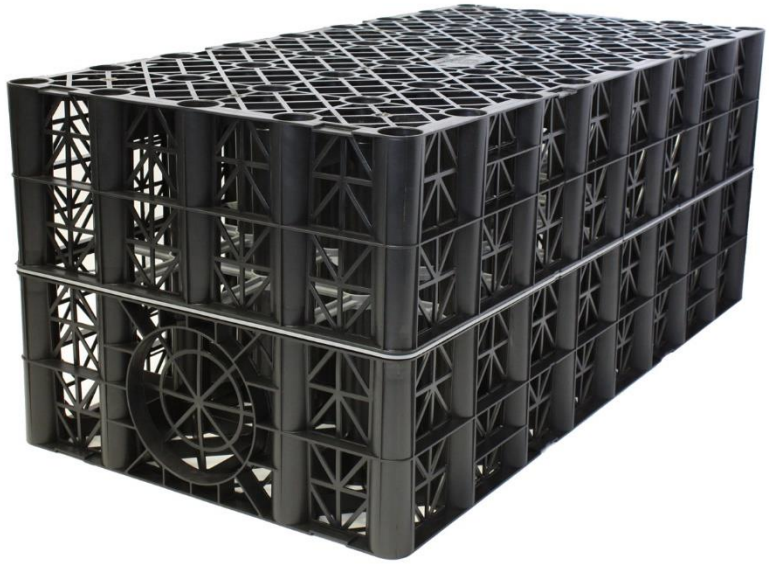


ENVIRONMENTAL PRODUCT DECLARATION

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

Polystorm-R
Polypipe Civils & Green Urbanisation



EPD HUB, HUB-1074
Published on 06.02.2024, last updated on 06.02.2024, valid until 06.02.2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Polypipe Civils & Green Urbanisation
Address	Charnwood Business Park, North Road, Loughborough, Leicestershire, LE11 1LE.
Contact details	civilsenquiries@polypipe.com
Website	https://www.polypipe.com/civils

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Manufactured product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Ben Johnson
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited

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	Polystorm-R
Additional labels	PSM1A
Product reference	PSM1A
Place of production	United Kingdom
Period for data	2022 / 2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	0 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Unit of PSM1A
Declared unit mass	9.46 kg
GWP-fossil, A1-A3 (kgCO2e)	0.903
GWP-total, A1-A3 (kgCO2e)	-1.49
Secondary material, inputs (%)	100.0
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	8.12
Total water use, A1-A3 (m3e)	0.00957

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Polypipe Civils & Green Urbanisation designs, develops and manufactures the UK's leading range of integrated water management, green assets, and network systems solutions for every sector of the construction industry. Enhancing resilient development, Polypipe partners within both customers and suppliers to minimise the environmental impact of its products, maximising the use of recycled materials and renewable energy wherever possible. The company currently re-processes over 16,000 tonnes of plastic waste each year in the manufacture of its products. Polypipe Civils & Green Urbanisation is part of the Genuit Group.

PRODUCT DESCRIPTION

The Polystorm-R modular cell is ideally suited for loaded applications at greater depths, such as housing, commercial and infrastructure projects and has a compressive strength of up to 61 tonnes/m2. It offers all the proven performance of the Polystorm cell, with the added benefits of being manufactured from 100% recycled polypropylene. The Polystorm-R modular cells are combined to form a structure that receives rainwater collected from roofs of surface drains. The rainwater is then either attenuated by the structure, when wrapped in an impermeable membrane, or infiltrated by the structure, when wrapped in a permeable geotextile.

Further information can be found at https://www.polypipe.com/civils.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	N/A
Minerals	0	N/A
Fossil materials	100	UK / Netherlands
Bio-based materials	0	N/A

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.4464

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Unit of PSM1A
Mass per declared unit	9.46 kg
Functional unit	N/A
Reference service life	> 60 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	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	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

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

The product is manufactured from 100% recycled polypropylene supplied from the UK and the Netherlands. The materials are fed through an injection moulding process causing the material to melt. The material is then inserted into a mould where it is cooled, enabling it to set. The product is then assembled using robots, before being manually placed onto a pallet and secured with strapping ready to be distributed to the customer. Waster has been included as an ancillary material within the manufacturing process. All energy used in the manufacturing process, including injection moulding, is procured through a renewable energy guarantee of origin via 100% wind power.

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.

The transport distance to site is based on historic deliveries of orders in excess of 1000 units, resulting in an average distance of 298km. Vehicle capacity utilisation volume factor is assumed to be 1. This could vary depending on the size of the order, however the impact this would have on transport emissions is assumed to be negligible. All vehicles used are to the Euro 5/6 standard. Empty returns are not taken into account as it is assumed that the vehicle would be used to facilitate the transportation of different products from other sites. There are no losses associated with transportation as the products are all packaged and strapped securely.

For the typical installation of this product in which the goods are delivered directly to site, the product is lifted off with a forklift truck, and placed in situ in the ground. Here marks the end of life for the associated packaging of the declared unit, in which the assumption is wood chipping for the pallet, and treatment of the polyethylene packaging.

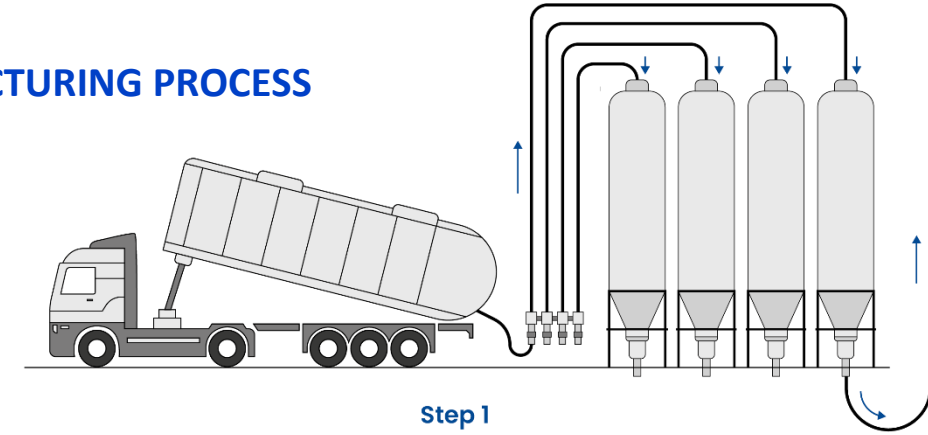
PRODUCT USE AND MAINTENANCE (B1-B7)

The use-phase of this product has been analysed and found to be immaterial to the overall carbon impact of the declared unit, this is due to the product applications. The assumption is in alignment with the product category rules (PCRs). Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

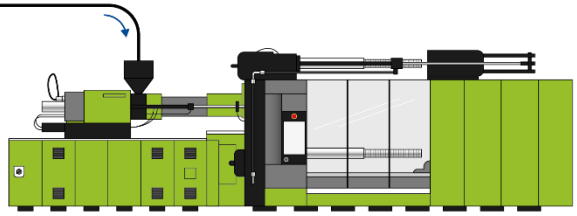
The assumption here is that the same equipment and methodologies for construction are used for the deconstruction of the product (C1). The end-of-life product is assumed to be sent back to the manufacturing site where it can be processed (C2). A conservative approach was taken with the assumption that the product may be taken to landfill at the end of its life (C3 - C4). Benefits outside the system boundary are assumed to be the net positive carbon gains because of the decrease in demand for raw polymers as a result of the recycling of the strapping, the same is applied to the wooden pallets (D).

MANUFACTURING PROCESS



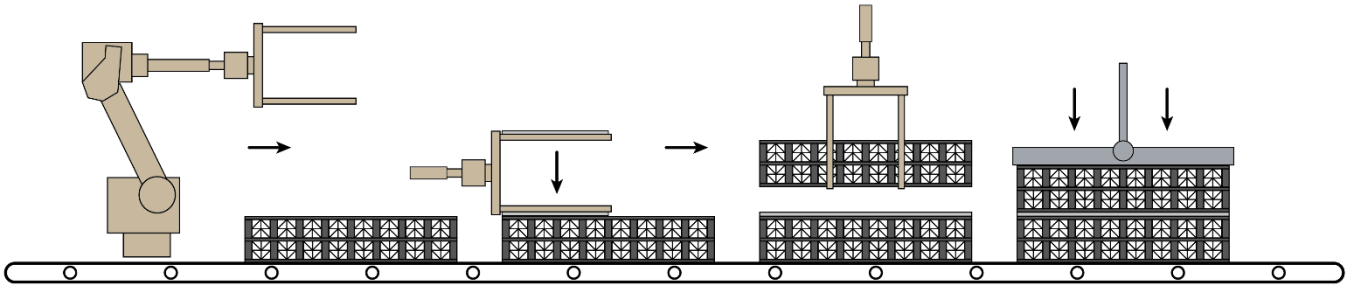
Step 1

Raw recycled material is delivered to our factory on a tanker and deposited into our silos.



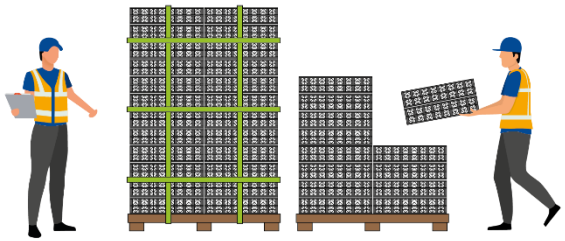
Step 2

Raw material is fed from the silo into the hopper where the material is passed through a screw and barrel and injected into a mould before cooling.



Step 3

The product is automatically assembled; robotic arms attach the mid-section, before the cells are compressed together.



Step 4

Once produced, the units are palletised, strapped manually and then stored on site.



Step 5

The product is then loaded onto a lorry and dispatched.

LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	0 %

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

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. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.

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[1)]	kg CO_2e	0.00E+00	4.87E-01	-1.97E+00	-1.49E+00	2.93E-01	3.68E+00	MND	MND	MND	MND	MND	MND	MND	1.27E+00	2.65E-01	0.00E+00	1.11E+00	1.06E-01
GWP – fossil	kg CO_2e	0.00E+00	4.86E-01	4.17E-01	9.03E-01	2.93E-01	1.28E+00	MND	MND	MND	MND	MND	MND	MND	1.27E+00	2.65E-01	0.00E+00	1.11E+00	-5.45E-02
GWP – biogenic	kg CO_2e	0.00E+00	1.88E-04	-2.39E+00	-2.39E+00	1.13E-04	2.39E+00	MND	MND	MND	MND	MND	MND	MND	2.74E-04	1.02E-04	0.00E+00	1.13E-04	1.61E-01
GWP – LULUC	kg CO_2e	0.00E+00	1.79E-04	2.11E-03	2.29E-03	1.08E-04	1.60E-04	MND	MND	MND	MND	MND	MND	MND	1.41E-04	9.76E-05	0.00E+00	1.14E-04	-3.04E-04
Ozone depletion pot.	kg CFC_{-11}e	0.00E+00	1.12E-07	6.07E-08	1.73E-07	6.73E-08	2.74E-07	MND	MND	MND	MND	MND	MND	MND	2.74E-07	6.09E-08	0.00E+00	3.05E-08	-8.53E-09
Acidification potential	mol H^+e	0.00E+00	2.06E-03	2.59E-03	4.65E-03	1.24E-03	1.31E-02	MND	MND	MND	MND	MND	MND	MND	1.30E-02	1.12E-03	0.00E+00	9.09E-04	-3.16E-04
EP-freshwater[2)]	kg Pe	0.00E+00	3.98E-06	2.86E-05	3.26E-05	2.40E-06	6.47E-06	MND	MND	MND	MND	MND	MND	MND	5.60E-06	2.17E-06	0.00E+00	1.86E-06	-1.32E-06
EP-marine	kg Ne	0.00E+00	6.12E-04	7.71E-04	1.38E-03	3.68E-04	5.74E-03	MND	MND	MND	MND	MND	MND	MND	5.73E-03	3.33E-04	0.00E+00	1.44E-03	-1.01E-04
EP-terrestrial	mol Ne	0.00E+00	6.75E-03	8.08E-03	1.48E-02	4.06E-03	6.29E-02	MND	MND	MND	MND	MND	MND	MND	6.28E-02	3.67E-03	0.00E+00	3.29E-03	-1.10E-03
POCP ("smog")[3)]	kg NMVOCe	0.00E+00	2.16E-03	3.03E-03	5.19E-03	1.30E-03	1.73E-02	MND	MND	MND	MND	MND	MND	MND	1.73E-02	1.17E-03	0.00E+00	1.18E-03	-3.13E-04
ADP-minerals & metals[4)]	kg Sbe	0.00E+00	1.14E-06	3.84E-06	4.98E-06	6.86E-07	8.35E-07	MND	MND	MND	MND	MND	MND	MND	8.05E-07	6.20E-07	0.00E+00	3.61E-07	-1.75E-07
ADP-fossil resources	MJ	0.00E+00	7.30E+00	7.73E+00	1.50E+01	4.40E+00	1.72E+01	MND	MND	MND	MND	MND	MND	MND	1.70E+01	3.97E+00	0.00E+00	2.38E+00	-7.76E-01
Water use[5)]	m^3e depr.	0.00E+00	3.27E-02	3.68E-01	4.01E-01	1.97E-02	6.33E-02	MND	MND	MND	MND	MND	MND	MND	5.86E-02	1.78E-02	0.00E+00	1.51E-02	-7.65E-03

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, PEF

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	0.00E+00	5.60E-08	4.07E-08	9.67E-08	3.37E-08	3.48E-07	MND	MND	MND	MND	MND	MND	MND	3.47E-07	3.05E-08	0.00E+00	1.72E-08	-5.19E-09
Ionizing radiation[6)]	kBq U235e	0.00E+00	3.48E-02	5.31E-02	8.79E-02	2.09E-02	8.40E-02	MND	MND	MND	MND	MND	MND	MND	7.94E-02	1.89E-02	0.00E+00	1.18E-02	-5.43E-03
Ecotoxicity (freshwater)	CTUe	0.00E+00	6.57E+00	1.05E+01	1.70E+01	3.95E+00	1.11E+01	MND	MND	MND	MND	MND	MND	MND	1.09E+01	3.57E+00	0.00E+00	5.10E+00	-8.38E-01
Human toxicity, cancer	CTUh	0.00E+00	1.61E-10	2.90E-09	3.06E-09	9.72E-11	5.57E-10	MND	MND	MND	MND	MND	MND	MND	5.49E-10	8.78E-11	0.00E+00	8.12E-11	-3.48E-11
Human tox. non-cancer	CTUh	0.00E+00	6.50E-09	9.96E-09	1.65E-08	3.91E-09	8.09E-09	MND	MND	MND	MND	MND	MND	MND	7.97E-09	3.54E-09	0.00E+00	2.16E-09	-7.32E-10
SQP[7)]	-	0.00E+00	8.41E+00	1.92E+02	2.00E+02	5.07E+00	2.34E+00	MND	MND	MND	MND	MND	MND	MND	2.30E+00	4.58E+00	0.00E+00	5.62E+00	-5.97E-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	0.00E+00	8.23E-02	1.51E+01	1.52E+01	4.95E-02	1.59E-01	MND	MND	MND	MND	MND	MND	MND	1.29E-01	4.48E-02	0.00E+00	4.96E-02	-3.61E-02
Renew. PER as material	MJ	0.00E+00	0.00E+00	2.10E+01	2.10E+01	0.00E+00	-2.10E+01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.99E+00
Total use of renew. PER	MJ	0.00E+00	8.23E-02	3.61E+01	3.62E+01	4.95E-02	-2.08E+01	MND	MND	MND	MND	MND	MND	MND	1.29E-01	4.48E-02	0.00E+00	4.96E-02	-1.00E+01
Non-re. PER as energy	MJ	0.00E+00	7.30E+00	6.02E+00	1.33E+01	4.40E+00	1.72E+01	MND	MND	MND	MND	MND	MND	MND	1.70E+01	3.97E+00	0.00E+00	2.38E+00	-7.75E-01
Non-re. PER as material	MJ	4.22E+01	0.00E+00	1.72E+00	4.40E+01	0.00E+00	-1.72E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-4.22E+01	-3.31E-01
Total use of non-re. PER	MJ	4.22E+01	7.30E+00	7.73E+00	5.73E+01	4.40E+00	1.55E+01	MND	MND	MND	MND	MND	MND	MND	1.70E+01	3.97E+00	0.00E+00	-3.99E+01	-1.11E+00
Secondary materials	kg	9.46E+00	2.03E-03	7.83E-02	9.54E+00	1.22E-03	1.01E-02	MND	MND	MND	MND	MND	MND	MND	1.00E-02	1.10E-03	0.00E+00	8.36E-04	-3.87E-04
Renew. secondary fuels	MJ	0.00E+00	2.05E-05	7.07E-01	7.07E-01	1.23E-05	2.34E-05	MND	MND	MND	MND	MND	MND	MND	2.31E-05	1.11E-05	0.00E+00	3.20E-05	-4.84E-06
Non-ren. secondary fuels	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
Use of net fresh water	m^3	0.00E+00	9.46E-04	8.63E-03	9.57E-03	5.70E-04	1.33E-03	MND	MND	MND	MND	MND	MND	MND	1.18E-03	5.15E-04	0.00E+00	2.52E-03	-1.59E-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	0.00E+00	9.68E-03	3.19E-02	4.16E-02	5.83E-03	3.12E-02	MND	MND	MND	MND	MND	MND	MND	3.04E-02	5.27E-03	0.00E+00	0.00E+00	-2.48E-03
Non-hazardous waste	kg	0.00E+00	1.59E-01	6.18E-01	7.78E-01	9.58E-02	2.56E-01	MND	MND	MND	MND	MND	MND	MND	2.17E-01	8.66E-02	0.00E+00	9.46E+00	-5.29E-02
Radioactive waste	kg	0.00E+00	4.89E-05	2.74E-05	7.62E-05	2.94E-05	1.19E-04	MND	MND	MND	MND	MND	MND	MND	1.17E-04	2.66E-05	0.00E+00	0.00E+00	-4.58E-06

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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+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 energy rec	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
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

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_2e	0.00E+00	4.81E-01	4.08E-01	8.89E-01	2.90E-01	1.27E+00	MND	MND	MND	MND	MND	MND	MND	1.26E+00	2.62E-01	0.00E+00	9.04E-01	-5.40E-02
Ozone depletion Pot.	kg CFC_{-11}e	0.00E+00	8.86E-08	5.07E-08	1.39E-07	5.33E-08	2.17E-07	MND	MND	MND	MND	MND	MND	MND	2.17E-07	4.82E-08	0.00E+00	2.42E-08	-6.79E-09
Acidification	kg SO_2e	0.00E+00	1.60E-03	1.99E-03	3.59E-03	9.63E-04	9.35E-03	MND	MND	MND	MND	MND	MND	MND	9.31E-03	8.70E-04	0.00E+00	6.93E-04	-2.43E-04
Eutrophication	kg PO_4^3e	0.00E+00	3.64E-04	1.07E-03	1.44E-03	2.19E-04	2.23E-03	MND	MND	MND	MND	MND	MND	MND	2.19E-03	1.98E-04	0.00E+00	6.10E-02	-7.42E-05
POCP (“smog”)	kg C_2H_4e	0.00E+00	6.24E-05	2.56E-04	3.19E-04	3.76E-05	2.15E-04	MND	MND	MND	MND	MND	MND	MND	2.13E-04	3.40E-05	0.00E+00	1.66E-04	-9.02E-06
ADP-elements	kg Sbe	0.00E+00	1.10E-06	3.77E-06	4.87E-06	6.65E-07	8.25E-07	MND	MND	MND	MND	MND	MND	MND	7.95E-07	6.01E-07	0.00E+00	3.50E-07	-1.71E-07
ADP-fossil	MJ	0.00E+00	7.30E+00	7.73E+00	1.50E+01	4.40E+00	1.72E+01	MND	MND	MND	MND	MND	MND	MND	1.70E+01	3.97E+00	0.00E+00	2.38E+00	-7.75E-01

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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
06.02.2024



VERIFIED ISO 14025