

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025



Techno-CreteTM
Carbon Saving Postmix

www.technocrete.co.uk

EPD HUB, HUB-3319

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GENERAL INFORMATION

MANUFACTURER

Manufacturer	TECHNO-CRETE
Address	Unit 5Q, Sileby Road Industrial Estate, Barrow Upon Soar, LE12 8LP, UK
Contact details	jon@jtcltd.co.uk
Website	https://technocrete.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
Parent EPD number	n/a
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Sam McGarrick (Blue Marble Environmental Partnerships 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	Sarah Curpen, 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	TECHNO-CRETE
Additional labels	-
Product reference	-
Place of production	Leicestershire, UK
Period for data	01 January 2023 – 31 December 2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	n/a

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Unit
Declared unit mass	1.8 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	4.31
GWP-total, A1-A3 (kgCO ₂ e)	3.97
Secondary material, inputs (%)	0
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	16
Net freshwater use, A1-A3 (m ³)	0.01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

JT Consulting manufactures and packs TECHNO-CRETE in our factory in Leicestershire, UK. TECHNO-CRETE, was developed to offer a cleaner, greener, safer and more consistent engineered alternative to the use of site-mixed post mix in use in the fencing industry. A 1.8 kg pack of Techno-Crete replaces 60 kg of cement-based post mix and water.

PRODUCT DESCRIPTION

TECHNO-CRETE is a two-part, high density hydrophobic Polyurethane based upon a polyol with recycled PET content.

Once mixed, the blend foams to form a structurally robust, solid foam that securely holds fence posts, gate posts, elevated troughing, signage and marker boards in place.

Supplied in readily handleable 1.8 kg packs, TECHNO-CRETE's two pack system is hand mixed. It doesn't need water, and a 1.8 kg pack replaces three 20 kg bags of concrete post mix. It therefore significantly reduces transportation costs and the risk of personal injury from manual handling.

Note that this product uses an average of 3.6 recycled PET bottles per declared unit. This calculation has been provided by the manufacturer.

TECHNO-CRETE has been used to secure posts for elevated troughing and security fencing on Network Rail, and won the Best Use of Technology, Carbon Reduction Award at the 2019 New Civil Engineer TechFest Awards.

Further information can be found at <https://technocrete.co.uk/>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	0	-
Fossil materials	100	UK, EU
Bio-based materials	0	-

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	0.03

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Unit
Mass per declared unit	1.8 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	Reuse	Recovery
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal			Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The product is a two-part system comprised of a polyol with recycled PET content and isocyanate which when combined form a high-density hydrophobic polyurethane. (A1)

The polyol component is manufactured and sourced from the UK; the isocyanate component is manufactured in Europe before being transported to the material supplier in the UK. Both components are transported via 7.5-16 tonne lorry to the TECHNO-CRETE manufacturing facility (A2).

Manufacturing involves a process of decanting the two components into separate inner packaging vessels using a combination of air compressor and heat sealant machinery using medium voltage electricity drawn from the UK grid. Very small quantities of residual material may be found in the decanting pipework but have been excluded from this study as the quantities are negligible (significantly below the cut-off criteria). (A3)

The product components are packaged in separate inner 3-ply aluminium / plastic bags, an outer polyethelene bag, before being grouped into a recycled cardboard box and stacked on a pallet for onward shipping to the customer. (A3)

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.

In this EPD, transportation to site has been modelled at 100km via 7.5-16 tonne lorry. This allows users of the EPD to model their own transportation impacts based on actual distances on a case-by-case basis. (A4)

As the product is mixed by hand, no installation resources have been considered. One half of the inner packaging can be combined with the product at the point of installation and encapsulated within the product as it cures; the end-of-life of this packaging is assumed to be concurrent with the end-of-life of the product in Module C4.

Other forms of packaging are considered installation waste with plastic packaging assumed to reach landfill with no benefits. The pallet end-of-life is assumed to be via incineration with energy recovery. The cardboard end-of-life is assumed to be recycled at a rate of 70% with the remaining amount reaching landfill (DEFRA, 2023). Transportation to waste treatment is assumed to be 50km via >32 tonne lorry. (A5)

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)

At the end of its life the product is assumed to be removed through a combination of manual shovelling / digging and electric-powered SDS drill using low-voltage electricity drawn from the grid. (C1).

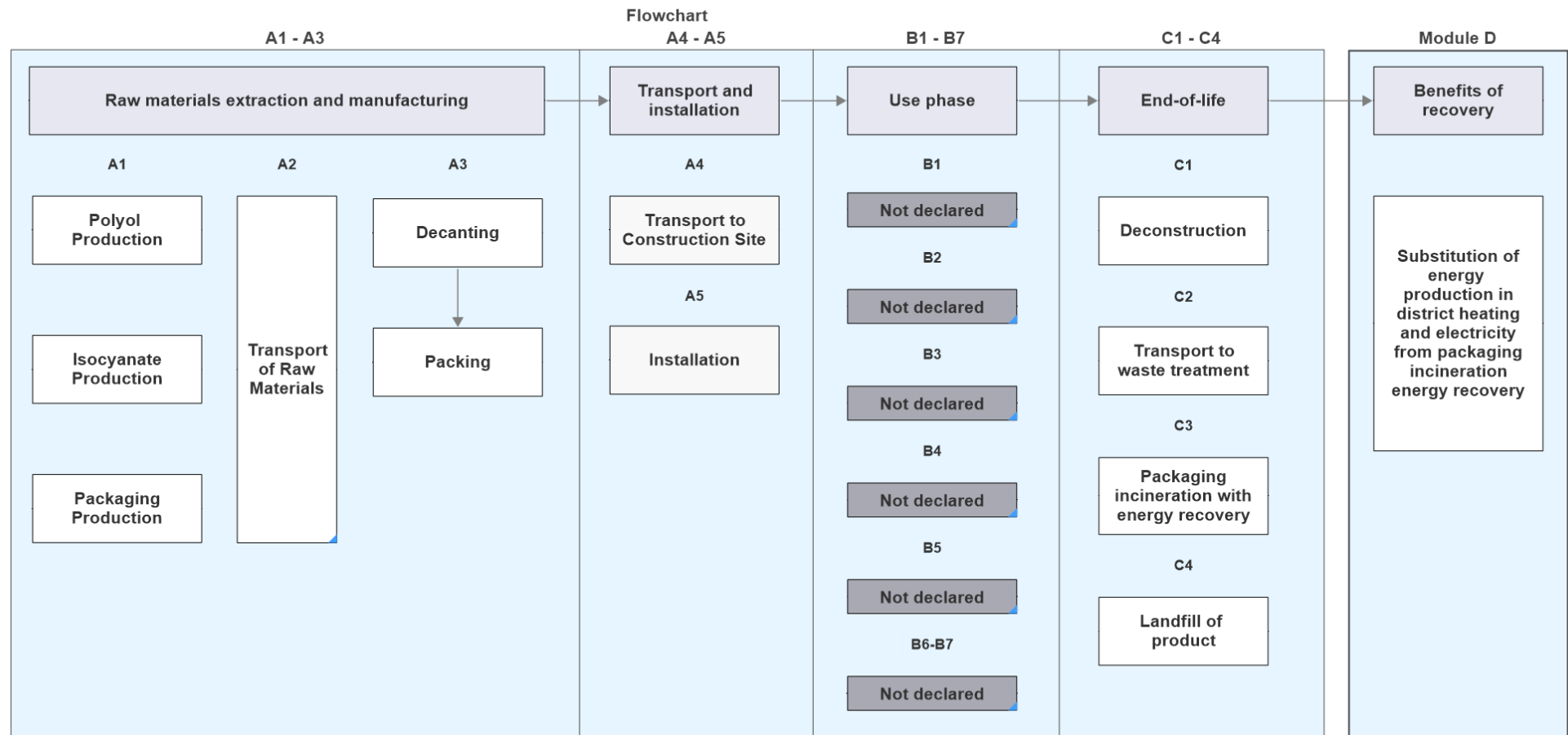
Transportation to waste treatment is assumed to be 50km via >32 tonne lorry. (C2)

At the end of its life, the product is assumed to be sent to landfill with no benefits (C4).

Module D accounts for the heat and electricity production replaced due to energy recovered from incineration of the wood pallet; the fuel efficiency of the power plant is 73%, of which electricity accounts for 11% and heat for

62% (Eriksson, O & Finnveden, G. 2017); the loads of incineration are also considered. As the cardboard box is comprised of secondary material, to avoid double counting, no benefits from the recycling process have been considered in Module D. (D)

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	No allocation

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	n/a

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	3.68E+00	2.85E-02	2.67E-01	3.97E+00	4.31E-02	1.22E-01	MND	MND	MND	MND	MND	MND	MND	3.17E-02	7.94E-03	0.00E+00	4.55E-01	-3.99E-02
GWP – fossil	kg CO ₂ e	3.90E+00	2.85E-02	3.77E-01	4.31E+00	4.31E-02	1.08E-02	MND	MND	MND	MND	MND	MND	MND	3.17E-02	7.94E-03	0.00E+00	2.26E-01	-1.13E-02
GWP – biogenic	kg CO ₂ e	-2.28E-01	0.00E+00	-1.11E-01	-3.39E-01	0.00E+00	1.11E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	2.28E-01	-2.85E-02
GWP – LULUC	kg CO ₂ e	4.55E-03	1.29E-05	7.25E-04	5.29E-03	2.13E-05	2.88E-06	MND	MND	MND	MND	MND	MND	MND	4.37E-05	2.98E-06	0.00E+00	4.00E-05	-3.88E-06
Ozone depletion pot.	kg CFC ₋₁₁ e	6.91E-12	6.14E-09	8.12E-08	8.73E-08	8.98E-09	5.82E-10	MND	MND	MND	MND	MND	MND	MND	2.18E-09	1.98E-09	0.00E+00	6.18E-09	-1.54E-09
Acidification potential	mol H ⁺ e	1.36E-02	9.63E-05	1.84E-03	1.55E-02	1.27E-04	1.87E-05	MND	MND	MND	MND	MND	MND	MND	1.11E-04	2.53E-05	0.00E+00	2.39E-04	-1.34E-05
EP-freshwater ²⁾	kg Pe	1.12E-04	2.57E-07	1.50E-05	1.27E-04	4.08E-07	8.39E-08	MND	MND	MND	MND	MND	MND	MND	6.80E-07	5.67E-08	0.00E+00	8.11E-07	-5.84E-08
EP-marine	kg Ne	4.42E-03	2.27E-05	4.19E-04	4.87E-03	2.44E-05	3.76E-05	MND	MND	MND	MND	MND	MND	MND	2.22E-05	5.58E-06	0.00E+00	2.28E-03	-2.66E-06
EP-terrestrial	mol Ne	5.22E-02	2.52E-04	3.91E-03	5.64E-02	2.72E-04	4.99E-05	MND	MND	MND	MND	MND	MND	MND	2.67E-04	6.19E-05	0.00E+00	8.44E-04	-3.16E-05
POCP (“smog”) ³⁾	kg NMVOCe	8.87E-03	8.70E-05	1.46E-03	1.04E-02	1.02E-04	2.49E-05	MND	MND	MND	MND	MND	MND	MND	6.63E-05	2.44E-05	0.00E+00	2.72E-04	-1.02E-05
ADP-minerals & metals ⁴⁾	kg Sbe	1.29E-06	1.08E-07	1.04E-05	1.18E-05	1.96E-07	2.32E-08	MND	MND	MND	MND	MND	MND	MND	3.62E-07	1.94E-08	0.00E+00	1.10E-07	-9.67E-09
ADP-fossil resources	MJ	1.03E+02	4.13E-01	8.77E+00	1.12E+02	6.15E-01	5.16E-02	MND	MND	MND	MND	MND	MND	MND	8.31E-01	1.27E-01	0.00E+00	5.72E-01	-2.19E-01
Water use ⁵⁾	m ³ e depr.	3.56E-01	1.95E-03	2.48E-01	6.07E-01	2.98E-03	5.76E-04	MND	MND	MND	MND	MND	MND	MND	7.24E-03	5.85E-04	0.00E+00	5.25E-03	5.55E-04

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	1.12E-07	2.39E-09	2.00E-08	1.34E-07	2.94E-09	3.14E-10	MND	MND	MND	MND	MND	MND	MND	5.71E-10	9.22E-10	0.00E+00	3.76E-09	-3.15E-11
Ionizing radiation ⁶⁾	kBq 11235e	9.28E-02	1.94E-03	2.98E-02	1.25E-01	2.87E-03	4.14E-04	MND	MND	MND	MND	MND	MND	MND	2.90E-02	6.54E-04	0.00E+00	3.52E-03	-2.56E-03
Ecotoxicity (freshwater)	CTUe	5.75E+01	3.89E-01	9.24E+00	6.71E+01	5.94E-01	1.63E-01	MND	MND	MND	MND	MND	MND	MND	5.07E-01	1.05E-01	0.00E+00	4.30E+00	-3.88E-02
Human toxicity, cancer	CTUh	3.53E-09	1.13E-11	2.48E-10	3.79E-09	1.85E-11	3.61E-12	MND	MND	MND	MND	MND	MND	MND	1.36E-11	2.74E-12	0.00E+00	1.88E-11	-5.47E-13
Human tox. non-cancer	CTUh	3.62E-07	3.52E-10	4.98E-09	3.67E-07	5.11E-10	1.10E-10	MND	MND	MND	MND	MND	MND	MND	4.06E-10	1.07E-10	0.00E+00	5.47E-10	1.22E-11
SQP ⁷⁾	-	8.61E+01	3.26E-01	7.01E+00	9.34E+01	3.65E-01	6.77E-02	MND	MND	MND	MND	MND	MND	MND	3.67E-01	1.48E-01	0.00E+00	1.10E+00	-2.80E-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	1.35E+00	5.29E-03	1.09E+00	2.44E+00	8.38E-03	2.44E-03	MND	MND	MND	MND	MND	MND	MND	1.78E-01	1.64E-03	0.00E+00	2.40E-02	-1.32E-02
Renew. PER as material	MJ	1.35E+00	0.00E+00	9.76E-01	2.32E+00	0.00E+00	-9.76E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-1.35E+00	0.00E+00
Total use of renew. PER	MJ	2.69E+00	5.29E-03	2.06E+00	4.76E+00	8.38E-03	-9.74E-01	MND	MND	MND	MND	MND	MND	MND	1.78E-01	1.64E-03	0.00E+00	-1.32E+00	-1.32E-02
Non-re. PER as energy	MJ	4.98E+01	4.13E-01	4.97E+00	5.51E+01	6.15E-01	5.16E-02	MND	MND	MND	MND	MND	MND	MND	8.31E-01	1.27E-01	0.00E+00	5.72E-01	-2.19E-01
Non-re. PER as material	MJ	4.98E+01	0.00E+00	3.80E+00	5.36E+01	0.00E+00	-3.80E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-4.98E+01	0.00E+00
Total use of non-re. PER	MJ	9.95E+01	4.13E-01	8.77E+00	1.09E+02	6.15E-01	-3.75E+00	MND	MND	MND	MND	MND	MND	MND	8.31E-01	1.27E-01	0.00E+00	-4.92E+01	-2.19E-01
Secondary materials	kg	0.00E+00	1.48E-04	5.80E-02	5.81E-02	2.48E-04	3.65E-05	MND	MND	MND	MND	MND	MND	MND	8.09E-05	3.57E-05	0.00E+00	1.72E-04	-6.11E-06
Renew. secondary fuels	MJ	0.00E+00	1.89E-06	1.40E-02	1.40E-02	3.40E-06	4.58E-07	MND	MND	MND	MND	MND	MND	MND	6.22E-07	3.15E-07	0.00E+00	6.26E-06	-1.39E-08
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	2.96E-03	5.29E-05	6.13E-03	9.14E-03	7.83E-05	3.46E-05	MND	MND	MND	MND	MND	MND	MND	1.71E-04	1.68E-05	0.00E+00	5.53E-04	-2.29E-05

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	4.61E-09	6.35E-04	2.54E-02	2.60E-02	1.01E-03	1.46E-04	MND	MND	MND	MND	MND	MND	MND	1.83E-03	1.36E-04	0.00E+00	0.00E+00	-1.78E-04
Non-hazardous waste	kg	1.25E-02	1.02E-02	5.01E-01	5.24E-01	1.60E-02	8.64E-02	MND	MND	MND	MND	MND	MND	MND	2.77E-02	2.37E-03	0.00E+00	1.83E+00	1.75E-02
Radioactive waste	kg	1.32E-04	2.72E-06	1.02E-05	1.45E-04	4.02E-06	1.82E-07	MND	MND	MND	MND	MND	MND	MND	7.27E-06	8.75E-07	0.00E+00	0.00E+00	-7.09E-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	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	0.00E+00	0.00E+00	0.00E+00	4.11E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+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	2.33E-02	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	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

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.

Sarah Curpen, as an authorized verifier acting for EPD Hub Limited.

16.05.2025

