

EPD HUB, HUB-2477

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# ENVIRONMENTAL PRODUCT DECLARATION

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

SIGMA (ALL SIZES)

BRETT LANDSCAPING AND BUILDING  
PRODUCTS



## GENERAL INFORMATION

### MANUFACTURER INFORMATION

<b>Manufacturer</b>	Brett Landscaping and Building Products
<b>Address</b>	Salt Lane, Cliffe, Rochester, Kent, ME3 7SZ
<b>Contact details</b>	landscapinginfo@brett.co.uk
<b>Website</b>	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.

<b>EPD program operator</b>	EPD Hub, hub@epdhub.com
<b>EPD standards</b>	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
<b>PCR</b>	EPD Hub Core PCR version 1.1, 5 Dec 2023
<b>EPD author</b>	Phillip Litchfield, BLBP
<b>EPD verification</b>	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
<b>Scope of the EPD</b>	Cradle to gate with options, A4-A5, and modules C1-C4,D

<b>Category of EPD</b>	Third party verified EPD
<b>Sector</b>	Construction Product

### PRODUCT

<b>Product name</b>	Sigma (All sizes)
<b>Additional labels</b>	
<b>Place(s) of production</b>	Rochester, Kent ME3 7SZ, United Kingdom
<b>Period for data</b>	Calendar year 2023
<b>Averaging in EPD</b>	No averaging

### ENVIRONMENTAL DATA SUMMARY

<b>Declared unit</b>	1Tonne
<b>Declared unit mass</b>	1000 kg
<b>GWP-fossil, A1 – A3 (kgCO<sub>2</sub>e)</b>	1,73E+02
<b>GWP-total, A1 – A3 (kgCO<sub>2</sub>e)</b>	1,73E+02
<b>Secondary material, inputs (%)</b>	0.93
<b>Secondary material, outputs (%)</b>	90
<b>Total energy use, A1 – A3 (kWh)</b>	487
<b>Total water use, A1 – A3 (m<sup>3</sup>e)</b>	14.7

## PRODUCT INFORMATION

### ABOUT THE MANUFACTURER

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

Cements used are a CEM I, CEM II, 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 1 Tonne.

### PRODUCT APPLICATION

Concrete Flags, Blocks, Bricks 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/m<sup>3</sup>

### ADDITIONAL TECHNICAL INFORMATION

Further information can be found at [www.brettlandscaping.co.uk](http://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 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	MND	MND	MND	MND	MND	MND	MND	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

Modules not declared = MND. Modules not relevant = MNR

## DECLARED FUNCTIONAL UNIT

The Declared Unit of this EPD is 1 Tonne 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 Tonne of concrete paving - which is the Representative Product. This is based on the values of the CO<sub>2</sub>-eq per 1 Tonne of the products (Cradle-to-Gate, i.e. A1- A3).

## 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 114.8 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.

## REUSE – RECOVERY – RECYCLING POTENTIAL (D)

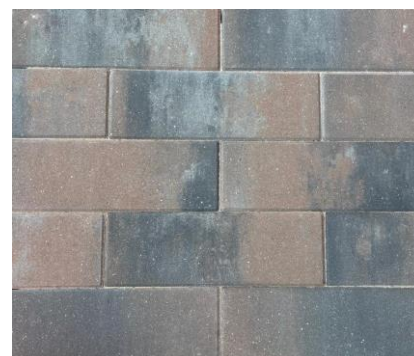
Due to the recycling potential of concrete, it can be used as secondary raw material, which avoids the use of virgin raw materials. 100% of the concrete waste going to waste processing is converted into secondary raw materials after recycling.



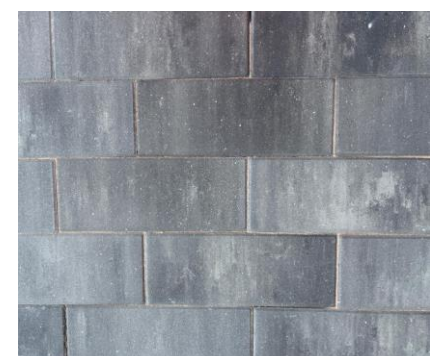
Sigma Urban Bronze  
300x100x60mm



Sigma Urban Slate  
300x100x60mm



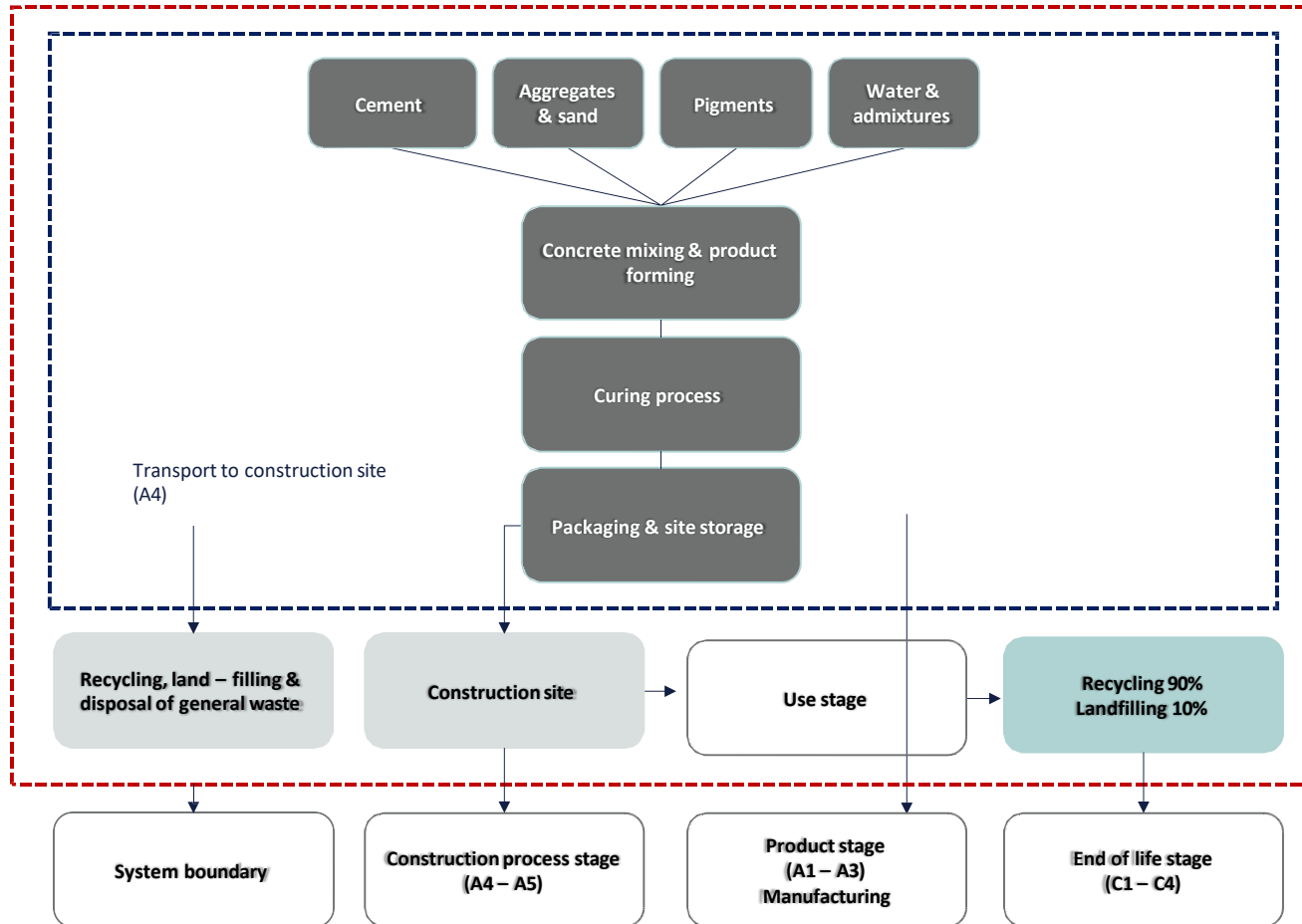
Sigma Urban Bronze  
600x200x60mm



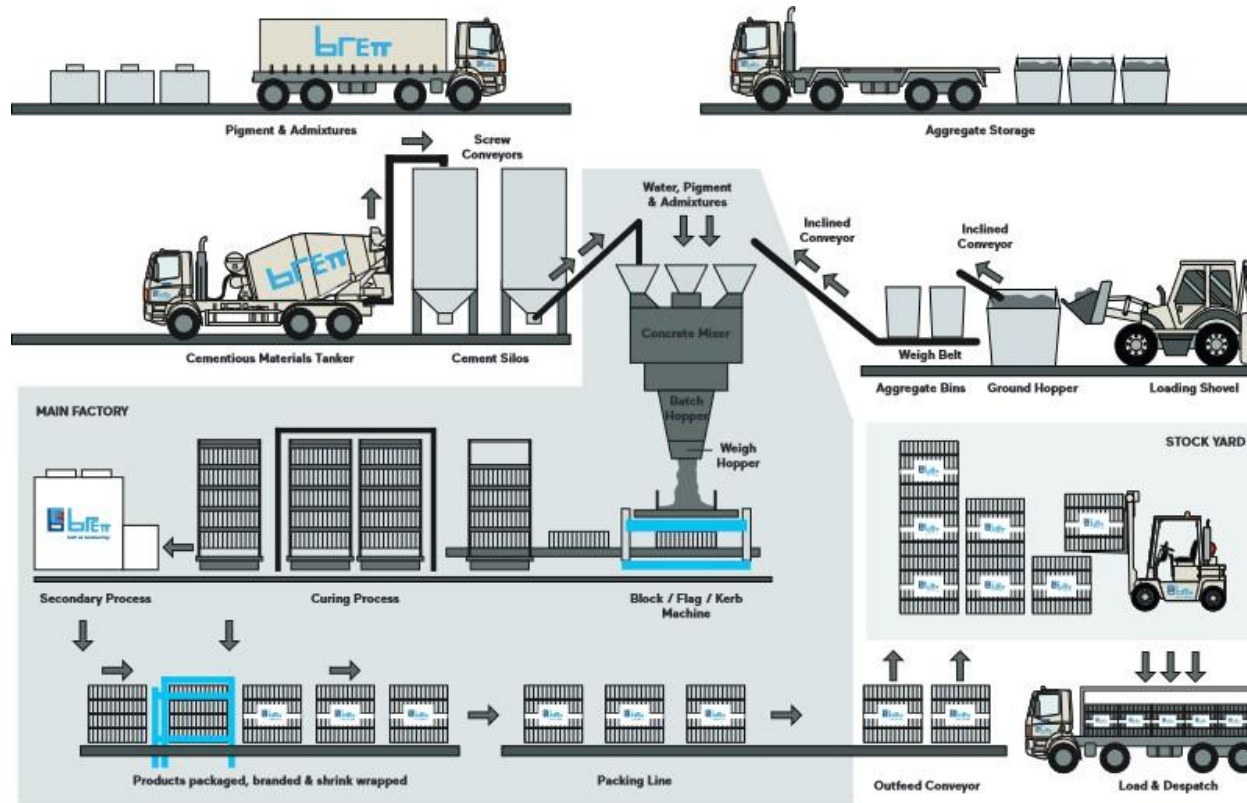
Sigma Urban Slate  
600x200x60mm

## 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), C4 (Disposal) & D System boundary.



# MANUFACTURING PROCESS



## LIFE-CYCLE ASSESSMENT

### DECLARED AND FUNCTIONAL UNIT

<b>Declared unit</b>	1 Tonne
<b>Mass per declared unit</b>	1000 kg
<b>Reference service life</b>	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. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

<b>Data type</b>	<b>Allocation</b>
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.

# ENVIRONMENTAL IMPACT DATA

## 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 <sub>2</sub> e	1,42E+02	1,37E+00	2,95E+01	1,73E+02	3,11E+01	1,04E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,69E+00	1,12E+01	5,27E-01	-7,24E+00
GWP - fossil	kg CO <sub>2</sub> e	1,42E+02	1,37E+00	2,95E+01	1,73E+02	3,11E+01	1,04E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,69E+00	1,12E+01	5,27E-01	-7,23E+00
GWP - biogenic	kg CO <sub>2</sub> e	0,00E+00	0,00E+00	2,21E-03	2,21E-03	0,00E+00	-2,18E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP - LULUC	kg CO <sub>2</sub> e	9,24E-03	5,04E-04	3,79E-02	4,76E-02	1,12E-02	2,99E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,73E-03	2,34E-02	4,97E-04	-9,95E-03
Ozone depletion pot.	kg CFC-11e	1,71E-06	3,14E-07	4,50E-06	6,53E-06	7,09E-06	7,25E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,08E-06	3,24E-06	2,13E-07	-5,89E-07
Acidification potential	mol H <sup>+</sup> e	4,01E-01	5,78E-03	1,08E-01	5,15E-01	1,29E-01	3,43E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,99E-02	9,97E-02	4,95E-03	-4,68E-02
EP-freshwater <sup>3)</sup>	kg Pe	1,14E-02	1,12E-05	5,61E-04	1,20E-02	6,09E-04	6,30E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,84E-05	1,00E-04	5,52E-06	-4,11E-04
EP-marine	kg Ne	3,51E-02	1,72E-03	2,13E-02	5,82E-02	3,82E-02	5,77E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,90E-03	3,84E-02	1,71E-03	-1,01E-02
EP-terrestrial	mol Ne	1,43E+00	1,90E-02	2,53E-01	1,70E+00	4,22E-01	1,17E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,51E-02	4,21E-01	1,89E-02	-1,32E-01
POCP (“smog”)	kg NMVOCe	3,47E-01	6,07E-03	6,85E-02	4,22E-01	1,31E-01	3,05E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,08E-02	1,19E-01	5,48E-03	-3,39E-02
ADP-minerals & metals	kg Sbe	7,29E-05	3,20E-06	8,23E-05	1,58E-04	5,74E-04	3,70E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,10E-05	2,30E-05	1,21E-06	-7,04E-05
ADP-fossil resources	MJ	5,64E+02	2,05E+01	8,95E+02	1,48E+03	4,68E+02	1,00E+02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,05E+01	2,19E+02	1,44E+01	-1,05E+02
Water use <sup>2)</sup>	m <sup>3</sup> e depr.	1,21E+01	9,18E-02	6,48E+00	1,86E+01	1,71E+00	1,03E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,15E-01	7,81E-01	4,58E-02	-1,38E+01

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 PO<sub>4</sub>e.

## 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	9,67E+01	2,31E-01	1,31E+02	2,28E+02	6,14E+00	1,17E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,94E-01	2,30E+00	1,25E-01	-9,39E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	9,67E+01	2,31E-01	1,31E+02	2,28E+02	6,14E+00	1,17E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,94E-01	2,30E+00	1,25E-01	-9,39E+00
Non-re. PER as energy	MJ	5,61E+02	2,05E+01	7,49E+02	1,33E+03	4,68E+02	9,28E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,05E+01	2,19E+02	1,44E+01	-1,05E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	1,27E+01	1,27E+01	0,00E+00	-1,27E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	5,61E+02	2,05E+01	7,62E+02	1,34E+03	4,68E+02	8,01E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,05E+01	2,19E+02	1,44E+01	-1,05E+02
Secondary materials	kg	9,29E+00	5,70E-03	5,89E-02	9,35E+00	4,49E-02	4,72E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,96E-02	6,66E-02	3,03E-03	-1,15E-01
Renew. secondary fuels	MJ	6,81E+01	5,75E-05	1,09E-02	6,81E+01	4,53E-04	3,40E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,97E-04	9,50E-04	7,93E-05	-8,23E-04
Non-ren. secondary fuels	MJ	1,25E+02	0,00E+00	0,00E+00	1,25E+02	0,00E+00	6,27E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m <sup>3</sup>	1,46E+01	2,66E-03	1,42E-01	1,47E+01	7,33E-02	7,40E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,13E-03	1,51E-01	1,58E-02	-3,33E-01

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	1,84E-02	2,72E-02	1,56E+00	1,61E+00	5,26E-01	1,13E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,34E-02	2,89E-01	0,00E+00	-6,12E-01
Non-hazardous waste	kg	9,16E-01	4,47E-01	2,21E+01	2,34E+01	2,49E+01	2,49E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,54E+00	3,69E+00	1,00E+02	-1,80E+01
Radioactive waste	kg	5,23E-04	1,37E-04	7,46E-03	8,12E-03	3,18E-03	5,85E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,71E-04	1,48E-03	0,00E+00	-5,22E-04

## END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	6,38E-05	0,00E+00	0,00E+00	6,38E-05	0,00E+00	5,03E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,00E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	2,99E-04	0,00E+00	0,00E+00	2,99E-04	0,00E+00	1,50E-05	MND	MND	MND	MND	MND	MND	MND	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	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

## SCENARIO DOCUMENTATION

### Transport scenario documentation

Scenario parameter	Value
Specific transport CO <sub>2</sub> e emissions, kg CO <sub>2</sub> e / tkm	31
Average transport distance, km	114.8
Capacity utilization (including empty return) %	100
Bulk density of transported products kg/m <sup>3</sup>	2350

## LCA SOFTWARE AND BIBLIOGRAPHY

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

## 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.

Imane Uald lamkaddam, as an authorized verifier acting for EPD Hub Limited  
09.02.2025

