



BRISTAN GROUP

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Artisan Thermostatic Bath Shower Mixer Bristan Group



EPD HUB, HUB-6572

Published on 04.06.2026, last updated on 04.06.2026, valid until 03.06.2031

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.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Bristan Group
Address	Birch Coppice Business Park, Dordon, Tamworth, B78 1SG, UK
Contact details	enquire@bristan.com
Website	https://www.bristan.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 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	n/a
Scope of the EPD	Cradle to gate with option 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: ☐ Internal verification ☒ External verification
EPD verifier	D.V as an authorized verifier for EPD Hub

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	Artisan Thermostatic Bath Shower Mixer
Additional labels	n/a
Product reference	AR2 THBSM C
Place(s) of raw material origin	China
Place of production	Fujian, China
Place(s) of installation and use	UK
Period for data	Calendar year 2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	n/a
A1-A3 Specific data (%)	57.5

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Unit
Declared unit mass	2.073 kg
Mass of packaging	0.92 kg
GWP-fossil, A1-A3 (kgCO₂e)	26.2
GWP-total, A1-A3 (kgCO₂e)	24.9
Secondary material, inputs (%)	14.2
Total energy use, A1-A3 (kWh)	97.9
Net freshwater use, A1-A3 (m³)	0.4

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Bristan Group offers a complete spectrum of innovative taps, showers and accessories for domestic, commercial and industrial specifications. Our product ranges are available in a range of styles and price points to suit every application – from luxury homes and hotels, hospitals and schools, to student accommodation and leisure centres.

PRODUCT DESCRIPTION

Deck mounted bath shower mixer with chrome plated brass construction to ensure durability. The thermostatic cartridge means that flow and temperature are controlled separately maintaining water temperature.

Specification	AR2 THBSM C
Product Type	Bath Shower Mixer
Main Construction Material	Brass
Mount Type	Deck Mounted
Handle Type	Oval Handles
Connection Inlet	¾" BSP
Connection Outlet	G ½"
Number of Tap Holes	2
Valve / Cartridge Type	¾" Compression Valve & Thermostatic Cartridge
Plumbing System Requirements	Nominally Balanced Supply Pressures Only
Minimum Dynamic Pressure (bar)	0.5 bar
Maximum Dynamic Pressure (bar)	5.0 bar
Maximum Hot Water Temperature °C	80
Maximum Static Pressure (bar)	10 bar
Flow Type	Single
Isolation Included	No

Further information can be found at: <https://www.bristan.com/>



Figure 1. Bristan Artisan Thermostatic Bath Shower Mixer Chrome (AR2 THBSM C)

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	96	China
Minerals	n/a	n/a
Fossil materials	4	China
Bio-based materials	n/a	n/a

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	0.390

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Unit
Mass per declared unit	2.073 kg
Functional unit	n/a
Reference service life	n/a

SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
Lead	231-100-4	7439-92-1

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

Modules not declared = ND. 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.

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

The product is comprised of an assembly of components / materials (copper ingot, stainless steel, EPDM, POM, ABS + others) received by the manufacturing facility in China. All raw materials are sourced from suppliers within China. Manufacturing stages involve casting of copper ingot, precision milling of copper tube, polishing, bright chrome plating and finally assembly with purchased components.

Manufacturing involves electricity drawn of the grid in China. The sources for electricity are listed in the scenario documentation at the end of this EPD.

The factory consumes water in the manufacturing process and wastewater treatment is accounted for. Treatment of other manufacturing waste has been included within the scope of the study.

There is no production loss as all scrap metal is recollected as a raw material input to the casting process.

Once assembled, the product is packed in a combination of plastic 'bubble wrap', kraft paper and cardboard box. A paper manual is also included as a packaging material.

The product is then shipped via road to a port within China, then via container ship to a port within the UK, finally the product is transported via road to the UK warehouse. The UK warehouse uses a combination of electricity drawn from the UK grid and on-site photovoltaics.

TRANSPORT AND INSTALLATION (A4-A5)

This EPD does not disclose the transport to site (A4) phase. Air, soil, and water impacts during the transportation to site phase has not been studied.

Transportation to site varies within the UK and it is assumed that the EPD user will make use of their own transport scenarios.

As installation requires no energy or additional materials installation impacts are assumed to be zero.

Packaging waste is assumed to reach end-of-life at the point of installation and therefore the results in module A5 relate to packaging end-of-life. The balancing-out reporting of biogenic CO₂ of packaging is included in module A5.

PRODUCT USE AND MAINTENANCE (B1-B7)

Once installed the product remains in-situ until it is removed at the end of its life. The use phase (B1-B7) modules have not been included because there is no PCR available for this type of product that defines the use phase scenario to be considered.

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 can be manually removed (no energy required). It is assumed that 100% of the product is collected at the end of its life. The transport to waste treatment / disposal is estimated at 80km via 16-32 tonne lorry (EURO 6).

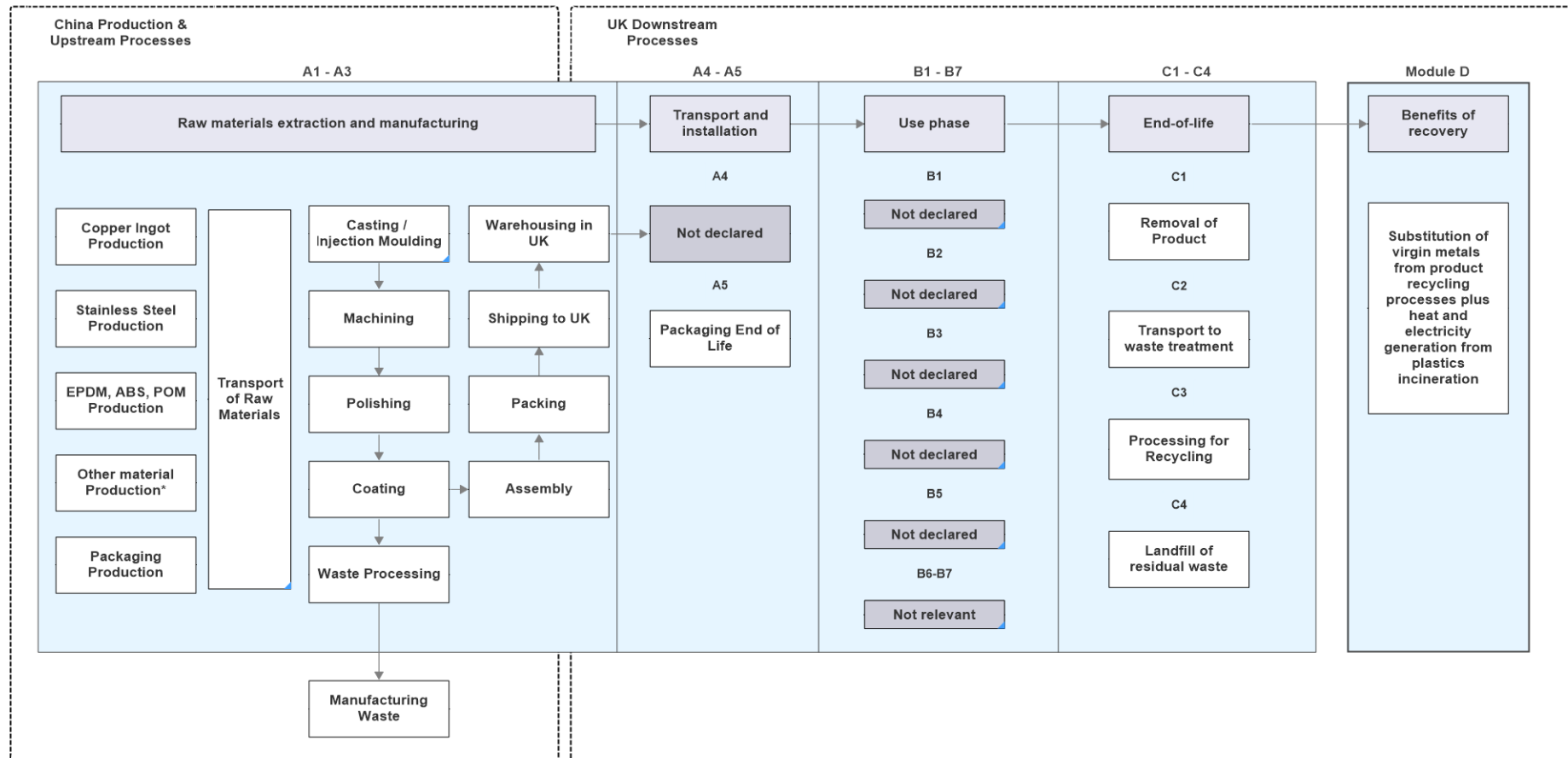
The metal components of the product (>90%) are assumed to be recycled at a rate of 90% with the remaining 10% assumed to reach landfill alongside

other items of construction waste. Metals for recycling are collected, sorted and pressed. Metals for landfill receive no further processing prior to waste treatment. The end-of-life scenario for metals is based on the recycling rate for pipes used as MEP equipment contained in RICS v2.

The smaller fossil-based material components (ABS, POM etc.) are assumed to enter the metal recycling stream at the same time as the metal components but are ultimately incinerated with energy recovery. The efficiency of the combined heat and power (CHP) plant is assumed to be 11% for electrical energy and 62% for thermal energy.

Module D accounts for the benefits and loads beyond the system boundary. The benefits from the provision of recyclates (scrap metal) to subsequent lifecycles are expressed as a negative figure, after first deducting the loads of the recycling processes. The avoided impacts from heat and electricity generation in plastics incineration as a result of the energy-from-waste plant are also considered as a benefit.

SYSTEM BOUNDARY DIAGRAM



*Generally smaller quantities of other materials with detailed material list being confidential information

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.

All infrastructure (e.g. recycling facilities, transportation systems) and capital goods (e.g. production equipment) have been excluded for upstream, core and downstream processes.

In addition, the following processes have been excluded due to their expected negligible effects on overall results:

- Coating sand / grinding belt as consumables whose impact is negligible on a per unit basis
- Business travel
- Factory maintenance activities
- Factory and warehouse municipal waste not falling within existing recycling streams
- Packaging of incoming raw materials received by the Chinese factories

- Office / sales / administrative activities not directly related to the production of the product

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	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

The allocations in the Ecoinvent 3.10.1 datasets used in this study follow the Ecoinvent system model 'Allocation, cut-off, 15804:2012+A2:2019. The methodological choices for allocation for reuse, recycling and recovery have been set according to the polluter pays principle (PPP).

Scenarios included in the LCA including End-of-Life scenarios are based on realistic scenarios which are currently in use and are representative for one of the most likely scenario alternatives.

PRODUCT & MANUFACTURING SITES GROUPING

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

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 System Verification 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'.

End of life scenarios for the product are in line with pipes as a MEP component and have been taken from Royal Institution of Chartered Surveyors (RICS) (2023) Whole life carbon assessment for the built environment, 2nd edition, September 2023, Version 3 (August 2024), effective from 1 July 2024. London: RICS.

The justification for incineration of the mixed plastic components is based on these being considered a 'sorting residue' from metal recycling processes as recognised in UK waste management guidance, see: Department for

Environment, Food & Rural Affairs (DEFRA) (2025) UK statistics on waste. London: UK Government

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 ₂ e	1.02E+01	1.22E+00	1.34E+01	2.49E+01	ND	1.40E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.15E-02	2.59E-01	1.24E-03	-8.75E+00
GWP – fossil	kg CO ₂ e	1.03E+01	1.22E+00	1.47E+01	2.62E+01	ND	5.38E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.15E-02	2.59E-01	1.24E-03	-8.74E+00
GWP – biogenic	kg CO ₂ e	-8.16E-02	2.15E-04	-1.34E+00	-1.42E+00	ND	1.34E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.32E-06	-9.85E-05	-3.94E-07	-1.58E-03
GWP – LULUC	kg CO ₂ e	1.76E-02	6.01E-04	3.37E-02	5.20E-02	ND	2.09E-05	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.13E-05	5.14E-05	7.07E-07	-1.15E-02
Ozone depletion pot.	kg CFC ₁₁ e	1.88E-07	1.82E-08	1.05E-07	3.12E-07	ND	3.15E-10	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.27E-10	6.23E-10	3.58E-11	-7.03E-08
Acidification potential	mol H ⁺ e	3.40E-01	2.37E-02	9.09E-02	4.55E-01	ND	1.51E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.55E-05	5.29E-04	8.77E-06	-1.21E-01
EP-freshwater ²⁾	kg Pe	1.27E-01	5.78E-05	3.42E-03	1.30E-01	ND	7.96E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.12E-06	2.66E-05	1.02E-07	-1.94E-01
EP-marine	kg Ne	5.73E-02	5.96E-03	1.22E-02	7.55E-02	ND	1.54E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.57E-05	1.35E-04	3.34E-06	-7.56E-02
EP-terrestrial	mol Ne	8.16E-01	6.61E-02	1.16E-01	9.98E-01	ND	4.84E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.70E-04	1.44E-03	3.65E-05	-1.11E+00
POCP (“smog”) ³⁾	kg NMVOCe	1.73E-01	1.87E-02	3.29E-02	2.24E-01	ND	1.86E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.09E-04	4.16E-04	1.31E-05	-2.06E-01
ADP-minerals & metals ⁴⁾	kg Sbe	5.03E-03	2.25E-06	5.12E-06	5.04E-03	ND	2.21E-07	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.05E-07	2.87E-06	1.97E-09	-1.67E-03
ADP-fossil resources	MJ	1.28E+02	1.57E+01	1.69E+02	3.13E+02	ND	3.07E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.43E-01	5.83E-01	3.04E-02	-9.26E+01
Water use ⁵⁾	m ³ e depr.	6.43E+00	5.64E-02	1.26E+02	1.32E+02	ND	9.04E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.20E-03	2.41E-02	8.76E-05	-3.37E+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, 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
Particulate matter	Incidence	1.88E-06	5.78E-08	1.31E-07	2.07E-06	ND	5.96E-09	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.32E-09	6.77E-09	2.00E-10	-2.08E-06
Ionizing radiation ⁶⁾	kBq 11235e	9.23E-01	1.04E-02	3.78E-01	1.31E+00	ND	1.05E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.71E-04	4.66E-03	1.91E-05	-2.71E-01
Ecotoxicity (freshwater)	CTUe	1.05E+04	1.65E+00	3.78E+01	1.06E+04	ND	1.10E+01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.89E-02	7.44E-01	2.55E-03	-2.33E+03
Human toxicity, cancer	CTUh	2.67E-07	2.38E-10	1.04E-09	2.69E-07	ND	4.41E-11	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.28E-12	5.46E-11	2.28E-13	1.08E-08
Human tox. non-cancer	CTUh	2.21E-06	6.29E-09	8.08E-08	2.29E-06	ND	1.97E-09	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.80E-10	3.10E-09	5.24E-12	1.69E-06
SQP ⁷⁾	-	1.81E+02	4.56E+00	5.63E+01	2.42E+02	ND	2.36E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.68E-01	1.06E+00	5.98E-02	-1.58E+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	4.08E+01	1.67E-01	4.92E-01	4.14E+01	ND	-1.42E+01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.75E-03	1.03E-01	2.93E-04	-4.49E+01
Renew. PER as material	MJ	2.32E-04	0.00E+00	0.00E+00	2.32E-04	ND	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-2.32E-04	0.00E+00	0.00E+00
Total use of renew. PER	MJ	4.08E+01	1.67E-01	4.92E-01	4.14E+01	ND	-1.42E+01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.75E-03	1.02E-01	2.93E-04	-4.49E+01
Non-re. PER as energy	MJ	1.25E+02	1.57E+01	1.70E+02	3.11E+02	ND	-5.03E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.43E-01	-2.75E+00	3.04E-02	-9.26E+01
Non-re. PER as material	MJ	3.31E+00	0.00E+00	0.00E+00	3.31E+00	ND	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-3.31E+00	0.00E+00	0.00E+00
Total use of non-re. PER	MJ	1.28E+02	1.57E+01	1.70E+02	3.14E+02	ND	-5.03E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.43E-01	-6.06E+00	3.04E-02	-9.26E+01
Secondary materials	kg	2.94E-01	7.35E-03	7.79E-01	1.08E+00	ND	5.18E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.06E-04	6.99E-04	7.63E-06	1.96E+00
Renew. secondary fuels	MJ	4.27E-03	4.66E-05	7.39E-02	7.82E-02	ND	3.09E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.60E-06	3.19E-05	1.58E-07	-5.46E-03
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	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	1.71E-01	1.49E-03	2.30E-01	4.03E-01	ND	-1.89E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.03E-05	5.34E-04	3.16E-05	-6.06E-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	2.55E+00	2.29E-02	6.18E-02	2.63E+00	ND	5.35E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.44E-04	7.30E-03	3.35E-05	-1.92E+00
Non-hazardous waste	kg	7.65E+01	3.71E-01	2.88E+00	7.98E+01	ND	3.76E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.36E-02	2.29E-01	7.66E-04	2.76E+01
Radioactive waste	kg	2.33E-04	2.55E-06	7.11E-05	3.07E-04	ND	2.59E-07	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.42E-07	1.19E-06	4.65E-09	-5.97E-05

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	ND	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	7.60E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	1.78E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	9.18E-02	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	4.77E-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	ND	2.00E-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	ND	2.77E-01	ND	ND	ND	ND	ND	ND	ND	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 ₂ e	1.03E+01	1.21E+00	1.47E+01	2.62E+01	ND	1.57E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.13E-02	2.59E-01	1.23E-03	-8.71E+00
Ozone depletion Pot.	kg CFC ₁₁ e	1.62E-07	1.45E-08	9.20E-08	2.68E-07	ND	2.60E-10	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.99E-10	5.18E-10	2.85E-11	-5.88E-08
Acidification	kg SO ₂ e	2.66E-01	1.89E-02	7.81E-02	3.63E-01	ND	1.16E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.26E-05	4.21E-04	6.49E-06	-4.84E-02
Eutrophication	kg PO ₄ ³ e	4.83E-02	2.21E-03	1.45E-02	6.50E-02	ND	1.26E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.33E-05	6.85E-05	2.06E-06	-6.51E-02
POCP (“smog”)	kg C ₂ H ₄ e	1.21E-02	9.81E-04	3.25E-03	1.63E-02	ND	3.65E-05	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.57E-06	2.52E-05	6.14E-07	-3.35E-03
ADP-elements	kg Sbe	5.02E-03	2.20E-06	5.10E-06	5.03E-03	ND	2.17E-07	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.02E-07	2.86E-06	1.93E-09	-1.66E-03
ADP-fossil	MJ	1.14E+02	1.55E+01	1.66E+02	2.95E+02	ND	2.90E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.33E-01	5.02E-01	3.01E-02	-8.88E+01

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 ₂ e	1.03E+01	1.22E+00	1.48E+01	2.63E+01	ND	5.39E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.15E-02	2.59E-01	1.24E-03	-8.75E+00

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 (A3) - Scenario documentation

Scenario parameter	Value
Electricity: On-site photovoltaic (UK)	Electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted, United Kingdom, Ecoinvent - 0.0802 kgCO ₂ e/kWh
Electricity: residual mix (China)	Electricity, consumption mix w/o renewables, China, 2023 (One Click LCA) – 1.15 kg CO ₂ e/kWh
Electricity: residual mix (UK)	Electricity, medium voltage, residual mix, United Kingdom, Ecoinvent - 0.51 kgCO ₂ e/kWh

Installation at the building site (A5) - Scenario documentation

Scenario parameter	Value
Energy: type and consumption (MJ or kWh)	Not applicable
Water use (m ³)	Not applicable
Ancillary materials: type and mass (kg)	Not applicable
Waste materials: type and mass (kg)	Waste plastic packaging wrap - 0.02kg Waste cardboard - 0.789 kg Waste paper – 0.111 kg
Waste materials: output routes	Plastic packaging waste: 37% - Incinerated 23% - landfill 40% - recycled Cardboard / Paper packaging waste: 8% - Incinerated 9% - landfill 83% - recycled The source for the EoL scenarios for packaging is taken from (source: EUROSTAT, https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519174/default/table?lang=en)
Direct emissions (kg)	Not applicable

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	2.073
Collection process: Mixed waste (kg)	0
Recovery: re-use (kg)	0
Recovery: recycling (kg)	1.783
Recovery: energy recovery (kg)	0.092
Disposal (kg)	0.198
Scenario assumptions e.g. transportation (mode, km) & other	Transportation of the components to waste treatment or disposal (landfill) has been assumed to be 80km via 16-32 tonne lorry.

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

D.V as an authorized verifier for EPD Hub Limited 04.06.2026

