ENVIRONMENTAL PRODUCT DECLARATION

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

Roof Hoods
Climecon Oy

EPD HUB, HUB-1013
Publishing date 8 January 2024, last updated on 8 January 2024, valid until 8 January 2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Climecon Oy
Address	Lämmittäjänkatu 4A, 00880 Helsinki, FINLAND
Contact details	info@climecon.fi
Website	https://climeconair.com/en-en/

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 1.0, 1 Feb 2022
Sector	Manufactured product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Emma Piha
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Magaly González Vázquez, 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

Product name	Roof Hoods
Additional labels	OTSO-U, OTSO-S, KONTIO-U, KONTIO-S
Product reference	-
Place of production	Pihtipudas, Finland
Period for data	calendar year 2022
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	+/- 17.7 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	3,51E+00
GWP-total, A1-A3 (kgCO2e)	3,12E+00
Secondary material, inputs (%)	27.1
Secondary material, outputs (%)	82.4
Total energy use, A1-A3 (kWh)	13.8
Total water use, A1-A3 (m3e)	3,18E-02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

We are Climecon, a responsible forerunner in indoor air design. With our indoor air design, we take a holistic approach to the well-being of people, buildings, and the environment. We design our solutions and products in a human-centric way, taking into account the perspective and needs of different users.

PRODUCT DESCRIPTION

This environmental product declaration covers the environmental impacts of roof hoods manufactured by Climecon Oy in Pihtipudas, Finland. Climecon roof hoods are designed by paying special attention to attractive appearance, high degree of separation, solid structure, and low pressure loss. Climecon roof hoods for exhaust and inlet air represent Scandinavian design and have been tested in challenging Nordic climate conditions.

All Climecon's roof hoods have a rectangular form. The construction gives them exceptionally solid structure. Structural heights of the roof hoods are very shallow, reducing the wind loads and enhancing their appearance. A horizontal groove in the middle of the unit strengthens the outer shell and provides a visual break on the otherwise uniform structure, which makes the roof hoods look even shallower. The surface treatment of Climecon's roof hoods meets the corrosivity class C4, sustaining well the toughest climatic conditions. The EPD contains four similar products:

- OTSO-U and KONTIO-U models designed for exhaust air
- OTSO-S and KONTIO-S models designed for inlet air.

OTSO roof hoods have a round connection type, while KONTIO roof hoods have a rectangular connection type. Together OTSO and KONTIO roof hoods form an elegant entity with a unified style.

Further information can be found at https://climeconair.com/en-en/.

PRODUCT RAW MATERIAL MAIN COMPOSITION010

Raw material category	Amount, mass- %	Material origin
Metals	98	Finland
Minerals	-	
Fossil materials	2	Finland
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	0.10582

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	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

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.

The hot rolled galvanized steel sheets are cut to specified shapes and bent mechanically in Climecon's Kausala production site. Hydraulic oil is used during the process to reduce the wear of machines and to ensure stable cutting and bending conditions. The parts are then transported to Climecon's Pihtipudas production site, where the final products are assembled with steel rivets. The manufacturing process requires electricity for the different equipment as well as district heating. The steel waste produced at the plant is directed to recycling. The loss of material is considered, as well as wastewater treatments. A wooden pallet, steel screws and packaging plastics are used as a packaging material for transporting the product from the factory gate. The product is then powder coated by a subcontractor.

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.

Average distance of transportation from production plant to building site is assumed as 325 km, which is the distance between the location of coating subcontractor and Climecon's headquarters in Helsinki. The transportation method is assumed to be lorry. Vehicle capacity is assumed to be 100% which means full load. In reality, it may vary, but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Transportation does not cause losses as product are packaged properly. Installation consumes 0.01 kWh of energy for assembling 1 kg of product. Treatment of packaging material waste (wood, steel and plastic) is considered in this module. Moreover, direct emission to air of carbon dioxide are considered as well to balance emissions of the biogenic CO2.

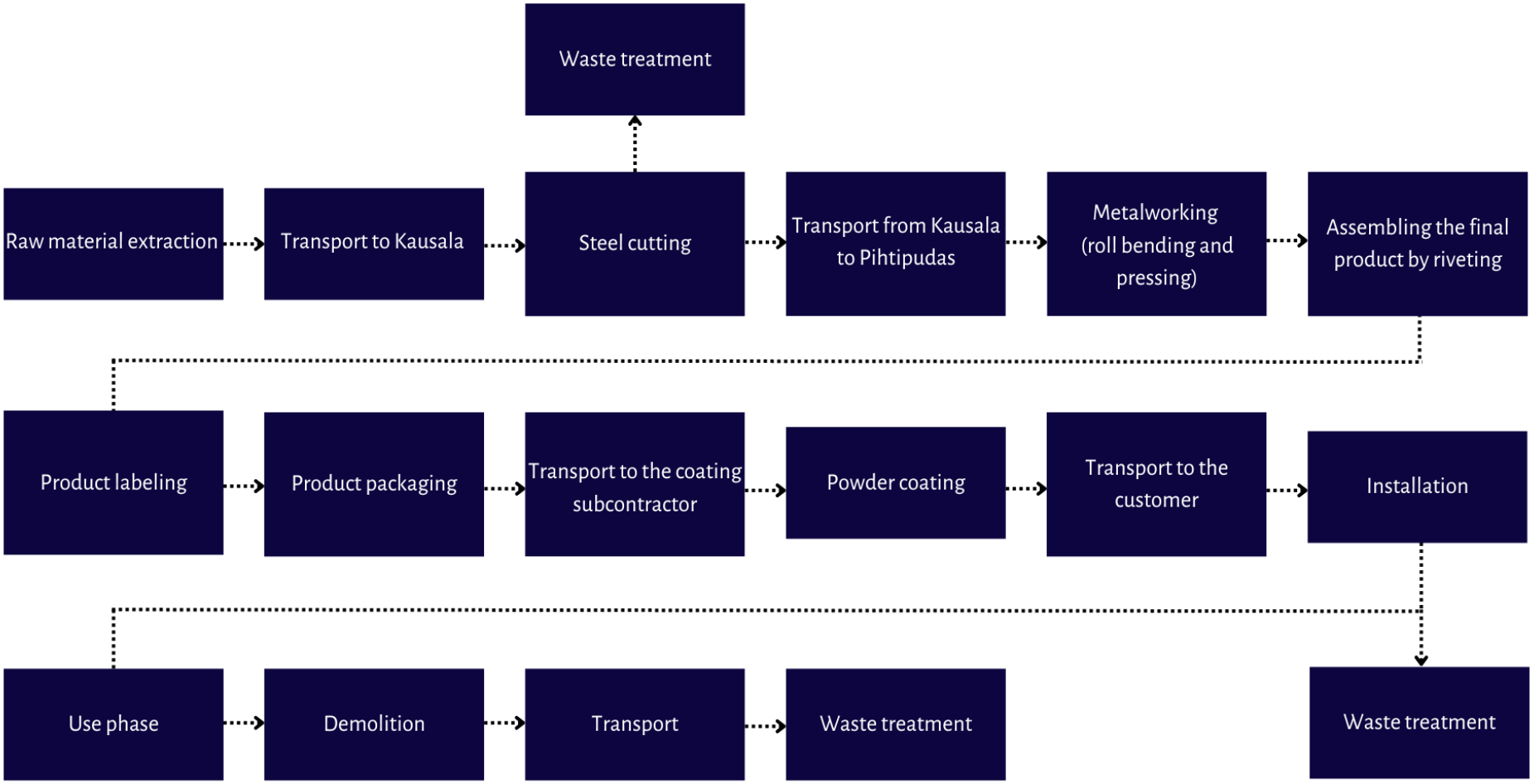
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Demolition is assumed to consume 0,01 kWh/kg of product. The source of energy is diesel fuel used by construction machines (C1). It is assumed that 100% of the waste is collected and transported to the waste treatment center. Transportation distance to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2). Approximately 85% of steel is assumed to be recycled, according to The World Steel Association (C3). It is assumed that the remaining 15% of steel and powder coating are taken to landfill for final disposal (C4). Due to the recycling process, the end-of-life product is converted into recycled steel, while majority of the timber (97%) and plastic packaging (85%) are incinerated with energy recovery (D).

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.

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	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by revenue

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3	+/- 17.7 %

This environmental product declaration covers Climecon Oys roof hoods manufactured in Pihtipudas, Finland. The EPD contains four different products:

- OTSO-U and KONTIO-U for exhaust air
- OTSO-S and KONTIO-S for inlet air.

All of the roof hoods have the same manufacturing materials, process and locations. The differences occur in the number of rivets used in the assembly and the amount of powder coating used in the finished product. EPD data can be scaled for different rood hood sizes by multiplying EPD result table by the mass of product.

OTSO-U 125⌀ was used as the reference product, as it the most dense product with highest percentage of steel rivets and paint used per kilogram of product.

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 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	3,37E+00	7,80E-02	-3,28E-01	3,12E+00	3,46E-02	4,00E-01	MND	MND	MND	MND	MND	MND	MND	3,31E-03	4,69E-03	2,15E-02	8,86E-04	-9,26E-01
GWP – fossil	kg CO_2e	3,37E+00	7,80E-02	6,14E-02	3,51E+00	3,46E-02	1,18E-02	MND	MND	MND	MND	MND	MND	MND	3,31E-03	4,69E-03	2,15E-02	8,85E-04	-9,27E-01
GWP – biogenic	kg CO_2e	1,65E-03	1,60E-07	-3,89E-01	-3,88E-01	1,34E-05	3,88E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	2,16E-03	2,88E-05	2,37E-04	2,42E-03	1,28E-05	2,44E-05	MND	MND	MND	MND	MND	MND	MND	3,30E-07	1,73E-06	2,80E-05	8,35E-07	7,13E-04
Ozone depletion pot.	kg CFC_{-11}e	2,29E-07	1,79E-08	6,31E-09	2,53E-07	7,96E-09	4,37E-10	MND	MND	MND	MND	MND	MND	MND	7,07E-10	1,08E-09	2,31E-09	3,58E-10	-3,00E-08
Acidification potential	mol H^+e	3,54E-02	3,30E-04	5,33E-04	3,62E-02	1,46E-04	3,52E-05	MND	MND	MND	MND	MND	MND	MND	3,44E-05	1,99E-05	2,46E-04	8,32E-06	-4,22E-03
EP-freshwater[2)]	kg Pe	1,54E-04	6,39E-07	3,74E-06	1,59E-04	2,83E-07	1,34E-07	MND	MND	MND	MND	MND	MND	MND	1,10E-08	3,84E-08	9,33E-07	9,27E-09	-1,72E-05
EP-marine	kg Ne	3,41E-03	9,81E-05	1,76E-04	3,68E-03	4,35E-05	1,29E-05	MND	MND	MND	MND	MND	MND	MND	1,52E-05	5,91E-06	5,22E-05	2,88E-06	-1,71E-04
EP-terrestrial	mol Ne	1,23E-01	1,08E-03	1,76E-03	1,26E-01	4,80E-04	1,40E-04	MND	MND	MND	MND	MND	MND	MND	1,67E-04	6,52E-05	6,01E-04	3,17E-05	-9,55E-03
POCP ("smog")[3)]	kg NMVOCe	1,40E-02	3,46E-04	4,60E-04	1,48E-02	1,54E-04	3,55E-05	MND	MND	MND	MND	MND	MND	MND	4,59E-05	2,08E-05	1,65E-04	9,21E-06	-4,76E-03
ADP-minerals & metals[4)]	kg Sbe	1,08E-04	1,83E-07	2,28E-06	1,11E-04	8,11E-08	2,12E-08	MND	MND	MND	MND	MND	MND	MND	1,68E-09	1,10E-08	2,45E-06	2,03E-09	-2,34E-05
ADP-fossil resources	MJ	4,00E+01	1,17E+00	9,13E-01	4,21E+01	5,19E-01	1,06E-01	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,05E-02	2,57E-01	2,43E-02	-8,38E+00
Water use[5)]	m^3e depr.	1,45E+00	5,24E-03	3,31E-02	1,49E+00	2,32E-03	1,04E-02	MND	MND	MND	MND	MND	MND	MND	1,20E-04	3,15E-04	4,37E-03	7,70E-05	2,78E-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.

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	3,70E+00	1,32E-02	4,24E+00	7,95E+00	5,85E-03	1,99E-02	MND	MND	MND	MND	MND	MND	MND	2,54E-04	7,94E-04	3,96E-02	2,11E-04	-1,30E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	3,47E+00	3,47E+00	0,00E+00	-3,47E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,52E+00
Total use of renew. PER	MJ	3,70E+00	1,32E-02	7,70E+00	1,14E+01	5,85E-03	-3,45E+00	MND	MND	MND	MND	MND	MND	MND	2,54E-04	7,94E-04	3,96E-02	2,11E-04	2,22E+00
Non-re. PER as energy	MJ	3,98E+01	1,17E+00	7,83E-01	4,18E+01	5,19E-01	1,06E-01	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,05E-02	2,57E-01	2,43E-02	-8,36E+00
Non-re. PER as material	MJ	1,57E-01	0,00E+00	8,29E-02	2,40E-01	0,00E+00	-1,09E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-1,31E-01	1,10E-01
Total use of non-re. PER	MJ	4,00E+01	1,17E+00	8,66E-01	4,20E+01	5,19E-01	-3,17E-03	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,05E-02	2,57E-01	-1,07E-01	-8,25E+00
Secondary materials	kg	2,71E-01	3,25E-04	1,52E-03	2,73E-01	1,44E-04	5,04E-05	MND	MND	MND	MND	MND	MND	MND	1,74E-05	1,96E-05	2,76E-04	5,10E-06	5,17E-01
Renew. secondary fuels	MJ	6,76E-04	3,28E-06	9,87E-05	7,78E-04	1,46E-06	1,75E-07	MND	MND	MND	MND	MND	MND	MND	5,70E-08	1,97E-07	1,40E-05	1,33E-07	-1,18E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	3,09E-02	1,52E-04	6,99E-04	3,18E-02	6,73E-05	4,54E-05	MND	MND	MND	MND	MND	MND	MND	2,70E-06	9,13E-06	1,24E-04	2,66E-05	-2,24E-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	1,19E+00	1,55E-03	7,49E-03	1,20E+00	6,89E-04	1,87E-04	MND	MND	MND	MND	MND	MND	MND	5,96E-05	9,35E-05	1,97E-03	0,00E+00	-4,76E-01
Non-hazardous waste	kg	6,55E+00	2,55E-02	1,04E-01	6,68E+00	1,13E-02	1,33E-01	MND	MND	MND	MND	MND	MND	MND	4,19E-04	1,54E-03	5,00E-02	1,68E-01	-2,26E+00
Radioactive waste	kg	9,85E-05	7,84E-06	3,15E-06	1,09E-04	3,48E-06	8,96E-07	MND	MND	MND	MND	MND	MND	MND	3,13E-07	4,72E-07	1,13E-06	0,00E+00	-8,63E-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	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	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	2,30E+00	2,30E+00	0,00E+00	5,44E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,32E-01	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	MND	MND	MND	MND	MND	MND	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	2,56E+00	MND	MND	MND	MND	MND	MND	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_2e	3,24E+00	7,72E-02	6,01E-02	3,38E+00	3,42E-02	1,17E-02	MND	MND	MND	MND	MND	MND	MND	3,27E-03	4,64E-03	2,11E-02	8,67E-04	-8,68E-01
Ozone depletion Pot.	kg CFC_{-11}e	2,20E-07	1,42E-08	6,10E-09	2,40E-07	6,30E-09	3,69E-10	MND	MND	MND	MND	MND	MND	MND	5,60E-10	8,55E-10	1,86E-09	2,83E-10	-3,78E-08
Acidification	kg SO_2e	2,31E-02	2,57E-04	3,88E-04	2,37E-02	1,14E-04	2,62E-05	MND	MND	MND	MND	MND	MND	MND	2,45E-05	1,54E-05	1,98E-04	6,29E-06	-3,43E-03
Eutrophication	kg PO_4^3e	9,08E-03	5,84E-05	1,75E-04	9,32E-03	2,59E-05	2,18E-05	MND	MND	MND	MND	MND	MND	MND	5,69E-06	3,52E-06	6,18E-05	1,36E-06	-1,56E-03
POCP (“smog”)	kg C_2H_4e	1,42E-03	1,00E-05	2,76E-05	1,45E-03	4,44E-06	9,79E-07	MND	MND	MND	MND	MND	MND	MND	5,36E-07	6,03E-07	7,55E-06	2,63E-07	-6,10E-04
ADP-elements	kg Sbe	1,07E-04	1,77E-07	2,27E-06	1,10E-04	7,85E-08	2,06E-08	MND	MND	MND	MND	MND	MND	MND	1,65E-09	1,07E-08	2,45E-06	2,00E-09	-2,33E-05
ADP-fossil	MJ	4,00E+01	1,17E+00	9,12E-01	4,21E+01	5,19E-01	1,02E-01	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,05E-02	2,57E-01	2,43E-02	-8,38E+00

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

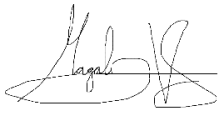
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
08.01.2024



EPD Hub
VERIFIED ISO 14025