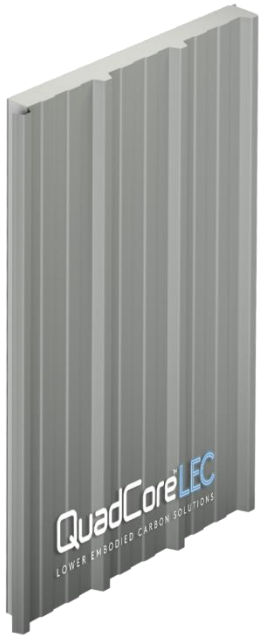
ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Quadcore RW LEC
Kingspan Insulated Panels Ltd.



EPD HUB, HUB-0289

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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Kingspan Insulated Panels Ltd.
Address	Greenfield Business Park, 2 Bagillt Rd, Holywell CH8 7GJ, United Kingdom
Contact details	SustainabilityTeam@kingspan.com
Website	https://www.kingspan.com/gb/en-gb

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Becca Spurdle, Kingspan Insulated Panels
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	Quadcore RW LEC
Additional labels	-
Product reference	-
Place of production	Holywell, United Kingdom; Sherburn, United Kingdom; Kingscourt, Ireland
Period for data	01.01.2023 - 31.12.2023
Averaging in EPD	Multiple factories
Variation in GWP-fossil for A1-A3	<10%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m2 (100mm Thickness)
Declared unit mass	11.3 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2.41E+01
GWP-total, A1-A3 ($kgCO_2e$)	2.36E+01
Secondary material, inputs (%)	60.4
Secondary material, outputs (%)	60.4
Total energy use, A1-A3 (kWh)	160
Net freshwater use, A1-A3 (m^3)	2.98

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Kingspan Insulated Panels is the worlds largest and leading manufacturer of high-performance insulated panel systems. Offering a range of insulation cores from A-class mineral fibre to Kingspans flagship QuadCore technology, we have a solution that suits all regulatory regimes while delivering a faster speed of construction with less labour when compared with traditional built-up systems. Kingspans proprietary QuadCore technology provides building owners with excellent build quality and air tightness, underpinned by a guaranteed lifetime thermal performance.

We have a long term commitment to delivering a sustainable agenda as part of the Kingspan 10 year sustainability programme. Through Planet Passionate, we aim to impact climate change, circularity and protection of our natural world. We believe that through true collaboration we can help make a difference.

PRODUCT DESCRIPTION

We are on the path to reducing our embodied carbon for QuadCore insulated panels with the QuadCore LEC range, Lower Embodied Carbon variations of our standard core.
Thanks to collaboration with our supply chains, the QuadCore LEC range can now offer a reduction in embodied carbon, when compared to standard QuadCore, reducing a building's carbon footprint.
QuadCore RW LEC, Trapezoidal wall and roof panel system is an insulated composite panel. It is manufactured with a HCFC, CFC, HFC free QuadCore hybrid insulation core. The panels are manufactured under Environmental Management System Certification BS EN 14001.
Further technical information is available on the Kingspan website in the product data sheet.

Further information can be found at https://www.kingspan.com/gb/en-gb.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	64	EU
Minerals	-	-
Fossil materials	36	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	0.121

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m2 (100mm Thickness)
Mass per declared unit	11.3 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		
×	×	×	×	×	MND	MND	MND	MND	MND	MND	MND	×	×	×	×	×		
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 manufacturing of insulated panels starts with the de-coiling of the internal and external steel coils. The liners are rolled into the desired profiled pattern. The foam formulation is then sprayed on to the internal liner and rises to meet the external liner, creating a chemical bond between the two liner sheets. Protective film is then placed on both liners to protect the paint coating. The panel is packaged with plastic wrap, corrugated cardboard to protect the edges which is held in place with plastic tape, and the packaged product is distributed on wooden pallets.Transportation has been included from our raw material suppliers manufacturing sites, to our sites. Production losses have been calculated through monitored scrap rates on our production lines. The RW product is manufactured at one of three manufacturing sites across the UK. The energy and waste information, attributed to the productions of RW, included within the EPD have been gathered from each of the sites and then a weighted averaging method has been used based on production volumes at each site. The recycled content included within our LCA modelling comes from our steel content. 0% of the recycled content in our products comes from our core.

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.

The transportation distance is assumed to be an average of 100km. The insulated panels are made to order, specific to the buildings requirements. Installation guides are available to assist the contractor with correct installation of the product and any ancillaries. The installation scenario assumes steel fixing (1 fixing per 1m2 of panel with an average weight of 0.021kg) and a conservative estimate of electricity for a power tool (1 kWh) and diesel (2 kWh) for a crane. Installation losses are estimated at 2%. These losses, as well as packaging, are included as installation waste.

PRODUCT USE AND MAINTENANCE (B1-B7)

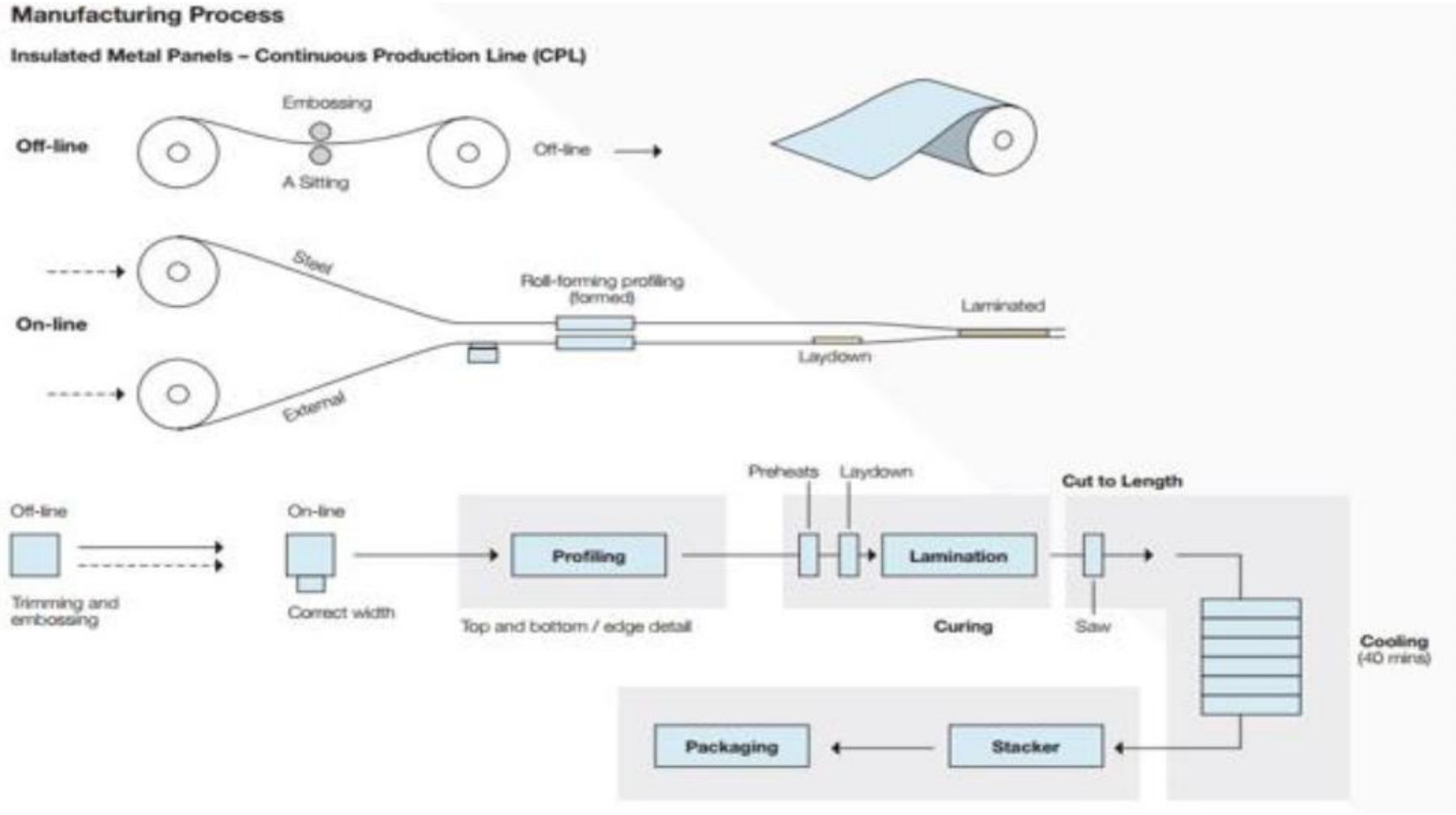
This EPD does not cover the use phase.

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

PRODUCT END OF LIFE (C1-C4, D)

For removal of the panels, a conservative estimate of electricity for a power tool (1 kWh) and diesel (2 kWh) for a crane has been made. At the end of the panel service life, it is recommended that the panels are sent to a reclamation facility where the steel can be separated from the foam and be recycled. 95% of steel is assumed to be recycled, with the remaining 5% landfilled according to 'World Steel Association, 2020'. To be most representative to the market whilst acknowledging that the foam can be used for waste to energy, we have modelled 50% to incineration and 50% landfill for our foam EOL. Energy recovery rates are considered based on 'Tolvik _ UK Energy from Waste Statistics, 2021'. It is not recommended that the panels are sent to landfill. In Module D, the net benefit of recycling steel, incinerating foam, and waste treatment of packaging materials is included as avoided material production (from recycling) and electricity and heat production (from incineration).

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 material	No allocation
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple factories
Averaging method	Based on average results of product group - by total volume
Variation in GWP-fossil for A1-A3	<10%

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

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	2.07E+01	1.72E+00	1.22E+00	2.36E+01	1.17E-01	2.18E+00	MND	MND	MND	MND	MND	MND	MND	9.74E-01	8.98E-02	5.33E+00	2.39E-01	0.00E+00
GWP – fossil	kg CO_2e	2.07E+01	1.72E+00	1.66E+00	2.41E+01	1.17E-01	1.74E+00	MND	MND	MND	MND	MND	MND	MND	9.73E-01	8.97E-02	5.33E+00	2.39E-01	0.00E+00
GWP – biogenic	kg CO_2e	0.00E+00	0.00E+00	-4.42E-01	-4.42E-01	4.87E-05	4.44E-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	1.37E-02	6.43E-04	3.97E-03	1.83E-02	4.40E-05	9.28E-04	MND	MND	MND	MND	MND	MND	MND	4.92E-04	3.59E-05	2.53E-04	4.45E-05	0.00E+00
Ozone depletion pot.	kg CFC_{-11}e	7.47E-05	4.27E-07	1.66E-07	7.53E-05	2.93E-08	1.68E-06	MND	MND	MND	MND	MND	MND	MND	1.63E-07	2.08E-08	4.25E-08	7.53E-09	0.00E+00
Acidification potential	mol H^+e	6.13E-02	5.54E-03	5.07E-03	7.19E-02	3.74E-04	9.82E-03	MND	MND	MND	MND	MND	MND	MND	7.85E-03	2.55E-04	6.35E-03	2.76E-04	0.00E+00
EP-freshwater[2)]	kg Pe	1.45E-03	1.22E-05	2.90E-05	1.49E-03	8.39E-07	4.26E-05	MND	MND	MND	MND	MND	MND	MND	8.24E-06	6.41E-07	1.05E-05	8.81E-07	0.00E+00
EP-marine	kg Ne	1.35E-02	1.25E-03	1.66E-03	1.64E-02	8.25E-05	3.89E-03	MND	MND	MND	MND	MND	MND	MND	3.26E-03	5.09E-05	2.88E-03	2.38E-03	0.00E+00
EP-terrestrial	mol Ne	1.47E-01	1.38E-02	1.66E-02	1.77E-01	9.15E-04	4.10E-02	MND	MND	MND	MND	MND	MND	MND	3.59E-02	5.65E-04	2.83E-02	9.80E-04	0.00E+00
POCP ("smog")[3)]	kg NMVOCe	5.02E-02	5.37E-03	4.30E-03	5.99E-02	3.60E-04	1.15E-02	MND	MND	MND	MND	MND	MND	MND	9.80E-03	2.17E-04	6.91E-03	3.13E-04	0.00E+00
ADP-minerals & metals[4)]	kg Sbe	1.62E-03	4.20E-06	5.50E-06	1.63E-03	2.87E-07	3.52E-05	MND	MND	MND	MND	MND	MND	MND	1.22E-06	3.24E-07	2.07E-05	1.23E-07	0.00E+00
ADP-fossil resources	MJ	4.44E+02	2.74E+01	2.83E+01	5.00E+02	1.88E+00	2.84E+01	MND	MND	MND	MND	MND	MND	MND	1.72E+01	1.34E+00	4.84E+00	6.72E-01	0.00E+00
Water use[5)]	m^3e depr.	-1.07E+01	1.26E-01	3.37E-01	-1.03E+01	8.65E-03	-6.30E-02	MND	MND	MND	MND	MND	MND	MND	8.81E-02	6.25E-03	2.29E-01	5.78E-03	0.00E+00

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

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	4.03E-07	1.99E-07	6.37E-08	6.66E-07	1.36E-08	2.11E-07	MND	MND	MND	MND	MND	MND	MND	1.89E-07	7.23E-09	3.92E-08	4.46E-09	0.00E+00
Ionizing radiation[6]	kBq U235e	8.34E-01	1.41E-01	3.93E-01	1.37E+00	9.66E-03	3.70E-01	MND	MND	MND	MND	MND	MND	MND	3.32E-01	7.01E-03	2.65E-02	4.02E-03	0.00E+00
Ecotoxicity (freshwater)	CTUe	3.76E+02	2.28E+01	2.56E+01	4.24E+02	1.56E+00	2.44E+01	MND	MND	MND	MND	MND	MND	MND	9.32E+00	1.11E+00	2.30E+01	4.53E+00	0.00E+00
Human toxicity, cancer	CTUh	1.37E-08	5.92E-10	7.10E-10	1.50E-08	4.05E-11	1.04E-09	MND	MND	MND	MND	MND	MND	MND	2.86E-10	3.43E-11	7.67E-10	2.12E-11	0.00E+00
Human tox. non-cancer	CTUh	7.92E-07	2.32E-08	1.33E-08	8.28E-07	1.59E-09	2.68E-08	MND	MND	MND	MND	MND	MND	MND	6.35E-09	1.09E-09	3.04E-08	6.06E-10	0.00E+00
SQP[7]	-	1.70E+01	3.19E+01	3.62E+01	8.51E+01	2.18E+00	6.61E+00	MND	MND	MND	MND	MND	MND	MND	4.25E+00	9.48E-01	4.53E+00	1.32E+00	0.00E+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	1.67E+02	3.54E-01	1.14E+01	1.78E+02	2.43E-02	5.25E+00	MND	MND	MND	MND	MND	MND	MND	1.56E+00	1.94E-02	4.11E-01	2.59E-02	0.00E+00
Renew. PER as material	MJ	4.40E-01	0.00E+00	3.87E+00	4.31E+00	0.00E+00	-3.87E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-4.10E-01	-2.16E-02	0.00E+00
Total use of renew. PER	MJ	1.67E+02	3.54E-01	1.53E+01	1.83E+02	2.43E-02	1.37E+00	MND	MND	MND	MND	MND	MND	MND	1.56E+00	1.94E-02	1.07E-03	4.33E-03	0.00E+00
Non-re. PER as energy	MJ	3.43E+02	2.74E+01	2.68E+01	3.97E+02	1.88E+00	2.64E+01	MND	MND	MND	MND	MND	MND	MND	1.72E+01	1.34E+00	4.84E+00	6.72E-01	0.00E+00
Non-re. PER as material	MJ	1.01E+02	0.00E+00	-3.22E-01	1.01E+02	0.00E+00	-1.49E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-2.73E-01	-9.89E+01	0.00E+00
Total use of non-re. PER	MJ	4.44E+02	2.74E+01	2.65E+01	4.98E+02	1.88E+00	2.49E+01	MND	MND	MND	MND	MND	MND	MND	1.72E+01	1.34E+00	4.57E+00	-9.83E+01	0.00E+00
Secondary materials	kg	6.82E+00	7.71E-03	2.18E-01	7.04E+00	5.28E-04	1.51E-01	MND	MND	MND	MND	MND	MND	MND	4.05E-03	4.55E-04	3.21E-03	1.99E-04	0.00E+00
Renew. secondary fuels	MJ	1.97E-04	6.80E-05	5.64E-02	5.67E-02	4.66E-06	1.18E-03	MND	MND	MND	MND	MND	MND	MND	1.36E-05	5.00E-06	1.56E-04	7.16E-06	0.00E+00
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	2.97E+00	3.63E-03	8.00E-03	2.98E+00	2.49E-04	6.26E-02	MND	MND	MND	MND	MND	MND	MND	2.05E-03	1.70E-04	1.09E-02	6.59E-04	0.00E+00

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	1.35E+00	2.93E-02	4.85E-02	1.42E+00	2.01E-03	9.10E-02	MND	MND	MND	MND	MND	MND	MND	2.91E-02	1.52E-03	1.36E-02	0.00E+00	0.00E+00
Non-hazardous waste	kg	1.01E+01	5.10E-01	8.59E-01	1.14E+01	3.50E-02	9.71E-01	MND	MND	MND	MND	MND	MND	MND	3.21E-01	2.70E-02	2.33E+00	2.36E+00	0.00E+00
Radioactive waste	kg	4.28E-03	1.89E-04	1.15E-04	4.58E-03	1.29E-05	2.32E-04	MND	MND	MND	MND	MND	MND	MND	1.36E-04	9.19E-06	1.17E-05	0.00E+00	0.00E+00

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	1.30E-01	1.30E-01	0.00E+00	1.37E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	6.76E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	6.95E-02	6.95E-02	0.00E+00	1.17E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.90E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	2.79E-01	2.79E-01	0.00E+00	1.51E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	7.65E+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	2.21E+01	1.70E+00	1.65E+00	2.55E+01	1.16E-01	1.83E+00	MND	MND	MND	MND	MND	MND	MND	9.62E-01	8.89E-02	5.26E+00	1.97E-01	0.00E+00
Ozone depletion Pot.	kg CFC_{-11}e	9.89E-05	3.38E-07	1.44E-07	9.94E-05	2.32E-08	2.13E-06	MND	MND	MND	MND	MND	MND	MND	1.31E-07	1.65E-08	3.61E-08	5.99E-09	0.00E+00
Acidification	kg SO_2e	7.14E-02	4.48E-03	3.79E-03	7.97E-02	3.03E-04	7.69E-03	MND	MND	MND	MND	MND	MND	MND	5.67E-03	2.09E-04	4.61E-03	2.10E-04	0.00E+00
Eutrophication	kg PO_4^3e	3.75E-02	9.53E-04	1.56E-03	4.00E-02	6.43E-05	3.33E-03	MND	MND	MND	MND	MND	MND	MND	1.39E-03	4.51E-05	2.59E-03	5.61E-02	0.00E+00
POCP (“smog”)	kg C_2H_4e	6.71E-03	2.07E-04	2.36E-04	7.16E-03	1.41E-05	3.43E-04	MND	MND	MND	MND	MND	MND	MND	1.45E-04	1.06E-05	9.23E-05	3.61E-05	0.00E+00
ADP-elements	kg Sbe	6.84E-05	4.08E-06	5.27E-06	7.77E-05	2.80E-07	4.15E-06	MND	MND	MND	MND	MND	MND	MND	1.22E-06	3.17E-07	2.06E-05	1.20E-07	0.00E+00
ADP-fossil	MJ	4.56E+02	2.74E+01	2.83E+01	5.11E+02	1.88E+00	2.86E+01	MND	MND	MND	MND	MND	MND	MND	1.72E+01	1.34E+00	4.84E+00	6.72E-01	0.00E+00

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	2.07E+01	1.72E+00	1.66E+00	2.41E+01	1.17E-01	1.74E+00	MND	MND	MND	MND	MND	MND	MND	9.74E-01	8.98E-02	5.33E+00	2.39E-01	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

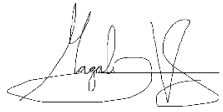
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried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

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
13.06.2025



VERIFIED ISO 14025

ANNEX 1

SCALING TABLE A1-A3

Thickness of Product		40mm	53mm	60mm	73mm	80mm	91mm	100mm	115mm	120mm	137mm	150mm	167mm
Impact Category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804 + A2, PEF	GWP Total KgCO2e	0.73	0.79	0.86	0.89	0.92	0.97	1.00	1.08	1.11	1.19	1.25	1.33
	GWP Fossil kgCO2e	0.72	0.78	0.85	0.87	0.90	0.96	1.00	1.07	1.09	1.17	1.23	1.31
	GWP biogenic kgCO2e	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	GWP LULUC kgCO2e	0.69	0.76	0.92	0.86	0.90	0.96	1.00	1.08	1.10	1.19	1.26	1.34
	Ozone Depletion Pot.	0.41	0.54	0.60	0.72	0.81	0.91	1.00	1.15	1.19	1.37	1.50	1.66
	Acidification Pot.	0.75	0.81	0.89	0.89	0.92	0.96	1.00	1.06	1.08	1.15	1.21	1.27
	EP- Freshwater	0.47	0.59	0.66	0.77	0.83	0.92	1.00	1.16	1.17	1.32	1.48	1.56
	EP- Marine	0.76	0.81	0.93	0.89	0.92	0.96	1.00	1.06	1.08	1.15	1.20	1.27
	EP- Terrestrial	0.76	0.81	0.93	0.89	0.92	0.97	1.00	1.06	1.08	1.15	1.21	1.27
	POCP ("smog")	0.75	0.80	0.91	0.88	0.91	0.96	1.00	1.06	1.08	1.15	1.21	1.28
	ADP - Minerals & Metals	0.99	0.99	0.99	0.99	0.99	1.00	1.00	1.01	1.01	1.01	1.01	1.01
	ADP- Fossil Resources	0.62	0.70	0.78	0.83	0.87	0.94	1.00	1.09	1.12	1.23	1.31	1.42
EN 15804 +A1, CML/ISO 21930	Global Warming Pot.	0.75	0.80	0.87	0.88	0.91	0.96	1.00	1.06	1.08	1.16	1.21	1.28

ANNEX 2

SCALING TABLE A-C

Thickness of Product		40mm	53mm	60mm	73mm	80mm	91mm	100mm	115mm	120mm	137mm	150mm	167mm
Impact Category		A-C	A-C	A-C	A-C	A-C	A-C	A-C	A-C	A-C	A-C	A-C	A-C
EN 15804 + A2	GWP Total KgCO2e	0.68	0.75	0.82	0.86	0.89	0.95	1.00	1.08	1.10	1.19	1.26	1.35
	GWP Fossil kgCO2e	0.68	0.75	0.82	0.86	0.89	0.95	1.00	1.08	1.10	1.19	1.26	1.35
	GWP biogenic kgCO2e	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	GWP LULUC kgCO2e	0.71	0.78	0.92	0.87	0.91	0.96	1.00	1.08	1.09	1.18	1.25	1.32
	Ozone Depletion Pot.	0.41	0.54	0.60	0.73	0.81	0.91	1.00	1.15	1.19	1.36	1.49	1.66
	Acidification Pot.	0.78	0.83	0.90	0.90	0.93	0.97	1.00	1.05	1.07	1.14	1.19	1.24
	EP- Freshwater	0.48	0.59	0.66	0.76	0.83	0.92	1.00	1.15	1.16	1.31	1.47	1.55
	EP- Marine	0.76	0.81	0.89	0.89	0.92	0.97	1.00	1.06	1.08	1.15	1.20	1.27
	EP- Terrestrial	0.79	0.84	0.92	0.91	0.93	0.97	1.00	1.05	1.07	1.13	1.18	1.23
	POCP ("smog")	0.79	0.83	0.91	0.90	0.93	0.97	1.00	1.05	1.07	1.13	1.18	1.24
	ADP - Minerals & Metals	0.99	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	1.01
	ADP- Fossil Resources	0.65	0.73	0.79	0.84	0.88	0.95	1.00	1.09	1.12	1.21	1.29	1.39
EN 15804 +A1, CML/ISO 21930	Global Warming Pot.	0.71	0.77	0.83	0.87	0.90	0.96	1.00	1.07	1.10	1.18	1.24	1.32