



# Environmental product declaration.

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

NWES98 ePM1 90%



**EPD HUB, HUB-0951**

**Publishing date:** 15 December 2023

**Last updated date:** 22 March 22, 2024

**Valid until:** 15 December 2028

## General information

### MANUFACTURER

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

### EPD STANDARDS, SCOPE AND VERIFICATION

<b>Program operator</b>	EPD Hub, hub@epdhub.com
<b>Reference standard</b>	EN 15804+A2:2019 and ISO 14025
<b>PCR</b>	EPD Hub Core PCR version 1.0, 1 Feb 2022
<b>Sector</b>	Construction product
<b>Category of EPD</b>	Third party verified EPD
<b>Scope of the EPD</b>	Cradle to gate with options, A4-A5, B1, B6 and modules C1-C4, D
<b>EPD author</b>	D.Donis/N.Bustin - Deltrian
<b>EPD verification</b>	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
<b>EPD verifier</b>	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited

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

<b>Product name</b>	NWES98 ePM1 90%
<b>Additional labels</b>	NWES98 -6/360/08 ; NWES98 -6/360/10 ; NWES98 -6/450/08 ; NWES98 -6/450/10 ; NWES98 -6/580/10
<b>Product reference</b>	1743207
<b>Place of production</b>	Slovakia
<b>Period for</b>	2022
<b>Averaging in EPD</b>	Multiple products
<b>Variation in GWP-fossil for A1-A3</b>	15.1%

### ENVIRONMENTAL DATA SUMMARY

<b>Declared unit</b>	1 filter
<b>Declared unit mass</b>	2.66 kg
<b>GWP-fossil, A1-A3 (kgCO2e)</b>	7,84E+00
<b>GWP-total, A1-A3 (kgCO2e)</b>	7,04E+00
<b>Secondary material, inputs (%)</b>	7.09
<b>Secondary material, outputs (%)</b>	0.0
<b>Total energy use, A1-A3 (kWh)</b>	38.5
<b>Total water use, A1-A3 (m3e)</b>	1,76E-01

## Product and manufacturer.



### 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 NWES98 is a bag filter manufactured by Deltrian Slovakia, with a filtration class of ePM1 90% in compliance with ISO 16890 (F9). This filter is built with a robust galvanized frame and uses polypropylene media for efficient filtration. Bag filters are commonly used in heating, ventilation and air-conditioning (HVAC) systems, and serve as final filters in many applications, including industrial, commercial and healthcare. The service life of bag 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](http://www.deltrian.com)



Headquarters.

Production.



### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	66	Frame, rivet : Slovakia
Minerals	/	
Fossil materials	34	Thread: Hungary, Media: Germany , Hot melt glue: Slovakia, Mastic: Slovakia
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	0.25

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 filter
Mass per declared unit	2.66 kg
Functional unit	-
Reference service life	1 year (used to filter air with this efficiency during a year)

### 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 installation	Use	Maintenance	Repaire	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	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
✓	✓	✓	✓	✓	✓	MND	MND	MND	MND	✓	NMD	✓	✓	✓	✓	✓

Modules not declared = MND. 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 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.

**A1** : includes the extraction and processing of raw materials, as well as the production of materials and components used in the manufacture of bag filters: filter media, galvanized frames, mastics, hot-melt adhesives and wires.

**A2** : includes transportation of the materials and components to the production site Kežmarok, Slovakia.

**A3** : covers production of the bag filters at the production site in Kežmarok. This stage includes electricity consumption for bag assembly and filter assembly, as well as the electricity consumption for general processes, such as heating and lighting. Bag assembly includes trimming and stitching the rolled media into a pocket shape including thread and hot melt.

### 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** : covers transport of packaged bag filters from production site (Deltrian SK) to storage location (Deltrian BE) Distance between the two is 1200 km

**A4**: Covers transport of bag filter from storage site (Deltrian BE) to end customer. Average distance assumed to be 164,1 km. Customers in France and the US have not been taken into account, as they account for less than 1% of the average distance. The year represented is 2022.

**A5** : covers the transport of cardboard boxes to waste management: part is incinerated, another part goes to the recycling center and the rest is recycled.

### PRODUCT USE AND MAINTENANCE (B1-B7)

**B1** : includes the accumulation of dirt in the filter and consequent reduction of airborne particles.

**B6** : includes electricity consumption during one year of bag filter operation. Electricity consumption has been calculated in accordance with Eurovent 21/04/2019.

### PRODUCT END OF LIFE (C1-C4, D)

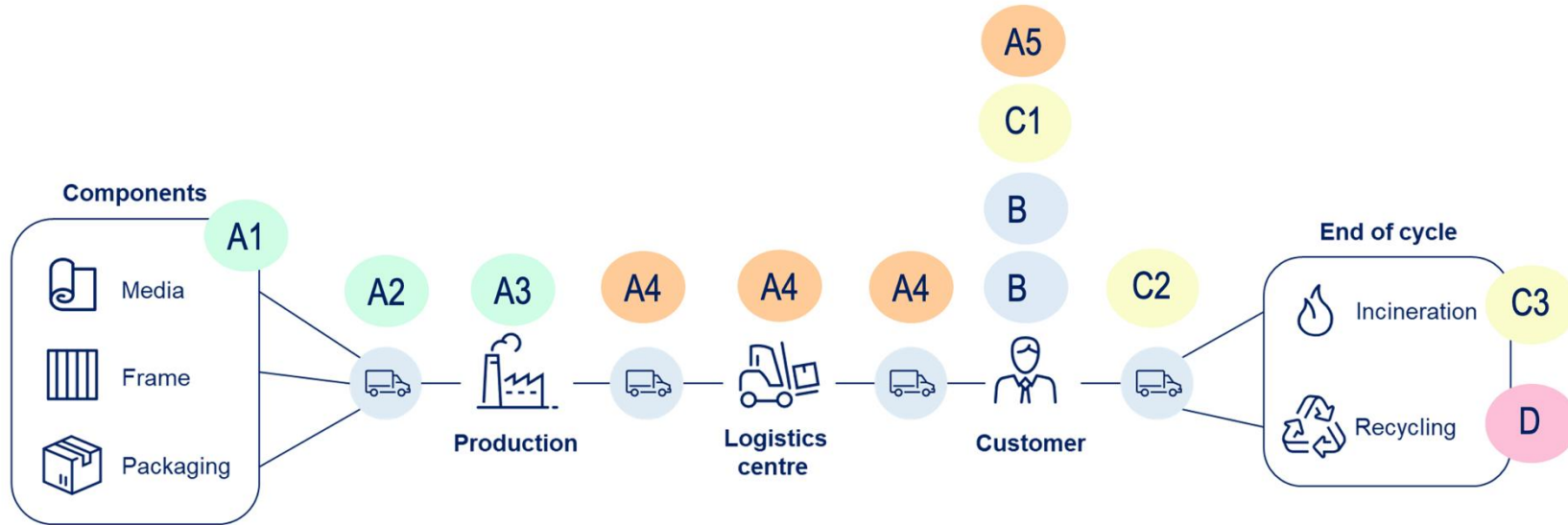
**C1** : this pertains to the manual removal process of the filter from the equipment.

**C2** : this encompasses the journey from the user's site to the waste treatment facility. The average distance traveled is estimated to be 80 km.

**C3** : this includes the incineration of the filter and the collected dust. The incineration process is carried out with energy recovery.

**C4** : covers incineration of the filter and the collected dust. The incineration process is conducted with recovery of energy.

# Manufacturing process.



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.

All raw materials used in production have been included in the model calculations. The processes and transport involved in recycling the material back to the production site are taken into account.

Life-Cycle Stages Excluded:

- The study does not take into account 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 taken into account 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.

### 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	No allocation
Manufacturing energy and waste	Allocated by mass or volume

### AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3	15.1%

***This is an Average EPD for the NWES98 filter (592/592/08) - This EPD is valid for the smallest filter in the NWES 98 range and for the largest filter in the NWES98 range (filters declared on EUROVENT).***

### 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. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.



**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 <sub>2</sub> e	%
<b>A1-A3</b>	Product Stage	<b>7,2</b>	1,41%
<b>A4</b>	Transport to the building site	<b>0,77</b>	0,15%
<b>A5</b>	Installation into the building	<b>0,83</b>	0,16%
<b>B1</b>	Use or application of the product	<b>0</b>	0%
<b>B6</b>	Operational energy use	<b>497,7</b>	97,61%
<b>C1</b>	Deconstruction	<b>/</b>	<b>/</b>
<b>C2</b>	Waste transport	<b>0,04</b>	0,01%
<b>C3</b>	Waste processing	<b>3,34</b>	0,66%
<b>C4</b>	Waste disposal	<b>/</b>	<b>/</b>
<b>D</b>	External impacts (excluded from totals)	<b>-1,34</b>	-0,26%
	<b>Total</b>	<b>508,54 Kg CO<sub>2</sub>e</b>	<b>100%</b>

# 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 <sup>1)</sup>	kg CO <sub>2</sub> e	1,36E+01	2,37E-01	1,29E+00	1,52E+01	7,36E-01	-6,12E-01	0,00E+00	MND	MND	MND	MND	4,98E+02	MND	0,00E+00	4,41E-02	2,71E+00	0,00E+00	-6,64E+00
GWP – fossil	kg CO <sub>2</sub> e	1,36E+01	2,37E-01	1,29E+00	1,52E+01	7,36E-01	1,43E-02	0,00E+00	MND	MND	MND	MND	4,97E+02	MND	0,00E+00	4,40E-02	2,71E+00	0,00E+00	-6,70E+00
GWP – biogenic	kg CO <sub>2</sub> e	3,78E-03	0,00E+00	-3,78E-03	2,82E-18	0,00E+00	-6,27E-01	0,00E+00	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,18E-02
GWP – LULUC	kg CO <sub>2</sub> e	1,37E-02	9,67E-05	6,61E-03	2,04E-02	3,00E-04	1,27E-05	0,00E+00	MND	MND	MND	MND	1,16E+00	MND	0,00E+00	1,80E-05	2,65E-05	0,00E+00	-2,60E-03
Ozone depletion pot.	kg CFC <sub>11</sub> e	5,58E-07	5,23E-08	1,08E-07	7,19E-07	1,62E-07	7,70E-10	0,00E+00	MND	MND	MND	MND	2,48E-05	MND	0,00E+00	9,71E-09	7,09E-09	0,00E+00	-3,64E-07
Acidification potential	mol H <sup>+</sup> e	2,02E-01	9,82E-04	6,28E-03	2,10E-01	3,05E-03	8,99E-05	0,00E+00	MND	MND	MND	MND	2,69E+00	MND	0,00E+00	1,82E-04	4,88E-04	0,00E+00	-5,27E-02
EP-freshwater <sup>2)</sup>	kg Pe	6,32E-05	2,00E-06	7,67E-05	1,42E-04	6,20E-06	4,02E-07	0,00E+00	MND	MND	MND	MND	5,27E-02	MND	0,00E+00	3,71E-07	7,46E-07	0,00E+00	-3,58E-04
EP-marine	kg Ne	1,49E-02	2,87E-04	1,41E-03	1,66E-02	8,90E-04	1,32E-04	0,00E+00	MND	MND	MND	MND	3,67E-01	MND	0,00E+00	5,32E-05	2,09E-04	0,00E+00	-6,54E-03
EP-terrestrial	mol Ne	7,91E-01	3,16E-03	1,35E-02	8,08E-01	9,82E-03	2,60E-04	0,00E+00	MND	MND	MND	MND	4,16E+00	MND	0,00E+00	5,87E-04	2,27E-03	0,00E+00	-7,15E-02
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	4,25E-02	9,63E-04	3,59E-03	4,71E-02	2,99E-03	1,10E-04	0,00E+00	MND	MND	MND	MND	1,13E+00	MND	0,00E+00	1,79E-04	5,88E-04	0,00E+00	-1,95E-02
ADP-minerals & metals <sup>4)</sup>	kg Sbe	4,07E-05	8,25E-07	5,91E-06	4,75E-05	2,56E-06	1,81E-07	0,00E+00	MND	MND	MND	MND	1,17E-03	MND	0,00E+00	1,53E-07	1,79E-07	0,00E+00	-3,66E-06
ADP-fossil resources	MJ	2,81E+02	3,43E+00	2,42E+01	3,09E+02	1,06E+01	1,22E-01	0,00E+00	MND	MND	MND	MND	1,06E+04	MND	0,00E+00	6,37E-01	6,48E-01	0,00E+00	-7,77E+01
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	6,10E+00	1,50E-02	8,79E-01	6,99E+00	4,66E-02	7,86E-03	0,00E+00	MND	MND	MND	MND	2,72E+02	MND	0,00E+00	2,79E-03	1,73E-01	0,00E+00	-7,87E-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	1,44E-06	2,02E-08	1,38E-07	1,60E-06	6,26E-08	4,51E-09	9,78E-06	MND	MND	MND	MND	8,23E-06	MND	0,00E+00	3,75E-09	7,51E-09	0,00E+00	-4,11E-07
Ionizing radiation <sup>6)</sup>	kBq U235e	4,99E-01	1,60E-02	4,88E-01	1,00E+00	4,95E-02	7,30E-04	0,00E+00	MND	MND	MND	MND	2,84E+02	MND	0,00E+00	2,96E-03	2,26E-03	0,00E+00	-8,62E-01
Ecotoxicity (freshwater)	CTUe	2,37E+02	3,16E+00	3,51E+01	2,75E+02	9,81E+00	2,68E+00	0,00E+00	MND	MND	MND	MND	5,84E+03	MND	0,00E+00	5,87E-01	1,73E+00	0,00E+00	-1,39E+02
Human toxicity, cancer	CTUh	1,69E-08	8,89E-11	7,42E-10	1,77E-08	2,76E-10	5,28E-11	0,00E+00	MND	MND	MND	MND	1,70E-07	MND	0,00E+00	1,65E-11	1,71E-10	0,00E+00	-1,84E-09
Human tox. non-cancer	CTUh	3,02E-07	2,94E-09	2,05E-08	3,25E-07	9,13E-09	8,91E-10	0,00E+00	MND	MND	MND	MND	5,81E-06	MND	0,00E+00	5,46E-10	4,24E-09	0,00E+00	-6,16E-08
SQP <sup>7)</sup>	-	1,67E+01	2,38E+00	7,65E+01	9,55E+01	7,37E+00	1,03E-01	0,00E+00	MND	MND	MND	MND	1,55E+03	MND	0,00E+00	4,41E-01	6,25E-01	0,00E+00	-1,39E+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 <sup>8)</sup>	MJ	1,40E+01	4,02E-02	8,40E+00	2,25E+01	1,25E-01	1,03E-02	0,00E+00	MND	MND	MND	MND	1,80E+03	MND	0,00E+00	7,47E-03	1,40E-02	0,00E+00	-1,39E+01
Renew. PER as material	MJ	5,97E-01	0,00E+00	6,79E+00	7,39E+00	0,00E+00	-6,79E+00	0,00E+00	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	-5,97E-01	0,00E+00	-6,96E+00
Total use of renew. PER	MJ	1,46E+01	4,02E-02	1,52E+01	2,99E+01	1,25E-01	-6,78E+00	0,00E+00	MND	MND	MND	MND	1,80E+03	MND	0,00E+00	7,47E-03	-5,83E-01	0,00E+00	-2,08E+01
Non-re. PER as energy	MJ	2,32E+02	3,43E+00	2,38E+01	2,59E+02	1,06E+01	1,23E-01	0,00E+00	MND	MND	MND	MND	1,05E+04	MND	0,00E+00	6,37E-01	6,48E-01	0,00E+00	-7,79E+01
Non-re. PER as material	MJ	1,03E+02	0,00E+00	-9,83E+00	9,27E+01	0,00E+00	-3,86E-01	0,00E+00	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	-9,23E+01	0,00E+00	-3,57E+01
Total use of non-re. PER	MJ	3,34E+02	3,43E+00	1,40E+01	3,52E+02	1,06E+01	-2,63E-01	0,00E+00	MND	MND	MND	MND	1,05E+04	MND	0,00E+00	6,37E-01	-9,16E+01	0,00E+00	-1,14E+02
Secondary materials	kg	2,27E-01	1,13E-03	3,79E-02	2,66E-01	3,50E-03	2,79E-04	0,00E+00	MND	MND	MND	MND	8,03E-01	MND	0,00E+00	2,10E-04	1,16E-03	0,00E+00	-4,46E-01
Renew. secondary fuels	MJ	6,78E-05	1,46E-05	1,22E-01	1,22E-01	4,54E-05	1,70E-06	0,00E+00	MND	MND	MND	MND	4,18E-03	MND	0,00E+00	2,72E-06	1,28E-05	0,00E+00	6,02E-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	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m <sup>3</sup>	2,30E-01	4,06E-04	2,25E-02	2,53E-01	1,26E-03	1,71E-04	0,00E+00	MND	MND	MND	MND	8,72E+00	MND	0,00E+00	7,53E-05	-4,31E-04	0,00E+00	-5,51E-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	7,62E-01	4,94E-03	7,61E-02	8,43E-01	1,53E-02	1,17E-03	0,00E+00	MND	MND	MND	MND	3,69E+01	MND	0,00E+00	9,17E-04	0,00E+00	0,00E+00	-5,29E-01
Non-hazardous waste	kg	2,13E+01	7,90E-02	2,71E+00	2,40E+01	2,45E-01	1,60E-01	0,00E+00	MND	MND	MND	MND	2,40E+03	MND	0,00E+00	1,47E-02	3,17E+00	0,00E+00	-2,54E+01
Radioactive waste	kg	2,63E-03	2,27E-05	1,36E-04	2,79E-03	7,04E-05	1,94E-07	0,00E+00	MND	MND	MND	MND	7,66E-02	MND	0,00E+00	4,21E-06	0,00E+00	0,00E+00	-3,34E-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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	0,00E+00	MND	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	0,00E+00	0,00E+00	MND	MND	MND	MND	0,00E+00	MND	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	0,00E+00	0,00E+00	MND	MND	MND	MND	0,00E+00	MND	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	0,00E+00	0,00E+00	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	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 <sub>2</sub> e	8,46E+00	2,35E-01	1,28E+00	9,97E+00	7,28E-01	1,21E-01	0,00E+00	MND	MND	MND	MND	4,92E+02	MND	0,00E+00	4,36E-02	2,70E+00	0,00E+00	-6,60E+00
Ozone depletion Pot.	kg CFC <sub>11</sub> e	4,94E-07	4,15E-08	9,29E-08	6,28E-07	1,29E-07	6,62E-10	0,00E+00	MND	MND	MND	MND	2,14E-05	MND	0,00E+00	7,69E-09	5,85E-09	0,00E+00	-2,97E-07
Acidification	kg SO <sub>2</sub> e	1,14E-01	7,65E-04	5,10E-03	1,19E-01	2,38E-03	7,03E-05	0,00E+00	MND	MND	MND	MND	2,28E+00	MND	0,00E+00	1,42E-04	3,50E-04	0,00E+00	-4,49E-02
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	2,48E-02	1,76E-04	3,78E-03	2,88E-02	5,45E-04	3,11E-04	0,00E+00	MND	MND	MND	MND	1,84E+00	MND	0,00E+00	3,26E-05	3,14E-04	0,00E+00	-1,21E-02
POCP (“smog”)	kg C <sub>2</sub> H <sub>4</sub> e	2,34E-03	3,11E-05	3,40E-04	2,71E-03	9,65E-05	3,01E-05	0,00E+00	MND	MND	MND	MND	9,29E-02	MND	0,00E+00	5,77E-06	1,49E-05	0,00E+00	-1,87E-03
ADP-elements	kg Sbe	2,42E-02	8,06E-07	5,75E-06	2,42E-02	2,50E-06	1,78E-07	0,00E+00	MND	MND	MND	MND	1,17E-03	MND	0,00E+00	1,50E-07	1,60E-07	0,00E+00	-3,32E-06
ADP-fossil	MJ	2,27E+02	3,43E+00	2,40E+01	2,54E+02	1,06E+01	1,22E-01	0,00E+00	MND	MND	MND	MND	1,05E+04	MND	0,00E+00	6,37E-01	6,48E-01	0,00E+00	-7,78E+01

## Verification statement.

### VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? [Read more online](#)

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

### THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited  
15.12.2023

