

EPD HUB, EPDHUB-0189

Publishing date 18 November 2022, last updated date 18 November 2022, valid until 18 November 2027

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

BROADWAY
450x450x32MM

**BRETT LANDSCAPING AND
BUILDING PRODUCTS**



GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	Brett Landscaping and Building Products
Address	Sileby Road, Barrow upon Soar, Loughborough, Leicestershire, LE12 8LX
Contact details	landscapinginfo@brett.co.uk
Website	www.brettlandscaping.co.uk

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	EPD Hub, hub@epdhub.com
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
EPD author	Phillip Litchfield, BLBP
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4
Category of EPD	Third party verified EPD

EPD verifier	E.A as authorized verifier acting for EPD Hub Limited
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PRODUCT

Product name	Broadway 450x450x32mm
Additional labels	Chaucer / BS Paving / Quorndon / Tactile / Yorktone
Place(s) of production	Barrow upon Soar, Loughborough LE12 8LX
Period for data	Calendar year 2021
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m ²
Declared unit mass	72.9 kg
GWP-fossil, A1 – A3 (kgCO₂e)	10.6
GWP-total, A1 – A3 (kgCO₂e)	10.6
Secondary material, inputs (%)	0.134
Secondary material, outputs (%)	0
Total energy use, A1 – A3 (kWh)	43.9
Total water use, A1 – A3 (m³e)	0.153

PRODUCT INFORMATION

ABOUT THE MANUFACTURER

Brett concrete products are made with aggregates, sands, cements and pigments specially selected for their aesthetic and functional performance.

Cements used are a CEM I. Sands and aggregates are sourced from local quarries when possible.

The finished products are then supplied to customers per pack, most are shrink-wrapped in polythene comprising 30% recycled plastic.

Pallets are not included in the calculation.

The declared unit for this EPD for this product is 1m².

PRODUCT APPLICATION

Concrete Flags, Blocks and Kerbs are produced for both the domestic and commercial markets.

Concrete paving products are used in a variety of paving applications including Sustainable Urban Drainage Systems (SUDS) and include blocks, slabs and kerbs.

Installation standard BS 7533-4:2003

Design standard BS 7533-101:2021

TECHNICAL SPECIFICATIONS

Products are manufactured and tested in accordance with BS EN 1338: 2003, BS EN 1339: 2003 and BS EN 1340: 2003.

See Technical data sheets - More information can be found on the Brett website.

PRODUCT STANDARDS

Products are manufactured to BS EN 1338: 2003, BS EN 1339: 2003 and BS EN 1340: 2003.

More information can be found on the Brett website.

PHYSICAL PROPERTIES OF THE PRODUCT

The mean density of the hardened products is 2350 kg/m³

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at www.brettlandscaping.co.uk.

PRODUCT RAW MATERIAL COMPOSITION

Materials	Percentage range	Material origin
Metals	-	-
Minerals	100%	EU
Fossil materials	-	-
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

The mass of the product is less than 5%, thus the declaration of biogenic carbon content is not included.

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

SCOPE AND EPD TYPE

This is a Cradle to Gate with options EPD. The modules are outlined in the table below.

Construction on process stage															
Product stage			Construction on process stage			Use stage						End of life stage			
Raw material supply	Transport	Manufacturing	Transport from the gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste Processing	Disposal
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X
MDT	MDT	MDT	OP	OP	OP	OP	OP	OP	OP	OP	OP	MDT	MDT	MDT	MDT

DECLARED FUNCTIONAL UNIT

The Declared Unit of this EPD is 1 m² of concrete paving with useful service life of 50 years.

For the Declared Products in this EPD (listed in Product Identification on page 1), the impact results of these products lie within + or - 10% of the values for the Declared Unit of 1 m² of concrete paving - which is the Representative Product. This is based on the values of the CO₂-eq per m² of the products (Cradle-to-Gate, i.e. A1- A3).

The greatest variance above the Declared Unit [Representative Product] impact values is +85.1%.

The greatest variance below the Declared Unit [Representative Product] impact values is -0.6%.

The CO₂-eq impact values (A1-A3) of the individual products is given on page 15: Other Optional Additional Environmental Information.

PRODUCT LIFE-CYCLE

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.

A1. Raw materials supply

The raw materials, sands, pigments, admixtures and cements are sourced from within the representative geographic area. This module takes into account extraction and processing (including energies) of raw materials before delivery to Brett sites.

A2. Transport

This module covers the impacts of the transport of the raw materials to the production site as outlined in the LCA.

A3. Manufacturing Process

Production starts by transporting the binders, aggregates and additives are delivered to silos/bays, from where they are dosed onto a conveyor.

Cement is then added to the ingredients, after which the material is mixed dry. Water and additives are then added to the mixture, followed by wet mixing. The wet mass is filled into moulds and formed into its final shape. The products are then transported on an automatic line to a curing chamber. When the first stage of curing is complete the products go to the packaging line, where they are taken for storage. Eventually, the products are moved out and transported to the customer site.

TRANSPORT AND INSTALLATION (A4-A5)

A4. Transport to Market

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

Average distance of transportation from production plant to building site is 121 km and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not considered as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly. Also, volume capacity utilisation factor is assumed to be 1 for the nested packaged products

A5. Product Installation

In the product installation process, the following assumptions apply:

- No ancillary materials are used (i.e. zero)
- No energy or other resources are used (i.e. zero)
- Losses of 5% of the product occur on-site during the installation process.
- The lost material is re-used on site as incidental construction infill, and not transported off site.

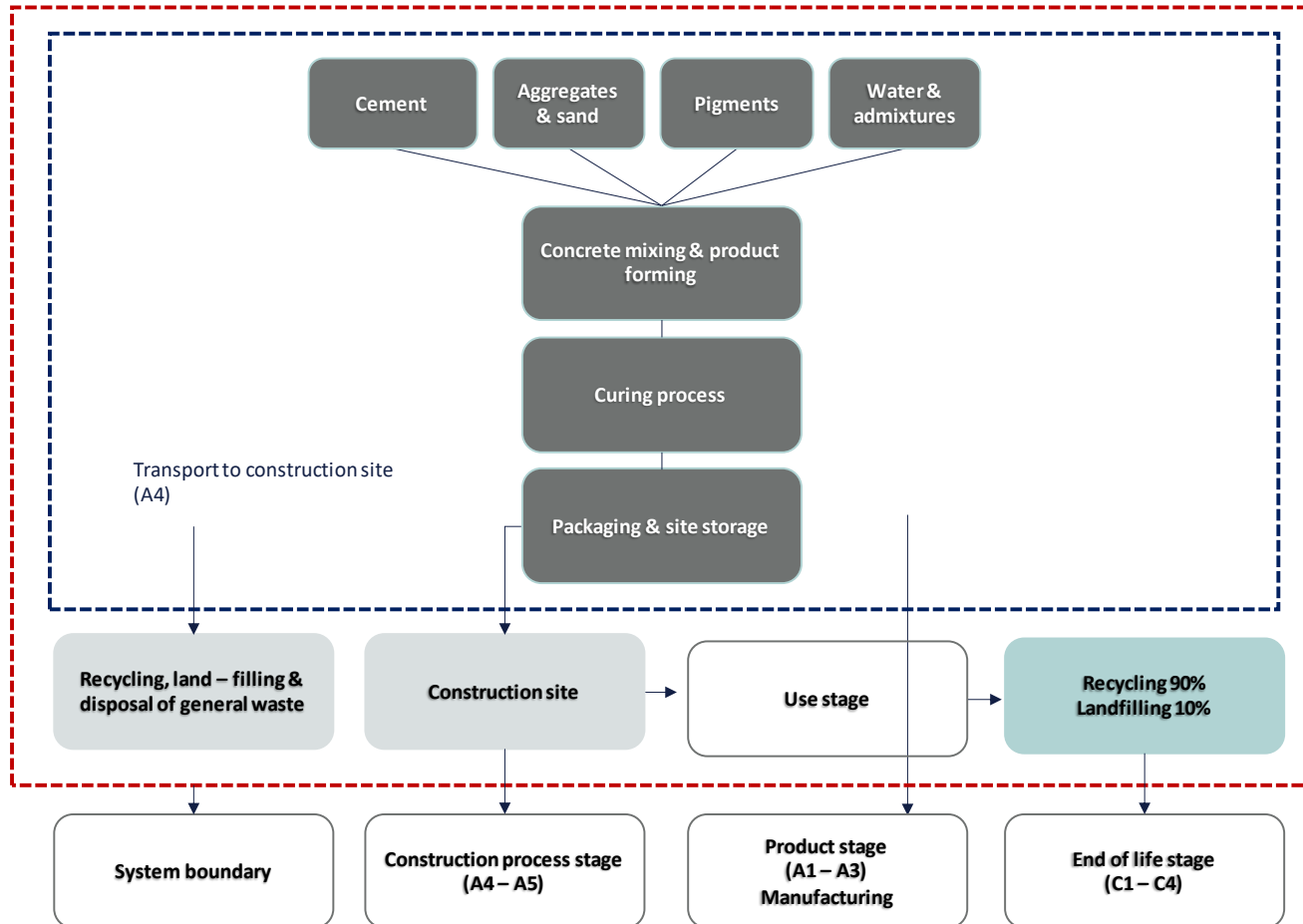
PRODUCT END OF LIFE (C1-C4)

Name	Value	Unit
Recycling	90	%
Landfilling	10	%

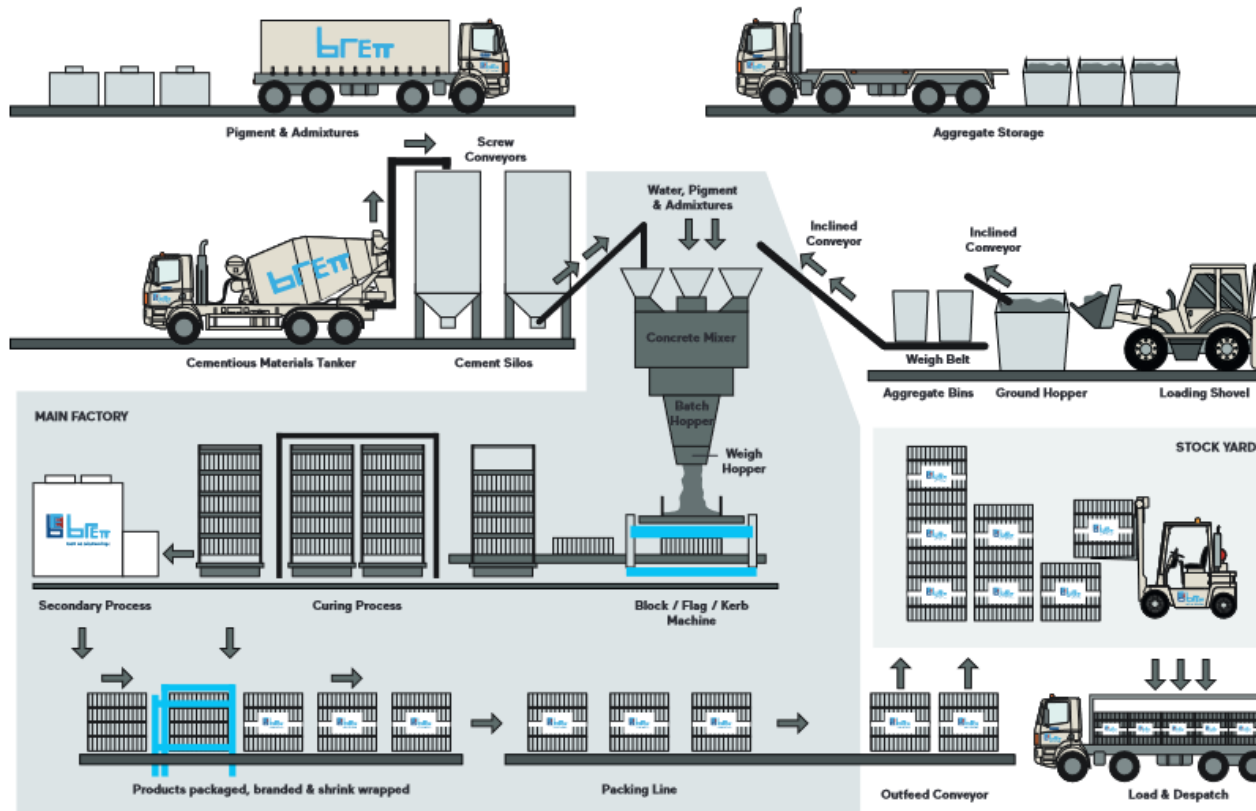
It is assumed that 90% of the product at the end of life stage will be recycled with 10% going to Landfill.

SYSTEM BOUNDARIES

This EPD covers the Cradle to Gate with modules scope with the following modules: A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal).



MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

DECLARED AND FUNCTIONAL UNIT

Declared unit	1m ²
Mass per declared unit	72.9 kg
Reference service life	50 years

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 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.

Data type	Allocation
Raw materials	Mass or Volume
Packaging materials	Mass or Volume
Ancillary materials	Mass or Volume
Manufacturing energy & waste	Mass or Volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	N/A
Variation in GWP- total for A1 – A3	%

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

The percentage difference between these products in kg CO₂-eq per m² can be viewed on page 15.

ENVIRONMENTAL IMPACT DATA

Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	6,16E0	9,38E-1	3,53E0	1,06E1	1,47E0	5,01E-2	MND	MND	MND	MND	MND	MND	MND	0E0	6,08E-1	2,61E-1	4,12E-2	0E0
GWP – fossil	kg CO ₂ e	6,16E0	9,37E-1	3,52E0	1,06E1	1,48E0	5,01E-2	MND	MND	MND	MND	MND	MND	MND	0E0	6,08E-1	2,61E-1	4,11E-2	0E0
GWP – biogenic	kg CO ₂ e	1,81E-3	5,05E-4	2,94E-3	5,26E-3	7,9E-4	3,86E-6	MND	MND	MND	MND	MND	MND	MND	0E0	3,24E-4	7,25E-5	8,14E-5	0E0
GWP – LULUC	kg CO ₂ e	9,37E-4	3,28E-4	4,27E-3	5,53E-3	5,25E-4	5,14E-7	MND	MND	MND	MND	MND	MND	MND	0E0	2,15E-4	2,2E-5	1,22E-5	0E0
Ozone depletion pot.	kg CFC-11e	1,4E-7	2,13E-7	7,11E-7	1,06E-6	3,36E-7	2,42E-10	MND	MND	MND	MND	MND	MND	MND	0E0	1,38E-7	5,63E-8	1,69E-8	0E0
Acidification potential	mol H ⁺ e	1,51E-2	3,84E-3	1,48E-2	3,38E-2	6,05E-3	1,42E-5	MND	MND	MND	MND	MND	MND	MND	0E0	2,48E-3	2,72E-3	3,9E-4	0E0
EP-freshwater ³⁾	kg Pe	2,65E-6	7,92E-6	1,1E-4	1,21E-4	1,24E-5	1,8E-8	MND	MND	MND	MND	MND	MND	MND	0E0	5,08E-6	1,05E-6	4,96E-7	0E0
EP-marine	kg Ne	4,82E-3	1,14E-3	2,8E-3	8,77E-3	1,8E-3	6,42E-6	MND	MND	MND	MND	MND	MND	MND	0E0	7,38E-4	1,2E-3	1,34E-4	0E0
EP-terrestrial	mol Ne	5,75E-2	1,26E-2	3,04E-2	1,01E-1	1,98E-2	6,53E-5	MND	MND	MND	MND	MND	MND	MND	0E0	8,15E-3	1,32E-2	1,48E-3	0E0
POCP (“smog”)	kg NMVOCe	1,37E-2	3,88E-3	8,46E-3	2,6E-2	6,08E-3	1,64E-5	MND	MND	MND	MND	MND	MND	MND	0E0	2,49E-3	3,63E-3	4,29E-4	0E0
ADP-minerals & metals	kg Sbe	2,37E-6	2,43E-5	9,09E-6	3,58E-5	4E-5	3,37E-8	MND	MND	MND	MND	MND	MND	MND	0E0	1,64E-5	3,98E-7	3,75E-7	0E0
ADP-fossil resources	MJ	1,96E1	1,42E1	1,04E2	1,37E2	2,23E1	1,74E-2	MND	MND	MND	MND	MND	MND	MND	0E0	9,16E0	3,59E0	1,15E0	0E0
Water use ²⁾	m ³ e depr.	5,23E-1	4,7E-2	-3,27E-2	5,37E-1	7,18E-2	2,44E-3	MND	MND	MND	MND	MND	MND	MND	0E0	2,95E-2	6,69E-3	5,31E-2	0E0

1) GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) 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 experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e.

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	MJ	1,24E0	1,95E-1	1,3E1	1,44E1	3,15E-1	4,74E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,29E-1	1,94E-2	9,28E-3	0E0
Renew. PER as material	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	1,24E0	1,95E-1	1,3E1	1,44E1	3,15E-1	4,74E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,29E-1	1,94E-2	9,28E-3	0E0
Non-re. PER as energy	MJ	1,96E1	1,42E1	1,03E2	1,36E2	2,23E1	1,74E-2	MND	MND	MND	MND	MND	MND	MND	0E0	9,16E0	3,59E0	1,15E0	0E0
Non-re. PER as material	MJ	0E0	0E0	1,05E0	1,05E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	1,96E1	1,42E1	1,04E2	1,37E2	2,23E1	1,74E-2	MND	MND	MND	MND	MND	MND	MND	0E0	9,16E0	3,59E0	1,15E0	0E0
Secondary materials	kg	9,59E-2	0E0	1,38E-3	9,73E-2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Renew. secondary fuels	MJ	2,93E0	0E0	0E0	2,93E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	4,41E0	0E0	0E0	4,41E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	1,3E-1	2,48E-3	2,07E-2	1,53E-1	3,81E-3	8,4E-5	MND	MND	MND	MND	MND	MND	MND	0E0	1,57E-3	3,17E-4	1,26E-3	0E0

6) 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	6,16E-3	1,46E-2	2,34E-1	2,55E-1	2,27E-2	6,88E-4	MND	MND	MND	MND	MND	MND	MND	0E0	9,3E-3	0E0	1,07E-3	0E0
Non-hazardous waste	kg	1,14E-1	1,05E0	3,42E0	4,58E0	1,56E0	2,15E-2	MND	MND	MND	MND	MND	MND	MND	0E0	6,39E-1	0E0	7,8E0	0E0
Radioactive waste	kg	1,7E-5	9,68E-5	7,81E-4	8,95E-4	1,53E-4	8E-8	MND	MND	MND	MND	MND	MND	MND	0E0	6,28E-5	0E0	7,6E-6	0E0

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	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

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	2,05E-1	9,29E-1	3,46E0	4,59E0	1,47E0	5E-2	MND	MND	MND	MND	MND	MND	MND	0E0	6,02E-1	2,59E-1	4,03E-2	0E0
Ozone depletion Pot.	kg CFC	2,98E-8	1,69E-7	6,77E-7	8,76E-7	2,68E-7	2,26E-10	MND	MND	MND	MND	MND	MND	MND	0E0	1,1E-7	4,45E-8	1,34E-8	0E0
Acidification	kg SO ₂ e	1,12E-3	1,96E-3	1,24E-2	1,55E-2	2,97E-3	9,81E-6	MND	MND	MND	MND	MND	MND	MND	0E0	1,22E-3	3,85E-4	1,63E-4	0E0
Eutrophication	kg PO ₄ ³ e	2,82E-4	4,08E-4	3,47E-3	4,16E-3	6,1E-4	1,13E-5	MND	MND	MND	MND	MND	MND	MND	0E0	2,5E-4	6,77E-5	3,14E-5	0E0
POCP ("smog")	kg C ₂ H ₄ e	6,17E-5	1,23E-4	5,38E-4	7,23E-4	1,95E-4	2,98E-7	MND	MND	MND	MND	MND	MND	MND	0E0	8,02E-5	3,96E-5	1,19E-5	0E0
ADP-elements	kg Sbe	2,37E-6	2,43E-5	9,09E-6	3,58E-5	4E-5	3,37E-8	MND	MND	MND	MND	MND	MND	MND	0E0	1,64E-5	3,98E-7	3,75E-7	0E0
ADP-fossil	MJ	1,96E1	1,42E1	1,04E2	1,37E2	2,23E1	1,74E-2	MND	MND	MND	MND	MND	MND	MND	0E0	9,16E0	3,59E0	1,15E0	0E0

SCENARIO DOCUMENTATION

Transport scenario documentation

Scenario parameter	Value
Specific transport CO ₂ e emissions, kg CO ₂ e / tkm	1.5
Average transport distance, km	121.8
Capacity utilization (including empty return) %	100
Bulk density of transported products kg/m ³	2350

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent database v3.6 (2019) and One Click LCA database.

EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

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.

Elma Avdyli as an authorized verifier acting for EPD Hub Limited
18.11.2022



OPTIONAL ADDITIONAL ENVIROMENTAL INFORMATION

The kg CO₂-eq per m² of the individual products listed in column A are given in column B (Cradle-to Gate A1-A3), and the percentage difference between these CO₂-eq values and the that of the Representative Product (Broadway 450x450x32mm) are given in column C in the table below:

A	B	C
Product	kg CO ₂ -eq per m ²	Difference from Representative Product (%)
British Standard 600x600x50	15.07	42.2%
British Standard 450x450x50	15.07	42.2%
Broadway 600X600X32	10.90	2.8%
Broadway 450x450x32mm	10.60	0.0%
Chaucer 600x600x35	11.35	7.1%
Chaucer 450X450X32	10.54	-0.6%
Meltone 450X450X32	10.80	1.9%
Meltone 600X600X3	11.54	8.9%
Quorndon 450X450X35	11.26	6.2%
Quorndon 600X300X35	11.17	5.4%
Quorndon 600X600X35	11.35	7.1%
Blister 400X400X50	14.99	41.4%
Blister 450X450X50	14.99	41.4%
Blister 400X400X65	19.16	80.8%
Blister 450X450X70	19.62	85.1%
Yorktone 450X450X50	15.17	43.1%
Yorktone 600X300X50	14.91	40.7%
Yorktone 600X450X50	15.08	42.3%
Yorktone 600X600X50	14.91	40.7%
Yorktone 400X400X65	18.45	74.1%