01	-8.63E+00	-5.08E-01
Secondary materials	kg	1.08E-01	2.41E-04	4.47E-02	1.53E-01	ND	1.25E-04	ND	ND	ND	ND	ND	ND	ND	1.96E-05	1.77E-04	5.21E-04	2.85E-05	-7.36E-05
Renew. secondary fuels	MJ	9.19E-03	3.06E-06	4.19E-03	1.34E-02	ND	1.01E-06	ND	ND	ND	ND	ND	ND	ND	5.12E-08	2.25E-06	1.14E-05	4.23E-07	-4.95E-07
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	6.94E-02	8.38E-05	1.11E-02	8.06E-02	ND	-3.22E-04	ND	ND	ND	ND	ND	ND	ND	3.12E-06	5.45E-05	5.91E-04	-7.15E-04	-4.33E-04

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1.13E+00	9.60E-04	9.71E-03	1.14E+00	ND	1.09E-03	ND	ND	ND	ND	ND	ND	ND	5.25E-05	6.91E-04	1.89E-02	2.90E-04	-2.49E-03
Non-hazardous waste	kg	1.09E+01	1.78E-02	1.61E+00	1.25E+01	ND	5.85E-01	ND	ND	ND	ND	ND	ND	ND	7.15E-04	1.29E-02	3.60E-01	9.96E-01	-1.10E-01
Radioactive waste	kg	2.60E-04	1.21E-07	2.81E-04	5.41E-04	ND	1.08E-07	ND	ND	ND	ND	ND	ND	ND	5.12E-09	8.08E-08	3.69E-07	2.93E-08	-2.85E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	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	ND	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	1.39E+00	1.39E+00	ND	1.17E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	4.81E-01	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	4.17E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	3.71E+00	0.00E+00	0.00E+00
Exported energy – Electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	1.77E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	1.56E+00	0.00E+00	0.00E+00
Exported energy – Heat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	2.40E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	2.15E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	7.46E+00	3.88E-02	2.71E-01	7.77E+00	ND	2.37E-02	ND	ND	ND	ND	ND	ND	ND	3.59E-03	2.81E-02	8.98E-01	1.79E-02	-3.47E-02
Ozone depletion Pot.	kg $CFC_{-11}e$	1.07E-07	4.60E-10	1.67E-07	2.74E-07	ND	1.70E-10	ND	ND	ND	ND	ND	ND	ND	4.37E-11	3.20E-10	2.91E-10	9.28E-11	-3.58E-10
Acidification	kg SO_2e	3.60E-02	1.02E-04	8.80E-04	3.70E-02	ND	6.29E-05	ND	ND	ND	ND	ND	ND	ND	2.29E-05	7.24E-05	1.89E-04	1.97E-05	-1.86E-04
Eutrophication	kg PO_4^3e	6.16E-03	2.48E-05	2.69E-03	8.88E-03	ND	2.55E-05	ND	ND	ND	ND	ND	ND	ND	5.34E-06	1.76E-05	4.18E-05	1.40E-05	-1.95E-05
POCP (“smog”)	kg C_2H_4e	1.71E-03	9.06E-06	7.67E-05	1.80E-03	ND	7.18E-06	ND	ND	ND	ND	ND	ND	ND	1.71E-06	6.48E-06	1.22E-05	3.62E-06	-1.05E-05
ADP-elements	kg Sbe	1.91E-03	1.06E-07	5.99E-07	1.92E-03	ND	3.36E-08	ND	ND	ND	ND	ND	ND	ND	1.26E-09	8.70E-08	7.23E-07	9.39E-09	-4.40E-08

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADP-fossil	MJ	1.03E+02	5.59E-01	2.76E+00	1.06E+02	ND	1.76E-01	ND	ND	ND	ND	ND	ND	ND	4.68E-02	3.94E-01	2.44E-01	9.18E-02	-3.79E-01

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	7.53E+00	3.91E-02	2.72E-01	7.84E+00	ND	1.38E-02	ND	ND	ND	ND	ND	ND	ND	3.61E-03	2.82E-02	8.98E-01	1.85E-02	-3.49E-02

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Electricity, France, residual mix, 2024, France, One Click LCA, 0.0510 kgCO2e/kWh

Installation at the building site (A5) - Scenario documentation

Scenario parameter	Value
Energy: type and consumption (MJ or kWh)	-
Water use (m^3)	-
Ancillary materials: type and mass (kg)	-
Waste materials: type and mass (kg)	Installation-related waste is limited to packaging materials only. No product material waste is generated during installation. The packaging waste per unit consists of approximately 0.045 kg of cardboard (box) and 0.25 kg of wood (pallet). These values represent typical packaging quantities under standard delivery conditions.
Waste materials: output routes	
Direct emissions (kg)	

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	
Collection process: Mixed waste (kg)	
Recovery: re-use (kg)	0
Recovery: recycling (kg)	0.48
Recovery: energy recovery (kg)	0
Disposal (kg)	0
Scenario assumptions e.g. transportation (mode, km) & other	After removal, insulation piercing connectors are transported to either recycling facilities or landfill sites. The average assumed distances are 250 km to recycling facilities and 50 km to landfill.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Yazan Badour as an authorized verifier for EPD Hub Limited 07.05.2026