ENVIRONMENTAL PRODUCT DECLARATION

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

Cableflex Series-resistive 2-conductor with screen
AB Ebeco

EBECO

EPD HUB, HUB-0889
Publishing date 27 November 2023, last updated date 27 November 2023, valid until 27 November 2028

GENERAL INFORMATION

MANUFACTURER

Manufacturer	AB Ebeco
Address	Lärjeågatan 11
Contact details	henrik.donner@ebeco.se
Website	www.ebeco.se

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	Construction 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	Henrik Donner, Ebeco AB
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Lucas Pedro Berman, 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	Cableflex Series-resistive 2-conductor with screen
Additional labels	
Product reference	8960102, 8960104, 8960106, 8960108, 8960110, 8960112, 8960114, 8960116, 8960118, 8960120, 8960122, 8960124, 8960126, 8960128, 8960130, 8961132, 8961133, 8961134, 8961135, 8961136, 8961137, 8961138, 8961139, 8961140, 8961141, 8961142, 8961144, 8961145, 8961146, 8961147, 8961148, 8961149, 8961150, 8961151, 8961152
Place of production	Barcelona
Period for data	Calendar year 2022
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	-22 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m installed heating cable, including manufacturing and waste treatment at end-of-life. (A1-A5, C-D)
Declared unit mass	0.033 kg
GWP-fossil, A1-A3 (kgCO2e)	2,87E-01
GWP-total, A1-A3 (kgCO2e)	2,25E-01
Secondary material, inputs (%)	3.05
Secondary material, outputs (%)	35.7
Total energy use, A1-A3 (kWh)	0.889
Total water use, A1-A3 (m3e)	3,77E-03

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Ebeco is a family business and we have been working on heating solutions since Ebbe Larsson founded the company in the late seventies. It started with underfloor heating and for 40 years Ebeco have presented a number of innovations that have come to shape the whole heating cable market.

Today, Ebeco offer the markets widest and most complete range of heating solutions in four business areas: indoors, outdoors, construction and industry.

PRODUCT DESCRIPTION

Cableflex is a series of underfloor heating cables for all types of surfaces and flooring. They can be used for both wet rooms and dry areas. The heating cable is laid in levelling compound or embedded into concrete. The range offers different outputs to cover all needs for underfloor heating solutions.

Specifications:

Connection voltage	230 V
Connection cable	H05-Z1Z1F
Length Connection cable	2,5 m
Number of conductors	2 pcs
Bending radius, min.	25 mm
Output	6 W/m, 11 W/m & 20 W/m
Installation temperature, min.	-5 ºC
Insulation material intermediate	XLPE
Insulation material inner	ETFE
Insulation material outer	EVA, PE
Cable type Series-resistive	2-conductor with screen
Enclosure class	IP67
Max Ambient temperature	90 °C
Mechanical classification	M2
Protective conductor	Twisted
UV resistance	No

For more information, please visit:
https://www.ebeco.com/products/underfloor-heating/cableflex

Further information can be found at www.ebeco.se.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	41	EU and Asia
Minerals	-	-
Fossil materials	59	EU
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	0.000405995

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m installed heating cable, including manufacturing and waste treatment at end-of-life. (A1-A5, C-D)
Mass per declared unit	0.033 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 cable is made of metals and plastic materials. The materials are transported from raw material suppliers to our cable factory. Wires are drawn to the required dimension, the cores are stranded, insulation material is extruded before the tape is applied along with the extruded outer sheath. The manufacturing processes require electricity for the different equipment as well as heating. Certain ancillary materials are also included. The study considers the losses of main raw materials occurring during the manufacturing process.
The finished product is packaged in a plastic film and a cardboard drum before being sent to the installation site on a wooden pallet.

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.

Transportation distance is defined according to the PCR. Average distance of transportation from production plant to building site is is the average obtained from declaration of emissions from transport company. The transportation method is assumed to be lorry. Vehicle capacity utilization volume factor 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. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly. Also, volume capacity utilisation factor is assumed to be 100 % for the nested packaged products. Transportation impacts that occur from delivery of the product cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions.

Environmental impacts from installation in the construction site include waste packaging materials (A5) and release of biogenic carbon dioxide from waste processing of cardboard and wood pallets. Electricity consumption for installation of cable is considered to be negligible.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

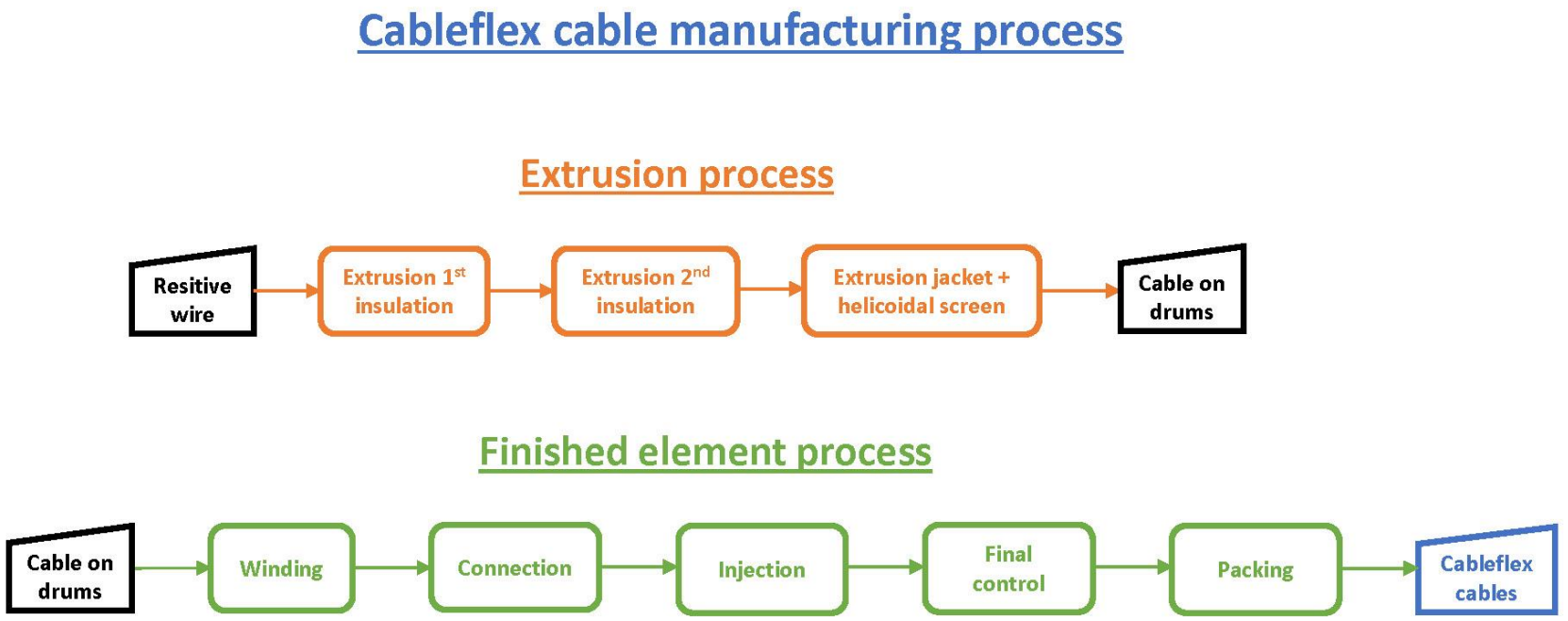
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-c4, D)

Energy consumption is assumed to be negligible for the process of cable de-construction. It is assumed that the waste is collected separately 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). As per common practice, the power cable is shredded and the metals and plastics from the product is sorted. Module C3 accounts for energy and resource inputs for sorting and treating these waste streams - 95% of metals are assumed to be recycled while 90% of plastics are incinerated for energy recovery. Due to the material and energy recovery potential of the materials, a part of the end-of-life product is converted into recycled raw materials while electric and heat energy are generated from incineration.

The remaining materials from the product - 5% of metals and 10% of plastics - are assumed to be sent to sanitary landfill to account for a conservative scenario.
The wood pallet and plastic film are incinerated, where the energy recovered from incineration displaces electricity and heat production. The benefits and loads of incineration and recycling are included in Module D for packaging materials as well.

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	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Representative product
Variation in GWP-fossil for A1-A3	-22 %

Primary data represents the manufacturing of product Cableflex 11 which is the representative product for the Ebeco Cableflex series (Cableflex 11, 6 and 20). Separated EPD:s were generated for each of the products at first. Since the difference in GWP fossil (A1-A3) was lower than 50%, the EPD of Cableflex 11 became the representative product because it has a significantly higher turnover than others in the series.

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	1,98E-01	8,74E-03	1,82E-02	2,25E-01	2,44E-03	6,44E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	5,49E-02	4,64E-03	-1,97E-01
GWP – fossil	kg CO_2e	1,98E-01	8,73E-03	8,02E-02	2,87E-01	2,44E-03	1,84E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	5,49E-02	4,64E-03	-8,11E-02
GWP – biogenic	kg CO_2e	-7,85E-06	0,00E+00	-6,26E-02	-6,26E-02	0,00E+00	6,26E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,16E-01
GWP – LULUC	kg CO_2e	2,01E-04	3,14E-06	6,04E-04	8,08E-04	8,77E-07	9,98E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,57E-06	4,27E-08	2,51E-04
Ozone depletion pot.	kg CFC_{-11}e	2,50E-06	2,09E-09	9,96E-09	2,51E-06	5,83E-10	8,42E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,37E-10	1,16E-11	-5,08E-09
Acidification potential	mol H^+e	1,55E-02	3,64E-05	3,77E-04	1,59E-02	1,02E-05	5,30E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,97E-05	1,10E-06	-2,63E-02
EP-freshwater[2)]	kg Pe	1,94E-05	5,98E-08	4,21E-06	2,37E-05	1,67E-08	3,85E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,09E-07	1,25E-09	-2,83E-05
EP-marine	kg Ne	2,40E-04	1,10E-05	1,92E-04	4,43E-04	3,08E-06	1,46E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	5,51E-06	5,11E-07	-3,69E-04
EP-terrestrial	mol Ne	3,44E-03	1,22E-04	1,07E-03	4,62E-03	3,40E-05	1,39E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	6,17E-05	5,26E-06	-5,36E-03
POCP ("smog")[3)]	kg NMVOCe	1,67E-03	3,91E-05	2,43E-04	1,96E-03	1,09E-05	4,04E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,55E-05	1,28E-06	-2,62E-03
ADP-minerals & metals[4)]	kg Sbe	1,73E-04	2,05E-08	3,67E-07	1,73E-04	5,73E-09	1,77E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	6,53E-08	4,27E-10	-2,97E-04
ADP-fossil resources	MJ	1,78E+00	1,34E-01	1,17E+00	3,09E+00	3,73E-02	2,79E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,00E-02	9,59E-04	-8,63E-01
Water use[5)]	m^3e depr.	8,25E-02	6,17E-04	3,42E-02	1,17E-01	1,72E-04	9,62E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,04E-03	1,84E-04	-2,73E-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.

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	2,23E-01	1,73E-03	3,27E-01	5,52E-01	4,84E-04	8,28E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,49E-03	3,45E-05	-5,96E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	6,41E-01	6,41E-01	0,00E+00	-6,41E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,17E+00
Total use of renew. PER	MJ	2,23E-01	1,73E-03	9,68E-01	1,19E+00	4,84E-04	-6,33E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,49E-03	3,45E-05	5,76E-01
Non-re. PER as energy	MJ	1,34E+00	1,34E-01	1,16E+00	2,64E+00	3,73E-02	2,79E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,00E-02	9,59E-04	-8,75E-01
Non-re. PER as material	MJ	4,39E-01	0,00E+00	-1,51E-03	4,38E-01	0,00E+00	-7,40E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-3,87E-01	-4,30E-02	0,00E+00

Total use of non-re. PER	MJ	1,78E+00	1,34E-01	1,16E+00	3,08E+00	3,73E-02	2,05E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-3,57E-01	-4,21E-02	-8,75E-01
Secondary materials	kg	1,01E-03	3,77E-05	8,39E-02	8,49E-02	1,05E-05	2,43E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,69E-05	7,88E-07	4,31E-02
Renew. secondary fuels	MJ	2,82E-04	3,32E-07	6,65E-03	6,93E-03	9,28E-08	1,07E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,20E-06	2,76E-08	-1,04E-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	2,94E-03	1,77E-05	8,18E-04	3,77E-03	4,95E-06	2,35E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,93E-05	6,95E-06	-2,19E-03

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	2,44E-02	1,43E-04	3,81E-03	2,83E-02	4,00E-05	1,23E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,72E-04	0,00E+00	-2,55E-02
Non-hazardous waste	kg	2,11E+00	2,49E-03	9,03E-02	2,20E+00	6,97E-04	3,20E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,22E-02	2,62E-03	-3,42E+00
Radioactive waste	kg	3,81E-06	9,21E-07	4,50E-06	9,22E-06	2,57E-07	3,28E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,81E-08	0,00E+00	-8,97E-07

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	3,70E-02	3,70E-02	0,00E+00	4,22E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,29E-02	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	1,39E-02	1,39E-02	0,00E+00	9,92E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,71E-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	1,85E-01	8,65E-03	8,47E-02	2,78E-01	2,42E-03	2,18E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	5,49E-02	4,63E-03	-7,92E-02
Ozone depletion Pot.	kg CFC_{-11}e	2,90E-06	1,65E-09	8,27E-09	2,91E-06	4,61E-10	7,01E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,15E-10	1,03E-11	-4,26E-09
Acidification	kg SO_2e	1,40E-02	2,82E-05	2,80E-04	1,43E-02	7,89E-06	4,16E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,54E-05	7,87E-07	-2,38E-02
Eutrophication	kg PO_4^3e	1,16E-03	6,31E-06	2,00E-04	1,37E-03	1,76E-06	5,08E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,50E-06	5,57E-07	-1,84E-03
POCP (“smog”)	kg C_2H_4e	5,65E-04	1,11E-06	1,57E-05	5,81E-04	3,10E-07	4,55E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	5,00E-07	1,75E-08	-9,40E-04
ADP-elements	kg Sbe	1,73E-04	1,99E-08	3,42E-07	1,73E-04	5,57E-09	1,76E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	6,49E-08	3,34E-10	-2,97E-04
ADP-fossil	MJ	1,78E+00	1,34E-01	1,17E+00	3,09E+00	3,73E-02	2,79E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,00E-02	9,59E-04	-8,57E-01

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

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.

Lucas Pedro Berman, as an authorized verifier acting for EPD Hub Limited
27.11.2023

VERIFIED ISO 14025