ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

EPD HUB, HUB-3469
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GENERAL INFORMATION

MANUFACTURER

Manufacturer	Triton Showers
Address	Triton Road, Nuneaton, Warwickshire, CV11 4NR, United Kingdom
Contact details	trade_sales_team@tritonshowers.co.uk
Website	https://www.tritonshowers.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	NA
Scope of the EPD	Cradle to gate with options, A4-A5, B2, B6 and B7, and modules C1-C4, D
EPD author VP-004	George Kelly (Blue Marble Environmental Partnerships Ltd)
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier VP-055	Abderazak Guiz, 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	Triton T80
Additional labels	SP8008ZFF, SP8007ZFF, GEFFDU11
Product reference	T80
Place of production	Nuneaton, UK
Period for data	2023 (Calendar year)
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	+ 49.7 / - 0.0%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Unit
Declared unit mass	3.35 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	1.71E+01
GWP-total, A1-A3 ($kgCO_2e$)	1.59E+01
Secondary material, inputs (%)	33.2
Secondary material, outputs (%)	58.7
Total energy use, A1-A3 (kWh)	65.6
Net freshwater use, A1-A3 (m^3)	0.21

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Triton Showers is the UK's leading shower manufacturer, established in 1975. Known for providing energy-efficient electric and mixer showers, the company joined the 'Made in Britain' scheme in 2014, showcasing its commitment to British manufacturing. Triton is dedicated to delivering style, functionality, and value to its customers, with a focus on ease of installation and reliability. The company's mission is "to inspire everyone to shower sustainably." By using electric showers, households can save water and energy, contributing to a cleaner conscience amid rising living costs and resource demand. Choosing energy-efficient water heating appliances makes a meaningful difference. In May 2024, Triton was honoured with a King's Award for Enterprise, recognizing its commitment to Sustainable Development and its goal of achieving 'Net Zero by 2035.' This focus on sustainability has also earned the company accolades from the Bathroom Manufacturers Association (BMA) for three consecutive years, including the Workplace Initiative award in 2021 and Special Recognition in Driving Behaviour Change in 2022. Triton's efforts in behaviour change were further acknowledged by Planet Mark with the Sustainability Campaign award in 2023, followed by the Employee Engagement award in 2024. Triton Showers remains a leader in promoting sustainable practices in the industry.

PRODUCT DESCRIPTION

The T80 is a range of electric showers which is known for its ease of installation features. These include multiple pipe and cable entry points, removable entry trims and adjustable riser rail brackets. The range covers 7.5kW, 8.5kW, 9.5kW and 10.5kW electric showers, with a choice of a dual outlet option.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	26	Global
Minerals	-	-
Fossil materials	46	Global
Bio-based materials	28	Global

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.27
Biogenic carbon content in packaging, kg C	0.12

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Unit
Mass per declared unit	3.35 kg
Functional unit	One electric shower unit in use for 5 years
Reference service life	5 years

SUBSTANCES, REACH - VERY HIGH CONCERN

*No substances of very high concern are present

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		
×	×	×	×	×	MNR	×	MND	MND	MND	×	×	×	×	×	×	×		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production, packaging and other ancillary materials. Material losses during manufacturing and the handling of waste formed in the production processes at the manufacturing facilities are also included in this stage. This study also considers the losses during electricity transmission.

The product system is comprised of an assembly of components manufactured from various raw materials including fossil-based materials, metals, electronic components and components from mineral raw materials such as glass (A1).

The T80 product is received at the place of production as a multitude of parts and assembled where required and as such components and parts are shipped to Triton showers from a variety of locations and some packaging is included in this. The products are then manoeuvred and stored utilising electrical equipment (A3).
The environmental impacts considered for the product stage cover the manufacture of raw materials (A1) used in production as well as production processes, transportation to the place of production (A2), packaging materials and ancillary materials (A3) where applicable.
Transportation methodologies for module A2 assessed include road (3.5-7.5 and 16-32 tonne lorry), Rail (Diesel freight train) and sea transportation (Container Ship).
On top of this electricity and fuel consumption from assembly, storage and handling activities is included in this stage. Material losses and their waste during the manufacturing process (A3) have been deemed negligible and excluded from this study.
All transport to waste treatment sites has been conservatively assumed to be 100km. (Plumbing Manufacturers International, 2018[1]).

[1] Plumbing Manufacturers International (2018). https://www.safeplumbing.org/files/safeplumbing.org/documents/resources/PMI-Kitchen-and-Bath-Vessel-PCR-Guidance-Document-1-1.pdf

All production and material losses at this stage are assumed to undergo the same processes as at module C and to avoid duplication see treatment methodology and assumptions there.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurring from the place of production to the construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, and related infrastructure emissions. Transportation methodologies assessed include road (16-32 tonne lorry), Rail (Diesel freight train) and sea transportation (Container Ship).
Transportation has been split into Electrical Wholesale, Independent Merchants, Distributors and digital direct to customers.
For Digital sales a mean transportation distance of all other destinations has been utilised as an assumption, due to lack of data.

Packaging waste is assumed to reach end-of-life at the point of installation and is accounted for in module A5.
Any transportation to waste treatment is conservatively assumed to be 100km (Plumbing Manufacturers International, 2018[2]).
Wooden pallet packaging is assumed to be recycled via chipping processes (A5) (NWPCA, 2018[3]).
Plastic packaging film is considered to undergo municipal incineration (electricity and heat) due to low global recycling rates of plastic films. For example, approximately ~2% of flexible & film plastic packaging is recycled in the USA (The Recycling Partnership, 2021[4]).
Cardboard and paper reaching a waste state in module A5 are assumed to be a mixture of recycling & landfill, 80% and 20% respectively (Eurostat, 2022[5]).
All other forms of packaging (labels etc.) are conservatively assumed to reach landfill with no benefits (A5).

All other waste treatment at this stage is assumed to undergo the same processes as at module C and, to avoid duplication see treatment methodology and assumptions in the "Product End of Life (C1-C4, D)" section.

Installation procedures assumed to be undertaken are: (A5)

- Pipe runs - utilising an electric crimping tool and a hand-held gas blow torch at a 40% and 60% allocation of installation jobs respectively. Market data was analysed for power consumption of electric crimping tools and a conservative estimate of 90 watts and a continuous usage time of 4 minutes was assumed.
- Cable runs – Completed with an electric drill. Market data was analysed for power consumption and a conservative approach of ~1086 watts and a time of 4 minutes of continuous use was assumed.
- Final install – This includes a mixture of electronic and manual screwing of the unit to the wall and manual plumbing of connections (all push fits)

[2] Plumbing Manufacturers International (2018). https://www.safeplumbing.org/files/safeplumbing.org/documents/resources/PMI-Kitchen-and-Bath-Vessel-PCR-Guidance-Document-1-1.pdf
[3] National Wooden Pallet and Container Association (2018). https://palletfoundation.org/portfolio-item/landfill-avoidance-march-2018/
[4] The Recycling Partnership (2021). https://recyclingpartnership.org/wp-content/uploads/dlm_uploads/2021/04/FF_Whitepaper_final.pdf
[5] Eurostat (2022). https://ec.europa.eu/eurostat/web/waste/database?node_code=env_waspac

PRODUCT USE AND MAINTENANCE (B1-B7)

The T80 has been assumed to align with an average 5-year product lifetime. Impacts arising from maintenance activities carried out are considered in module B2 (Maintenance). Three maintenance activities have been considered in this module:

- General cleaning – 60 activities across the reference lifetime.
- Shower head descaling – 20 activities across the reference lifetime.
- Rinse off – Common to all activities therefore across the 80 activities above during the reference lifetime.

Within this 5-year reference lifetime, impacts arriving from operational energy and water consumption are considered in modules B6 & 7 respectively.

Assumptions within this period:

- Number of users – 2.4 people (ONS survey, 2021[6])
- Number of weekly showers per user – 4.4 uses (Energy Savings Trust report 2013[7])
- Average estimated 5-year product lifetime
- Average shower duration – 7.40 minutes (Unilever, 2015[8])

For waste treatment and processing within this module, transportation distances have been conservatively assumed to be 100km (Plumbing Manufacturers International, 2018[9]).

As components covered for waste treatment are also covered in end-of-life they are assumed to undergo the same processes as in module C. Therefore, to avoid duplication see treatment methodology and assumptions in the "Product End of Life" section.

PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, the product is assumed to be removed from the wall utilising (C1). The same steps as those taken to install the product have been conservatively assumed to be undertaken in module C1. This ensures the complete removal of the product to prepare for waste treatment.

Transportation to and between waste treatments is assumed to be 100km via 16-32 tonne lorry (C2).

The entire product is assumed to undergo manual and mechanical treatment to separate materials and allow for the treatment of individual commodities.

Steel materials are then assumed to be recycled at a rate of 85% with the remaining 15% reaching landfill (World Steel Association, 2021[10]).

[6] Office of National statistics (2021) https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/bulletins/householdandresidentcharacteristicsenglandandwales/census2021#:~:text=Dividing%20the%20overall%20number%20of,residents%20per%20household%20in%20Wales).

[7] Energy Savings Trust (2013) https://www.energysavingtrust.org.uk/sites/default/files/reports/AtHomewithWater%287%29.pdf

[8] Unilever (2015) https://www.watefnetwork.co.uk/files/default/resources/Conference_2015/Presentations/06-HendrickxFinal.pdf

[9] Plumbing Manufacturers International (2018). https://www.safeplumbing.org/files/safeplumbing.org/documents/resources/PMI-Kitchen-and-Bath-Vessel-PCR-Guidance-Document-1-1.pdf

[10] World Steel Association (2021). Life cycle inventory (LCI) study. https://worldsteel.org/wp-content/uploads/2021-LCA-Study-Report.pdf

Aluminium and non-ferrous metals are assumed to be recycled at a rate of 90% with the remaining 10% reaching landfill (European Aluminium Association, 2020[11]).

Metals for recycling are collected, sorted and pressed (C3). Metals for landfill receive no further processing prior to waste treatment (C4)

All plastics within the product have been assumed to be split across waste treatment streams with 26% recycled, 47.5% energy recovery (C3) and 26.5% reaching landfill with no further benefits (C4) (Plastics Europe, 2021)[12].

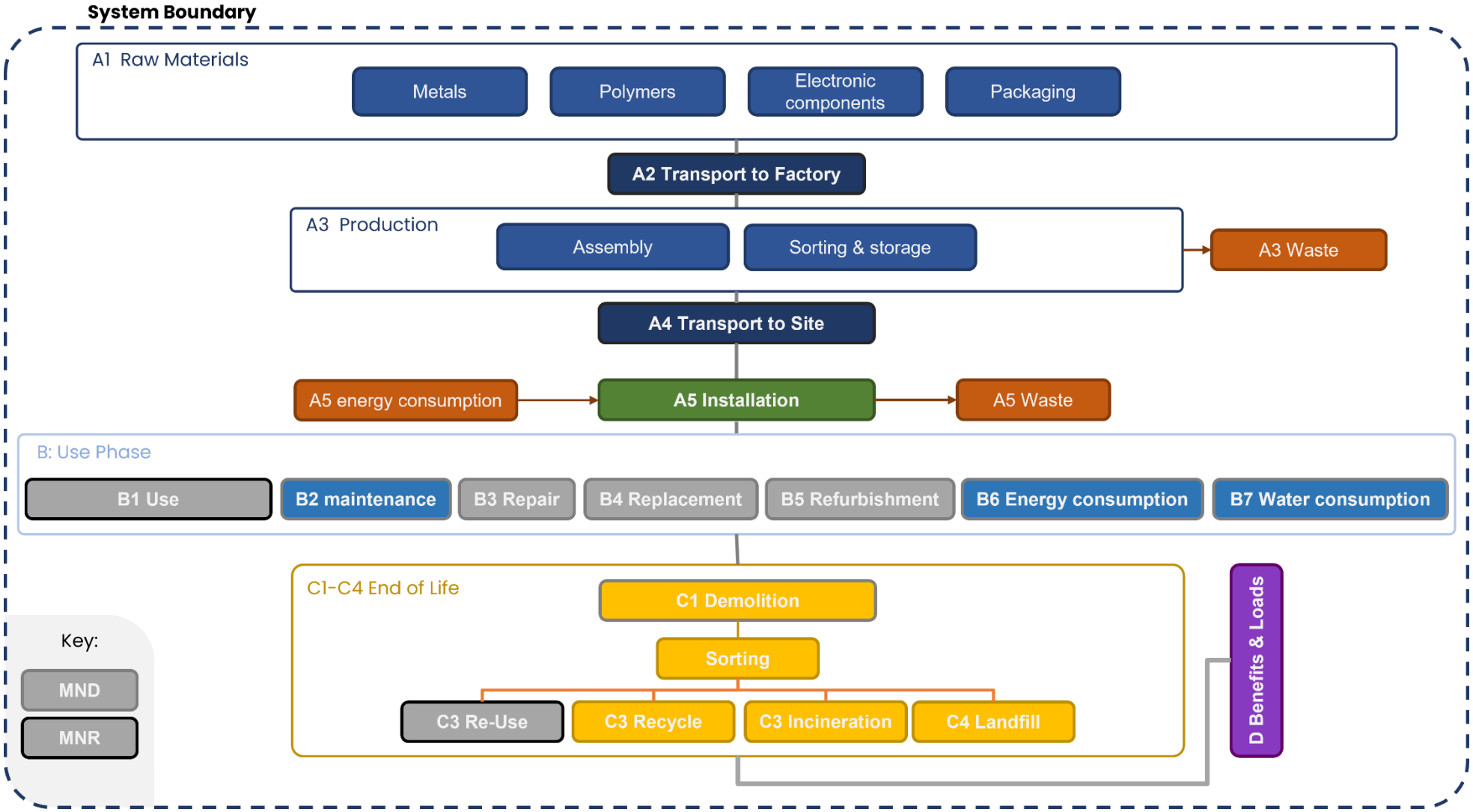
For all electronic components, an assumed treatment split of 12% recycling (C3) and 88% landfilled (C4) with no further benefits is employed (GLOBAL EWASTE MONITOR. 2024[13]).

Electronics assumed to be recycled, undergo Hydro-metallurgical treatment and mechanical separation (C3). Whereas those landfilled are treated as such with no further benefits (C4).

Module D accounts for the benefits and loads beyond the system boundary. The benefits from the provision of recyclates (aluminium, scrap steel, wood, cardboard packaging, etc.) to subsequent lifecycles and are expressed as a negative figure.

[11] European Aluminium Association (2020). European Aluminium General Programme Instructions. https://european-aluminium.eu/wp-content/uploads/2022/12/EPD-programme-rules-3rd-rev-European-Aluminium.pdf
[12] Plastics Europe (2021). https://plasticseurope.org/wp-content/uploads/2021/12/Plastics-the-Facts-2021-web-final.pdf
[13] Global E-waste Monito (2024). https://ewastemonitor.info/wp-content/uploads/2024/03/GEM_2024_18-03_web_page_per_page_web.pdf

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

AVERAGES AND VARIABILITY

Type of average	Product specific averaging
Averaging method	Representative product
Variation in GWP-fossil for A1-A3	+ 49.7 / - 0.0 %

This EPD applies to Triton showers T80 models 7.5kw, 8.5kw and 10.5kw.

In order to create a representative average, the following product systems were considered (Retail SKUs in closed brackets):

- Triton Showers T80 7.5 kw - SP8007ZFF (SFX8007EFPW)
  (taken to be the **minimum** case product system for GWP fossil)
- Triton Showers T80 8.5 kw - SP8008ZFF (SFX8008EFPW)
  (the **base case**)
- Triton Showers T80 10.5 kw - GEFFDU11 (REEFDU11)
  (taken to be the **maximum** case product system for GWP fossil)

The base case product system was selected as highly typical due to its typical raw material composition and on account of positioning the product within the middle of Triton Showers T80 commercial offerings when considering function.

The combination of components within this average all share an equivalent purpose. Product systems within this range have very similar raw material composition.

For the variance against the base case GWP fossil is shown below:

MAX GWP (Fossil) value: 2.56E+01 kg CO_2e / + 49.7%
MIN GWP (Fossil) value: 1.71E+01 kg CO_2e / - 0.0%
Base Case Product System (Fossil) value: 1.71E+01 kg CO_2e

Variance from base case product (max +/- 50%):

+ 49.7 % Max
- 0.0 % Min

Products covered in this EPD have been selected as representations of the T80 range, all SKUs of which are detailed below. Those in bold are the direct SKUs investigated in this EPD (or the retail equivalent SKU number).

Full SKU numbers for T80 range:

SP8008ZFF, **SFX8008EFPW**, SW8008EFPW, SW8008EF, **SP8007ZFF**, **SFX8007EFPW**, **GEFFDU11**, **REEFDU11**, KEEFDU11, SP8007PF, SP8001ZFF, SFX8001EFPW, ECO8008ZFF, ECO8008PF, SP8009PF, SP8CHR8ZFF, GEFFDU91, KEEFDU91, REEFDU91, SP8CHR9ZFF, SP8CHR1ZFF, SP8001PF, SP8008ZFFTHM, SFX8008EFPTH, SW8008EFPTH, SP8009ZFFTHM, SFX8009EFPTH, SW8009EFPTH, SP8001ZFFTHM, SFX8001EFPTH, SP8008PF, SP8009ZFF, SFX8009EFPW, SW8009EFPW, SW8009EF

As the minimum, base case and maximum products have been selected based on the variation within the range, this EPD can been seen as representative of all above SKUs.

LCA SOFTWARE AND BIBLIOGRAPHY

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

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	1.43E+01	1.11E+00	5.00E-01	1.59E+01	9.98E-02	8.86E-01	MNR	2.02E+01	MND	MND	MND	6.89E+02	2.36E+01	1.25E+00	4.77E-02	4.22E+00	2.36E-01	-4.78E+00
GWP – fossil	kg CO_2e	1.53E+01	1.11E+00	7.63E-01	1.71E+01	9.97E-02	8.53E-01	MNR	1.78E+01	MND	MND	MND	6.87E+02	2.35E+01	1.25E+00	4.77E-02	3.44E+00	3.96E-02	-4.31E+00
GWP – biogenic	kg CO_2e	-9.84E-01	3.87E-05	-2.64E-01	-1.25E+00	0.00E+00	3.32E-02	MNR	-3.33E-16	MND	MND	MND	4.01E-01	4.70E-02	0.00E+00	0.00E+00	7.87E-01	1.97E-01	-4.75E-01
GWP – LULUC	kg CO_2e	3.46E-02	4.91E-04	7.62E-04	3.59E-02	3.52E-05	2.10E-04	MNR	2.48E+00	MND	MND	MND	8.55E-01	4.78E-02	8.16E-05	1.68E-05	4.79E-04	3.51E-06	-3.06E-03
Ozone depletion pot.	kg $CFC\text{-}_{11}e$	6.30E-06	2.01E-08	3.10E-08	6.35E-06	1.98E-09	1.45E-08	MNR	4.34E-07	MND	MND	MND	3.48E-05	3.37E-07	2.71E-08	9.48E-10	3.45E-09	1.46E-10	-1.68E-06
Acidification potential	mol H^+e	2.09E-01	1.20E-02	1.83E-03	2.23E-01	3.12E-04	1.72E-03	MNR	1.25E-01	MND	MND	MND	2.55E+00	1.25E-01	1.83E-03	1.49E-04	2.16E-03	4.05E-05	-1.21E-01
EP-freshwater[2)]	kg Pe	1.50E-02	7.17E-05	9.18E-05	1.51E-02	6.61E-06	5.87E-05	MNR	1.91E-02	MND	MND	MND	1.23E-01	1.43E-02	4.52E-05	3.16E-06	1.22E-04	5.75E-07	-9.24E-03
EP-marine	kg Ne	2.01E-02	3.13E-03	5.23E-04	2.38E-02	1.05E-04	7.06E-04	MNR	4.58E-02	MND	MND	MND	5.52E-01	2.41E-02	6.24E-04	5.02E-05	8.93E-04	8.40E-04	-7.58E-03
EP-terrestrial	mol Ne	2.17E-01	3.46E-02	5.22E-03	2.57E-01	1.14E-03	5.88E-03	MNR	2.83E-01	MND	MND	MND	6.39E+00	2.32E-01	6.75E-03	5.46E-04	7.26E-03	1.64E-04	-1.00E-01
POCP ("smog")[3)]	kg NMVOCe	7.09E-02	1.07E-02	2.07E-03	8.37E-02	4.89E-04	2.68E-03	MNR	8.12E-02	MND	MND	MND	1.79E+00	7.69E-02	3.56E-03	2.34E-04	2.00E-03	6.48E-05	-3.04E-02
ADP-minerals & metals[4)]	kg Sbe	2.25E-03	3.73E-06	5.76E-06	2.26E-03	3.26E-07	2.18E-06	MNR	2.30E-04	MND	MND	MND	1.16E-02	1.34E-04	5.05E-06	1.56E-07	2.50E-06	1.20E-08	-1.57E-03
ADP-fossil resources	MJ	2.44E+02	1.49E+01	1.51E+01	2.74E+02	1.40E+00	1.12E+01	MNR	2.83E+02	MND	MND	MND	1.87E+04	4.19E+02	2.02E+01	6.69E-01	3.70E+00	1.24E-01	-7.06E+01
Water use[5)]	m^3e depr.	7.20E+00	7.28E-02	1.41E-01	7.41E+00	6.88E-03	4.64E-02	MNR	2.54E+01	MND	MND	MND	1.84E+02	1.16E+01	8.02E-02	3.29E-03	3.08E-01	6.07E-04	-2.29E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1.07E-06	5.62E-08	1.74E-08	1.14E-06	7.84E-09	2.72E-08	MNR	1.43E-06	MND	MND	MND	1.58E-05	1.42E-06	6.64E-09	3.75E-09	2.79E-08	8.84E-10	-3.67E-07
Ionizing radiation[6)]	kBq U235e	8.31E-01	2.17E-02	2.87E-01	1.14E+00	1.79E-03	3.25E-02	MNR	1.13E+00	MND	MND	MND	6.56E+02	8.59E+00	3.70E-03	8.53E-04	2.40E-02	1.27E-04	-4.99E-01
Ecotoxicity (freshwater)	CTUe	2.45E+03	2.20E+00	1.70E+00	2.45E+03	1.84E-01	5.57E+00	MNR	3.23E+02	MND	MND	MND	1.88E+03	8.02E+01	1.43E+00	8.79E-02	3.83E+01	1.55E+00	-7.36E+02
Human toxicity, cancer	CTUh	1.48E-05	2.13E-10	5.81E-10	1.48E-05	1.70E-11	1.42E-10	MNR	2.21E-08	MND	MND	MND	2.43E-07	2.92E-08	1.40E-10	8.12E-12	8.41E-10	4.59E-12	-3.88E-06
Human tox. non-cancer	CTUh	4.73E-06	7.59E-09	6.86E-09	4.75E-06	8.80E-10	4.17E-09	MNR	2.39E-07	MND	MND	MND	1.16E-05	1.33E-06	5.24E-09	4.20E-10	7.64E-08	8.93E-10	-1.96E-06
SQP[7)]	-	9.36E+01	5.04E+00	3.96E+01	1.38E+02	8.34E-01	1.19E+00	MNR	3.46E+02	MND	MND	MND	1.13E+04	9.82E+01	5.61E-01	3.98E-01	2.26E+00	2.80E-01	-4.74E+01

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	1.16E+01	2.89E-01	3.07E+00	1.49E+01	2.42E-02	-8.74E+00	MNR	9.29E+01	MND	MND	MND	6.25E+03	7.50E+01	6.11E-02	1.16E-02	3.84E-01	2.01E-03	-7.42E+00
Renew. PER as material	MJ	1.09E+01	0.00E+00	5.99E+00	1.69E+01	0.00E+00	1.99E+00	MNR	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.72E+00	-2.18E+00	3.71E+00
Total use of renew. PER	MJ	2.25E+01	2.89E-01	9.06E+00	3.18E+01	2.42E-02	-6.75E+00	MNR	9.29E+01	MND	MND	MND	6.25E+03	7.50E+01	6.11E-02	1.16E-02	-8.33E+00	-2.18E+00	-3.70E+00
Non-re. PER as energy	MJ	1.92E+02	1.49E+01	1.43E+01	2.21E+02	1.40E+00	1.03E+01	MNR	2.57E+02	MND	MND	MND	1.87E+04	4.19E+02	2.02E+01	6.69E-01	-4.02E+01	-1.49E+01	-7.53E+01
Non-re. PER as material	MJ	5.23E+01	0.00E+00	7.52E-01	5.31E+01	0.00E+00	1.09E-04	MNR	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.86E+01	-1.37E+01	-2.11E+01
Total use of non-re. PER	MJ	2.44E+02	1.49E+01	1.51E+01	2.74E+02	1.40E+00	1.03E+01	MNR	2.57E+02	MND	MND	MND	1.87E+04	4.19E+02	2.02E+01	6.69E-01	-7.88E+01	-2.86E+01	-9.64E+01
Secondary materials	kg	1.11E+00	7.81E-03	1.66E-02	1.14E+00	6.42E-04	5.45E-03	MNR	8.82E-02	MND	MND	MND	3.32E+00	1.59E+00	2.77E-03	3.07E-04	2.82E-03	4.29E-05	9.96E-01
Renew. secondary fuels	MJ	9.79E-02	6.85E-05	1.28E-01	2.26E-01	8.10E-06	2.88E-05	MNR	2.34E-03	MND	MND	MND	2.39E-02	1.06E-03	6.43E-06	3.87E-06	1.68E-04	8.06E-07	-3.77E-03
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.00E-01	1.98E-03	3.41E-03	2.06E-01	1.89E-04	6.83E-04	MNR	6.57E-01	MND	MND	MND	4.39E+00	7.86E+01	1.99E-03	9.01E-05	6.84E-03	-1.58E-03	-7.71E-02

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	3.62E+00	2.22E-02	2.15E-02	3.67E+00	2.01E-03	2.14E-02	MNR	1.74E+00	MND	MND	MND	2.86E+01	2.57E+00	1.31E-02	9.60E-04	1.90E-01	2.08E-04	-7.12E-01
Non-hazardous waste	kg	6.37E+01	4.78E-01	7.24E-01	6.49E+01	4.24E-02	9.43E-01	MNR	7.84E+01	MND	MND	MND	6.42E+02	7.73E+02	2.66E-01	2.03E-02	1.92E+00	2.14E+00	-3.25E+01
Radioactive waste	kg	2.05E-04	5.42E-06	6.29E-05	2.73E-04	4.44E-07	7.36E-06	MNR	2.86E-04	MND	MND	MND	1.43E-01	2.20E-03	8.45E-07	2.12E-07	5.88E-06	3.11E-08	-1.14E-04

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	MNR	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	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	7.01E-01	MNR	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E+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	2.30E-02	MNR	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.76E-01	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	2.45E-01	2.45E-01	0.00E+00	7.02E-01	MNR	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	1.53E+01	1.10E+00	7.91E-01	1.72E+01	9.91E-02	1.01E+00	MNR	2.02E+01	MND	MND	MND	6.86E+02	2.35E+01	1.25E+00	4.73E-02	3.46E+00	3.79E-02	-4.26E+00
Ozone depletion Pot.	kg CFC_{-11}e	5.40E-06	1.60E-08	2.52E-08	5.44E-06	1.58E-09	1.17E-08	MNR	3.97E-07	MND	MND	MND	2.86E-05	2.86E-07	2.16E-08	7.54E-10	2.96E-09	1.16E-10	-1.44E-06
Acidification	kg SO_2e	1.81E-01	9.48E-03	1.44E-03	1.92E-01	2.37E-04	1.32E-03	MNR	9.77E-02	MND	MND	MND	2.02E+00	1.04E-01	1.39E-03	1.13E-04	1.66E-03	3.00E-05	-1.06E-01
Eutrophication	kg PO_4^3e	2.67E-02	1.31E-03	3.66E-03	3.17E-02	6.03E-05	4.14E-04	MNR	1.76E-01	MND	MND	MND	3.41E-01	1.77E-02	3.02E-04	2.88E-05	4.32E-04	4.39E-05	-8.50E-03
POCP (“smog”)	kg C_2H_4e	8.88E-03	5.51E-04	1.68E-04	9.60E-03	2.26E-05	2.47E-04	MNR	8.90E-03	MND	MND	MND	1.40E-01	7.98E-03	1.48E-04	1.08E-05	1.31E-04	7.87E-06	-4.85E-03
ADP-elements	kg Sbe	2.24E-03	3.63E-06	5.70E-06	2.25E-03	3.19E-07	2.14E-06	MNR	2.02E-04	MND	MND	MND	1.16E-02	1.26E-04	4.96E-06	1.52E-07	2.39E-06	1.16E-08	-1.57E-03
ADP-fossil	MJ	2.26E+02	1.45E+01	1.12E+01	2.52E+02	1.37E+00	1.08E+01	MNR	2.64E+02	MND	MND	MND	9.95E+03	2.68E+02	2.01E+01	6.55E-01	3.32E+00	1.22E-01	-6.28E+01

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.

Abderazak Guiz, as an authorized verifier acting for EPD Hub Limited.
16.06.2025