



ENVIRONMENTAL PRODUCT DECLARATION

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

AC400 Bespoke Rafts

Amron Architectural Limited

EPD HUB, HUB-0503

Publishing date 16 June 2023, last updated on 16 June 2023, valid until 16 June 2028

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Amron Architectural Limited
Address	9-10, The Foundry Business Park, Seager Road, Faversham, Kent, ME13 7FD, UK
Contact details	info@amronarchitectural.co.uk
Website	https://amronarchitectural.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 modules C1-C4, D
EPD author	Sam McGarrick, Blue Marble
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> 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	AC400 Bespoke Rafts
Additional labels	-
Product reference	AC400
Place of production	Coventry, UK
Period for data	01 January 2022 - 31 December 2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	- %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m ²
Declared unit mass	9.8 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	3.12E1
GWP-total, A1-A3 (kgCO ₂ e)	3.11E1
Secondary material, inputs (%)	44.0
Secondary material, outputs (%)	85.6
Total energy use, A1-A3 (kWh)	111.0
Total water use, A1-A3 (m ³ e)	2.07E-1

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Breathtaking Metal for architecture and interior design. Creative metal solutions for any project – Just ask Amron. We understand the built environment, the issues, the people, and most importantly, the challenges facing the industry. With an extensive range of products and knowledge to advise architects and interior designers, our ethos is to influence choice, engage and inspire.

The history of Amron is built around our customers. Our humble beginnings have seen us gain expertise across the built environment and develop relationships with some of the industry's most influential brands.

PRODUCT DESCRIPTION

The AC400 Series is a range of bespoke mesh rafts. There is not a standard size or format for the AC400 everything is designed and manufactured to meet the design intent on a project. We are able to manufacture, square, rectangle, triangle, hexagonal and oval rafts. The frames are manufactured from mild steel, and the mesh is welded into the frame. This ensures the mesh sits flat and provides extra strength for the overall for the raft. The rafts have a simple installation and suspension method, which involves threaded bar being hung from the ceiling and a special connector attaching to the rafts.

The mesh used in this EPD is RB35 which contains 60% open area. RB35 Expanded Mesh is a versatile and commonly used product for architectural and interior design applications such as ceiling panels, partitions and joinery. Due to its unique manufacturing process, no material is actually lost, as the flat sheets are sheared to create the expanded openings, due to this it offers excellent aesthetic and strength properties.

Rafts can be suspended individually or bolted together to cover a larger area, cut-outs for services can also be incorporated into the mesh.

Further information can be found at <https://amronarchitectural.co.uk/>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	99	EU, Taiwan, Vietnam, South Korea
Minerals	0	-
Fossil materials	1	EU
Bio-based materials	0	-

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	0.059

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m2
Mass per declared unit	9.8 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	MND	MND	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 steel mesh is manufactured in the UK using 30% recycled steel from Asia - a weighted average of transportation distances has been calculated. The steel is expanded and cut to required shapes and transported 100km to the fabricator. The substructure is 30% recycled galvanised steel from Europe and Asia - a weighted average of transportation distances has been calculated (A1, A2). The mesh is polyester powder coated and welded to the substructure by the fabricator, the substructure is folded into shape. The welding process

consumes welding fillers as well as gases used as shielding. The manufacturing process requires electricity for the different equipment (A3). The steel waste produced at the plant is collected for recycling (100km transportation distance assumed). Approximately 85% of steel is assumed to be actually recycled based on World Steel Association, 2020. It is assumed that the remaining 15 % of steel is taken to landfill for final disposal. The loss of material is considered. (A3) The product is packaged on wooden pallets for shipping and wrapped in polyethylene packaging film at the factory gate (A3).

TRANSPORT AND INSTALLATION (A4-A5)

This EPD does not cover modules A4-A5.

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)

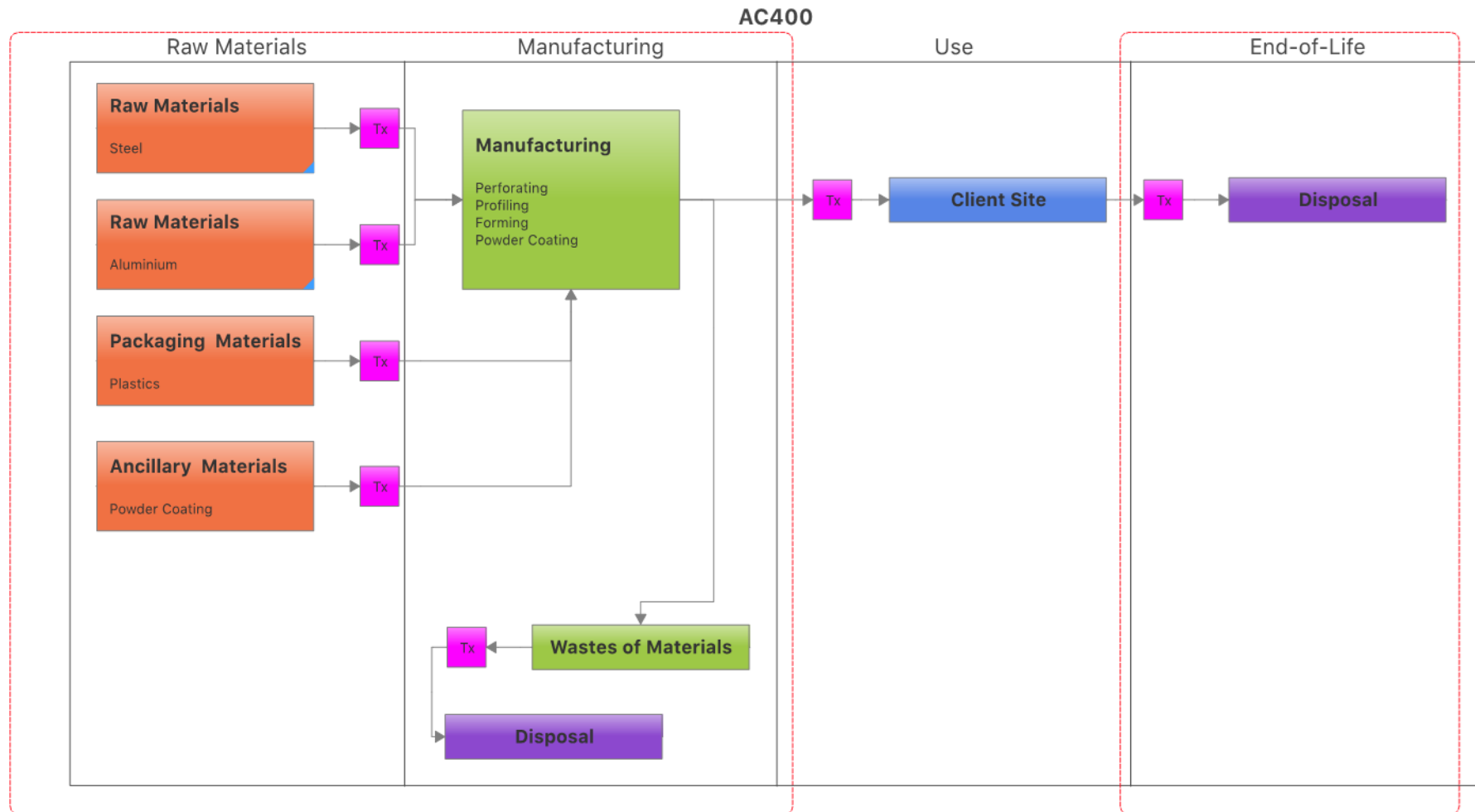
Deconstruction is assumed to consume 0.01 kWh/m² of product. The source of energy is electricity used by hand operated power tools (C1).

It is assumed that 100% of the waste is collected and transported to the waste treatment centre in the UK. Transportation distance of product and packaging to waste treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2).

Approximately 85% of steel is assumed to be recycled based on World Steel Association, 2020 (C3). It is assumed that the remaining 15 % of steel is taken to landfill for final disposal (C4). Packaging waste is either incinerated (in the case of the pallet, with energy recovery efficiency of 73%) (C3) or sent to landfill with no benefits (in the case of the plastic packaging) (C4).

Due to the recycling process, the end-of-life product is converted into recycled steel, while (as noted above) the wooden pallet is incinerated for energy recovery (D).

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.

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.

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.

One Click  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 ₂ e	2.81E1	1.97E0	1.01E0	3.11E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.18E-3	4.79E-2	3.97E-1	5.26E-2	-4.87E0
GWP – fossil	kg CO ₂ e	2.8E1	1.97E0	1.22E0	3.12E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.17E-3	4.79E-2	1.82E-1	-4.5E0	-5.14E0
GWP – biogenic	kg CO ₂ e	5.41E-2	5.84E-4	-2.12E-1	-1.57E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	4.37E-6	0E0	2.15E-1	0E0	2.63E-1
GWP – LULUC	kg CO ₂ e	2.66E-2	1.22E-3	1.31E-3	2.91E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	4.37E-6	1.77E-5	2.4E-4	1.15E-5	5.61E-3
Ozone depletion pot.	kg CFC ₁₁ e	1.82E-6	4.1E-7	4.78E-8	2.28E-6	MND	MND	MND	MND	MND	MND	MND	MND	MND	2.18E-10	1.1E-8	2.24E-8	4.09E-9	-1.45E-7
Acidification potential	mol H ⁺ e	3.49E-1	4.68E-2	5.32E-3	4.01E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.11E-5	2.03E-4	-2.8E-1	1.02E-4	-1.89E-2
EP-freshwater ²⁾	kg Pe	1.32E-3	9.84E-6	3.95E-5	1.37E-3	MND	MND	MND	MND	MND	MND	MND	MND	MND	6.8E-8	3.92E-7	9.81E-6	1.74E-7	-3.77E-5
EP-marine	kg Ne	3.35E-2	1.16E-2	1.04E-3	4.62E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	2.22E-6	6.02E-5	4.86E-4	4.22E-5	4.9E-6
EP-terrestrial	mol Ne	1.26E0	1.29E-1	1.15E-2	1.4E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	2.67E-5	6.64E-4	5.62E-3	3.8E-4	-5.26E-2
POCP (“smog”) ³⁾	kg NMVOCe	1.13E-1	3.4E-2	4.75E-3	1.51E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	6.63E-6	2.13E-4	1.55E-3	1.2E-4	-2.93E-2
ADP-minerals & metals ⁴⁾	kg Sbe	1.01E-3	3.31E-6	8.87E-6	1.02E-3	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.62E-8	1.12E-7	2.44E-5	2.97E-8	-1.62E-4
ADP-fossil resources	MJ	3.21E2	2.62E1	3.13E1	3.78E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	8.31E-2	7.19E-1	2.48E0	2.93E-1	-4.3E1
Water use ⁵⁾	m ³ e depr.	1.28E1	9.16E-2	8.13E-1	1.37E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	7.24E-4	3.22E-3	4.82E-2	1.33E-3	2.14E0

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	4.18E-6	1.13E-7	7.04E-8	4.36E-6	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.71E-11	5.51E-9	3E-8	2.01E-9	-1.67E-7
Ionizing radiation ⁶⁾	kBq U235e	1.79E0	1.22E-1	2.45E-1	2.16E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	2.9E-3	3.42E-3	2.79E-2	1.53E-3	5.75E-2
Ecotoxicity (freshwater)	CTUe	1.18E3	1.91E1	1.74E1	1.22E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.07E-2	6.46E-1	1.11E1	2.22E-1	-1.18E2
Human toxicity, cancer	CTUh	1.9E-7	1.02E-9	2.43E-9	1.93E-7	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.36E-12	1.59E-11	3.41E-10	6.1E-12	5.36E-8
Human tox. non-cancer	CTUh	1.12E-6	1.51E-8	1.37E-8	1.15E-6	MND	MND	MND	MND	MND	MND	MND	MND	MND	4.06E-11	6.4E-10	1.52E-8	1.42E-10	3.2E-7
SQP ⁷⁾	-	9.34E1	1.29E1	3.32E1	1.39E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.67E-2	8.28E-1	4.94E0	6.29E-1	-1.83E1

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	2.83E1	2.2E-1	3.84E0	3.23E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.78E-2	8.1E-3	4.39E-1	4.63E-3	-6.27E0
Renew. PER as material	MJ	0E0	0E0	1.89E0	1.89E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-1.89E0	0E0	0E0
Total use of renew. PER	MJ	2.83E1	2.2E-1	5.73E0	3.42E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.78E-2	8.1E-3	-1.45E0	4.63E-3	-6.27E0
Non-re. PER as energy	MJ	3.21E2	2.62E1	1.84E1	3.66E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	8.31E-2	7.19E-1	2.48E0	2.93E-1	-4.3E1
Non-re. PER as material	MJ	0E0	0E0	1.29E1	1.29E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-1.25E-1	-1.27E1	0E0
Total use of non-re. PER	MJ	3.21E2	2.62E1	3.13E1	3.78E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	8.31E-2	7.19E-1	2.35E0	-1.24E1	-4.3E1
Secondary materials	kg	4.28E0	1.04E-2	2.09E-2	4.31E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	8.09E-6	2E-4	2.74E-3	7.37E-5	3.6E0
Renew. secondary fuels	MJ	4.1E-3	4.66E-5	6.05E-2	6.46E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	6.22E-8	2.01E-6	1.42E-4	2.17E-6	-7.14E-4
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	1.85E-1	2.28E-3	1.99E-2	2.07E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.71E-5	9.31E-5	1.46E-3	3.16E-4	-1.44E-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	9.11E0	3.55E-2	8.39E-2	9.23E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.83E-4	9.53E-4	1.68E-2	3.38E-5	-3.2E0
Non-hazardous waste	kg	4.93E1	3.89E-1	1.74E0	5.15E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	2.77E-3	1.57E-2	5.37E-1	1.76E0	-1.05E1
Radioactive waste	kg	7.31E-4	1.82E-4	7E-5	9.83E-4	MND	MND	MND	MND	MND	MND	MND	MND	MND	7.27E-7	4.81E-6	1.45E-5	5.91E-8	6.35E-6

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	8.24E-1	8.24E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	8.26E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	1.3E-1	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	MND	MND	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	2.7E1	1.95E0	1.18E0	3.02E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.13E-3	4.74E-2	1.79E-1	4.4E-2	-4.75E0
Ozone depletion Pot.	kg CFC ₁₁ e	1.72E-6	3.25E-7	4.08E-8	2.09E-6	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.92E-10	8.72E-9	1.81E-8	3.24E-9	-2.11E-7
Acidification	kg SO ₂ e	2.22E-1	3.74E-2	4.36E-3	2.64E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	8.87E-6	1.57E-4	1.86E-3	7.71E-5	-1.5E-2
Eutrophication	kg PO ₄ ³ e	8.07E-2	4.4E-3	1.64E-3	8.67E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	2.96E-6	3.59E-5	6.17E-4	1.69E-3	-8.02E-3
POCP ("smog")	kg C ₂ H ₄ e	1.08E-2	9.87E-4	5.4E-4	1.23E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	4.27E-7	6.15E-6	7.04E-5	8.92E-6	-3.86E-3
ADP-elements	kg Sbe	1E-3	3.23E-6	8.82E-6	1.01E-3	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.62E-8	1.09E-7	2.43E-5	2.9E-8	-1.61E-4
ADP-fossil	MJ	3.21E2	2.62E1	3.13E1	3.78E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	8.3E-2	7.19E-1	2.47E0	2.93E-1	-4.3E1

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

16.06.2023

