



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Armourcoat Clay Lime plaster
Armourcoat Limited



EPD HUB, HUB-7330

Published on 25.08.2026, last updated on 25.08.2026, valid until 24.08.2031
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.



Created with One Click LCA

ARMOURCOAT[®]
SUSTAINABLE LUXURY FINISHES

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Armourcoat Limited
Address	Unit 2&3 Morewood Close, London Road, Sevenoaks, Kent, United Kingdom
Contact details	sales@armourcoat.co.uk
Website	www.armourcoat.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 EN 16908 Cement and building lime
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Duncan MacKellar, Armourcoat Ltd.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Yazan Badour 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	Armourcoat Clay Lime Plaster
Additional labels	Clime, Clime Honed, Clime Coarse, Rammed Earth, Carved Earth
Product reference	P100, P110
Place(s) of raw material origin	United Kingdom & Europe
Place of production	Armourcoat Ltd, Longend Lane, Marden, TN129SE United Kingdom
Place(s) of installation and use	Worldwide
Period for data	Period for data 01/01/2025-31/12/2025, calendar year 2025, FIY 2025.
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	0
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	20.8

ENVIRONMENTAL DATA SUMMARY

Declared unit	The declared unit is specified as 1 kg of Clay Lime Plaster, with reference to the relevant cPCR (EN 16908). This meets the requirements.
Declared unit mass	1 kg
Mass of packaging	0.0266 kg
GWP-fossil, A1-A3 (kgCO₂e)	0.25
GWP-total, A1-A3 (kgCO₂e)	0.21
Secondary material, inputs (%)	0.04
Total energy use, A1-A3 (kWh)	0.84
Net freshwater use, A1-A3 (m³)	0

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Armourcoat Ltd is a UK-based manufacturer and specialist contractor of decorative surface finishes, acoustic plaster systems, three-dimensional sculptural wall systems and racket sports surfaces.

Founded in 1986, the company originally specialized in the manufacture of high-performance plasters and renders for squash and racket courts before expanding its portfolio in 1990 to include decorative plasters and specialist coatings.

Armourcoat manufactures all products in the UK and operates an integrated design, manufacturing and installation model for the UK market, with an international network of approved distributors and applicators serving projects in more than 40 countries.

Manufacturing is certified to ISO 9001, ISO 14001 and ISO 45001. Armourcoat is a certified B Corporation.

PRODUCT DESCRIPTION

Armourcoat Clay Lime Plaster is a natural mineral decorative plaster formulated from clay, natural hydraulic lime and crushed marble. Supplied as a dry powder, it is mixed on site with clean water prior to application.

Developed to create refined mineral surfaces with low embodied carbon, the material provides a durable, breathable finish suitable for a wide range of interior wall and ceiling applications. Formulated using abundant natural raw materials, including unfired clay, natural hydraulic lime, limestone, recycled marble powder and natural pozzolanic additives, it offers a natural alternative to conventional paints and wallcoverings while supporting sustainable construction.

Armourcoat Clay Lime Plaster is available in a range of smooth and textured finishes, with surface appearance determined by the application technique and aggregate grading.

Product Application:

The product is intended for application by trained professional applicators. Armourcoat Clay Lime Plaster is mixed on site with clean water before application. A base coat is applied to the prepared substrate and allowed to dry before subsequent coats are applied. Depending on the required finish, one or two additional coats are applied and trowelled to achieve the desired surface texture and appearance.

For selected finishes, including Clime Stone, additional crushed marble aggregate may be incorporated into the material prior to application to create a more pronounced textured surface. Depending on the finish specified, either 3 kg or 6 kg of additional aggregate is added to each 18 kg bag of Clay Lime Plaster.

Technical specification:

Armourcoat Clay Lime Plaster was developed to provide a natural decorative plaster with low embodied carbon, suitable for long-term sustainable architecture. Extensive testing and evaluation demonstrated that the carefully balanced clay and hydraulic lime formulation offers significantly improved durability compared with traditional clay-sand plasters.

The inclusion of natural hydraulic lime provides enhanced strength and longevity while maintaining a low environmental impact. The small increase in embodied carbon associated with the lime content is offset by the improved durability and extended service life of the finished surface.

Supplied in 18 kg paper sacks.

Coverage rate: 2.6–4.0 kg/m², typically applied in two coats, depending on the specified finish and texture.

Water demand: 0.30–0.32 litres of clean water per kilogram of dry material.

Shelf life: 12 months when stored under normal dry conditions. Full pallets retained in their original shrink wrapping have a shelf life of up to 24 months.

Product Standards:

European fire certification to EN13501:2018: A1 / A1fl / A1L.

Indoor Air Comfort Gold: Pass

LEED V 4 & 4.1 - Low Emitting Material: Pass

BREEAM - Compliance with Exemplary criteria on VOC emissions: Pass

Emicode EC1+: Pass

ABG / AgBB: Pass

CDPH: Pass

Manufactured in accordance with ISO 9001

Material Properties:

Natural mineral material

Does not contain VOCs

Low embodied carbon

Low embodied energy

Does not contain Portland or high alumina cement

Nontoxic

Absorbs toxins from the air

Breathable finish helps to regulate humidity

Resistant to mould and mildew

Completely noncombustible

UV resistant

Seamless

Durable

Promotes good health and well-being for occupants

Recyclable

Wide range of finishes achievable

Developed and manufactured by Armourcoat in the UK

Further information can be found at armourcoat.com

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	
Minerals	98.22	
Fossil materials	1.5	
Bio-based materials	0.28	

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.0006
Biogenic carbon content in packaging, kg C	0.01

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	The declared unit is specified as 1 kg of Clay Lime Plaster, with reference to the relevant cPCR (EN 16908). This meets the requirements.
Mass per declared unit	1 kg
Functional unit	1kg
Reference service life	20 years

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	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 use	Operational water use	Deconstruction/ demolition	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.

Armourcoat Clay Lime Plaster is a natural mineral decorative plaster formulated primarily from clay, natural hydraulic lime, crushed limestone and recycled marble powder, together with carefully selected additives to optimise application characteristics.

The raw materials are carefully weighed and sieved before being blended at the Armourcoat factory to produce a consistent dry powder. The finished material is then packed into 18 kg paper sacks. Every batch undergoes a comprehensive quality control check, with retained samples stored for a minimum of two years from the date of manufacture.

Electricity used in the manufacturing process is supplied through a certified 100% renewable electricity tariff. The life cycle assessment also accounts for high-to-medium voltage transformation and a 1.5% allowance for transmission losses.

Where possible, pallets received with incoming raw materials are reused for finished products. Waste arising from raw material packaging is accounted for within the assessment. Finished product pallets are stretch wrapped to maintain product integrity and stability during storage and transportation, before being stored in the warehouse ready for distribution.

The environmental impacts associated with raw material supply include the extraction, transportation and processing of raw materials, together with waste arising from upstream production processes. Raw material losses during manufacture are also accounted for. The A1–A3 assessment includes

the raw materials incorporated into the finished product, together with the energy and packaging required for its manufacture.

The recycled marble powder used in Armourcoat Clay Lime Plaster is derived from waste and offcuts generated by the marble slab industry. This material is crushed and sieved into different grades for use in a range of building products.

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.

Armourcoat Clay Lime Plaster is manufactured at the Armourcoat factory in the UK. For UK projects, the finished product is transported to site by road, with approximately 60% of UK deliveries made to London and the Southeast. For international projects, the product is typically transported by road to a UK port and then by sea to Armourcoat's international distributors. The principal UK port used for export is Felixstowe.

For the purposes of the life cycle assessment, transportation to the construction site (A4) is modelled in accordance with the applicable RTS PCR. An average transportation distance of 100 km from the production facility to the construction site is assumed, using a Euro 6 lorry.

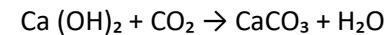
The environmental impacts associated with transportation include direct fuel combustion emissions, the upstream impacts of fuel production and associated transport infrastructure.

The installation stage (A5) accounts for environmental impacts associated with the installation of the product into the building, including product losses during application, energy consumed during installation and waste generated at the construction site.

PRODUCT USE AND MAINTENANCE (B1)

B1 - During the use stage, the lime within Armourcoat Clay lime plaster gradually absorbs carbon dioxide (CO₂) from the atmosphere through the natural process of carbonation, forming calcium carbonate. This process forms part of the natural lime cycle and is expected to be substantially complete within the assessment period.

The carbonation reaction can be represented as follows:



The potential carbon dioxide uptake is dependent on the quantity and purity of lime within the product and the extent of carbonation during the assessment period.

Where accounted for within the life cycle assessment, the resulting CO₂ uptake is reported within the appropriate use-stage module as a negative emission.

Other potential impacts to air, soil and water during the use stage have not been assessed.

PRODUCT END OF LIFE (C1-C4, D)

Armourcoat Clay Lime Plaster is a thin decorative mineral finish that remains permanently bonded to the building substrate throughout its service life. At the end of the building's life, the product is assumed to remain attached to

the substrate during demolition and is therefore managed together with the associated mineral construction waste.

Module C1 – Deconstruction and Demolition

Clay Lime Plaster requires no separate removal from the substrate prior to demolition. The consumption of energy and natural resources associated with the removal of the product at end of life is considered negligible. The environmental impacts associated with deconstruction and demolition are therefore assumed to be zero.

Module C2 – Transport

At end of life, the product is assumed to be transported to the nearest appropriate waste treatment facility for recycling or disposal. A transportation distance of 50 km by Euro 6 diesel lorry is assumed.

Transport Assumptions – Modules A2, A4 and C2

For transport modules A2, A4 and C2, the vehicle capacity utilization factor is assumed to be 1, representing a full load. Actual vehicle utilization may vary; however, as transportation represents a relatively small proportion of the overall environmental impact, variations in load factor are considered negligible within the assessment. Empty return journeys are not included, on the assumption that return journeys are used by the transport operator to serve other customers.

Module C3 – Waste Processing

At end of life, Armourcoat Clay Lime Plaster is assumed to be collected as part of the mineral construction waste stream. Under the modelled end-of-life scenario, 96% of the material is assumed to be collected for recycling, with the associated waste processing accounted for within Module C3.

Module C4 – Disposal

The remaining 4% of the material is assumed to be disposed of to landfill. Armourcoat Clay Lime Plaster consists predominantly of mineral constituents, including clay, hydraulic lime, limestone and marble aggregates. For the purposes of the life cycle assessment, the material sent to landfill is modelled as inert construction waste in accordance with the applicable end-of-life scenario.

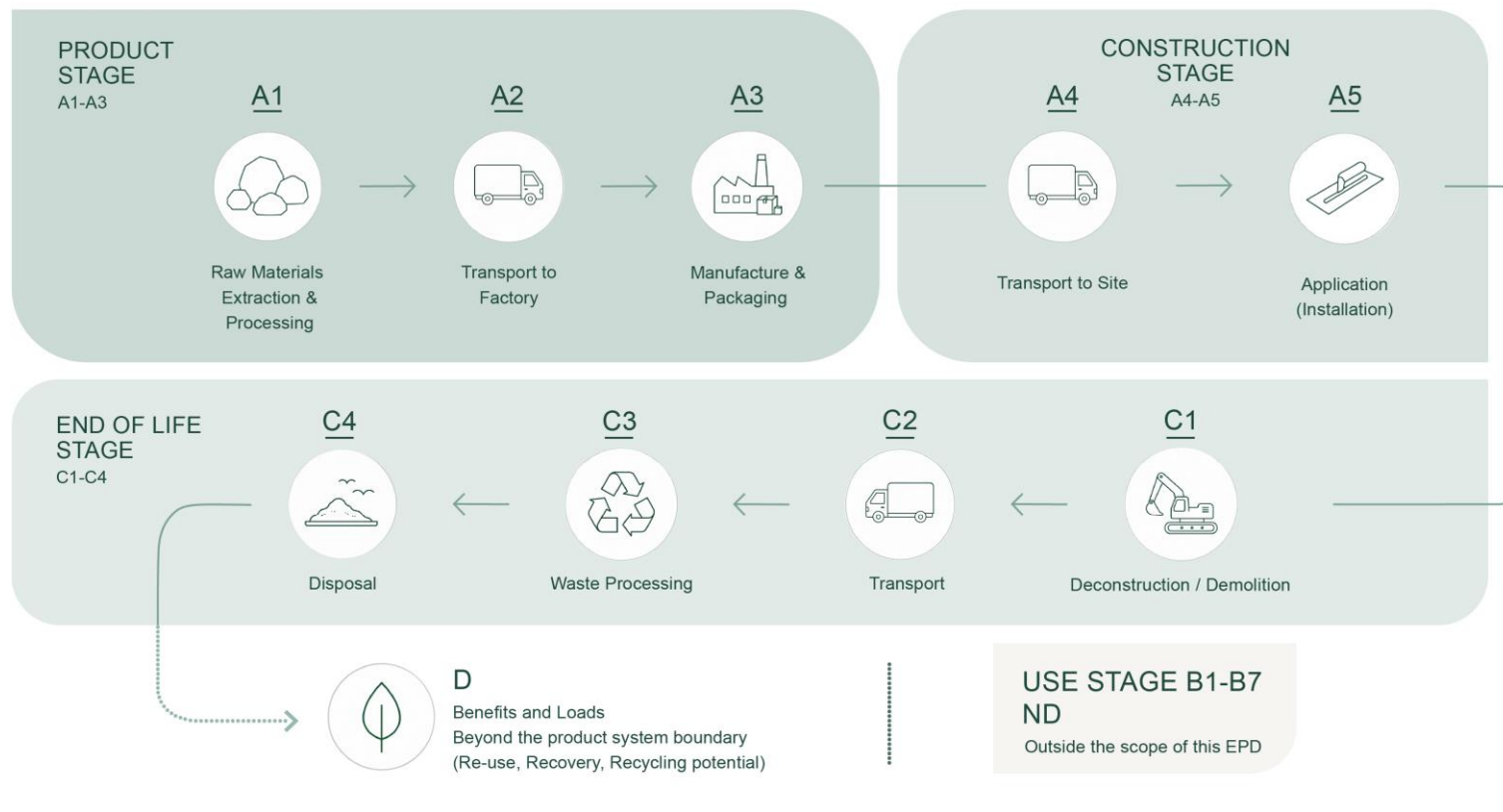
Module D – Benefits and Loads Beyond the System Boundary

Module D reports the potential benefits and loads associated with materials leaving the product system for reuse, recovery or recycling. These impacts are reported separately and occur beyond the product system boundary.

LIFE CYCLE FLOW DIAGRAM

LIFE CYCLE ASSESSMENT

Clay Lime Plaster P100_P110



This life cycle assessment diagram illustrates the declared life cycle modules of this EPD (A1–A5, C1–C4 and D) in accordance with EN 15804+A2. Module D reports potential benefits and loads beyond the product system boundary.

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, together with the maintenance and operation of capital equipment, are excluded from the assessment. Personnel-related activities and energy and water consumption associated with company management and sales activities are also excluded.

The Armourcoat factory and warehouse are unheated and use LED lighting throughout. The associated energy consumption is considered negligible within the scope of the assessment and has therefore been excluded from the LCA.

General construction site heating and lighting have not been allocated to the installation stage, as these activities are not considered directly attributable to the installation of Armourcoat Clay Lime Plaster.

Unused, unopened sacks of material are returned to stock, so no waste allocation has been made for site.

At end of life, no separate disassembly of the Clay Lime Plaster finish is required. The consumption of energy and natural resources specifically

attributable to its removal is considered negligible and has therefore been excluded from the assessment.

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.

Note on indicator consistency: A technical inconsistency between PENRT (Total use of non-renewable primary energy) and ADP-fossil (Abiotic depletion potential for fossil resources) results in modules A1-A3 has been identified. A contribution analysis shows that the discrepancy originates from the specific characterization factors in the background environmental profiles of the primary raw materials. These inconsistencies are inherent to the third-party verified EPDs and background databases used and cannot be adjusted by the practitioner.

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	No allocation
Manufacturing energy and waste	No allocation

Raw material data was obtained from the One Click LCA Ecoinvent database.

The crushed marble used in Armourcoat Clay Lime Plaster is derived from waste material generated by the marble slab production industry. As a waste-derived input, no environmental impacts from the primary marble extraction process are allocated to the crushed marble used in the product.

Manufacturing energy consumption was measured at the Armourcoat factory for the specific machinery used in the production process, with energy consumption calculated from the measured power demand and operating requirements.

No resources or energy associated with the manufacture of production plant, machinery or other capital equipment have been allocated to the product.

The resources required for on-site mixing of Armourcoat Clay Lime Plaster are included within the installation stage (A5). General construction-site heating and lighting have not been allocated to the product, as these activities are not considered directly attributable to its installation.

Armourcoat Clay Lime Plaster forms a durable decorative surface that can be cleaned using a soap wash and locally repaired if damaged. For the purposes of the assessment, the product is assumed to remain in place for the service life of the building without requiring replacement.

Plasterboard is considered the most common substrate for the product. As the applied plaster is permanently bonded to the substrate and cannot readily be separated at end of life, the end-of-life scenario assumes that the product is managed together with the associated plasterboard waste. The disposal assumptions therefore reflect the relevant waste treatment route for plasterboard containing calcium sulphate.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	0

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 Process Certification v3.2.5. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 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	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	2.02E-01	3.55E-02	-2.38E-02	2.13E-01	1.06E-02	5.53E-02	-3.00E-02	0.00E+00	9.68E-03	1.54E-02	4.23E-04	-9.65E-03
GWP – fossil	kg CO ₂ e	2.04E-01	3.55E-02	1.46E-02	2.54E-01	1.06E-02	1.68E-02	-3.00E-02	0.00E+00	9.67E-03	1.30E-02	2.56E-04	-9.64E-03
GWP – biogenic	kg CO ₂ e	-2.27E-03	8.30E-06	-3.85E-02	-4.08E-02	2.32E-06	3.85E-02	0.00E+00	0.00E+00	1.92E-06	2.43E-03	1.67E-04	0.00E+00
GWP – LULUC	kg CO ₂ e	3.47E-04	1.38E-05	1.06E-04	4.67E-04	4.13E-06	1.31E-05	0.00E+00	0.00E+00	3.42E-06	2.30E-05	1.46E-07	-9.19E-06
Ozone depletion pot.	kg CFC-11e	4.00E-09	7.43E-10	3.76E-10	5.12E-09	2.22E-10	1.09E-09	0.00E+00	0.00E+00	1.92E-10	1.95E-10	7.41E-12	-7.57E-11
Acidification potential	mol H ⁺ e	6.77E-04	8.38E-05	8.38E-05	8.45E-04	2.51E-05	8.30E-05	0.00E+00	0.00E+00	3.02E-05	8.92E-05	1.81E-06	-6.04E-05
EP-freshwater ²⁾	kg Pe	4.65E-05	2.48E-06	1.22E-05	6.12E-05	7.42E-07	2.24E-06	0.00E+00	0.00E+00	6.41E-07	3.81E-06	2.10E-08	-3.32E-06
EP-marine	kg Ne	1.57E-04	2.20E-05	3.00E-05	2.09E-04	6.57E-06	1.74E-05	0.00E+00	0.00E+00	1.02E-05	3.28E-05	6.92E-07	-1.44E-05
EP-terrestrial	mol Ne	1.70E-03	2.38E-04	2.76E-04	2.21E-03	7.11E-05	1.51E-04	0.00E+00	0.00E+00	1.11E-04	3.55E-04	7.55E-06	-1.74E-04
POCP (“smog”) ³⁾	kg NMVOCe	6.00E-04	1.45E-04	1.03E-04	8.49E-04	4.36E-05	5.08E-05	0.00E+00	0.00E+00	4.74E-05	1.12E-04	2.71E-06	-4.83E-05
ADP-minerals & metals ⁴⁾	kg Sbe	5.07E-07	1.02E-07	1.23E-05	1.29E-05	3.04E-08	3.29E-07	0.00E+00	0.00E+00	3.16E-08	3.45E-08	4.07E-10	-5.81E-08
ADP-fossil resources	MJ	2.31E+00	5.33E-01	2.84E-01	3.12E+00	1.59E-01	1.93E-01	0.00E+00	0.00E+00	1.36E-01	1.86E-01	6.28E-03	-1.20E-01
Water use ⁵⁾	m ³ e depr.	4.35E-02	2.74E-03	1.12E-02	5.74E-02	8.16E-04	3.91E-03	0.00E+00	0.00E+00	6.67E-04	1.28E-03	1.38E-02	-1.51E-02

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	C1	C2	C3	C4	D
Particulate matter	Incidence	5.02E-09	3.46E-09	9.70E-10	9.45E-09	1.04E-09	8.89E-10	0.00E+00	0.00E+00	7.60E-10	9.07E-09	4.13E-11	-9.52E-10
Ionizing radiation ⁶⁾	kBq 11235e	1.15E-02	6.40E-04	2.56E-03	1.47E-02	1.92E-04	1.93E-03	0.00E+00	0.00E+00	1.73E-04	4.61E-04	3.95E-06	-8.29E-04
Ecotoxicity (freshwater)	CTUe	4.76E+00	8.15E-02	5.42E-01	5.38E+00	1.88E-02	2.07E-01	0.00E+00	0.00E+00	1.78E-02	6.44E-02	5.27E-04	-2.85E-01
Human toxicity, cancer	CTUh	4.13E-11	5.90E-12	3.86E-11	8.58E-11	1.77E-12	3.66E-12	0.00E+00	0.00E+00	1.65E-12	2.80E-12	4.72E-14	-2.65E-12
Human tox. non-cancer	CTUh	1.14E-09	3.44E-10	1.44E-10	1.62E-09	1.03E-10	9.70E-11	0.00E+00	0.00E+00	8.53E-11	1.18E-10	1.08E-12	-7.80E-11
SQP ⁷⁾	-	5.80E-01	5.36E-01	4.81E+00	5.93E+00	1.60E-01	1.80E-01	0.00E+00	0.00E+00	8.08E-02	1.45E-01	1.24E-02	-1.12E-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	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	1.30E-01	8.65E-03	3.60E-01	4.99E-01	2.60E-03	-3.75E-01	0.00E+00	0.00E+00	2.35E-03	6.84E-03	6.06E-05	-1.10E-02
Renew. PER as material	MJ	4.18E-02	0.00E+00	3.84E-01	4.26E-01	0.00E+00	-3.85E-01	0.00E+00	0.00E+00	0.00E+00	-3.87E-02	-2.65E-03	0.00E+00
Total use of renew. PER	MJ	1.72E-01	8.65E-03	7.44E-01	9.25E-01	2.60E-03	-7.60E-01	0.00E+00	0.00E+00	2.35E-03	-3.19E-02	-2.59E-03	-1.10E-02
Non-re. PER as energy	MJ	1.75E+00	5.33E-01	2.26E-01	2.51E+00	1.59E-01	1.43E-01	0.00E+00	0.00E+00	1.36E-01	1.87E-01	6.28E-03	-1.20E-01
Non-re. PER as material	MJ	1.27E-02	0.00E+00	5.71E-02	6.98E-02	0.00E+00	-5.72E-02	0.00E+00	0.00E+00	0.00E+00	-1.18E-02	-8.08E-04	0.00E+00
Total use of non-re. PER	MJ	1.77E+00	5.33E-01	2.83E-01	2.58E+00	1.59E-01	8.57E-02	0.00E+00	0.00E+00	1.36E-01	1.75E-01	5.47E-03	-1.20E-01
Secondary materials	kg	3.93E-04	2.30E-04	1.29E-03	1.92E-03	6.90E-05	6.54E-05	0.00E+00	0.00E+00	6.22E-05	7.25E-05	1.58E-06	-1.34E-04
Renew. secondary fuels	MJ	2.78E-06	2.91E-06	1.08E-02	1.08E-02	8.70E-07	2.69E-04	0.00E+00	0.00E+00	7.85E-07	6.64E-07	3.27E-08	-9.80E-07
Non-ren. secondary fuels	MJ	2.44E-09	0.00E+00	0.00E+00	2.44E-09	0.00E+00	6.10E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m³	1.05E-03	7.83E-05	3.39E-04	1.47E-03	2.35E-05	2.88E-04	0.00E+00	0.00E+00	1.83E-05	-4.17E-04	6.53E-06	-3.49E-04

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
Hazardous waste	kg	6.21E-03	7.71E-04	1.25E-03	8.23E-03	2.31E-04	3.33E-04	0.00E+00	0.00E+00	1.95E-04	4.76E-04	6.94E-06	-9.68E-04
Non-hazardous waste	kg	2.44E-01	1.54E-02	1.34E-01	3.94E-01	4.62E-03	1.41E-01	0.00E+00	0.00E+00	4.11E-03	6.13E-01	1.59E-04	-1.82E-02
Radioactive waste	kg	3.21E-06	1.58E-07	6.31E-07	4.00E-06	4.75E-08	1.53E-05	0.00E+00	0.00E+00	4.30E-08	1.13E-07	9.63E-10	-1.99E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
Components for re-use	kg	2.59E-10	0.00E+00	0.00E+00	2.59E-10	0.00E+00	6.47E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	4.86E-08	0.00E+00	4.15E-03	4.15E-03	0.00E+00	1.20E-02	0.00E+00	0.00E+00	0.00E+00	9.59E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	2.15E-03	2.15E-03	0.00E+00	4.07E-02	0.00E+00	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	9.00E-04	9.00E-04	0.00E+00	1.72E-02	0.00E+00	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	1.25E-03	1.25E-03	0.00E+00	2.35E-02	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	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	2.03E-01	3.52E-02	1.52E-02	2.53E-01	1.05E-02	1.78E-02	-3.00E-02	0.00E+00	9.61E-03	1.29E-02	2.54E-04	-9.62E-03
Ozone depletion Pot.	kg CFC ₁₁ e	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acidification	kg SO ₂ e	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Eutrophication	kg PO ₄ ³ e	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
POCP (“smog”)	kg C ₂ H ₄ e	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ADP-elements	kg Sbe	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
ADP-fossil	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	2.04E-01	3.55E-02	1.48E-02	2.54E-01	1.06E-02	1.68E-02	-3.00E-02	0.00E+00	9.67E-03	1.30E-02	2.56E-04	-9.65E-03

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 scenario documentation

1. Electricity production, wind, 1-3MW turbine, offshore, United Kingdom, Ecoinvent, 0.0168 kgCO₂e/kWh
2. Solar photovoltaic electricity, multi-crystalline modules with rack (2020), Germany, ProBas, 0.0072 kgCO₂e/MJ
3. Medium-scale hydropower electricity (2000), United Kingdom, ProBas, 0.0247 kgCO₂e/MJ
4. Electricity voltage transformation from high to medium voltage, United Kingdom, Ecoinvent, 0.30 kgCO₂e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Transport, freight, lorry >32 metric ton, EURO6, 100 km

Transport to the building site (A4) - Scenario documentation

Scenario parameter	Value
Capacity utilization (including empty return) %	100
Bulk density of transported products	1640
Volume capacity utilization factor	≥1

Installation at the building site (A5) - Scenario documentation

Scenario information	Value
Energy: type and consumption (MJ or kWh)	Electricity is used for on-site mixing of the product. A typical 110 V, 350 W plaster paddle mixer is used for approximately 2 minutes per mix.
Water use (m ³)	Armourcoat Clay Lime Plaster is mixed on site with clean tap water to produce a workable plaster. The mixed material is then applied to the substrate and trowelled to the required finish as excess water gradually evaporates.
Ancillary materials: type and mass (kg)	No allocation has been made for application tools, which typically comprise reusable stainless-steel trowels. These tools have an expected service life of approximately 5–10 years before replacement.
Waste materials: type and mass (kg)	Installation losses are assumed to be 2% of the product, comprising residual material remaining in the pail and material lost during application. The product is supplied in 18 kg paper sacks on wooden pallets and secured with plastic pallet wrap. Pallets are assumed to weigh 20.77 kg. Pallet wrap is calculated at 0.00085 kg per declared unit of 1 kg.
Waste materials: output routes	Product losses during installation are treated as inert waste to landfill as part of the general construction-site waste stream. Wooden pallet waste is modelled as 32% recycled, 30% incinerated with energy recovery and 38% landfilled. Plastic pails, lids and pallet wrap are modelled as 40% recycled, 37% incinerated with energy recovery and 23% landfilled.
Direct emissions (kg)	Direct emissions during installation are associated primarily with the evaporation of water from the applied product. Armourcoat Clay Lime Plaster has achieved Indoor Air Comfort Gold and EMICODE EC1 Plus certification, demonstrating very low emissions.

Use Stage (B1) - Scenario documentation

Scenario information	Value
Carbonation of lime	Armourcoat Polished Plaster contains hydrated lime (calcium hydroxide, $\text{Ca}(\text{OH})_2$). During the service life of the installed plaster, the lime undergoes a natural carbonation reaction in which carbon dioxide (CO_2) from the surrounding air is absorbed into the plaster and reacts with calcium hydroxide to form calcium carbonate (CaCO_3). The carbonation reaction can be represented as: $\text{Ca}(\text{OH})_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{H}_2\text{O}$ This process represents the final stage of the traditional lime cycle and results in the permanent mineralisation of atmospheric carbon dioxide within the plaster. Carbonation commences following application and continues while uncarbonated calcium hydroxide remains available and the plaster is exposed to atmospheric CO_2. The rate and extent of carbonation are influenced by factors including the quantity of available hydrated lime, plaster thickness, porosity, moisture content, surface permeability and exposure conditions. For the purposes of this EPD, the calculated uptake of atmospheric CO_2 by carbonation during the reference service life is reported in Module B1 as a negative contribution to Global Warming Potential (GWP). The quantity of CO_2 uptake has been calculated stoichiometrically from the amount of available calcium hydroxide in the installed product, adjusted by the assumed degree of carbonation over the reference service life. No carbonation credit has been attributed to calcium carbonate or marble already present within the product, as these materials are already in their carbonated state. The carbonation benefit reported in B1 relates solely to atmospheric CO_2 chemically bound through conversion of calcium hydroxide to calcium carbonate and does not represent biogenic carbon storage or an avoided-emissions credit.

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	Armourcoat Clay Lime Plaster is assumed to remain bonded to the plasterboard substrate at end of life and is therefore collected and treated together with the associated plasterboard waste rather than being separately recovered. The Ecoinvent datasets used in the life cycle assessment apply the “allocation, cut-off by classification” methodology, in accordance with the requirements of EN 15804.
Collection process: Mixed waste (kg)	1
Recovery: re-use (kg)	0
Recovery: recycling (kg)	0.96
Recovery: energy recovery (kg)	0
Disposal (kg)	0
Scenario assumptions e.g. transportation (mode, km) & other	All of the end-of-life products are assumed to be sent to the closest facilities such as recycling and landfill. Transportation distance to the closest disposal area is assumed to be 50 km and the transportation method is assumed as lorry which is the most common.

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

Yazan Badour as an authorized verifier for EPD Hub Limited 25.08.2026

