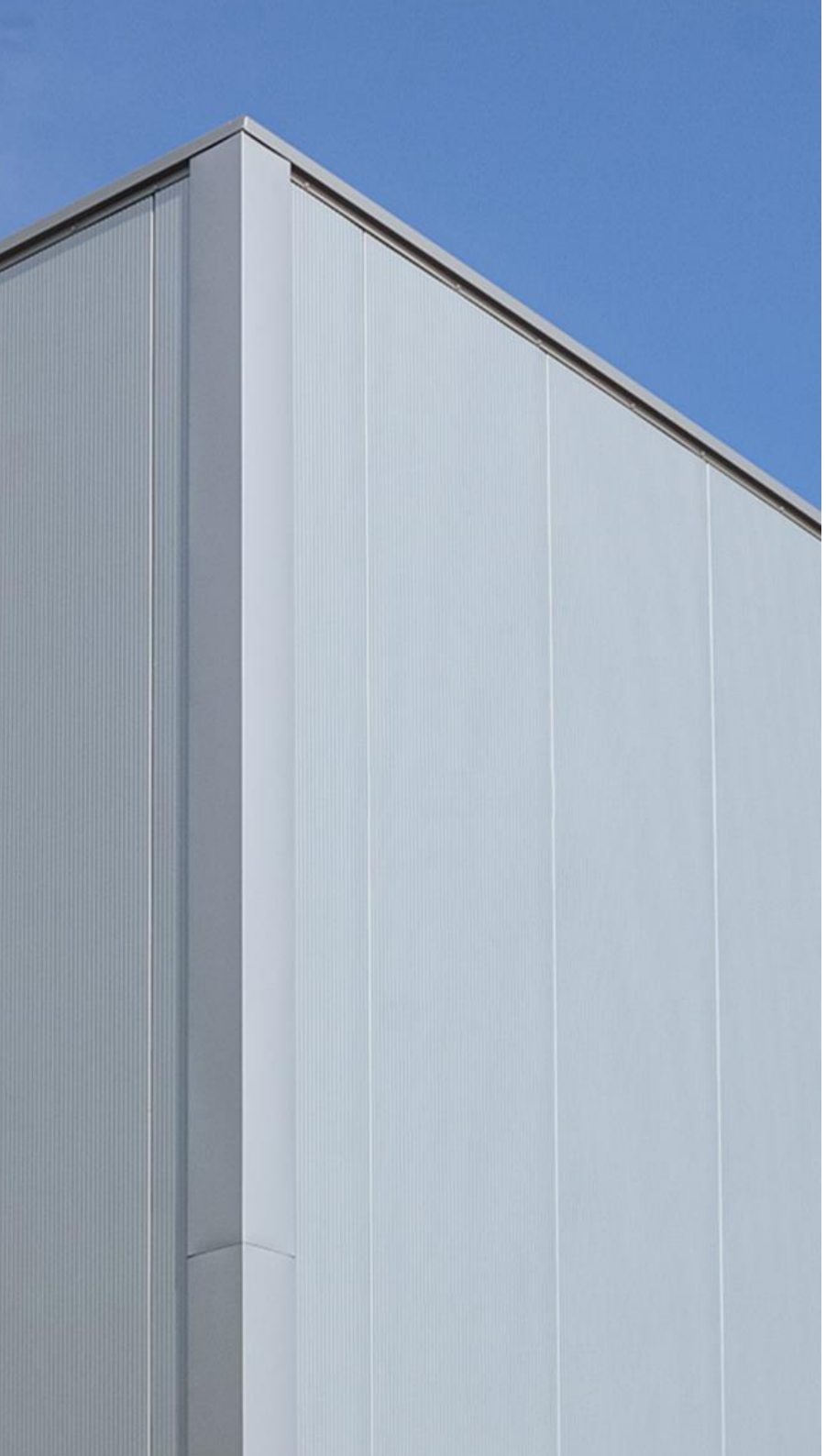


ENVIRONMENTAL PRODUCT DECLARATION

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

KS RF F K-Roc® LEC; KS RH F K-Roc® LEC
Kingspan Sp. z o.o.



EPD HUB, HUB-1894

Publishing date 30 August 2024, last updated on 30 August 2024, valid until 28 February 2026.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Kingspan Sp. z o.o.
Address	Przemyslowa 20, 27-300 Lipsko, Poland
Contact details	info@kingspan.pl
Website	www.kingspan.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 und ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Design phase EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A5, and modules C1-C4, D
EPD author	Marta Kubinska
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ 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	KS RF F K-Roc® LEC KS RH F K-Roc® LEC
Additional labels	Hoesch® isorock HP Typ S1 KS RP K-Roc® LEC
Product reference	-
Place of production	Lipsko, Poland
Period for data	April 2024
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m2
Declared unit mass	32.23 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2,82E+01
GWP-total, A1-A3 ($kgCO_2e$)	2,82E+01
Secondary material, inputs (%)	54.2
Secondary material, outputs (%)	36.7
Total energy use, A1-A3 (kWh)	243
Net freshwater use, A1-A3 (m^3)	0.56

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Kingspan Sp. z o.o. has been on the market since 2003, with its headquarters located in Lipsko. Kingspan exports products to almost 50 countries across five continents. The company specializes in the production of construction materials, including sandwich panels with both MW and PIR insulation cores, modular cold rooms, and cold store doors. Moreover, Kingspan also offers a wide variety of ancillary products that supplement the building envelope.

PRODUCT DESCRIPTION

Sandwich panels compose of a mineral wool insulating core placed between two colour-coated steel sheets. They are designed for structural purposes, specifically for external walls, and are available in thicknesses from 80 to 240 mm. This EPD is a variant prepared for products with a different core density manufactured on site and covers panels with a 200 mm thick mineral wool core and a density of 115 kg/m³.

Insulated panels are versatile building materials used in the construction of walls and roofs, as well as for creating technological casings for industrial and air-conditioning systems. They offer high thermal and acoustic insulation, enhancing energy efficiency and noise reduction. Thanks to collaboration with our supply chains, the K-Roc® LEC sandwich panels can now offer a reduction in embodied carbon, when compared to standard K-Roc® products, reducing a building's carbon footprint.

Sandwich panels are produced through a continuous process that bonds the insulation core to external metal cladding. The metal layers serve both a protective and decorative function, shielding against weather elements and resisting corrosive factors. They can be installed either vertically or horizontally, with options for through or secret fixing.
Further information can be found at www.kingspan.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	34.4	EU
Minerals	63.5	EU
Fossil materials	2.1	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	0.01

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m2
Mass per declared unit	32.23 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	MND	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	Deconstruction/ demolition	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 product is composed of a mineral wool insulation core placed between two organic coated steel sheets from recycled steel, bonded with a PUR adhesive. All components are sourced from Europe and shipped to the manufacturing site in Lipsko, Poland.

Energy and fuels used are included. The manufacturing process requires electricity and fuels (LPG) for product movement and loading as well as heating oil uses for heating production premises.

The loss of material at manufacturing phase is considered within this EPD. Both scrap steel and mineral wool waste is collected and sent to landfill (a distance of 20 km).

The finished product is stored at the manufacturing site before being shipped to the customer. It is transported in bundles, placed on EPS pods, with chipboards used as protective sheets, and shielding foils on the sides and top. The whole package is wrapped in stretch plastic foil.

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.

This EDP does not cover the transport phase (A4). Air, soil, and water impacts during the transport phase have not been studied. Transport from production plant to the construction site, as well as resources needed for installation of the product have not been considered.

It is assumed that polyethylene packaging waste is collected and sent to a recycling company, polystyrene waste is incinerated, and the rest is landfilled (a transportation distance of 20 km).

PRODUCT USE AND MAINTENANCE (B1-B7)

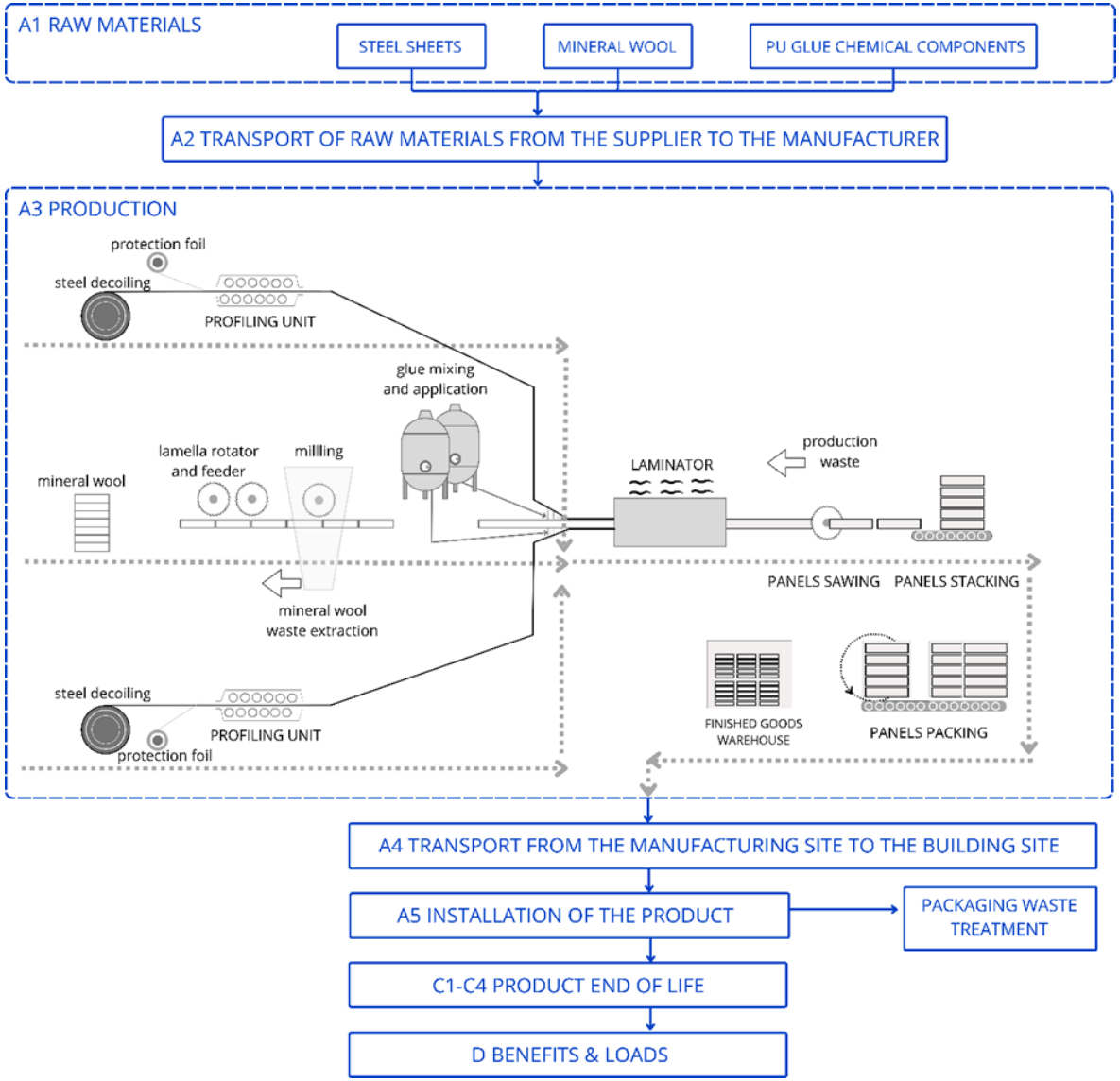
This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

It is assumed that at the end-of-life the product is demounted using electric tools, which consume 0.89 MWh per square meter of the panel dismantled (values based on a similar evaluation). Then, 100% of the waste is collected and transported to the waste treatment. Transportation distance to treatment is assumed as 20 km and the transportation method is assumed to be lorry. Approximately 95% of steel is assumed to be recycled (C3) and remaining 5% to be taken to landfill for final disposal (C4). The rates for steel are based on World Steel Association data. All mineral wool is assumed to be landfilled.

The avoided production of primary steel, as well as polyethylene, is considered. Resulting potential benefits and loads for the metal and plastic recycling are declared in module D. Moreover, the analysis includes the benefits and environmental impacts associated with incineration of packaging materials (electricity and heat production).

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 material	Allocated by mass or volume
Ancillary materials	Not applicable
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. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases 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	2,23E+01	3,50E+00	2,39E+00	2,82E+01	MND	5,16E-01	MND	MND	MND	MND	MND	MND	MND	2,49E-01	1,63E-01	2,59E-01	1,29E-01	-1,06E+00
GWP – fossil	kg CO_2e	2,23E+01	3,50E+00	2,43E+00	2,82E+01	MND	4,76E-01	MND	MND	MND	MND	MND	MND	MND	2,49E-01	1,62E-01	2,59E-01	1,28E-01	-1,06E+00
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-3,96E-02	-3,96E-02	MND	3,96E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,69E-04
GWP – LULUC	kg CO_2e	8,02E-03	1,47E-03	4,86E-04	9,98E-03	MND	1,45E-05	MND	MND	MND	MND	MND	MND	MND	5,87E-05	8,04E-05	3,40E-04	1,21E-04	4,03E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	1,13E-07	7,55E-07	8,86E-08	9,56E-07	MND	1,06E-09	MND	MND	MND	MND	MND	MND	MND	3,29E-09	3,39E-08	3,20E-08	5,19E-08	-3,04E-08
Acidification potential	mol H^+e	7,14E-02	1,04E-02	1,85E-02	1,00E-01	MND	9,49E-05	MND	MND	MND	MND	MND	MND	MND	1,80E-03	4,80E-04	3,29E-03	1,21E-03	-5,54E-03
EP-freshwater[2)]	kg Pe	8,16E-05	2,98E-05	2,22E-05	1,34E-04	MND	3,29E-07	MND	MND	MND	MND	MND	MND	MND	3,34E-05	1,54E-06	1,39E-05	1,35E-06	-3,61E-05
EP-marine	kg Ne	1,45E-02	2,11E-03	2,53E-03	1,91E-02	MND	3,80E-05	MND	MND	MND	MND	MND	MND	MND	1,95E-04	9,21E-05	6,95E-04	4,18E-04	-4,72E-04
EP-terrestrial	mol Ne	2,12E-01	2,35E-02	2,80E-02	2,64E-01	MND	4,02E-04	MND	MND	MND	MND	MND	MND	MND	2,21E-03	1,03E-03	8,04E-03	4,60E-03	-1,01E-02
POCP ("smog")[3)]	kg NMVOCe	4,41E-02	8,74E-03	9,04E-03	6,19E-02	MND	1,06E-04	MND	MND	MND	MND	MND	MND	MND	6,18E-04	3,83E-04	2,21E-03	1,34E-03	-4,46E-03
ADP-minerals & metals4)	kg Sbe	3,58E-01	1,24E-05	2,23E-06	3,58E-01	MND	1,39E-07	MND	MND	MND	MND	MND	MND	MND	2,45E-07	7,39E-07	3,49E-05	2,95E-07	-1,58E-05
ADP-fossil resources	MJ	2,51E+02	5,07E+01	2,53E+01	3,27E+02	MND	1,21E-01	MND	MND	MND	MND	MND	MND	MND	2,77E+00	2,32E+00	3,51E+00	3,52E+00	-1,58E+01
Water use[5)]	m^3e depr.	3,85E+00	2,25E-01	8,04E-01	4,88E+00	MND	1,30E-02	MND	MND	MND	MND	MND	MND	MND	5,71E-02	1,12E-02	6,81E-02	1,12E-02	3,65E-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.

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	2,34E-06	2,81E-07	5,98E-08	2,68E-06	MND	1,30E-09	MND	MND	MND	MND	MND	MND	MND	2,82E-09	1,11E-08	4,30E-08	2,43E-08	-4,30E-08
Ionizing radiation[6]	kBq U235e	2,08E-01	2,38E-01	5,04E-02	4,96E-01	MND	8,25E-04	MND	MND	MND	MND	MND	MND	MND	7,11E-03	1,08E-02	3,92E-02	1,59E-02	-6,23E-03
Ecotoxicity (freshwater)	CTUe	5,75E+01	4,66E+01	2,24E+01	1,26E+02	MND	5,82E-01	MND	MND	MND	MND	MND	MND	MND	3,44E+00	2,24E+00	1,59E+01	2,30E+00	-1,89E+01
Human toxicity, cancer	CTUh	4,34E-08	1,31E-09	4,04E-10	4,51E-08	MND	5,80E-11	MND	MND	MND	MND	MND	MND	MND	9,19E-11	6,97E-11	4,87E-10	5,74E-11	4,55E-09
Human tox. non-cancer	CTUh	2,44E-06	4,23E-08	1,30E-08	2,50E-06	MND	1,28E-09	MND	MND	MND	MND	MND	MND	MND	4,29E-09	1,93E-09	2,18E-08	1,50E-09	2,22E-08
SQP[7]	-	4,00E+02	3,60E+01	4,61E+00	4,40E+02	MND	1,47E-01	MND	MND	MND	MND	MND	MND	MND	5,11E-01	1,38E+00	7,07E+00	7,53E+00	-3,94E+00

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	5,52E+02	6,04E-01	1,53E+00	5,54E+02	MND	8,41E-03	MND	MND	MND	MND	MND	MND	MND	2,01E-01	3,16E-02	6,23E-01	3,06E-02	-1,14E+00
Renew. PER as material	MJ	3,05E+01	0,00E+00	-5,00E-01	3,00E+01	MND	-6,72E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-7,10E-01	-2,86E+01	0,00E+00
Total use of renew. PER	MJ	5,83E+02	6,04E-01	1,03E+00	5,84E+02	MND	-6,64E-01	MND	MND	MND	MND	MND	MND	MND	2,01E-01	3,16E-02	-8,72E-02	-2,86E+01	-1,14E+00
Non-re. PER as energy	MJ	2,44E+02	5,08E+01	2,70E+01	3,22E+02	MND	1,21E-01	MND	MND	MND	MND	MND	MND	MND	2,77E+00	2,32E+00	3,51E+00	3,52E+00	-1,05E+01
Non-re. PER as material	MJ	5,04E+01	0,00E+00	8,79E+00	5,92E+01	MND	-1,07E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-4,73E-01	-4,80E+01	0,00E+00
Total use of non-re. PER	MJ	2,95E+02	5,08E+01	3,58E+01	3,81E+02	MND	-1,06E+01	MND	MND	MND	MND	MND	MND	MND	2,77E+00	2,32E+00	3,04E+00	-4,45E+01	-1,05E+01
Secondary materials	kg	1,75E+01	1,70E-02	1,98E-03	1,75E+01	MND	4,66E-04	MND	MND	MND	MND	MND	MND	MND	2,23E-04	9,33E-04	3,91E-03	7,40E-04	4,48E-01
Renew. secondary fuels	MJ	0,00E+00	2,19E-04	3,74E-03	3,96E-03	MND	3,70E-06	MND	MND	MND	MND	MND	MND	MND	1,22E-06	1,28E-05	2,03E-04	1,93E-05	-6,50E-05
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	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	5,27E-01	6,07E-03	2,40E-02	5,57E-01	MND	1,07E-04	MND	MND	MND	MND	MND	MND	MND	7,50E-03	2,95E-04	2,06E-03	3,85E-03	-2,19E-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	2,72E-02	7,35E-02	1,10E-01	2,10E-01	MND	1,36E-03	MND	MND	MND	MND	MND	MND	MND	2,90E-02	3,82E-03	2,39E-02	0,00E+00	-3,24E-01
Non-hazardous waste	kg	4,82E+00	1,17E+00	5,50E+00	1,15E+01	MND	1,88E-01	MND	MND	MND	MND	MND	MND	MND	1,48E+00	6,05E-02	7,62E-01	2,44E+01	-2,74E+00
Radioactive waste	kg	8,32E-03	3,37E-04	3,58E-05	8,69E-03	MND	4,01E-07	MND	MND	MND	MND	MND	MND	MND	2,38E-06	1,51E-05	2,06E-05	0,00E+00	-7,74E-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	MND	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	9,77E-05	0,00E+00	0,00E+00	9,77E-05	MND	1,23E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,18E+01	0,00E+00	0,00E+00
Materials for energy rec	kg	2,69E-04	0,00E+00	0,00E+00	2,69E-04	MND	1,42E-01	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	5,51E-03	0,00E+00	0,00E+00	5,51E-03	MND	4,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+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

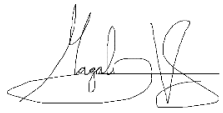
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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
30.08.2024



VERIFIED ISO 14025

ANNEX I

SCALING TABLE

Product Thickness [mm]		80	100	120	150	160	175	200	220	240
Product Weight [kg/m2]		18,21	20,65	22,96	26,19	27,70	29,18	32,23	34,16	37,13
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP – total	0,52	0,60	0,68	0,79	0,84	0,90	1,00	1,08	1,18
	GWP – fossil	0,52	0,60	0,68	0,79	0,84	0,90	1,00	1,08	1,18
	GWP – biogenic	0,57	0,64	0,71	0,81	0,86	0,90	1,00	1,06	1,16
	GWP – LULUC	0,52	0,60	0,68	0,79	0,85	0,90	1,00	1,07	1,17
	Ozone depletion pot.	0,51	0,61	0,69	0,81	0,85	0,90	1,00	1,09	1,19
	Acidification potential	0,52	0,60	0,68	0,79	0,85	0,90	1,00	1,08	1,18
	EP-freshwater	0,54	0,61	0,68	0,78	0,85	0,90	1,00	1,07	1,17
	EP-marine	0,52	0,61	0,69	0,80	0,85	0,90	1,00	1,07	1,17
	EP-terrestrial	0,50	0,58	0,66	0,78	0,84	0,89	1,00	1,08	1,18
	POCP (“smog”)	0,53	0,61	0,69	0,80	0,85	0,90	1,00	1,07	1,17
	ADP-minerals & metals	0,56	0,64	0,72	0,81	0,86	0,91	1,00	1,06	1,16
	ADP-fossil resources	0,52	0,60	0,68	0,79	0,85	0,90	1,00	1,08	1,18
	Water use	0,56	0,63	0,71	0,81	0,86	0,90	1,00	1,07	1,17