



GENERAL INFORMATION



ENVIRONMENTAL PRODUCT DECLARATION
IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Hemp Binder
Lime Green Products Ltd



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.

EPD HUB, XXXXX

Published on XXX, last updated on XXX, valid until XXX



Created with One Click LCA



MANUFACTURER

Manufacturer	Lime Green Products Ltd
Address	Coates Kilns, Stretton Road TF13 6DG, Much Wenlock, GB
Contact details	Build@lime-green.co.uk
Website	www.lime-green.co.uk

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	Internal verified
Parent EPD number	
Scope of the EPD	Cradle to gate with modules A1-A3, A4-A5, C1-C4, & D
EPD author	Roshan Sundas- Lime Green Products
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input checked="" type="checkbox"/> Internal verification <input type="checkbox"/> External verification
EPD verifier	#VERIFIER#

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	Hemp Binder
Additional labels	
Product reference	
Place(s) of raw material origin	United Kingdom, Europe
Place of production	Much Wenlock, Shropshire, United Kingdom
Place(s) of installation and use	United Kingdom
Period for data	01/11/2024- 01/11/2025
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	1.46

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Kg of Hemp Binder (Spray Grade)
Declared unit mass	1 kg
Mass of packaging	0.03310 kg
GWP-fossil, A1-A3 (kgCO₂e)	0.9
GWP-total, A1-A3 (kgCO₂e)	0.83
Secondary material, inputs (%)	0.14
Secondary material, outputs (%)	69.7
Total energy use, A1-A3 (kWh)	1.65
Net freshwater use, A1-A3 (m³)	0.01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Since its formation in 2002, Lime green has established itself as the UK's foremost manufacturer of hydraulic lime mortar, lime plaster and lime render.

PRODUCT DESCRIPTION

Lime Green Hemp Binder is a UK-manufactured, mineral-based binder designed for hemp construction systems. Supplied as a dry powder, it is mixed with hemp shiv and water to form a non-structural hempcrete material used for thermal insulation and breathable wall infill applications. The binder is composed of CL90 air lime, CEM II 52.5 cement, secondary waste mortar, and incorporates approximately 20% recycled content. When installed, it produces a lightweight, vapour-open composite with typical densities of 350–450 kg/m³, compressive strength ≥ 0.3 N/mm², and thermal conductivity between 0.07 and 0.12 W/m·K.

Further information can be found at: www.lime-green.co.uk

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	
Minerals	99.58	United Kingdom, France
Fossil materials	0	
Bio-based materials	0.42	Germany, Austria, Europe

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	8.619

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Kg of Hemp Binder (Spray Grade)
Mass per declared unit	1 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 boundary		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy	Operational water	Deconstruction/	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Not declared = ND.

MANUFACTURING AND PACKAGING (A1-A3)

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

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

The product is manufactured as a dry blended mineral binder composed primarily of cementitious and mineral raw materials, with small quantities of functional chemical additives. The main constituents include Portland cement (grey and white), hydrated lime, calcium carbonate, kaolin, and minor additives such as polycarboxylate-based superplasticisers, cellulose ethers, surfactants, starch-based polymers, and tin-based compounds. There is no production loss as waste is collected and used in rework in next similar production. Also, there are no ancillary materials used in production.

Raw materials such as natural Lime and calcium carbonate are mixed with additives. After mixing, the plaster is tested and packaged in plastic packaging film. The production site is supplied with electricity from the English power grid and Solar panels on site.

Any product that does not pass the quality test (failed) is transported to recycling facilities for aggregates. The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Hemp Binder (Spray Grade) is blended in our factory in the UK and is sent by road to our UK distributor centres. Transportation impacts occurred from final products delivery to construction site (A4) to cover fuel, direct exhaust emissions, environmental impacts of fuel production as well as related infrastructure emissions. Distance from

manufacturing site to distributors is based on the average distance of our top UK customers (248km by lorry) as they account for over 90% of our sales. It is then assumed that Customers travel 50km, by road, to their nearest distribution centre to get the production to the construction site.

The Hemp Binder Installation requires no machinery or energy for installation, only water.
Installation Loss Assumed to be 5%.

End-of-life treatment of packaging waste in Module A5 was modelled using EU scenario. The average recycling rate is approximately 70%. This rate was applied to all packaging materials, with the remaining 30% assumed to be treated via municipal incineration or landfill.

PRODUCT USE AND MAINTENANCE (B1-B7)

Impacts in stage B1-B7 have not been studied and not considered in this EPD.

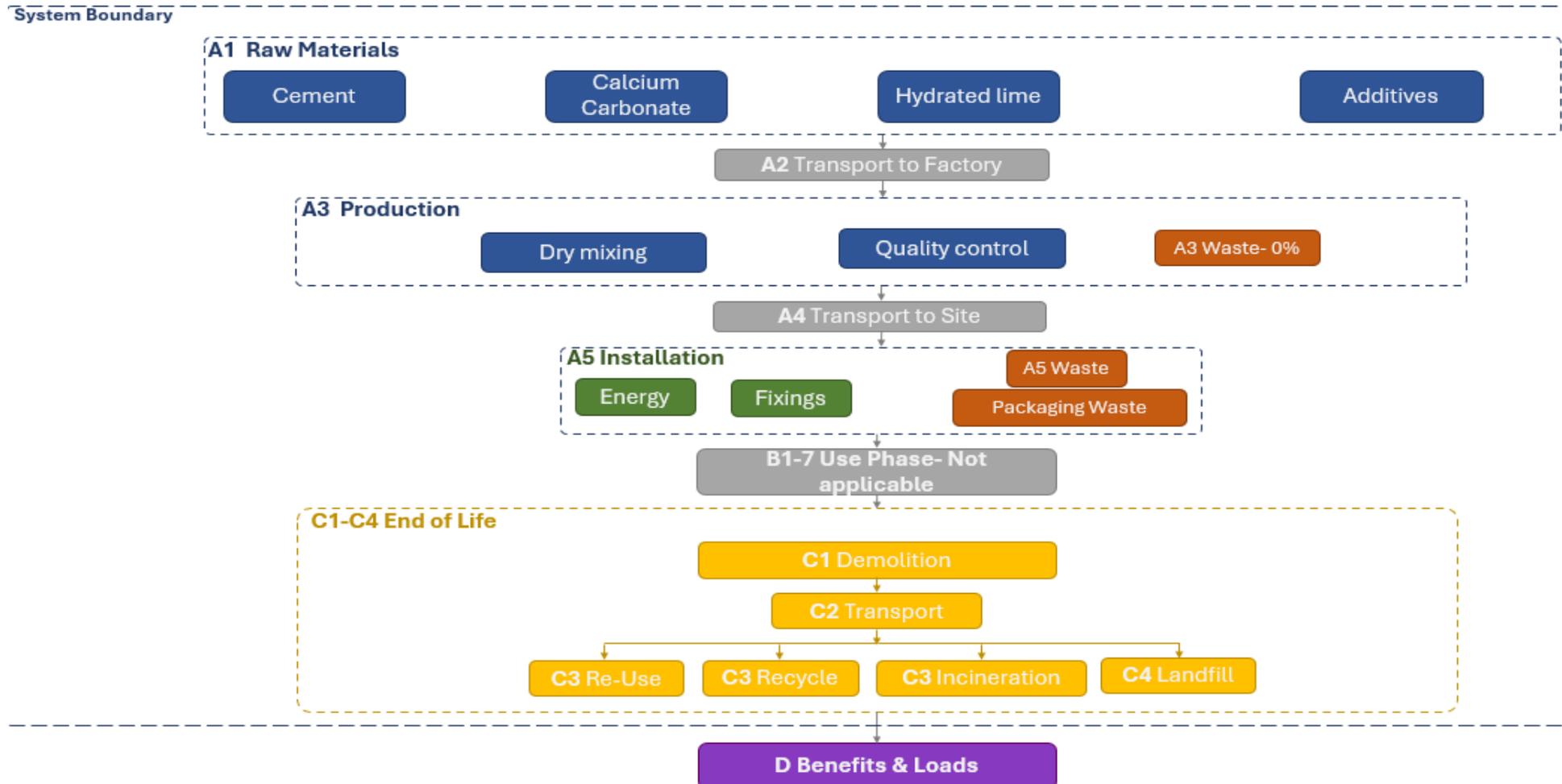
Soil, air and water impacts during the use phase have not been studied.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end of life, the product is assumed to form unreinforced concrete integrated into the building structure. Module C1 includes energy use associated with demolition and deconstruction activities, modelled using diesel consumption for building machinery. Module C2 covers the transport of demolition waste from the site to waste processing and disposal facilities. In modules C3 and C4, the end-of-life treatment of concrete is modelled according to representative European practice, if 70% of the concrete is processed for recycling as secondary aggregate, while the remaining 30% is disposed of in inert landfill.

Packaging materials arising at installation and demolition, including wooden pallets, cardboard, paper, and plastic packaging, are treated using representative EU waste management scenarios for recycling, recovery, and disposal. Module D reports the potential benefits and loads beyond the system boundary associated with material recycling, including the substitution of virgin materials by recycled concrete and 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 that is 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.

No cut-offs applied in the study as everything was included. No production losses are excluded, as all material losses are collected and reused in the next hemp spray production. The process uses dry mixing only, so there is no use of water or oil, and these are not included in the assessment. All main processes are covered; however, a proxy dataset was used for the Redox raw material because no exact dataset was available. Tin production was selected as the closest and most similar data source.

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 made according to 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	Allocated by mass or volume

Water evaporation during the process has been estimated at approximately 2%, based on consultation with the technical team and results from internal testing. The internal test data used for this estimate is based on average values from multiple measurements.

PRODUCT & MANUFACTURING SITES GROUPING

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

This is not an average EPD.

LCA SOFTWARE AND BIBLIOGRAPHY

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

ENVIRONMENTAL IMPACT DATA

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

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	8.41E-01	1.28E-02	-2.18E-02	8.32E-01	3.22E-02	8.78E-02	ND	3.61E-03	1.15E-02	3.70E-02	1.65E-02	-2.59E-02						
GWP – fossil	kg CO ₂ e	8.73E-01	1.28E-02	1.50E-02	9.01E-01	3.21E-02	5.06E-02	ND	3.60E-03	1.15E-02	3.63E-03	2.25E-03	-1.20E-02						
GWP – biogenic	kg CO ₂ e	-3.86E-02	2.69E-06	-3.68E-02	-7.54E-02	7.54E-06	3.69E-02	ND	3.68E-07	2.28E-06	3.34E-02	1.43E-02	-1.39E-02						
GWP – LULUC	kg CO ₂ e	6.36E-03	5.68E-06	7.38E-05	6.44E-03	1.49E-05	3.25E-04	ND	3.69E-07	4.07E-06	3.72E-07	1.28E-06	-5.12E-06						
Ozone depletion pot.	kg CFC-11e	6.23E-09	1.90E-10	3.58E-10	6.78E-09	5.10E-10	3.96E-10	ND	5.52E-11	2.29E-10	5.56E-11	6.51E-11	-1.16E-10						
Acidification potential	mol H ⁺ e	2.30E-03	4.34E-05	7.37E-05	2.41E-03	8.66E-05	1.35E-04	ND	3.25E-05	3.60E-05	3.28E-05	1.59E-05	-7.44E-05						
EP-freshwater ²⁾	kg Pe	1.31E-04	9.90E-07	8.60E-06	1.41E-04	2.57E-06	1.24E-05	ND	1.04E-07	7.63E-07	1.05E-07	1.85E-07	-5.47E-06						
EP-marine	kg Ne	6.75E-04	1.43E-05	2.26E-05	7.12E-04	2.34E-05	4.51E-05	ND	1.51E-05	1.21E-05	1.52E-05	6.07E-06	-1.69E-05						
EP-terrestrial	mol Ne	6.27E-03	1.55E-04	2.25E-04	6.65E-03	2.54E-04	3.86E-04	ND	1.65E-04	1.32E-04	1.67E-04	6.63E-05	-1.91E-04						
POCP (“smog”) ³⁾	kg NMVOCe	2.10E-03	6.41E-05	9.58E-05	2.26E-03	1.30E-04	1.34E-04	ND	4.93E-05	5.64E-05	4.97E-05	2.38E-05	-5.49E-05						
ADP-minerals & metals ⁴⁾	kg Sbe	6.01E-05	3.58E-08	7.42E-08	6.02E-05	9.24E-08	3.02E-06	ND	1.29E-09	3.76E-08	1.30E-09	3.57E-09	-4.80E-08						
ADP-fossil resources	MJ	5.01E+00	1.85E-01	3.00E-01	5.50E+00	4.81E-01	3.28E-01	ND	4.72E-02	1.62E-01	4.75E-02	5.52E-02	-1.62E-01						
Water use ⁵⁾	m ³ e depr.	2.68E-01	9.14E-04	9.05E-03	2.78E-01	2.37E-03	1.53E-02	ND	1.18E-04	7.94E-04	1.19E-04	1.59E-04	-1.25E-02						

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterization 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	1.78E-08	1.27E-09	9.56E-10	2.01E-08	3.17E-09	1.38E-09	ND	9.25E-10	9.05E-10	7.10E-09	3.63E-10	-9.66E-10						
Ionizing radiation ⁶⁾	kBq U235e	2.21E-02	1.63E-04	1.45E-03	2.37E-02	4.18E-04	1.28E-03	ND	2.09E-05	2.06E-04	2.10E-05	3.47E-05	-1.65E-03						
Ecotoxicity (freshwater)	CTUe	1.73E+01	2.61E-02	5.52E-01	1.78E+01	6.76E-02	1.40E+00	ND	2.60E-03	2.12E-02	2.62E-03	4.63E-03	-9.29E-02						
Human toxicity, cancer	CTUh	1.92E-10	2.11E-12	3.68E-11	2.31E-10	5.35E-12	1.51E-11	ND	3.71E-13	1.96E-12	3.73E-13	4.14E-13	-2.73E-12						
Human tox. non-cancer	CTUh	6.57E-09	1.20E-10	1.26E-10	6.82E-09	3.10E-10	4.12E-10	ND	5.87E-12	1.01E-10	5.91E-12	9.52E-12	-8.41E-11						
SQP ⁷⁾	-	3.75E+00	1.85E-01	3.64E+00	7.58E+00	4.84E-01	4.55E-01	ND	3.30E-03	9.62E-02	3.33E-03	1.09E-01	-2.88E-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	8.64E-01	2.55E-03	3.18E-01	1.18E+00	6.58E-03	-4.30E-01	ND	2.99E-04	2.79E-03	3.01E-04	5.32E-04	4.61E-02						
Renew. PER as material	MJ	1.83E-01	0.00E+00	3.62E-01	5.45E-01	0.00E+00	-3.62E-01	ND	0.00E+00	0.00E+00	-1.28E-01	-5.48E-02	1.39E-01						
Total use of renew. PER	MJ	1.05E+00	2.55E-03	6.80E-01	1.73E+00	6.58E-03	-7.92E-01	ND	2.99E-04	2.79E-03	-1.28E-01	-5.43E-02	1.85E-01						
Non-re. PER as energy	MJ	4.36E+00	1.85E-01	2.08E-01	4.76E+00	4.81E-01	2.19E-01	ND	4.72E-02	1.62E-01	4.75E-02	5.52E-02	-1.63E-01						
Non-re. PER as material	MJ	6.76E-01	0.00E+00	9.13E-02	7.68E-01	0.00E+00	-9.13E-02	ND	0.00E+00	0.00E+00	-4.73E-01	-2.03E-01	1.36E-02						
Total use of non-re. PER	MJ	5.04E+00	1.85E-01	3.00E-01	5.52E+00	4.81E-01	1.27E-01	ND	4.72E-02	1.62E-01	-4.26E-01	-1.48E-01	-1.49E-01						
Secondary materials	kg	1.40E-03	7.89E-05	1.49E-03	2.97E-03	2.04E-04	1.81E-04	ND	1.96E-05	7.40E-05	1.97E-05	1.39E-05	1.05E-03						
Renew. secondary fuels	MJ	5.34E-04	1.00E-06	1.07E-02	1.13E-02	2.60E-06	5.64E-04	ND	5.12E-08	9.35E-07	5.16E-08	2.87E-07	-1.66E-05						
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
Use of net fresh water	m ³	6.42E-03	2.73E-05	2.57E-04	6.70E-03	7.20E-05	5.00E-04	ND	3.12E-06	2.18E-05	3.14E-06	5.74E-05	-3.12E-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	1.91E-02	3.13E-04	1.17E-03	2.06E-02	8.11E-04	5.12E-02	ND	5.25E-05	2.32E-04	5.29E-05	6.09E-05	-9.45E-04						
Non-hazardous waste	kg	9.35E-01	5.80E-03	6.52E-02	1.01E+00	1.50E-02	9.89E-02	ND	7.15E-04	4.89E-03	7.21E-04	1.39E-03	-3.36E-02						
Radioactive waste	kg	5.60E-06	3.99E-08	3.63E-07	6.00E-06	1.02E-07	3.24E-07	ND	5.12E-09	5.12E-08	5.16E-09	8.45E-09	-4.12E-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	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	0.00E+00	1.23E-02	ND	0.00E+00	0.00E+00	8.30E-01	0.00E+00	0.00E+00						
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	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	6.06E-02	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
Exported energy – Electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.59E-02	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
Exported energy – Heat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E-02	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	8.83E-01	1.27E-02	1.50E-02	9.11E-01	3.20E-02	5.20E-02	ND	3.59E-03	1.14E-02	3.61E-03	2.23E-03	-1.19E-02						
Ozone depletion Pot.	kg CFC ₁₁ e	5.10E-09	1.52E-10	2.96E-10	5.55E-09	4.07E-10	3.23E-10	ND	4.37E-11	1.82E-10	4.41E-11	5.17E-11	-9.74E-11						
Acidification	kg SO ₂ e	1.79E-03	3.32E-05	5.72E-05	1.88E-03	6.84E-05	1.05E-04	ND	2.29E-05	2.73E-05	2.31E-05	1.18E-05	-5.90E-05						
Eutrophication	kg PO ₄ ³ e	5.96E-04	8.09E-06	3.58E-04	9.61E-04	1.64E-05	5.21E-05	ND	5.34E-06	6.95E-06	5.39E-06	3.75E-06	-9.75E-06						
POCP (“smog”)	kg C ₂ H ₄ e	2.84E-04	2.96E-06	8.67E-06	2.95E-04	6.41E-06	1.59E-05	ND	1.71E-06	2.61E-06	1.73E-06	1.11E-06	-4.71E-06						
ADP-elements	kg Sbe	5.95E-05	3.49E-08	7.11E-08	5.96E-05	9.01E-08	2.99E-06	ND	1.26E-09	3.68E-08	1.27E-09	3.50E-09	-4.73E-08						
ADP-fossil	MJ	4.63E+00	1.83E-01	2.75E-01	5.09E+00	4.74E-01	3.06E-01	ND	4.68E-02	1.58E-01	4.72E-02	5.46E-02	-1.35E-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	8.80E-01	1.28E-02	1.51E-02	9.07E-01	3.21E-02	5.09E-02	ND	3.61E-03	1.15E-02	3.63E-03	2.25E-03	-1.20E-02						

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterization 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 characterization factor for biogenic CO₂ is set to zero.

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

- Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted, United Kingdom, Ecoinvent, 0.0777 kgCO₂e/kWh
- Electricity, medium voltage, residual mix, United Kingdom, Ecoinvent, 0.47 kgCO₂e/kWh

Transport scenario documentation - A4 (Transport resources)

- Market for transport, freight, lorry >32 metric tons, EURO6, 248 km
- Market for transport, freight, lorry >32 metric ton, EURO5, 50 km

Transport scenario documentation A4

Scenario parameter	Value
Capacity utilization (including empty return) %	50
Bulk density of transported products	1.00E+03
Volume capacity utilization factor	1

Installation scenario documentation - A5 (Installation resources)

- Market for tap water, Ecoinvent, 0.1911 kg

Installation scenario documentation - A5 (Installation waste)

- Treatment of waste cement, hydrated, residual material landfill, Ecoinvent, 0.05 kg
- Exported Energy: Electricity, Ecoinvent, 0.021 MJ
- Exported Energy: Electricity, Ecoinvent, 5.9E-5 MJ
- Exported Energy: Electricity, Ecoinvent, 3.1E-4 MJ
- Exported Energy: Electricity, Ecoinvent, 0.0045 MJ
- Exported Energy: Thermal, Ecoinvent, 0.028 MJ
- Exported Energy: Thermal, Ecoinvent, 8.5E-5 MJ
- Exported Energy: Thermal, Ecoinvent, 4.4E-4 MJ
- Exported Energy: Thermal, Ecoinvent, 0.0062 MJ
- Treatment of waste wood, post-consumer, sorting and shredding, Ecoinvent, Materials for recycling, 0.0099 kg
- Treatment of waste wood, untreated, municipal incineration, Ecoinvent, 0.0093 kg
- Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, 0.012 kg
- Treatment of waste paperboard, unsorted, sorting, Ecoinvent, Materials for recycling, 3.1E-4 kg

- 14. Treatment of waste packaging paper, municipal incineration, Ecoinvent, 2.9E-5 kg
- 15. Treatment of waste packaging paper, municipal incineration, Ecoinvent, 1.4E-4 kg
- 16. Treatment of waste packaging paper, sanitary landfill, Ecoinvent, 3.3E-5 kg
- 17. Treatment of waste packaging paper, sanitary landfill, Ecoinvent, 1.6E-4 kg
- 18. Treatment of wastepaper, unsorted, sorting, Ecoinvent, Materials for recycling, 0.0014 kg
- 19. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, 7.1E-4 kg
- 20. Treatment of waste polyethylene, municipal incineration, Ecoinvent, 6.6E-4 kg
- 21. Treatment of waste polyethylene, sanitary landfill, Ecoinvent, 4.1E-4 kg
- 22. Direct emission to air: Water, One Click LCA, 3.9E-6 m³

End-of-life scenario documentation - C1-C4 (Data source)

- 1. Diesel, burned in building machine, Ecoinvent, 0.01 kWh
- 2. Treatment of waste concrete, not reinforced, recycling, Ecoinvent, Materials for recycling, 0.83 kg
- 3. Treatment of waste concrete, inert material landfill, Ecoinvent, 0.36 kg

Scenario information	Value
Scenario assumptions e.g. transportation	Transportation to waste facility: average 50km.

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 is filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

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

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

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

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

[Verified tools](#)

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

#SIGNATURE#