DELTRIAN

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EPD Hub

Environmental product declaration.

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

RPV98 ESG ePM1 80%

EPD HUB, HUB-4544

Published on 02.12.2025, last updated on 02.12.2025, valid until 01.12.2030

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.

One Click LCA

General information.

MANUFACTURER

Manufacturer	Deltrian International
Address	rue du Berlaimont 21a, 6220 Fleurus, Belgium
Contact details	filtration@deltrian.com
Website	www.deltrian.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	**EPD Hub, hub@epdhub.com**
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4, A5, B1, B6 and modules C1-C4, D
EPD author	Delphine Donis
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Elma Advyli, as authorized verifier acting for EPD HUB Limited.

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	RPV98 ESG ePM1 80%
Additional labels	-
Product reference	3800651
Place(s) of raw material origin	Media: France, Frame: Germany, Mastic: Germany, Hot melt glue : Italy
Place of production	Kežmarok, Slovakia
Place(s) of installation and use	Belgium - Europe
Period for data	Calendar year 2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3	-
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	6,95

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 filter
Declared unit mass	4,37 kg
Mass of packaging	0,986 Kg
GWP-fossil, A1-A3 (kgCO2e)	16,8
GWP-total, A1-A3 (kgCO2e)	15,6
Secondary material, inputs (%)	1,12
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	87,2
Total water use, A1-A3 (m3e)	0,17

Product and manufacturer.

DELTRIAN

About the manufacturer.

Specialized in air filtration, Deltrian offers advanced technological solutions for all sectors of activity. Thanks to its expertise and know-how, Deltrian is today an expert in air quality control. Thanks to its strategic vision and successful development, Deltrian is expanding internationally and rising to every challenge. More information on the organization is available on the website in the About Deltrian section.

Product description.

The RPV98 ES is a compact rigid filter manufactured by Deltrian Slovakia, with a filtration class of ePM1 80% in compliance with ISO 16890 (F9). This filter is constructed with a robust plastic frame and uses fiberglass paper media for efficient filtration. What's more, in terms of energy performance, it gets top marks: A. Rigid compact filters are commonly used in heating, ventilation and air-conditioning (HVAC) systems, and serve as final filters in many applications, including industrial, commercial and sanitary. The service life of filters can vary according to user preferences, the type of installation and the geographical location of the installation site.

Further information can be found at
www.deltrian.com

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com
ISO 9001 QUALITY MANAGEMENT VINÇOTTE
ISO 14001 ENVIRONMENTAL MANAGEMENT VINÇOTTE

Headquarters.

Production.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	29	Media: France
Fossil materials	71	Frame: Germany, Mastic : Germany, Hot melt glue : Italy
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,398

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 filter
Mass per declared unit	4,37 kg
Functional unit	KwH
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			CONSTRUCTION PROCESS STAGE		USAGE STAGE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
Raw materials	Transport	Manufacturing	Transport	Construction instal-lation	Use	Maintenance	Repaire	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction de-molition	Transport	Waste processing	Disposal	Reuse-Recovery-Re-cycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
✓	✓	✓	✓	✓	✓	ND	ND	ND	ND	✓	ND	✓	✓	✓	✓	✓

Modules not declared = ND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

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

A1 – Raw Material Supply: This stage includes the extraction and processing of raw materials, as well as the production of all materials and components used in the manufacturing of rigid compact filters: fiberglass paper filter media, plastic frames, adhesives, and mastics.

A2 – Transport to Production Site: This stage covers the transportation of materials and components to the production site in Kežmarok, Slovakia.

A3 – Manufacturing of the Filter: This stage represents the complete manufacturing process of the rigid compact filters at the Kežmarok site. It includes electricity consumption for assembling and gluing the filter media into the plastic frame, as well as general energy use for heating, lighting, and other factory operations.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

A4 – Transport to Customer : This stage covers the transportation of the finished bag filters to the end customer. The average transport distance considered is 1,270 km, and the reference year for this data is 2024.

A5 – Packaging Waste Management : No significant consumption of energy, water, or auxiliary materials is required during the installation of the filter at the client's site.
The installation process generates no direct emissions or other notable environmental impacts.
The only waste produced during this stage is the product's cardboard packaging.
Waste treatment follows local waste management practices:

- 86% of the cardboard is recycled,
- 13% is incinerated with energy recovery,
- 1% is disposed of in landfill.

No other material or energy flows are associated with the installation stage.

PRODUCT USE AND MAINTENANCE (B1-B7)

B1 – Filter Operation (Dust Accumulation) : This stage accounts for the accumulation of airborne particles within the filter during its operation, resulting in a progressive reduction of particles released into the air.

B6 – Operational Energy Use : This stage includes the electricity consumption associated with operating the filter for one year. The calculation of energy usage has been performed in accordance with Eurovent 21/04/2019. The energy mix considered for this assessment corresponds to the Belgian market.

PRODUCT END OF LIFE (C1-C4, D)

C1 – Deconstruction / Removal : The filter is removed from the ventilation system during maintenance or replacement operations. This step requires no specific energy input, apart from standard manual handling.

C2 – Transport to end-of-life treatment : The used filter is transported to an incineration or landfill facility,

with an average distance of 30 km by standard truck.

C3 – Waste processing : The filter is not dismantled prior to treatment. Since the type and composition of the retained particles are unknown (dust, pollutants, possible microorganisms), dismantling or handling of the filter media is not safe nor recommended. No additional treatment is performed prior to disposal.

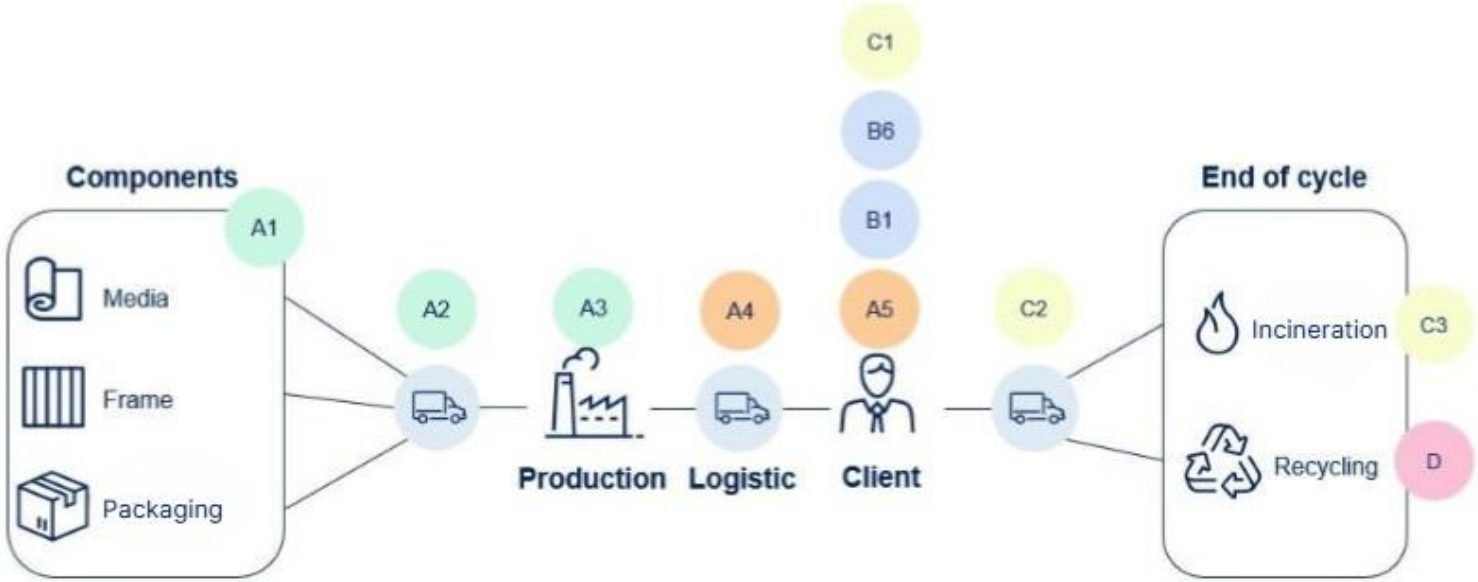
C4 – Disposal : Used filters are incinerated with energy recovery in authorized facilities for non-hazardous waste.

This method reduces sanitary risks and allows partial recovery of the energy content of the filter media and frame.

No material recovery is considered at this stage.

D – Energy Recovery Benefits : This module accounts for the potential environmental benefits derived from the energy recovered during the incineration process.

System Diagram.



PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USAGE STAGE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
Raw materials	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repaire	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
✓	✓	✓	✓	✓	✓	MND	MND	MND	MND	✓	NMD	✓	✓	✓	✓	✓

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.

Life-Cycle Stages Excluded:

- The study does not consider the impact of the production and maintenance of the infrastructure and equipment used to manufacture the products (since it was assumed to have a minor share per product). However, it does include the electricity used by this equipment.
- Business travel and travel to and from work of personnel.
- In the manufacturing stage (A3), the burdens associated with the incineration of media waste have been excluded. However, the media waste itself is included.
- In use (B1), only the carbon content of the collected dust was considered when estimating the total calorific value of the dust.
- In module C4, the landfilling of ash from filter incineration was excluded as it generates negligible environmental impact, assuming high process efficiency.

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 materials	No allocation
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

EPD – Evaluation of a Rigid Compact Filter

As part of this EPD, we developed a calculation tool to accurately assess the quantities of raw materials and waste associated with the production of a rigid compact filter. This tool is based on actual production data for the frame, filter media, and adhesives. It enables the integration of nearly 100% of all materials used in the filter. To ensure reliability, theoretical values were compared with practical weighings. Material losses were assessed using the same approach.

Storage and Transport

For the logistics and storage phase, we considered the average storage time in a warehouse, relative to the volume occupied by the filter and the energy required for its storage. For transport to the end user, the different modes of transport (truck, boat, etc.) Were considered. The assessment was based on the volumetric footprint of the filters, which is more significant than their weight in this context.

Use of the Filter by the Client

During the use phase, calculations were based on a standard air handling unit operating for one year. The Eurovent 4/21-2019 standard was applied to ensure a consistent and comparable unit of measure for energy consumption across applications.

Energy consumption (kwh) is calculated as follows:

$$\textbf{Energy (kWh)} = \frac{\text{Airflow} \times \text{Pressure drop} \times \text{Operating time}}{\text{Motor efficiency}} \times 1000$$

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	-

Scope and Representativeness

This EPD is valid for RPV95 ES filters.

LCA SOFTWARE AND BIBLIOGRAPHY

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

Environmental effectiveness.

Environmental impact data.

A COMPREHENSIVE OVERVIEW OF EPD – DATA SUMMARY

This summary typically includes key information on energy consumption, emissions to air, water, and soil, resource use, and waste generation. It aims to provide stakeholders, including consumers, manufacturers, and policymakers, with a transparent, reliable, and standardized method to understand and compare the environmental performance of products. By synthesizing complex life cycle assessment (LCA) data into accessible insights, the EPD summary helps in making informed decisions that lead towards more sustainable consumption and production patterns.

	Category	Global Warming Potential total kg CO_2e	%
A1-A3	Product Stage	**15,58**	5,91
A4	Transport to the building site	**0,73**	0,28
A5	Installation into the building	**1,34**	0,51
B1	Use or application of the product	**0**	0
B6	Operational energy use	**238,44**	90,50
C1	Deconstruction	**/**	/
C2	Waste transport	**0,02**	0,01
C3	Waste processing	**7,33**	2,78
C4	Waste disposal	**0,04**	0,02
D	External impacts (excluded from totals)	**-6,33**	-2,40
	Total	**263,47 Kg CO_2e**	100 %

Environmental impact data.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

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	1,42E+01	7,32E-01	6,84E-01	1,56E+01	7,32E-01	1,34E+00	0,00E+00	ND	ND	ND	ND	2,38E+02	ND	0,00E+00	1,74E-02	7,33E+00	4,13E-02	-6,33E+00
GWP – fossil	kg CO_2e	1,41E+01	7,32E-01	1,97E+00	1,68E+01	7,32E-01	2,65E-02	0,00E+00	ND	ND	ND	ND	2,38E+02	ND	0,00E+00	1,74E-02	7,33E+00	4,12E-02	-6,30E+00
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-1,31E+00	-1,31E+00	0,00E+00	1,31E+00	0,00E+00	ND	ND	ND	ND	-5,55E-17	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	5,18E-02	3,28E-04	2,08E-02	7,29E-02	3,27E-04	1,94E-05	0,00E+00	ND	ND	ND	ND	6,57E-01	ND	0,00E+00	7,79E-06	5,67E-05	7,35E-05	-2,41E-02
Ozone depletion pot.	kg $CFC\text{-}_{11}e$	3,74E-07	1,08E-08	4,17E-08	4,27E-07	1,08E-08	1,95E-10	0,00E+00	ND	ND	ND	ND	9,99E-06	ND	0,00E+00	2,57E-10	2,70E-09	8,55E-10	-5,06E-08
Acidification potential	mol H^+e	6,72E-02	2,50E-03	1,11E-02	8,08E-02	2,50E-03	1,42E-04	0,00E+00	ND	ND	ND	ND	4,10E-01	ND	0,00E+00	5,93E-05	1,67E-03	2,22E-04	-4,55E-02
EP-freshwater[2)]	kg Pe	3,40E-03	5,70E-05	1,22E-03	4,68E-03	5,70E-05	6,28E-06	0,00E+00	ND	ND	ND	ND	2,51E-02	ND	0,00E+00	1,35E-06	2,29E-05	4,67E-06	-3,25E-03
EP-marine	kg Ne	1,32E-02	8,20E-04	2,47E-03	1,65E-02	8,20E-04	7,94E-05	0,00E+00	ND	ND	ND	ND	1,38E-01	ND	0,00E+00	1,95E-05	9,50E-04	8,10E-05	-6,71E-03
EP-terrestrial	mol Ne	1,34E-01	8,92E-03	2,15E-02	1,65E-01	8,92E-03	4,50E-04	0,00E+00	ND	ND	ND	ND	1,35E+00	ND	0,00E+00	2,12E-04	8,10E-03	8,77E-04	-6,48E-02
POCP ("smog")[3)]	kg NMVOCe	5,39E-02	3,68E-03	6,72E-03	6,43E-02	3,68E-03	1,42E-04	0,00E+00	ND	ND	ND	ND	4,25E-01	ND	0,00E+00	8,75E-05	2,03E-03	3,17E-04	-1,97E-02
ADP-minerals & metals[4)]	kg Sbe	5,12E-04	2,04E-06	6,66E-06	5,20E-04	2,04E-06	2,14E-07	0,00E+00	ND	ND	ND	ND	9,75E-04	ND	0,00E+00	4,86E-08	5,26E-07	1,15E-07	-2,08E-06
ADP-fossil resources	MJ	3,56E+02	1,06E+01	3,76E+01	4,04E+02	1,06E+01	2,30E-01	0,00E+00	ND	ND	ND	ND	9,97E+03	ND	0,00E+00	2,53E-01	1,43E+00	7,47E-01	-7,40E+01
Water use[5)]	m^3e depr.	5,03E+00	5,25E-02	1,12E+00	6,20E+00	5,25E-02	1,31E-02	0,00E+00	ND	ND	ND	ND	9,73E+01	ND	0,00E+00	1,25E-03	4,83E-01	4,61E-03	-8,11E-01

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, PEF

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	4,55E-07	7,33E-08	2,13E-07	7,41E-07	7,33E-08	6,39E-09	-2,19E-05	ND	ND	ND	ND	4,28E-06	ND	0,00E+00	1,74E-09	8,61E-09	6,73E-09	-3,44E-07
Ionizing radiation[6)]	kBq U235e	2,61E+00	9,25E-03	7,95E-01	3,41E+00	9,25E-03	8,76E-04	0,00E+00	ND	ND	ND	ND	3,82E+02	ND	0,00E+00	2,20E-04	2,57E-03	6,98E-04	-6,73E-01
Ecotoxicity (freshwater)	CTUe	2,41E+02	1,50E+00	7,82E+00	2,50E+02	1,50E+00	8,41E-01	0,00E+00	ND	ND	ND	ND	3,62E+02	ND	0,00E+00	3,57E-02	1,44E+01	2,15E-01	-1,30E+01
Human toxicity, cancer	CTUh	1,56E-08	1,21E-10	7,37E-10	1,65E-08	1,21E-10	4,85E-11	0,00E+00	ND	ND	ND	ND	4,30E-08	ND	0,00E+00	2,87E-12	6,25E-10	1,77E-11	-1,01E-09
Human tox. non-cancer	CTUh	3,28E-07	6,88E-09	2,09E-08	3,55E-07	6,88E-09	1,98E-09	0,00E+00	ND	ND	ND	ND	1,36E-06	ND	0,00E+00	1,64E-10	2,19E-08	3,07E-10	-4,72E-08
SQP[7)]	-	4,32E+01	1,07E+01	1,09E+02	1,63E+02	1,07E+01	1,71E-01	0,00E+00	ND	ND	ND	ND	1,75E+03	ND	0,00E+00	2,54E-01	4,02E-01	1,05E+00	1,31E+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	2,12E+01	1,46E-01	1,49E+01	3,63E+01	1,46E-01	-1,59E+01	0,00E+00	ND	ND	ND	ND	1,31E+03	ND	0,00E+00	3,46E-03	5,87E-02	1,22E-02	8,35E-04
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,08E+01	1,08E+01	0,00E+00	5,13E+00	0,00E+00	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,12E+01	1,46E-01	2,57E+01	4,71E+01	1,46E-01	-1,08E+01	0,00E+00	ND	ND	ND	ND	1,31E+03	ND	0,00E+00	3,46E-03	5,87E-02	1,22E-02	8,35E-04
Non-re. PER as energy	MJ	2,30E+02	1,06E+01	3,71E+01	2,77E+02	1,06E+01	2,30E-01	0,00E+00	ND	ND	ND	ND	9,97E+03	ND	0,00E+00	2,53E-01	-1,11E+02	7,48E-01	-7,47E+01
Non-re. PER as material	MJ	1,27E+02	0,00E+00	6,23E-01	1,27E+02	0,00E+00	-6,14E-01	0,00E+00	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-1,27E+02	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	3,56E+02	1,06E+01	3,77E+01	4,05E+02	1,06E+01	-3,84E-01	0,00E+00	ND	ND	ND	ND	9,97E+03	ND	0,00E+00	2,53E-01	-2,37E+02	7,48E-01	-7,47E+01
Secondary materials	kg	4,88E-02	4,52E-03	6,13E-02	1,15E-01	4,52E-03	5,14E-04	0,00E+00	ND	ND	ND	ND	7,87E-01	ND	0,00E+00	1,08E-04	1,30E-03	1,30E-03	-7,86E-01
Renew. secondary fuels	MJ	2,51E-02	5,74E-05	1,93E-01	2,18E-01	5,74E-05	2,83E-06	0,00E+00	ND	ND	ND	ND	2,84E-03	ND	0,00E+00	1,37E-06	4,27E-05	1,55E-05	8,63E-02
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,38E-01	1,57E-03	3,12E-02	1,71E-01	1,57E-03	2,02E-04	0,00E+00	ND	ND	ND	ND	2,73E+00	ND	0,00E+00	3,73E-05	8,27E-03	5,61E-04	-5,22E-02

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	4,91E-01	1,80E-02	1,19E-01	6,28E-01	1,80E-02	4,71E-03	0,00E+00	ND	ND	ND	ND	6,31E+00	ND	0,00E+00	4,28E-04	1,26E-01	1,99E-03	-5,48E-01
Non-hazardous waste	kg	2,74E+01	3,33E-01	7,21E+00	3,50E+01	3,33E-01	2,36E-01	0,00E+00	ND	ND	ND	ND	1,47E+02	ND	0,00E+00	7,92E-03	3,41E+00	3,25E+00	-1,47E+01
Radioactive waste	kg	4,80E-04	2,26E-06	1,96E-04	6,78E-04	2,26E-06	2,14E-07	0,00E+00	ND	ND	ND	ND	9,24E-02	ND	0,00E+00	5,38E-08	6,55E-07	1,72E-07	-1,72E-04

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	1,89E-01	1,89E-01	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	8,48E-01	0,00E+00	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,28E-01	0,00E+00	ND	ND	ND	ND	0,00E+00	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	0,00E+00	1,08E+00	0,00E+00	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	9,23E+01	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	1,63E-01	0,00E+00	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,39E+01	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,19E-01	0,00E+00	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	7,84E+01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

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	1,39E+01	7,28E-01	2,00E+00	1,66E+01	7,28E-01	6,24E-02	0,00E+00	ND	ND	ND	ND	2,38E+02	ND	0,00E+00	1,73E-02	7,33E+00	4,10E-02	-6,30E+00
Ozone depletion Pot.	kg CFC-$_{11}$e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Acidification	kg SO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Eutrophication	kg PO_4^3e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
POCP (“smog”)	kg C_2H_4e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-elements	kg Sbe	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-fossil	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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	1,42E+01	7,32E-01	1,99E+00	1,69E+01	7,32E-01	2,65E-02	0,00E+00	ND	ND	ND	ND	2,38E+02	ND	0,00E+00	1,74E-02	7,33E+00	4,13E-02	-6,33E+00

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.

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 is filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub cannot 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

Elma Advyli, as authorized verifier acting for EPD HUB Limited.

02.12.2025