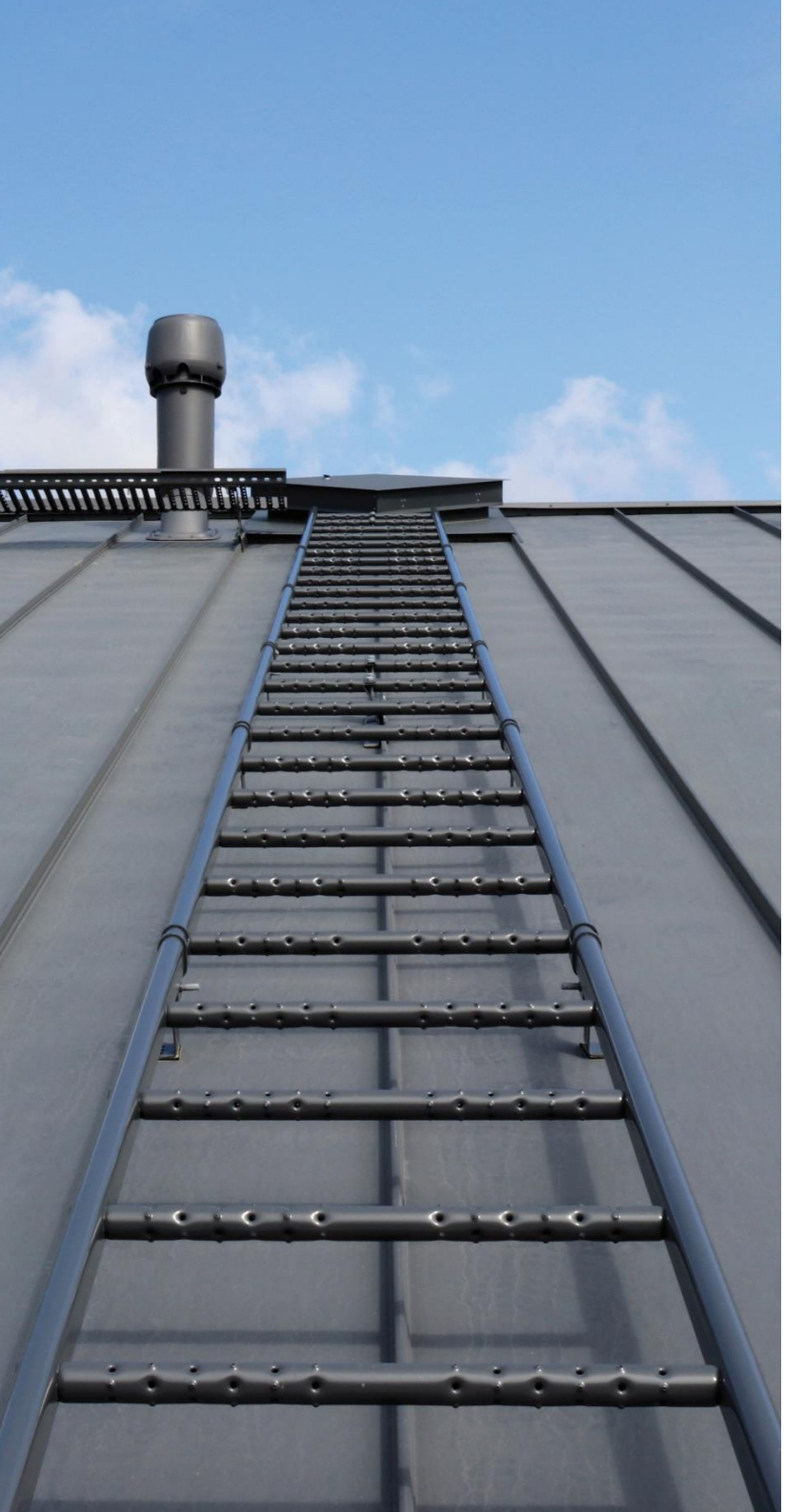
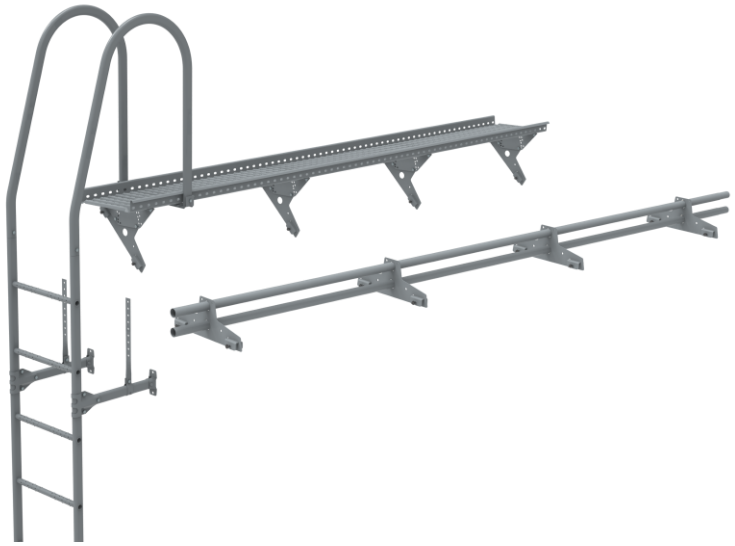


ENVIRONMENTAL PRODUCT DECLARATION

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

Roof safety products
Piristeel Oy



EPD HUB, HUB-1043
Published on 23.01.2024, last updated on 23.01.2024, valid until 23.01.2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Piristeel Oy
Address	Metallitie 4, 62200 Kauhava, Finland
Contact details	piristeel@piristeel.fi
Website	https://piristeel.fi/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	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	Mira Laukkanen, Ruukki Construction
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	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

Product name	Roof safety products
Additional labels	Ladder products, snow guards, roof walkways
Product reference	-
Place of production	Finland
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	2,95E+00
GWP-total, A1-A3 (kgCO2e)	2,89E+00
Secondary material, inputs (%)	6.04
Secondary material, outputs (%)	92.9
Total energy use, A1-A3 (kWh)	11.2
Total water use, A1-A3 (m3e)	1,14E-02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Piristeel is the leading manufacturer of rainwater systems, ladders and roof safety products in Finland. The products manufactured by Piristeel are identified by the Pisko brand. From our range, you can find products for detached houses, apartment buildings and industrial construction. The products are suitable for both new constructions and renovations. Piristeel is a part of Ruukki Construction and its roofing unit. More information about the manufacturer can be found at https://www.piristeel.com/.

PRODUCT DESCRIPTION

The roof safety products include snow guards, ladders, roof walkways, a variety of safety equipment and relevant fixing systems. The products consist of hot-dip galvanized steel and powder coating.

The Pisko SafeGrip ladders are designed for diversified use. The same ladder frames can be used as wall ladders, roof ladders and emergency ladders by using fasteners suitable for the application. Our selection also includes various safety equipment for ladder products. The Pisko SafeGrip wall ladders have been awarded with verification certificate through national approval. The Pisko SafeGrip roof ladders have a CE marking, and they meet the strength requirements of the standard EN 12951, class 2, which means that the ladders can be used as safety rope fixing points.

Snow guards are used to prevent dangerous situations that may be caused by snow and ice falling from the roof. In addition, the snow stoppers can be used to protect structures installed on the roof, such as roof ladders. The Pisko snow guards have been awarded with national approvals for construction products.

The roof walkways are used as extensions of the wall and roof ladders in order to create safe and continuous access routes to maintenance targets on the roofs, such as the chimney. Our selection also includes various safety equipment for roof walkways. The Pisko roof walkways are of solid construction, highly durable and the snow will permeate them easily. The Pisko roof walkways have a CE marking, and they meet the strength requirements of the standard EN 516, class 2, which means that the walkways can also be used as safety rope fixing points.

Further information can be found at https://www.piristeel.com/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	98	EU
Minerals	0	-
Fossil materials	2	EU
Bio-based materials	0	-

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	0.0196

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg
Functional unit	-
Reference service life	50 years

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	MNR	MNR	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.

Roof safety products are mainly made of hot-dip galvanized steel sheets or tubes. Steel is an alloy of mainly iron and some carbon, with small amounts of alloying elements. These elements improve the chemical and physical properties of steel such as strength, formability, durability and corrosion resistance.

The alloying elements of steel are closely linked to its chemical matrix. The steel density is 7 850 kg/m3. The zinc coating quantities are mainly min. 275 g/m2 (Z275). The zinc aluminum coating quantities are mainly min. 255 g/m2 (ZA255).

Ladder products and snow guards are manufactured from steel tubes. Walkways, fasteners and some snow guard profiles are manufactured from coils and sheets. Manufacturing process contain e.g. punching, bending, cutting and roll forming. Production methods are developed so that waste is minimized. Usually all products are powder painted, which improves corrosion resistance and gives a desired appearance.

Roof safety products that conform to this environmental product declaration are manufactured at Piristeel plant in Kauhava, Finland. Raw materials are transported to the production site mainly by road. A typical package consists of a wooden pallet, plastic wrapping material, and cardboard. Packing material is needed to protect the product during transportation.

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.

Finished products are transported by truck and sometimes in addition by ferry. Logistics aim to optimize transportation, maximize payloads, and combine transports as efficiently as possible. Environmental impacts from transport of finished product to the building site (A4), have been calculated based on the weighted average of the market shares. Installation (A5) is done with battery powered (rechargeable) hand tools (excluded from calculation under cut-off rule).

PRODUCT USE AND MAINTENANCE (B1-B7)

Use stage (B) is not taken into account in this EPD. This is because Pisko roof safety products require minimal maintenance during its use.
Air, soil, and water impacts during the use phase have not been studied.

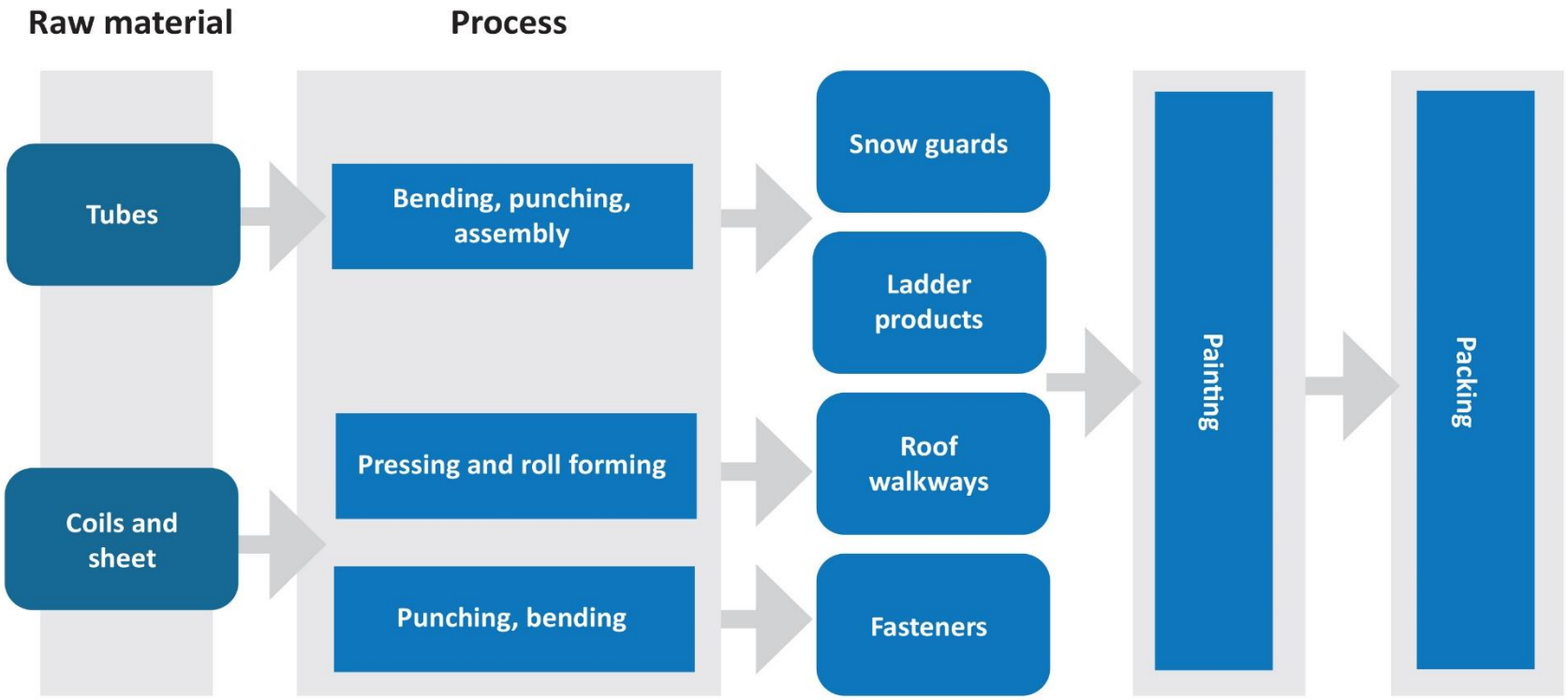
PRODUCT END OF LIFE (C1-C4, D)

It is assumed that energy consumption of demolition process (C1) is 0,01 kWh/kg (Bozdag, Ö & Secer, M. 2007.) It is also assumed that the used energy source in C1 is diesel. After dismantling, the waste is transported to waste processing (C2). Transportation distance to waste processing is assumed to be 50 km by truck.

Waste materials are sorted and steel is cycled back to the steel industry by scrap trade. In this EPD, it is assumed that 95% of steel is recycled (C3) and 5% is landfilled (C4) (World Steel Association, 2020). The powder paint is assumed to be incinerated (C3).

The benefits and loads of recycling and incineration of the product and packaging are included in module 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	Allocated by mass or volume
Packaging materials	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

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

This EPD is product and factory specific and does not contain average calculations.

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	2,65E+00	4,04E-02	1,97E-01	2,89E+00	4,12E-02	6,15E-02	MND	MND	MND	MND	MND	MND	MND	3,31E-03	4,69E-03	2,04E-02	5,29E-02	-1,50E+00
GWP – fossil	kg CO_2e	2,65E+00	4,04E-02	2,53E-01	2,95E+00	4,12E-02	5,15E-03	MND	MND	MND	MND	MND	MND	MND	3,31E-03	4,69E-03	2,03E-02	5,29E-02	-1,55E+00
GWP – biogenic	kg CO_2e	4,49E-05	5,71E-07	-5,61E-02	-5,61E-02	1,56E-05	5,64E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,34E-02
GWP – LULUC	kg CO_2e	1,25E-03	1,50E-05	1,82E-04	1,45E-03	1,58E-05	9,76E-07	MND	MND	MND	MND	MND	MND	MND	3,30E-07	1,73E-06	2,67E-05	3,85E-07	-5,64E-04
Ozone depletion pot.	kg CFC_{-11}e	3,95E-08	9,31E-09	1,68E-08	6,55E-08	9,42E-09	3,75E-10	MND	MND	MND	MND	MND	MND	MND	7,07E-10	1,08E-09	2,52E-09	1,52E-10	-6,28E-08
Acidification potential	mol H^+e	1,58E-02	1,78E-04	8,94E-04	1,68E-02	2,34E-04	1,33E-05	MND	MND	MND	MND	MND	MND	MND	3,44E-05	1,99E-05	2,58E-04	7,01E-06	-6,87E-03
EP-freshwater[2)]	kg Pe	6,61E-06	3,27E-07	5,19E-06	1,21E-05	3,27E-07	2,88E-08	MND	MND	MND	MND	MND	MND	MND	1,10E-08	3,84E-08	1,09E-06	8,06E-09	-6,81E-05
EP-marine	kg Ne	2,20E-03	5,21E-05	2,36E-04	2,49E-03	6,62E-05	5,00E-06	MND	MND	MND	MND	MND	MND	MND	1,52E-05	5,90E-06	5,46E-05	2,90E-06	-1,41E-03
EP-terrestrial	mol Ne	5,03E-02	5,75E-04	2,70E-03	5,35E-02	7,31E-04	5,34E-05	MND	MND	MND	MND	MND	MND	MND	1,67E-04	6,51E-05	6,31E-04	3,21E-05	-1,63E-02
POCP ("smog")[3)]	kg NMVOCe	6,53E-03	1,83E-04	7,48E-04	7,46E-03	2,22E-04	1,48E-05	MND	MND	MND	MND	MND	MND	MND	4,59E-05	2,08E-05	1,74E-04	8,31E-06	-7,79E-03
ADP-minerals & metals[4)]	kg Sbe	1,59E-04	9,61E-08	1,20E-06	1,60E-04	9,43E-08	1,05E-08	MND	MND	MND	MND	MND	MND	MND	1,68E-09	1,10E-08	2,74E-06	2,36E-09	-7,03E-05
ADP-fossil resources	MJ	2,84E+01	6,07E-01	4,02E+00	3,30E+01	6,14E-01	2,82E-02	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,05E-02	2,76E-01	1,17E-02	-1,40E+01
Water use[5)]	m^3e depr.	3,32E-01	2,72E-03	4,66E-02	3,81E-01	2,70E-03	2,59E-03	MND	MND	MND	MND	MND	MND	MND	1,20E-04	3,15E-04	5,35E-03	1,25E-03	-3,62E-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[6)]	MJ	2,32E+00	6,91E-03	1,40E+00	3,73E+00	6,79E-03	6,40E-04	MND	MND	MND	MND	MND	MND	MND	2,54E-04	7,94E-04	4,89E-02	1,89E-04	-1,40E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	4,92E-01	4,92E-01	0,00E+00	-4,92E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,11E-02
Total use of renew. PER	MJ	2,32E+00	6,91E-03	1,89E+00	4,22E+00	6,79E-03	-4,91E-01	MND	MND	MND	MND	MND	MND	MND	2,54E-04	7,94E-04	4,89E-02	1,89E-04	-1,42E+00
Non-re. PER as energy	MJ	3,20E+01	6,07E-01	3,90E+00	3,66E+01	6,14E-01	2,82E-02	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,05E-02	2,76E-01	1,17E-02	-1,39E+01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	1,07E-01	1,07E-01	0,00E+00	-1,28E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,88E-02
Total use of non-re. PER	MJ	3,20E+01	6,07E-01	4,01E+00	3,67E+01	6,14E-01	-9,96E-02	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,05E-02	2,76E-01	1,17E-02	-1,40E+01
Secondary materials	kg	6,04E-02	1,70E-04	3,07E-02	9,13E-02	1,74E-04	2,58E-05	MND	MND	MND	MND	MND	MND	MND	1,74E-05	1,96E-05	3,07E-04	1,13E-05	8,68E-01
Renew. secondary fuels	MJ	3,44E-04	1,71E-06	1,34E-02	1,38E-02	1,68E-06	1,46E-07	MND	MND	MND	MND	MND	MND	MND	5,70E-08	1,97E-07	1,60E-05	7,89E-08	-6,59E-03
Non-ren. secondary fuels	MJ	8,81E-22	0,00E+00	0,00E+00	8,81E-22	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	1,07E-02	7,84E-05	5,95E-04	1,14E-02	7,77E-05	-2,33E-06	MND	MND	MND	MND	MND	MND	MND	2,70E-06	9,13E-06	1,62E-04	1,18E-05	-5,54E-03

6) 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	1,33E-01	7,96E-04	1,29E-02	1,47E-01	8,12E-04	6,35E-05	MND	MND	MND	MND	MND	MND	MND	5,96E-05	9,34E-05	1,87E-03	0,00E+00	-4,86E-01
Non-hazardous waste	kg	1,55E+00	1,31E-02	1,70E-01	1,74E+00	1,31E-02	3,75E-02	MND	MND	MND	MND	MND	MND	MND	4,19E-04	1,54E-03	5,98E-02	7,10E-02	-2,69E+00
Radioactive waste	kg	5,09E-04	4,07E-06	2,38E-05	5,37E-04	4,12E-06	1,51E-07	MND	MND	MND	MND	MND	MND	MND	3,13E-07	4,71E-07	1,62E-06	0,00E+00	-2,56E-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	1,90E-02	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	1,32E-02	0,00E+00	2,30E-03	1,55E-02	0,00E+00	1,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,29E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	1,06E-01	0,00E+00	0,00E+00	1,06E-01	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	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

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	2,84E+00	4,00E-02	2,48E-01	3,12E+00	4,08E-02	5,17E-03	MND	MND	MND	MND	MND	MND	MND	3,27E-03	4,64E-03	2,00E-02	5,29E-02	-1,47E+00
Ozone depletion Pot.	kg CFC_{-11}e	1,25E-07	7,37E-09	1,41E-08	1,46E-07	7,46E-09	3,01E-10	MND	MND	MND	MND	MND	MND	MND	5,60E-10	8,55E-10	2,03E-09	1,24E-10	-6,84E-08
Acidification	kg SO_2e	2,90E-02	1,38E-04	6,83E-04	2,98E-02	1,83E-04	9,89E-06	MND	MND	MND	MND	MND	MND	MND	2,45E-05	1,54E-05	2,08E-04	5,06E-06	-5,56E-03
Eutrophication	kg PO_4^3e	7,19E-03	3,06E-05	2,38E-04	7,46E-03	3,54E-05	9,76E-06	MND	MND	MND	MND	MND	MND	MND	5,69E-06	3,52E-06	6,89E-05	4,08E-06	-2,84E-03
POCP (“smog”)	kg C_2H_4e	1,10E-03	5,33E-06	6,05E-05	1,17E-03	6,40E-06	4,34E-07	MND	MND	MND	MND	MND	MND	MND	5,36E-07	6,03E-07	7,89E-06	1,63E-07	-8,56E-04
ADP-elements	kg Sbe	5,54E-03	9,31E-08	6,44E-06	5,54E-03	9,14E-08	1,02E-08	MND	MND	MND	MND	MND	MND	MND	1,65E-09	1,07E-08	2,74E-06	1,97E-09	-7,03E-05
ADP-fossil	MJ	3,48E+01	6,07E-01	3,78E+00	3,92E+01	6,14E-01	2,82E-02	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,05E-02	2,76E-01	1,17E-02	-1,40E+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
23.01.2024

VERIFIED ISO 14025