

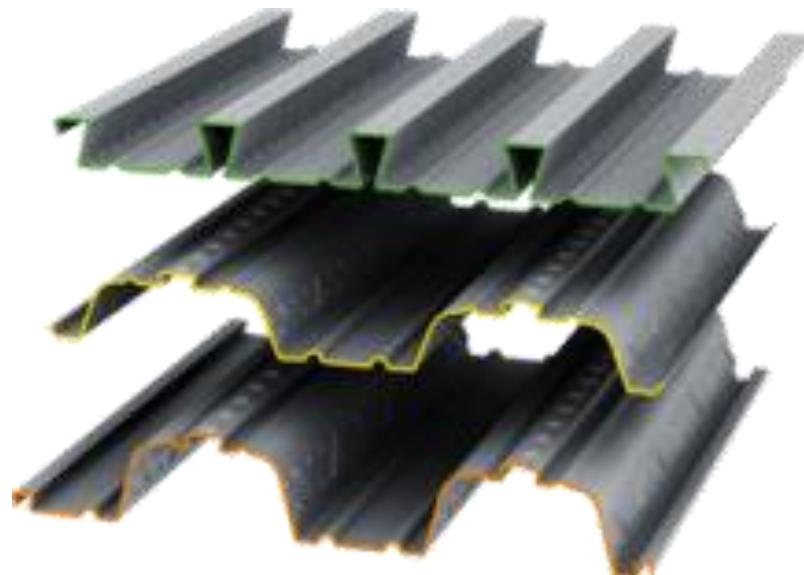


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

R733 Structural floor deck

Firth Steels Ltd



EPD HUB, HUB-3381

Published on 29.05.2025, last updated on 02.06.2025, valid until 28.05.2030

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
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Thomas O'Neil - Firth Steels Ltd
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	R733 Structural floor deck
Additional labels	R51+, TR60+, TR80+
Product reference	Structural Floor Deck
Place(s) of raw material origin	Europe
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 (%)	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m ² of steel structural deck. (1.0mm gauge)
Declared unit mass	12.54 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	1.01E+01
GWP-total, A1-A3 (kgCO ₂ e)	8.63E+00
Secondary material, inputs (%)	100
Secondary material, outputs (%)	85
Total energy use, A1-A3 (kWh)	73.4
Net freshwater use, A1-A3 (m ³)	0.1

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

The Firth Steels/SMD floor deck profile range is designed to support both formwork-only and composite slab applications, offering versatile solutions for a wide variety of construction projects.

Each profile is selected based on key structural and design parameters, including span length, composite beam interaction, slab design, loading requirements, and installation method. A common objective in modern construction is to minimise or eliminate the need for temporary propping, which can restrict site access and impact project timelines, Firth Steels/SMD profiles are engineered with this in mind.

Available in depths ranging from 50mm to 220mm and offered in a variety of steel grades and thicknesses, the range provides flexibility to meet differing project demands. When correctly specified, profiles can achieve un-propped spans of over 6.0 meters, helping to reduce on-site labour and streamline construction workflows.

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	100	EU
Minerals	0	-
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	0.0013
Biogenic carbon content in packaging, kg C	0.041

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m ² of steel structural deck. (1.0mm gauge)
Mass per declared unit	12.54 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	MND	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	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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

The steel used in the manufacture of the profiles is sourced from a supplier located outside the United Kingdom. Steel slabs are produced using an Electric Arc Furnace (EAF) process, which primarily utilises scrap steel as the raw material. The melting process is powered by electricity generated from fossil-free sources, contributing to a reduced environmental footprint. During production, the scrap steel is melted in the EAF to form molten steel, which is then cast into slabs. These slabs are subsequently rolled into coils and galvanised to provide corrosion protection.

The roll forming process used to manufacture the steel profiles consists of several critical steps designed to convert steel strips into functional, structurally sound profiled sheets. Initially, a coil of steel is fed into a roll forming machine comprising a series of roll stands, each equipped with rollers. These rollers progressively shape the steel strip into the required profile. As the strip advances through each stand, the material undergoes gradual forming to ensure dimensional accuracy, maintain structural integrity, and minimise distortion. Once the desired profile is fully achieved, the formed steel is cut to predetermined lengths based on project specifications.

During the manufacturing process, material losses and waste are primarily generated from steel offcuts. These offcuts are collected and fully recycled through a licensed recycling company, supporting the circular economy and reducing landfill impact.

For transport and delivery, the finished profiles are packaged using plastic banding and timber skids. These packaging materials are prepared and processed on-site upon delivery to ensure secure and efficient handling. The use of minimal yet effective packaging supports both product protection and sustainability goals.

TRANSPORT AND INSTALLATION (A4-A5)

A4-A5 are out of the scope of this EPD. The impacts of processing packaging wastes till the end-of-life stage is considered in the EOL stage.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

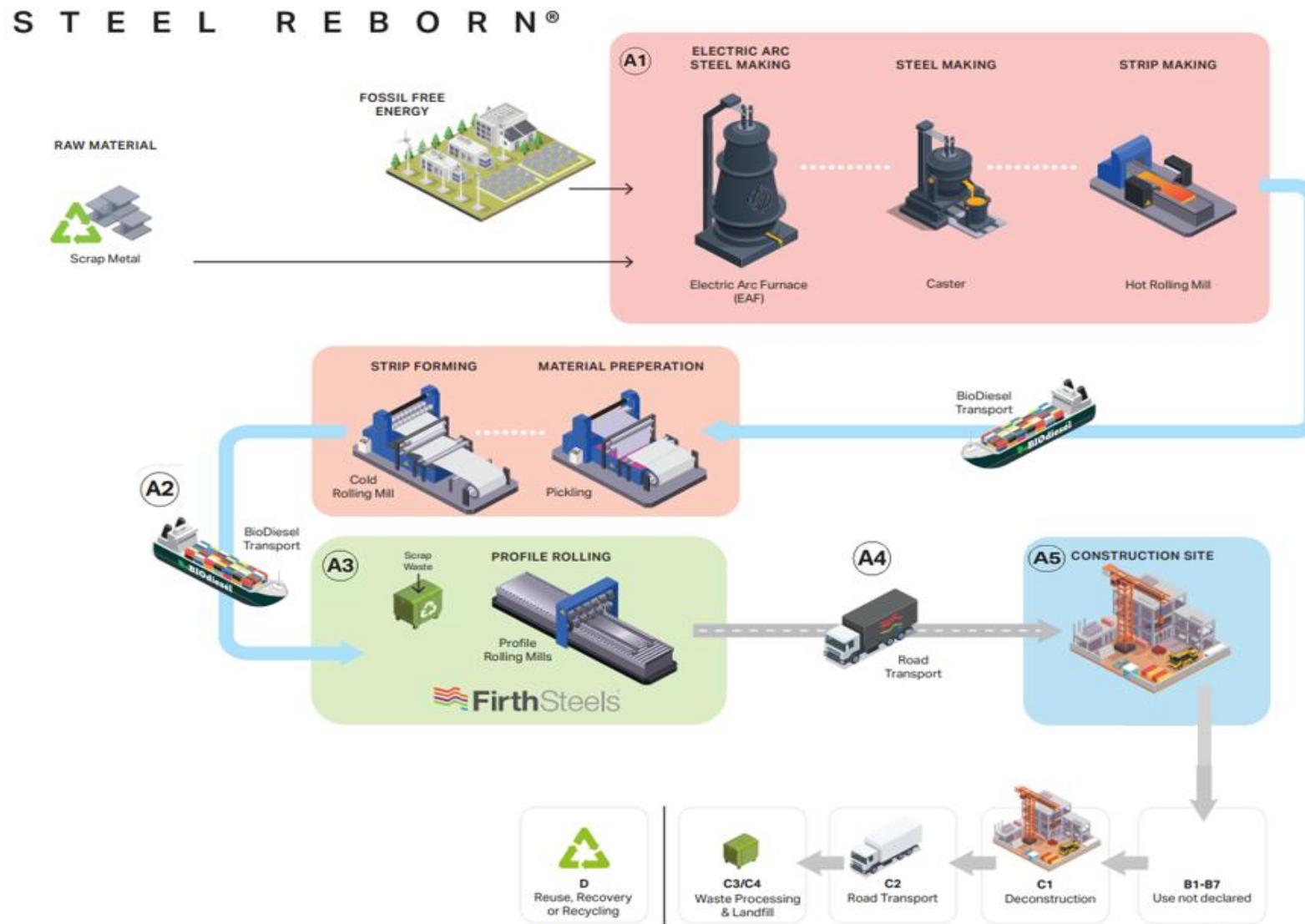
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

For 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 any other 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.

Module D claims the benefits of recycling and incineration with energy recovery of packaging materials.

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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

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 averaging
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-

This EPD is product and factory specific.

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

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

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	9.50E+00	3.06E-01	-1.17E+00	8.63E+00	MND	1,01E+00	5.39E-01	1.18E+00	5.86E-01	-1.15E-02								
GWP – fossil	kg CO ₂ e	9.43E+00	3.06E-01	3.38E-01	1.01E+01	MND	1,00E+00	5.39E-01	2.41E-01	1.17E-02	-1.75E-02								
GWP – biogenic	kg CO ₂ e	4.72E-02	5.72E-05	-1.51E+00	-1.46E+00	MND	7,36E-05	1.18E-04	9.37E-01	5.75E-01	6.04E-03								
GWP – LULUC	kg CO ₂ e	1.43E-02	1.42E-04	5.93E-04	1.50E-02	MND	7,39E-05	2.39E-04	2.97E-04	6.71E-06	-1.92E-05								
Ozone depletion pot.	kg CFC-11e	1.94E-10	5.40E-09	1.38E-07	1.44E-07	MND	1,10E-08	7.53E-09	3.24E-09	3.40E-10	-4.64E-10								
Acidification potential	mol H ⁺ e	3.75E-02	4.81E-03	1.54E-03	4.38E-02	MND	6,99E-03	1.80E-03	2.87E-03	8.32E-05	-8.66E-05								
EP-freshwater ²⁾	kg Pe	1.89E-04	1.55E-05	3.14E-05	2.36E-04	MND	2,22E-04	4.19E-05	1.55E-04	9.65E-07	-7.52E-06								
EP-marine	kg Ne	1.09E-02	1.20E-03	4.76E-04	1.26E-02	MND	3,11E-03	5.82E-04	6.35E-04	3.17E-05	-1.38E-05								
EP-terrestrial	mol Ne	1.19E-01	1.33E-02	5.14E-03	1.37E-01	MND	3,41E-02	6.33E-03	7.17E-03	3.47E-04	-1.40E-04								
POCP ("smog") ³⁾	kg NMVOCe	3.05E-02	3.96E-03	1.66E-03	3.61E-02	MND	1,01E-02	2.50E-03	2.12E-03	1.24E-04	-7.18E-05								
ADP-minerals & metals ⁴⁾	kg Sbe	7.28E-04	5.89E-07	2.28E-06	7.31E-04	MND	2,59E-07	1.77E-06	1.71E-05	1.87E-08	-7.27E-08								
ADP-fossil resources	MJ	1.36E+02	4.17E+00	6.42E+00	1.47E+02	MND	1,48E+01	7.56E+00	3.23E+00	2.88E-01	-4.01E-01								
Water use ⁵⁾	m ³ e depr.	3.03E+00	1.70E-02	6.02E-02	3.11E+00	MND	2,36E-02	3.51E-02	5.81E-02	8.31E-04	-5.07E-03								

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	0.00E+00	1.95E-08	2.13E-08	4.08E-08	MND	1,90E-07	4.28E-08	3.89E-08	1.89E-09	-7.07E-10								
Ionizing radiation ⁶⁾	kBq I1235e	0.00E+00	3.63E-03	1.20E-01	1.24E-01	MND	4,18E-03	6.12E-03	2.74E-02	1.81E-04	-3.64E-03								
Ecotoxicity (freshwater)	CTUe	0.00E+00	4.10E-01	1.37E+00	1.78E+00	MND	5,19E-01	1.20E+00	1.88E+00	2.42E-02	-3.60E-02								
Human toxicity, cancer	CTUh	0.00E+00	5.78E-11	8.69E-11	1.45E-10	MND	7,56E-11	9.16E-11	2.15E-10	2.16E-12	-3.51E-12								
Human tox. non-cancer	CTUh	0.00E+00	1.95E-09	2.47E-09	4.42E-09	MND	1,18E-09	4.73E-09	1.46E-08	4.97E-11	-1.42E-10								
SQ ⁷⁾	-	0.00E+00	2.48E+00	8.12E-01	3.29E+00	MND	6,61E-01	4.51E+00	6.29E+00	5.67E-01	-7.78E-02								

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	1.15E+02	5.19E-02	3.30E+00	1.18E+02	MND	1,08E+00	1.04E-01	6.03E-01	2.78E-03	1.20E-01								
Renew. PER as material	MJ	0.00E+00	0.00E+00	1.39E+01	1.39E+01	MND	0,00E+00	0.00E+00	-8.62E+00	-5.28E+00	4.02E-02								
Total use of renew. PER	MJ	1.15E+02	5.19E-02	1.72E+01	1.32E+02	MND	1,08E+00	1.04E-01	-8.01E+00	-5.28E+00	1.61E-01								
Non-re. PER as energy	MJ	1.36E+02	4.17E+00	6.24E+00	1.46E+02	MND	1,48E+01	7.56E+00	3.23E+00	2.88E-01	-4.01E-01								
Non-re. PER as material	MJ	0.00E+00	0.00E+00	1.82E-01	1.82E-01	MND	0,00E+00	0.00E+00	-1.40E-01	-4.20E-02	1.54E-01								
Total use of non-re. PER	MJ	1.36E+02	4.17E+00	6.42E+00	1.47E+02	MND	1,48E+01	7.56E+00	3.09E+00	2.46E-01	-2.47E-01								
Secondary materials	kg	1.41E+01	1.89E-03	8.19E-04	1.41E+01	MND	4,43E-03	3.40E-03	3.94E-03	7.24E-05	3.33E-03								
Renew. secondary fuels	MJ	0.00E+00	1.46E-05	1.02E-05	2.48E-05	MND	1,22E-05	4.32E-05	1.83E-04	1.50E-06	-3.88E-07								
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	0,00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00								
Use of net fresh water	m ³	1.03E-01	4.68E-04	1.27E-03	1.05E-01	MND	6,23E-04	1.00E-03	1.72E-03	3.00E-04	-1.74E-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	1.84E-05	5.81E-03	1.13E-02	1.71E-02	MND	2,61E-02	1.32E-02	2.11E-02	3.18E-04	-9.97E-04								
Non-hazardous waste	kg	1.04E+00	1.00E-01	2.73E-01	1.42E+00	MND	1,43E-01	2.47E-01	7.63E-01	7.27E-03	-9.82E-02								
Radioactive waste	kg	9.56E-03	8.95E-07	2.88E-05	9.59E-03	MND	6,73E-05	1.50E-06	7.02E-06	4.42E-08	-9.32E-07								

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	0.00E+00	0.00E+00	0.00E+00	0.00E+00								
Materials for recycling	kg	0.00E+00	0.00E+00	4.20E-01	4.20E-01	MND	0.00E+00	0.00E+00	1.07E+01	0.00E+00	0.00E+00								
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	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	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	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00								

ENVIRONMENTAL IMPACTS – GWP

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	9.45E+00	3.06E-01	3.38E-01	1.01E+01	MND	1,00E+00	5,39E-01	2.41E-01	1.17E-02	-1.75E-02								

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, medium voltage, residual mix, ecoinvent 3.10.1
Electricity CO2e / kWh	0.0789
District heating data source and quality	-
District heating CO2e / kWh	-

THIRD-PARTY 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

29.05.2025



ANNEX 1 - SCALING TABLE

System Product	TR60+ (0.9)	TR60+ (1.0)	TR80+ (0.9)	TR80+ (1.0)	TR60+ (1.2)	R51+ (0.9)	R51+ (1.0)	TR80+ (1.2)	R51+ (1.2)	
Impact Category	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	
Weight of System (Kg/m ²)	10.03	11.12	11.33	12.54	13.33	13.54	15.01	15.06	17.98	
EN 15804+A2,PEF	GWP - Total	0.78	0.87	0.89	1.0	1.07	1.09	1.22	1.22	1.48
	GWP- Fossil	0.81	0.88	0.91	1.0	1.06	1.07	1.18	1.19	1.40
	GWP - Bio genic	1.01	1.01	1.01	1.0	1.00	1.00	1.00	1.00	0.99
	GWP - Luluc	1.00	1.00	1.00	1.0	1.00	1.00	1.00	1.00	1.00