ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Protex ® Classic WS
Firth Steels Ltd

EPD HUB, HUB-4953
Published on 23.01.2026, last updated on 23.01.2026, valid until 22.01.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) 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 1.2, 24 Mar 2025
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	Thomas O'Neil - Firth Steels
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ 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 Classic WS
Additional labels	Protex Classic WS01 - WS06
Product reference	PRX-WS
Place(s) of raw material origin	United Kingdom
Place of production	Brighouse, United Kingdom
Place(s) of installation and use	United Kingdom
Period for data	Calendar Year 2023 & 2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	93.1

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m2 (190mm - System Depth)
Declared unit mass	13.69 kg
Mass of packaging	0.46792 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	39.5
GWP-total, A1-A3 ($kgCO_2e$)	37.8
Secondary material, inputs (%)	15.2
Secondary material, outputs (%)	71.8
Total energy use, A1-A3 (kWh)	136
Net freshwater use, A1-A3 (m^3)	0.27

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 ® allows the ability to select a range of elements, enabling the building envelope to be constructed to a project specific design and performance. Each component within the system can be uniquely specified to suit the individual projects requirements of sustainability, fire, thermal and acoustic performance.
The Protex® Wall system offers a tailor-made built up building envelope system combining high performance external finishes, A1 non-combustible Insulation, and Liner profile alongside industry leading Protex® approved suppliers to offer a complete 25-year system Warranty.

The Protex® System is a multi-component roofing solution, comprised of several key elements:

• Profiled Steel Sheets: The system includes either the N1000C, Sinus or Luna Wall Profile and N1000L+ Liner Profile.

• Insulation and Fixings: These components provide structure and support, integrated with the steel sheets to form the complete roof system.
Key Features:

• N1000C,Sinus & Luna Wall Profile: Available with various high-performance external finishes, providing warranties of up to 40 years. The options range from embossed, textured, to smooth finishes, allowing flexibility for diverse building envelope needs.

• N1000L+ Liner profile offers an economical solution incorporating a19mm light weight profile into the system. The N1000L+ Profile is available in Bright White Liner as standard with an A1 Fire Classification

The steel sheeting for the system is manufactured at the Firth Steels Facility, while the additional components are shipped directly to the site by their respective manufacturers. There, they are assembled to form the full Protex® Wall System.
The Life Cycle Assessment (LCA) and Environmental Product Declaration (EPD) cover a full analysis of the Protex System components.
This includes:
1. The steel used to manufacture the Wall Profile and N1000L+ Liner Profile.
2. Fixings, brackets, and insulation sourced from approved vendors, which are integrated with the Firth-manufactured products on-site to create the complete system.

The Protex® Roof System is available in different configurations, with depths ranging from 150mm to 270mm and insulation thicknesses from 120mm to 240mm. For the purpose of this LCA, a representative system with a depth of 190mm, insulation thickness of 160mm, and a system weight of 13.69 kg/m² was selected as a representative as this is the most popular system in the product family. An end-user table is also provided to facilitate impact calculations for other system configurations.

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	85	EU & Korea
Minerals	15	UK
Fossil materials	0	-
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.114
Biogenic carbon content in packaging, kg C	0.412

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m2 (190mm - System Depth)
Mass per declared unit	13.69 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	ND	ND	ND	ND	ND	ND	ND	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

Not declared = ND.

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.

A market-based approach is used in modelling the electricity mix utilized in the factory.
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. Fuels used by machinery and the handling of waste formed during the manufacturing processes are included in this stage. The study also accounts for material losses that occur during production, along with losses associated with electricity transmission. A market-based approach has been applied for electricity modelling, ensuring that the energy mix reflects the specific contractual and supplier arrangements relevant to the manufacturing operations.

The steel used to make the profiles is received from a supplier outside the UK. In the steel manufacturing plant, iron ore is processed into sinter, which is a material used in the blast furnace. The sintered iron ore and coke are fed into the blast furnace, where they undergo a chemical reaction to produce molten iron. The molten iron is then converted into steel through various processes, including the addition of alloying elements. The cast steel is passed through hot rolling mills to create steel strips, which can be used for various applications.

At the Firth Steels manufacturing facility in Brighouse 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.
The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

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 plant to building site has been calculated from the production weighted distance to site as 140 km and the transportation method is by lorry. Vehicle capacity utilisation volume factor is assumed to be 75% d. 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. 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 product is 7850 kg/m3, however bulk density varies depending on product type and thickness. Therefore, the average loss due to the openings both in the product itself and between the nested products is assumed as 10%; accordingly, bulk density is calculated as an approximate 7000 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.

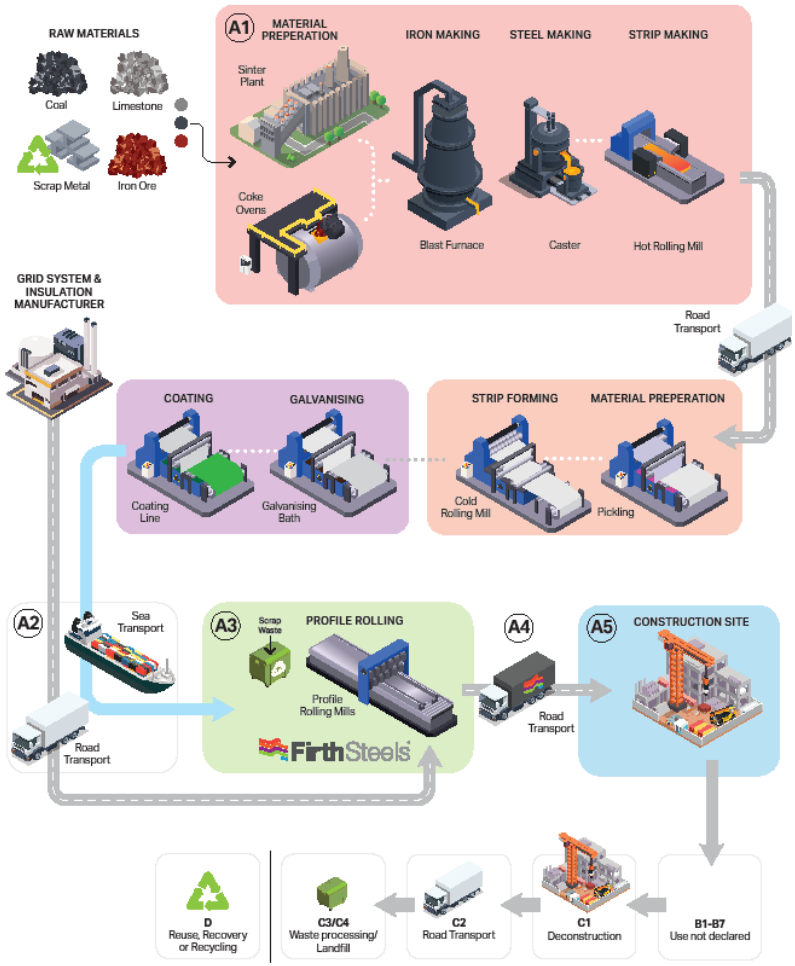
PRODUCT END OF LIFE (C1-C4, D)

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 the steel can be separated and appropriately recycled. In accordance with the World Steel Association (2020), an 85% recycling rate has been applied for steel, with the remaining 15% assumed to be sent to landfill.

The glass mineral wool core is assumed to be disposed of entirely to landfill at end of life, reflecting current practice for this material. Seal materials used within the system are also assumed to be sent 100% to landfill, as no established recycling route exists for these components.

In Module D, net benefits from recycling and waste treatment are accounted for as avoided burdens, including benefits from steel recycling and energy recovery from the incineration of packaging materials.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study applies the EN 15804+A2 cut-off rules by first collecting and quantifying all available foreground data and only applying exclusions where the measured flows clearly fall below the relevant thresholds. No flows have been omitted due to lack of data; all unit-process inputs and outputs for which data are available have been accounted for before determining whether a cut-off is appropriate.

Electricity consumption at the manufacturing facility is 0.40 kWh/m² of product, representing the total metered electricity supplied to the site after on-site solar generation and grid electricity are mixed in a shared battery system. As the renewable share cannot be reliably distinguished within the battery storage system, the full 0.40 kWh/m² has been modelled using the market-based grid residual mix, to avoid over-attribution of renewable electricity.

Cardboard is used only as import packaging for the delivery of steel coils to Firth Steels. Based on supplier data and material specifications, cardboard represents 0.6% of the total weight of materials delivered into Firth Steels. If this cardboard were carried through and included explicitly in the delivered product to site, it would correspond to approximately 0.04 kg/m² of product delivered to site. This contribution is below the 1% threshold for individual flows and remains well within the 5% cumulative mass and energy thresholds. Its environmental impact is therefore considered negligible in accordance with EN 15804+A2. The data has nevertheless been collected, quantified and evaluated prior to applying this cut-off, in line with the first principle of the cut-off rules.

Ancillary materials such as oils, solvents and cleaning consumables are not used in the production process. Profile cutting is performed by mechanical shearing without lubrication, and cleaning activities do not require consumable materials, resulting in no measurable ancillary material inputs to include or cut off.

Capital equipment, construction activities, infrastructure and personnel-related activities—as well as management-related energy and water use—are excluded in accordance with EN 15804+A2 and standard LCA practice and do not compromise compliance with the cut-off criteria.

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/AC:2021 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

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	N/A

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	3.72E+01	1.80E+00	-1.16E+00	3.78E+01	2.05E-01	2.70E+00	ND	ND	ND	ND	ND	ND	ND	1.16E+00	5.31E-01	2.22E-01	3.20E-01	-3.38E-01
GWP – fossil	kg CO_2e	3.74E+01	1.80E+00	3.53E-01	3.95E+01	2.05E-01	1.19E+00	ND	ND	ND	ND	ND	ND	ND	1.16E+00	5.30E-01	2.22E-01	5.56E-02	-3.44E-01
GWP – biogenic	kg CO_2e	-2.11E-01	2.82E-04	-1.51E+00	-1.72E+00	4.47E-05	1.51E+00	ND	ND	ND	ND	ND	ND	ND	1.06E-04	1.09E-04	-4.72E-04	2.64E-01	6.00E-03
GWP – LULUC	kg CO_2e	1.44E-02	9.12E-04	6.08E-04	1.59E-02	7.98E-05	1.29E-04	ND	ND	ND	ND	ND	ND	ND	1.05E-04	2.33E-04	2.74E-04	2.31E-05	-6.18E-05
Ozone depletion pot.	kg CFC_{-11}e	1.40E-07	2.78E-08	1.39E-07	3.06E-07	4.27E-09	3.35E-08	ND	ND	ND	ND	ND	ND	ND	3.33E-08	7.64E-09	2.99E-09	1.20E-09	-1.72E-09
Acidification potential	mol H^+e	1.65E-01	4.34E-02	1.60E-03	2.10E-01	4.83E-04	7.51E-03	ND	ND	ND	ND	ND	ND	ND	7.42E-03	1.73E-03	2.64E-03	2.85E-04	-1.38E-03
EP-freshwater[2)]	kg Pe	1.30E-03	6.91E-05	3.55E-05	1.40E-03	1.43E-05	5.00E-05	ND	ND	ND	ND	ND	ND	ND	4.57E-05	4.10E-05	1.43E-04	3.72E-06	-1.47E-04
EP-marine	kg Ne	2.68E-02	1.08E-02	4.88E-04	3.81E-02	1.27E-04	3.35E-03	ND	ND	ND	ND	ND	ND	ND	3.26E-03	5.57E-04	5.85E-04	2.75E-04	-2.99E-04
EP-terrestrial	mol Ne	5.08E-01	1.20E-01	5.26E-03	6.33E-01	1.37E-03	3.59E-02	ND	ND	ND	ND	ND	ND	ND	3.55E-02	6.06E-03	6.61E-03	1.20E-03	-3.27E-03
POCP ("smog")[3)]	kg NMVOCe	8.51E-02	3.32E-02	1.74E-03	1.20E-01	8.41E-04	1.08E-02	ND	ND	ND	ND	ND	ND	ND	1.07E-02	2.44E-03	1.96E-03	4.30E-04	-1.15E-03
ADP-minerals & metals[4)]	kg Sbe	2.11E+02	2.53E-06	2.38E-06	2.11E+02	5.86E-07	9.27E-07	ND	ND	ND	ND	ND	ND	ND	8.81E-07	1.73E-06	1.57E-05	1.18E-07	-3.21E-06
ADP-fossil resources	MJ	1.88E+02	2.27E+01	6.80E+00	2.18E+02	3.08E+00	1.97E+01	ND	ND	ND	ND	ND	ND	ND	1.94E+01	7.47E+00	2.98E+00	9.51E-01	-3.47E+00
Water use[5)]	m^3e depr.	5.75E+00	7.44E-02	6.87E-02	5.89E+00	1.58E-02	9.40E-02	ND	ND	ND	ND	ND	ND	ND	8.75E-02	3.49E-02	5.36E-02	3.55E-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.

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	4.79E+01	2.21E-01	3.32E+00	5.15E+01	5.01E-02	-6.56E+00	ND	ND	ND	ND	ND	ND	ND	1.82E-01	1.04E-01	5.56E-01	1.21E-02	-8.94E-02
Renew. PER as material	MJ	3.41E+00	0.00E+00	1.39E+01	1.73E+01	0.00E+00	-1.39E+01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-2.90E+00	-5.12E-01	4.02E-02
Total use of renew. PER	MJ	5.13E+01	2.21E-01	1.72E+01	6.88E+01	5.01E-02	-2.05E+01	ND	ND	ND	ND	ND	ND	ND	1.82E-01	1.04E-01	-2.34E+00	-4.99E-01	-4.92E-02
Non-re. PER as energy	MJ	4.08E+02	2.27E+01	6.44E+00	4.37E+02	3.08E+00	1.92E+01	ND	ND	ND	ND	ND	ND	ND	1.94E+01	7.47E+00	2.98E+00	-1.96E+00	-3.47E+00
Non-re. PER as material	MJ	2.14E+00	0.00E+00	3.64E-01	2.51E+00	0.00E+00	-3.64E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-2.56E-02	-2.12E+00	2.26E-01
Total use of non-re. PER	MJ	4.10E+02	2.27E+01	6.80E+00	4.40E+02	3.08E+00	1.88E+01	ND	ND	ND	ND	ND	ND	ND	1.94E+01	7.47E+00	2.95E+00	-4.08E+00	-3.24E+00
Secondary materials	kg	2.07E+00	1.07E-02	9.25E-04	2.09E+00	1.33E-03	4.71E-03	ND	ND	ND	ND	ND	ND	ND	4.54E-03	3.35E-03	3.64E-03	3.12E-04	1.82E-01
Renew. secondary fuels	MJ	1.29E-03	4.70E-05	1.62E-04	1.50E-03	1.68E-05	1.33E-05	ND	ND	ND	ND	ND	ND	ND	1.16E-05	4.26E-05	1.69E-04	5.10E-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	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.63E-01	1.90E-03	1.48E-03	2.66E-01	4.54E-04	1.56E-03	ND	ND	ND	ND	ND	ND	ND	2.13E-03	9.97E-04	1.58E-03	3.58E-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	8.79E-01	3.07E-02	1.22E-02	9.22E-01	4.45E-03	2.20E-02	ND	ND	ND	ND	ND	ND	ND	2.04E-02	1.29E-02	1.95E-02	1.18E-03	-1.07E-01
Non-hazardous waste	kg	7.37E+00	4.67E-01	3.69E-01	8.21E+00	8.91E-02	1.32E+00	ND	ND	ND	ND	ND	ND	ND	2.96E-01	2.42E-01	7.04E-01	4.23E-01	-9.63E-01
Radioactive waste	kg	2.61E-03	3.51E-06	2.91E-05	2.64E-03	9.17E-07	5.96E-05	ND	ND	ND	ND	ND	ND	ND	5.94E-05	1.53E-06	6.48E-06	2.09E-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	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.60E-02	0.00E+00	4.20E-01	4.46E-01	0.00E+00	1.55E-01	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ADDITIONAL INDICATOR – GWP-GHG

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	3.74E+01	1.80E+00	3.53E-01	3.96E+01	2.05E-01	1.19E+00	ND	ND	ND	ND	ND	ND	ND	1.16E+00	5.30E-01	2.22E-01	5.56E-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. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

DATA SOURCES

MANUFACTURING ENERGY SCENARIO DOCUMENTATION

Scenario parameter	Value
Electricity data source and quality	Electricity, medium voltage, residual mix, United Kingdom, Ecoinvent
Electricity CO2e / kWh	0.44
District heating data source and quality	N/A
District heating CO2e / kWh	N/A

Transport scenario documentation - A4 (Transport resources)

1. Transport, freight, lorry >32 metric ton, EURO6, 140 km

TRANSPORT SCENARIO DOCUMENTATION A4

Scenario parameter	Value
Capacity utilisation (including empty return) %	75
Bulk density of transported products	4557
Volume capacity utilisation factor	1

INSTALLATION SCENARIO DOCUMENTATION - A5 (INSTALLATION RESOURCES)

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	N/A
Water use / m³	N/A
Other resource use / kg	N/A
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	Electricity, medium voltage, residual mix, Ecoinvent, 1.0 kWh Diesel, burned in building machine, Ecoinvent, 2.0 kWh

Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Wood Pallet 0.4557kg Plastic Packaging PET 0.00795kg Plastic Packaging LDPE 0.00427kg
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	Wood Pallet -0.15kg Recycling -0.14Kg incineration -0.17Kg Landfill Plastic Packaging PET 0.00795kg -0.0032kg Recycling -0.0029Kg incineration -0.0018Kg Landfill Plastic Packaging LDPE 0.00427kg -0.0017kg Recycling -0.0016Kg incineration 9.8E-4 kg Landfill
Direct emissions to ambient air, soil and water / kg	N/A

EOL SCENARIO DOCUMENTATION - C1-C4 (DATA SOURCE)

Scenario information	Value
Collection process – kg collected separately	0.00
Collection process – kg collected with mixed waste	13.69
Recovery process – kg for re-use	0
Recovery process – kg for recycling	11.532
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	2.08
Scenario assumptions e.g. transportation	50 km truck transportation to disposal

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

#SIGNATURE#

CONVERSION TABLE

Depth of System (mm)		130	150	170	190	210	230	250	270	290	310	330	350	370
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)		12.8	13.03	13.26	13.69	13.92	14.15	14.38	14.61	14.84	15.07	15.3	15.53	15.76
EN 15804+A2,EF 3.1	GWP - Total	0.968	0.982	0.995	1.00	1.005	1.010	1.014	1.019	1.024	1.029	1.033	1.038	1.043
	GWP- Fossil	0.965	0.980	0.995	1.00	1.005	1.011	1.016	1.021	1.027	1.032	1.037	1.043	1.048
	GWP - Bio genic	0.890	0.936	0.983	1.00	1.017	1.035	1.052	1.070	1.087	1.105	1.122	1.140	1.157
	GWP - Luluc	0.981	0.987	0.994	1.00	1.063	1.126	1.189	1.252	1.314	1.377	1.440	1.503	1.566