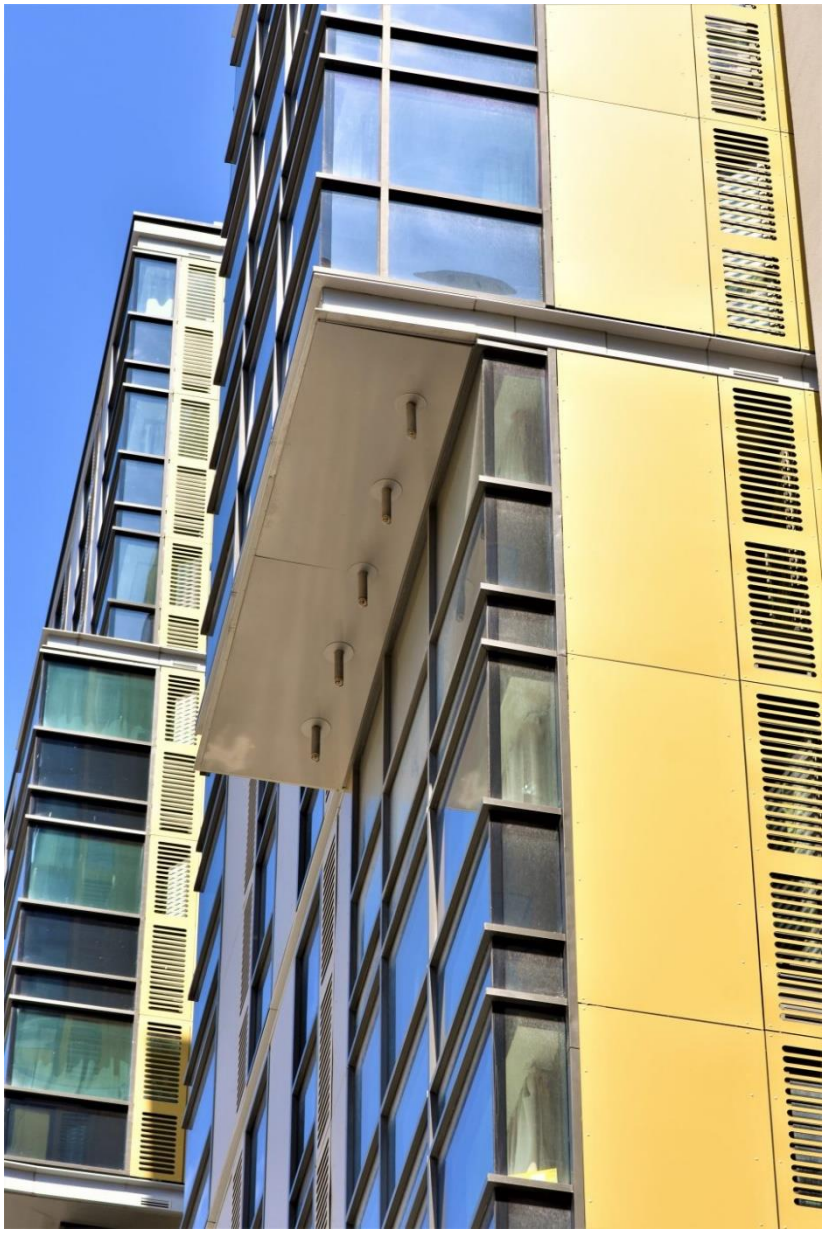


ENVIRONMENTAL PRODUCT DECLARATION

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

Vantage® MF Mechanical Fix Rainscreen System
BTS Facades & Fabrications
(3mm EN AW 1050A – Polyester Powder Coated)

EPD HUB, HUB-0495
Publishing date 10 June 2023, last updated on 10 June 2023, valid until 10 June 2028

GENERAL INFORMATION

MANUFACTURER

Manufacturer	BTS Facades & Fabrications
Address	Unit 7, Central Park, Woodham Road, Aycliffe Business Park, Newton Aycliffe, County Durham, DL5 6HT,
Contact details	mail@btsfabrications.co.uk
Website	https://btsfabrications.co.uk/

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	Construction 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	Sam McGarrick, Blue Marble
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Magaly Gonzalez, 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	Vantage® MF Mechanical Fix Rainscreen System
Additional labels	n/a
Product reference	(3mm EN AW 1050A – Polyester Powder Coated)
Place of production	Newton Aycliffe, United Kingdom
Period for data	01 April 2021 to 30 March 2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m2
Declared unit mass	7.953 kg
GWP-fossil, A1-A3 (kgCO2e)	4.75E1
GWP-total, A1-A3 (kgCO2e)	4.81E1
Secondary material, inputs (%)	69.8
Secondary material, outputs (%)	85.0
Total energy use, A1-A3 (kWh)	210.0
Total water use, A1-A3 (m3e)	4.77E-1

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

BTS Facades & Fabrications produce façade and rainscreen products. Their products are produced at their facilities in Newton Aycliffe, County Durham.

At BTS Facades and Fabrications, our focus is straight forward: to solely produce the best quality façade and rainscreen products, specified to a breadth of budgets. With an extensive variety of design capabilities, alongside our industry-leading rainscreen and façade systems, we have a desirable reputation within our industry. Our in-house technical and design team, and varied materials, finishes and manufacturing options, allow you to accomplish your design vision, no matter what your project limitations are.

PRODUCT DESCRIPTION

An aluminium rainscreen designed to protect buildings from wind and rain. Vantage® MF is a fully drained and back ventilated open jointed rainscreen cladding system, mechanically face fixed to a sub frame using low profile fixings or rivets. A simple and economic system, equally suitable for new build projects or low-cost refurbishments works. Vantage® MF panels have the advantage of being able to be formed to give a clean, sharp detail at all joints, corners & reveals, etc.

Further information can be found at https://btsfabrications.co.uk/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	100	EU, China
Minerals	-	-
Fossil materials	-	-
Bio-based materials	-	-

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	0.029

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m2
Mass per declared unit	7.953 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

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

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system 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 comprised of sheet aluminium. 70% recycled content in the aluminium has been modelled. As the aluminium is sourced from a variety of locations, a weighted average of transportation distances has been calculated. The product is powder coated off-site and the return trip to the powder coaters has been included, as has the mass contribution of the coating powder to the overall product mass. Plastic and cardboard packaging has been modelled, as have the pallets used. 20% production losses have been modelled, when the aluminium sheet is cut to size. Accurate data from a range of energy sources has been used to model the manufacturing process comprising (1) panel bending machine, (2) sheet metal punching machine, (3) compressor; 14.61% of factory energy consumption is from on-site LPG; 29.06% of factory energy consumption is from on-site biomass boiler; 56.33% of factory energy consumption is from mains electricity.

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.

A typical scenario has been used to model distances for transportation to the construction site (a distance of 235km). The pallet is returned for re-use. Installation requires use of hand operated power tools using low-voltage electricity and operation of a diesel-powered aerial lift - both are accounted for in the EPD. Conservative estimates have been made on packaging waste which is sent to landfill (a distance of 50km). The pallet is sent to municipal incineration (a distance of 50km) where some energy recovery is achieved and accounted for beyond the system boundary. As the product is prefabricated, there are no material losses during installation.

PRODUCT USE AND MAINTENANCE (B1-B7)

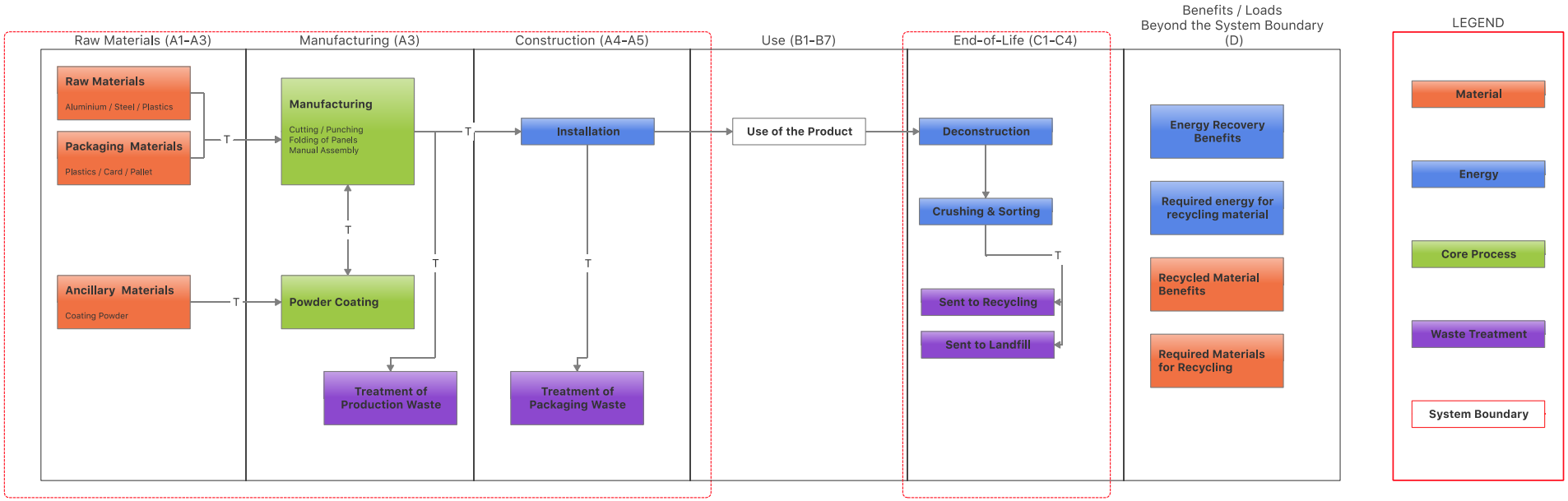
This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life the product is removed using hand operated power tools using low-voltage electricity and diesel-powered aerial lift. The product is

transported 50km to a notional waste processing facility. Fifteen percent of the metals (aluminium) are sent to landfill, the remaining eighty-five percent are recycled. After the percentage reaching landfill is deducted, the thirty percent primary aluminium content is included in Module D as an avoided product.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process 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.

Paint has been excluded on the basis that it represents 0.16% of total mass and is below cut-off criteria.

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	No allocation
Manufacturing energy and waste	No allocation

AVERAGES AND VARIABILITY

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

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

No allocation required - in all cases process level data has been obtained / used. For manufacturing process level data has been used, but split across an energy mix which includes some on-site energy generation from renewables - see comments for further details.

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.

Created with One Click LCA

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	4.14E1	6.13E0	6.21E-1	4.81E1	4.87E-1	1.92E0	MND	MND	MND	MND	MND	MND	MND	1.7E0	3.73E-2	5.3E-2	2.98E-2	-1.35E1
GWP – fossil	kg CO_2e	4.06E1	6.13E0	7.46E-1	4.75E1	4.92E-1	1.71E0	MND	MND	MND	MND	MND	MND	MND	1.69E0	3.73E-2	1.48E-1	4.66E-2	-1.31E1
GWP – biogenic	kg CO_2e	1.77E-1	1.48E-4	-1.26E-1	5.15E-2	1.97E-4	2.13E-1	MND	MND	MND	MND	MND	MND	MND	5.49E-4	0E0	-9.51E-2	-1.68E-2	-5.63E-2
GWP – LULUC	kg CO_2e	5.47E-1	2.26E-3	6.88E-4	5.5E-1	1.91E-4	2.61E-4	MND	MND	MND	MND	MND	MND	MND	2.59E-4	1.38E-5	1.94E-4	5.2E-5	-3.35E-1
Ozone depletion pot.	kg $CFC_{-11}e$	2.89E-6	1.41E-6	4.04E-8	4.34E-6	1.14E-7	3.56E-7	MND	MND	MND	MND	MND	MND	MND	3.56E-7	8.58E-9	1.83E-8	5.08E-9	-1.44E-6
Acidification potential	mol H^+e	2.71E-1	2.6E-2	3.41E-3	3.01E-1	1.65E-3	1.74E-2	MND	MND	MND	MND	MND	MND	MND	1.74E-2	1.58E-4	1.88E-3	3.09E-4	-8.81E-2
EP-freshwater[2)]	kg Pe	1.68E-3	5.02E-5	1.67E-5	1.75E-3	3.71E-6	9.83E-6	MND	MND	MND	MND	MND	MND	MND	9.74E-6	3.06E-7	7.94E-6	1.52E-6	-7.01E-4
EP-marine	kg Ne	4.03E-2	7.71E-3	7.77E-4	4.88E-2	4.07E-4	7.65E-3	MND	MND	MND	MND	MND	MND	MND	7.64E-3	4.7E-5	3.97E-4	7.38E-5	-9.52E-3
EP-terrestrial	mol Ne	3.94E-1	8.51E-2	8.82E-3	4.88E-1	4.5E-3	8.38E-2	MND	MND	MND	MND	MND	MND	MND	8.38E-2	5.18E-4	4.59E-3	8.24E-4	-1.05E-1
POCP ("smog")[3)]	kg NMVOCe	1.38E-1	2.72E-2	2.78E-3	1.68E-1	1.56E-3	2.31E-2	MND	MND	MND	MND	MND	MND	MND	2.3E-2	1.66E-4	1.26E-3	2.45E-4	-4E-2
ADP-minerals & metals[4)]	kg Sbe	1.24E-4	1.44E-5	9.58E-6	1.48E-4	1.6E-6	1.21E-6	MND	MND	MND	MND	MND	MND	MND	1.21E-6	8.75E-8	1.99E-5	1.09E-7	-3.3E-5
ADP-fossil resources	MJ	4.45E2	9.21E1	1.59E1	5.53E2	7.35E0	2.32E1	MND	MND	MND	MND	MND	MND	MND	2.31E1	5.6E-1	2.01E0	6.56E-1	-2.05E2
Water use[5)]	m^3e depr.	3.01E1	4.12E-1	3.33E-1	3.08E1	3.38E-2	8.3E-2	MND	MND	MND	MND	MND	MND	MND	8.24E-2	2.51E-3	3.89E-2	8.57E-3	-2.75E1

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	3.88E-6	7.06E-7	4.59E-8	4.63E-6	4.6E-8	4.62E-7	MND	MND	MND	MND	MND	MND	MND	4.62E-7	4.3E-9	2.46E-8	4.63E-9	-9.66E-7
Ionizing radiation[6)]	kBq U235e	4.88E0	4.38E-1	2.77E-1	5.59E0	3.72E-2	1.26E-1	MND	MND	MND	MND	MND	MND	MND	1.25E-1	2.67E-3	2.24E-2	3.86E-3	-3.76E0
Ecotoxicity (freshwater)	CTUe	1.18E3	8.28E1	7.41E1	1.33E3	6.31E0	1.4E1	MND	MND	MND	MND	MND	MND	MND	1.4E1	5.04E-1	9.09E0	7.39E2	-2.42E2
Human toxicity, cancer	CTUh	2.31E-7	2.03E-9	6.13E-10	2.34E-7	1.79E-10	5.33E-10	MND	MND	MND	MND	MND	MND	MND	5.32E-10	1.24E-11	2.78E-10	4.35E-11	9.29E-9
Human tox. non-cancer	CTUh	1.88E-6	8.2E-8	1.13E-8	1.98E-6	6.21E-9	1.03E-8	MND	MND	MND	MND	MND	MND	MND	1.03E-8	4.99E-10	1.24E-8	1.16E-9	-6E-7
SQP[7)]	-	8.43E1	1.06E2	2.39E1	2.14E2	6.47E0	3.11E0	MND	MND	MND	MND	MND	MND	MND	3.05E0	6.46E-1	4.04E0	8.48E-1	-1.41E1

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	2.02E2	1.04E0	3.6E0	2.07E2	9.79E-2	2.99E-1	MND	MND	MND	MND	MND	MND	MND	2.96E-1	6.31E-3	3.56E-1	4.28E-2	-8.63E1
Renew. PER as material	MJ	0E0	0E0	9.43E-1	9.43E-1	0E0	-9.43E-1	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	9.43E-1
Total use of renew. PER	MJ	2.02E2	1.04E0	4.54E0	2.08E2	9.79E-2	-6.44E-1	MND	MND	MND	MND	MND	MND	MND	2.96E-1	6.31E-3	3.56E-1	4.28E-2	-8.54E1
Non-re. PER as energy	MJ	4.46E2	9.21E1	1.3E1	5.51E2	7.35E0	2.32E1	MND	MND	MND	MND	MND	MND	MND	2.31E1	5.6E-1	2.01E0	6.56E-1	-2.05E2
Non-re. PER as material	MJ	0E0	0E0	2.96E0	2.96E0	0E0	-2.96E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	4.46E2	9.21E1	1.59E1	5.54E2	7.35E0	2.02E1	MND	MND	MND	MND	MND	MND	MND	2.31E1	5.6E-1	2.01E0	6.56E-1	-2.05E2
Secondary materials	kg	5.52E0	2.56E-2	5.05E-3	5.55E0	2.31E-3	8.82E-3	MND	MND	MND	MND	MND	MND	MND	8.8E-3	1.56E-4	2.23E-3	1.62E-4	2.27E0
Renew. secondary fuels	MJ	3.41E-3	2.58E-4	2.62E-2	2.99E-2	2.47E-5	2.95E-5	MND	MND	MND	MND	MND	MND	MND	2.92E-5	1.57E-6	1.16E-4	1.03E-5	-3.61E-4
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	4.57E-1	1.19E-2	7.77E-3	4.77E-1	9.47E-4	2.1E-3	MND	MND	MND	MND	MND	MND	MND	2.07E-3	7.26E-5	1.18E-3	5.07E-4	-5.98E-1

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1.21E1	1.22E-1	3.17E-2	1.22E1	8.86E-3	3.29E-2	MND	MND	MND	MND	MND	MND	MND	3.28E-2	7.43E-4	1.36E-2	0E0	-2.89E0
Non-hazardous waste	kg	6.21E1	2.01E0	5.95E-1	6.47E1	1.58E-1	4.82E-1	MND	MND	MND	MND	MND	MND	MND	4.04E-1	1.22E-2	4.35E-1	1.19E0	-3.19E1
Radioactive waste	kg	1.85E-3	6.16E-4	7.34E-5	2.54E-3	5.01E-5	1.63E-4	MND	MND	MND	MND	MND	MND	MND	1.63E-4	3.75E-6	1.18E-5	0E0	-1.3E-3

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	9.43E0	0E0	1.87E0	1.13E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	6.76E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	6.44E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	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_2e	3.98E1	6.07E0	7.21E-1	4.66E1	4.87E-1	1.69E0	MND	MND	MND	MND	MND	MND	MND	1.68E0	3.69E-2	1.46E-1	4.52E-2	-1.3E1
Ozone depletion Pot.	kg CFC_{-11}e	2.47E-6	1.12E-6	3.61E-8	3.62E-6	9.01E-8	2.82E-7	MND	MND	MND	MND	MND	MND	MND	2.82E-7	6.8E-9	1.48E-8	4.08E-9	-1.23E-6
Acidification	kg SO_2e	2.31E-1	2.02E-2	2.73E-3	2.54E-1	1.32E-3	1.25E-2	MND	MND	MND	MND	MND	MND	MND	1.24E-2	1.23E-4	1.52E-3	2.48E-4	-7.61E-2
Eutrophication	kg PO_4^3e	7.09E-2	4.59E-3	7.46E-4	7.62E-2	2.92E-4	3.45E-3	MND	MND	MND	MND	MND	MND	MND	2.99E-3	2.8E-5	5.01E-4	7.3E-5	-2.84E-2
POCP (“smog”)	kg C_2H_4e	1.78E-2	7.87E-4	1.75E-4	1.88E-2	5.99E-5	2.78E-4	MND	MND	MND	MND	MND	MND	MND	2.76E-4	4.79E-6	5.74E-5	1.72E-5	-8.01E-3
ADP-elements	kg Sbe	1.15E-4	1.39E-5	9.56E-6	1.39E-4	1.56E-6	1.2E-6	MND	MND	MND	MND	MND	MND	MND	1.19E-6	8.47E-8	1.99E-5	1.03E-7	-2.95E-5
ADP-fossil	MJ	4.45E2	9.21E1	1.59E1	5.53E2	7.35E0	2.32E1	MND	MND	MND	MND	MND	MND	MND	2.31E1	5.6E-1	2.01E0	6.56E-1	-2.05E2

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

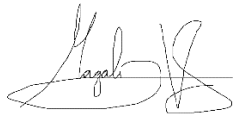
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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.

Magaly Gonzalezvazquez, as an authorized verifier acting for EPD Hub Limited
10.06.2023



VERIFIED ISO 14025