



ENVIRONMENTAL PRODUCT DECLARATION

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

Protex Voyage RS02

Firth Steels Ltd



EPD HUB, HUB-3342

Published on 22.05.2025, last updated on 22.05.2025, valid until 21.05.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 2023) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Firth Steels Ltd
Address	Calderbank, River St, Brighouse, HD6 1LU, Yorkshire, England
Contact details	Technical@firth-steels.co.uk
Website	https://www.firth-steels.co.uk/

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 1.1, 5 Dec 2023
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	Thomas O'Neil - Firth Steels
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. 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	Protex Voyage RS02
Additional labels	Protex Voyage RS04
Product reference	PRX-V-RS-02
Place(s) of raw material origin	United Kingdom
Place of production	Firth Steels Ltd - Brighouse, Yorkshire, United Kingdom
Place(s) of installation and use	United Kingdom
Period for data	Calendar Year 04:2023 to 04:2024
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m2 (280mm - System Depth)
Declared unit mass	15.05 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	1.88E+01
GWP-total, A1-A3 (kgCO ₂ e)	1.69E+01
Secondary material, inputs (%)	96.6
Secondary material, outputs (%)	65.3
Total energy use, A1-A3 (kWh)	115
Net freshwater use, A1-A3 (m ³)	0.57

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

At Firth Steels, sustainability isn't an afterthought, it's where we begin. From our steel profiles to our advanced building systems, each product is crafted with a commitment to reducing environmental impact and supporting a future, for good. Manufactured in Yorkshire, we blend innovative design with a commitment to environmental integrity, creating enduring spaces that positively impact our world.

PRODUCT DESCRIPTION

PROTEX® Voyage Roof System 02
Advanced Built-Up Solution with Low Embodied Carbon

The PROTEX® Voyage Roof System 02 provides a high-performance, project specific built-up solution, engineered to meet stringent environmental and technical requirements. The system incorporates steel sourced from leading global manufacturers, specifically utilising SSAB's Pural BT Zero steel. This steel is produced in state of the art Electric Arc Furnace (EAF) facilities, using 100% recycled scrap material and powered exclusively by fossil-free electricity. This approach significantly reduces embodied carbon without compromising mechanical performance or long-term durability. The system is supported by a 25-year full system guarantee, with external coating warranties of up to 40 years, ensuring lasting performance and confidence for building owners and specifiers.

Further information can be found at <https://www.firth-steels.co.uk/>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	74	EU
Minerals	26	UK
Fossil materials	-	-
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.117
Biogenic carbon content in packaging, kg C	0.412

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m2 (280mm - System Depth)
Mass per declared unit	15.05 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	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 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 steel used to manufacture the profiles is sourced from industry leading suppliers. At these supplier steel slabs are produced using an electric arc furnace (EAF) process, which primarily relies on scrap steel as the raw

material, combined with electricity generated from fossil-free sources. The scrap steel is melted in the EAF to produce molten steel, which is then cast into slabs. These slabs are subsequently rolled into coils, galvanised and colour coated.

At the Firth Steels manufacturing facility in Brighthouse the roll forming process for manufacturing steel profiles follows several key steps to transform steel strips into functional and visually consistent profiled sheets. Initially, a coil of steel is fed into a roll forming machine, which comprises a series of roll stands. Each stand contains rollers that incrementally shape the steel strip into the desired profile. As the strip moves through the forming process, it is gradually shaped to preserve structural integrity and avoid distortion. Once the final profile is formed, the steel is cut to specified lengths according to project requirements.

Minimal steel waste is generated during the manufacturing process. Offcuts and trimmings are collected and returned to the steel recycling stream, supporting circular resource use.

All components, including internal and external sheets, brackets, fixings, insulation, and sealants, are transported to the construction site. The full system is then assembled on-site by approved installers according to project specific requirements and standardised installation details.

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 average distance of transportation from production facility to building site has been calculated from the average distance to site from the production facility as 140 km and the transportation method is by lorry. Vehicle capacity utilisation volume factor is assumed to be 100% with 38% mineral wool and 52% steel. It may vary but as the role of transportation emissions in total results is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transportation does not cause losses as products are packaged properly. Density of the steel product is 7850 kg/m³, however bulk density varies depending on product type and thickness this product includes mineral wool. Therefore, the weighted average is calculated as approximately 4557 kg/m³.

The installation phase assumes a conservative estimate of 1 kWh of electricity and 2 kWh of diesel energy per m² of Protex system, accounting for crane and handling operations. Installation losses are considered negligible, as the system is manufactured to fit precisely on site.

PRODUCT USE AND MAINTENANCE (B1-B7)

Use stage is not considered in the assessment.

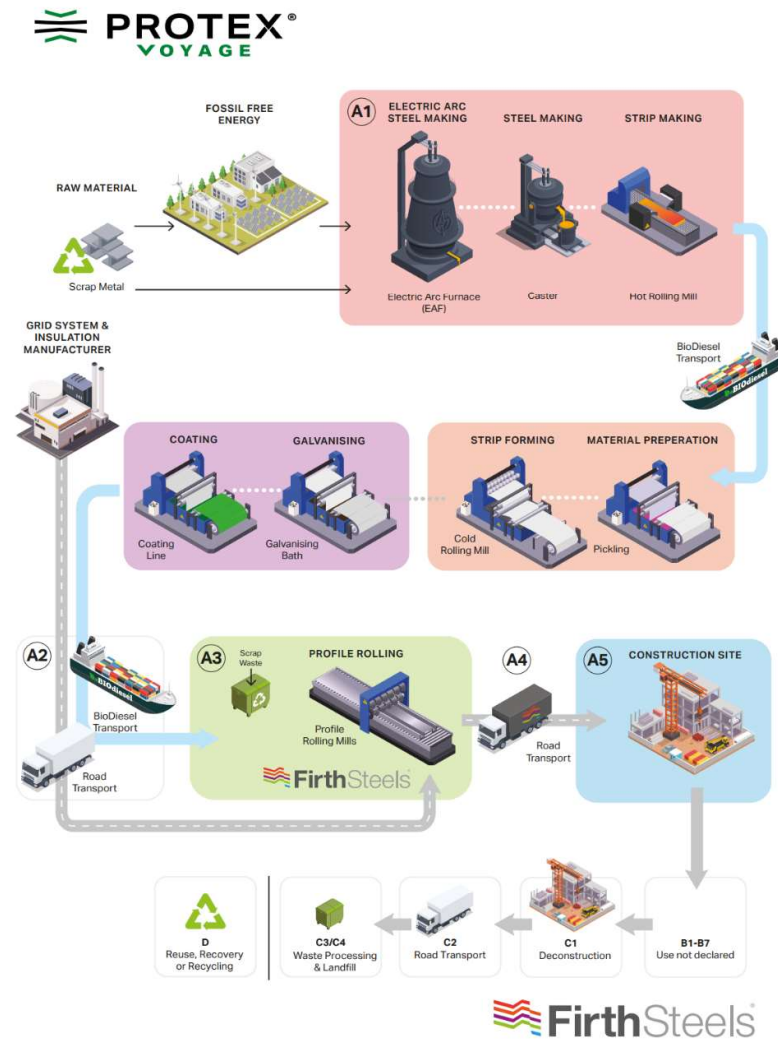
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

For product removal, a conservative estimate of 1 kWh of electricity for power tools and 2 kWh of diesel for crane operation per m² has been applied. At the end of the product's service life, it is recommended that profiles be directed to a reclamation facility, where steel can be separated from fibre components and appropriately recycled. In alignment with the World Steel Association (2020), 85% of the steel is assumed to be recycled, with the remaining 15% sent to landfill.

The fibre core is assumed to be 100% to landfill reflecting current market practices. In Module D, net benefits from recycling and waste treatment are accounted for as avoided burdens, this excludes savings from steel recycling due to the steel being manufactured from 100% scrap steel but includes energy recovery through incineration of packaging materials.

SYSTEM BOUNDARY



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 that is 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.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC2021 and JRC EF 3.1.

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	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 v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

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 ₂ e	1.77E+01	4.03E-01	-1.16E+00	1.69E+01	2.31E-01	2.70E+00	MND	MND	MND	MND	MND	MND	MND	1.16E+00	5.55E-01	2.22E-01	5.46E-01	-3.38E-01
GWP – fossil	kg CO ₂ e	1.81E+01	4.03E-01	3.53E-01	1.88E+01	2.31E-01	1.19E+00	MND	MND	MND	MND	MND	MND	MND	1.16E+00	5.54E-01	2.22E-01	8.37E-02	-3.44E-01
GWP – biogenic	kg CO ₂ e	-4.28E-01	5.23E-05	-1.51E+00	-1.94E+00	5.04E-05	1.51E+00	MND	MND	MND	MND	MND	MND	MND	1.06E-04	1.09E-04	-4.72E-04	4.62E-01	6.00E-03
GWP – LULUC	kg CO ₂ e	3.96E-02	1.76E-04	6.08E-04	4.04E-02	8.98E-05	1.29E-04	MND	MND	MND	MND	MND	MND	MND	1.05E-04	2.42E-04	2.74E-04	3.55E-05	-6.18E-05
Ozone depletion pot.	kg CFC ₋₁₁ e	1.59E-07	7.57E-09	1.39E-07	3.05E-07	4.82E-09	3.35E-08	MND	MND	MND	MND	MND	MND	MND	3.33E-08	8.15E-09	2.99E-09	1.85E-09	-1.72E-09
Acidification potential	mol H ⁺ e	1.39E-01	4.41E-03	1.60E-03	1.45E-01	5.45E-04	7.51E-03	MND	MND	MND	MND	MND	MND	MND	7.42E-03	1.79E-03	2.64E-03	4.36E-04	-1.38E-03
EP-freshwater ²⁾	kg Pe	1.67E-03	2.32E-05	3.55E-05	1.73E-03	1.61E-05	5.00E-05	MND	MND	MND	MND	MND	MND	MND	4.57E-05	4.27E-05	1.43E-04	5.77E-06	-1.47E-04
EP-marine	kg Ne	2.15E-02	1.11E-03	4.88E-04	2.31E-02	1.43E-04	3.35E-03	MND	MND	MND	MND	MND	MND	MND	3.26E-03	5.72E-04	5.85E-04	3.34E-04	-2.99E-04
EP-terrestrial	mol Ne	4.89E-01	1.22E-02	5.26E-03	5.07E-01	1.55E-03	3.59E-02	MND	MND	MND	MND	MND	MND	MND	3.55E-02	6.22E-03	6.61E-03	1.84E-03	-3.27E-03
POCP (“smog”) ³⁾	kg NMVOCe	5.79E-02	3.94E-03	1.74E-03	6.36E-02	9.47E-04	1.08E-02	MND	MND	MND	MND	MND	MND	MND	1.07E-02	2.54E-03	1.96E-03	6.60E-04	-1.15E-03
ADP-minerals & metals ⁴⁾	kg Sbe	1.36E-03	9.11E-07	2.38E-06	1.36E-03	6.60E-07	9.27E-07	MND	MND	MND	MND	MND	MND	MND	8.81E-07	1.80E-06	1.57E-05	1.91E-07	-3.21E-06
ADP-fossil resources	MJ	2.67E+02	5.69E+00	6.80E+00	2.80E+02	3.47E+00	1.97E+01	MND	MND	MND	MND	MND	MND	MND	1.94E+01	7.83E+00	2.98E+00	1.45E+00	-3.47E+00
Water use ⁵⁾	m ³ e depr.	2.26E+01	2.55E-02	6.87E-02	2.27E+01	1.77E-02	9.40E-02	MND	MND	MND	MND	MND	MND	MND	8.75E-02	3.68E-02	5.36E-02	5.57E-03	-6.01E-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	1.04E-06	3.05E-08	2.18E-08	1.09E-06	2.25E-08	1.91E-07	MND	MND	MND	MND	MND	MND	MND	1.89E-07	4.50E-08	3.59E-08	3.68E-08	-2.21E-08
Ionizing radiation ⁶⁾	kBq 11235e	2.49E-01	5.68E-03	1.21E-01	3.76E-01	4.18E-03	2.83E-01	MND	MND	MND	MND	MND	MND	MND	2.83E-01	6.68E-03	2.53E-02	1.34E-03	7.56E-03
Ecotoxicity (freshwater)	CTUe	1.35E+02	6.02E-01	1.46E+00	1.37E+02	4.08E-01	9.30E-01	MND	MND	MND	MND	MND	MND	MND	8.49E-01	1.20E+00	1.74E+00	4.26E-01	-8.32E-01
Human toxicity, cancer	CTUh	5.86E-09	7.29E-11	9.03E-11	6.03E-09	3.84E-11	1.27E-10	MND	MND	MND	MND	MND	MND	MND	1.19E-10	9.41E-11	1.98E-10	1.80E-11	-5.59E-11
Human tox. non-cancer	CTUh	1.48E-07	3.05E-09	2.59E-09	1.54E-07	2.24E-09	2.81E-09	MND	MND	MND	MND	MND	MND	MND	2.36E-09	4.92E-09	1.35E-08	7.50E-10	-2.71E-09
SQP ⁷⁾	-	2.12E+02	4.27E+00	8.80E-01	2.17E+02	3.49E+00	1.33E+00	MND	MND	MND	MND	MND	MND	MND	1.12E+00	5.03E+00	5.80E+00	2.12E+00	-1.02E+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	1.47E+02	7.91E-02	3.32E+00	1.50E+02	5.64E-02	-6.56E+00	MND	MND	MND	MND	MND	MND	MND	1.82E-01	1.10E-01	5.56E-01	1.90E-02	-8.94E-02
Renew. PER as material	MJ	0.00E+00	0.00E+00	1.39E+01	1.39E+01	0.00E+00	-1.39E+01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.02E-02
Total use of renew. PER	MJ	1.47E+02	7.91E-02	1.72E+01	1.64E+02	5.64E-02	-2.05E+01	MND	MND	MND	MND	MND	MND	MND	1.82E-01	1.10E-01	5.56E-01	1.90E-02	-4.92E-02
Non-re. PER as energy	MJ	2.53E+02	5.69E+00	6.44E+00	2.65E+02	3.47E+00	1.92E+01	MND	MND	MND	MND	MND	MND	MND	1.94E+01	7.83E+00	2.98E+00	-1.46E+00	-3.47E+00
Non-re. PER as material	MJ	2.11E+00	0.00E+00	3.64E-01	2.48E+00	0.00E+00	-3.64E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-2.11E+00	2.26E-01
Total use of non-re. PER	MJ	2.55E+02	5.69E+00	6.80E+00	2.68E+02	3.47E+00	1.88E+01	MND	MND	MND	MND	MND	MND	MND	1.94E+01	7.83E+00	2.98E+00	-3.57E+00	-3.24E+00
Secondary materials	kg	1.45E+01	2.53E-03	9.25E-04	1.45E+01	1.50E-03	4.71E-03	MND	MND	MND	MND	MND	MND	MND	4.54E-03	3.51E-03	3.64E-03	4.91E-04	1.82E-01
Renew. secondary fuels	MJ	1.29E-03	2.41E-05	1.62E-04	1.48E-03	1.89E-05	1.33E-05	MND	MND	MND	MND	MND	MND	MND	1.16E-05	4.46E-05	1.69E-04	7.81E-06	-2.70E-05
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	5.68E-01	7.15E-04	1.48E-03	5.70E-01	5.12E-04	1.56E-03	MND	MND	MND	MND	MND	MND	MND	2.13E-03	1.05E-03	1.58E-03	6.44E-04	-9.28E-04

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	8.40E-01	8.04E-03	1.22E-02	8.60E-01	5.01E-03	2.20E-02	MND	MND	MND	MND	MND	MND	MND	2.04E-02	1.34E-02	1.95E-02	1.82E-03	-1.07E-01
Non-hazardous waste	kg	8.19E+00	1.47E-01	3.69E-01	8.71E+00	1.00E-01	1.32E+00	MND	MND	MND	MND	MND	MND	MND	2.96E-01	2.53E-01	7.04E-01	4.37E-01	-9.63E-01
Radioactive waste	kg	1.12E-02	1.40E-06	2.91E-05	1.13E-02	1.03E-06	5.96E-05	MND	MND	MND	MND	MND	MND	MND	5.94E-05	1.64E-06	6.48E-06	3.31E-07	1.98E-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	2.34E-02	0.00E+00	4.20E-01	4.43E-01	0.00E+00	1.55E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	9.83E+00	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	8.04E-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 – Electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.41E-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 – Heat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.63E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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 ₂ e	1.81E+01	4.03E-01	3.53E-01	1.89E+01	2.31E-01	1.19E+00	MND	MND	MND	MND	MND	MND	MND	1.16E+00	5.55E-01	2.22E-01	8.37E-02	-3.44E-01

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.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity UK
Electricity CO2e / kWh	0.0789
District heating data source and quality	-
District heating CO2e / kWh	-

Transport scenario documentation A4

Scenario parameter	Value
Specific transport CO2e emissions, kg CO2e / tkm	0.11
Average transport distance, km	140
Capacity utilization (including empty return) %	75
Bulk density of transported products	4557
Volume capacity utilization factor	1

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	0
Water use / m ³	0
Other resource use / kg	0
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	3
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	0
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	0.4722
Direct emissions to ambient air, soil and water / kg	0

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

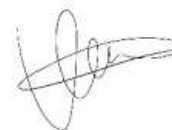
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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
22.05.2025



ANNEX 1 - SCALING TABLE

Depth of System (mm)		160	180	200	220	240	260	280	300	320	340	360	380	400
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	A1-A3
Weight of System (Kg/m ²)		9.59	11.15	12.45	13.49	14.27	14.79	15.05	15.31	15.83	16.61	17.65	18.95	20.51
EN 15804+A2, PEF	GWP - Total	0.82	0.85	0.88	0.91	0.94	0.97	1.00	1.03	1.06	1.09	1.12	1.15	1.18
	GWP - Fossil	0.82	0.85	0.88	0.91	0.94	0.97	1.00	1.03	1.06	1.09	1.12	1.15	1.18
	GWP - Bio genic	0.75	0.79	0.84	0.88	0.92	0.96	1.00	1.04	1.08	1.12	1.16	1.21	1.25
	GWP - Luluc	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00