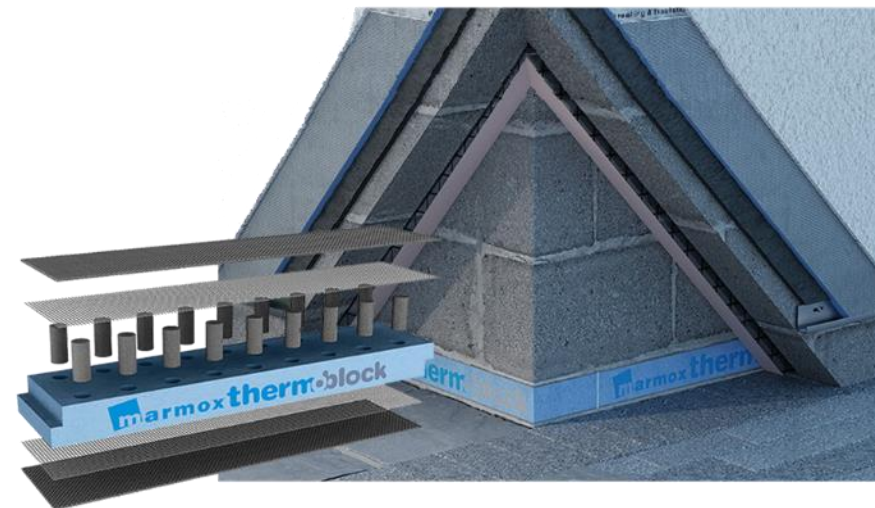
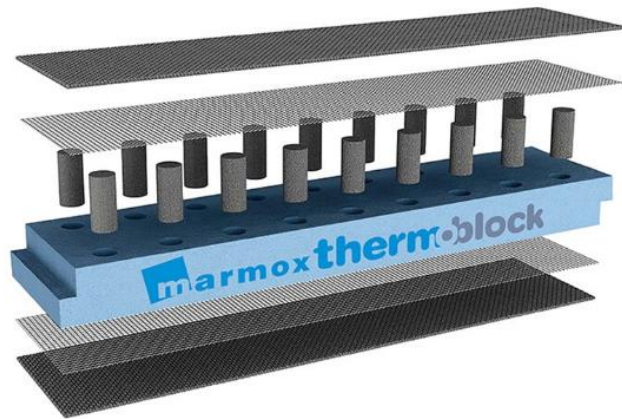


ENVIRONMENTAL PRODUCT DECLARATION

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

Marmox thermoblock

Marmox Egypt - CMB



EPD HUB, hub-1002

Publishing on 05.01.2024, last updated on 05.01.2024, valid until 05.01.2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Marmox Egypt - CMB
Address	43 El-Haram Street - Giza - Egypt
Contact details	Osama.s.ahmed@marmox.com
Website	www.marmox.com

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 A4-A5 , C1-C4, D
EPD author	Eng. Osama Saleh Marmox Egypt & Mr. Nemanja Nedic , One Click LCA Ltd.
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	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	Marmox Thermoblock
Additional labels	None
Product reference	Marmox Thermoblock 14/10
Place of production	Egypt
Period for data	Y 2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of Masonry Block (size : 600 mm useable length x 140 mm Width x 100 mm Hight)
Declared unit mass	2.6 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	6,52E+00
GWP-total, A1-A3 (kgCO ₂ e)	6,15E+00
Secondary material, inputs (%)	0.866
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	26.9
Total water use, A1-A3 (m ³ e)	3,01E-01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Marmox-Egypt Is a subsidiary of CMB group with a multinational sales network.

For over three decades, Marmox has been serving its valued customers and is proud to rank amongst the leading manufacturers and suppliers of construction building materials.

Marmox-Egypt specializes in the production of innovative, high-quality, cost-effective, and user / Environmentally -friendly products.

PRODUCT DESCRIPTION

Marmox THERMOBLOCK 600 mm useable size x 140 mm Width x 100 mm High is heat-insulation masonry blocks intended for base layers and consists of insulation material . Their lower and upper surfaces are coated with a polymer-modified cement mortar reinforced by an alkali-resistant glass fibre mesh. The insulation material consists of a core made of extruded polystyrene foam (XPS) or polyisocyanurate foam (PIR) , in which polymer-modified concrete cylinders are placed at regular intervals . The cylinders are firmly adhered to the upper and lower layers .

Marmox THERMOBLOCK is used as a base block to prevent heat losses at the base of outside walls and provides a solution for the problem of thermal bridging .

Further information can be found at www.marmox.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	None
Minerals	31.7 %	Local - Egypt - China
Fossil materials	68.3 %	Local - Egypt
Bio-based materials	0%	None

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	0.1

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit of Masonry Block (size : 600 mm useable length x 140 mm Width x 100 mm Hight)
Mass per declared unit	2.6 kg
Functional unit	-
Reference service life	Up to 100 years, based on the application

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.

Marmox Thermoblock are made from Extruded polystyrene foam (XPS) or Polyisocyanurate foam (PIR) insulation material. Cylinder holes are drilled into them at regular intervals according to the required dimensions. These holes are filled with a polymer-modified concrete. The cylinders formed in this way give the block its load-bearing capacity. The lower and upper sides of the block are coated within 2 mm -thick polymer modified mortar, with alkali-resistant double glass fibre mesh.

The packaging consists of dedicated carton box, wooden pallet as well as LDPE film, PET strapping and Paper label / Sticker. Material waste and loss are estimated at 6 ~ 8 %, which is landfilled as inert materials together with some incoming packaging such as wood. Other production wastes include paper & PE are sent to a treatment facility located 50 Km away from recycling.

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.

Packed product mass is transported with truck and ship, where truck transport distance of 350 Km includes distance from factory to port and from port to installation site and 5800 km represent oversea transport from Alex Sea port to London gate port. (A4) Marmox Thermoblock can be installed on diversity of structures & application. Installation procedures & recommendations are described in Marmox Thermoblock Brochures & Technical Data sheets. These can be downloaded directly from www.marmox.com.

No special protective personnel equipment is necessary during installations. A5 covers installation losses (5 %). Installation materials (Ordinary Portland Cement - sand and relevant waste treatments).

PRODUCT USE AND MAINTENANCE (B1-B7)

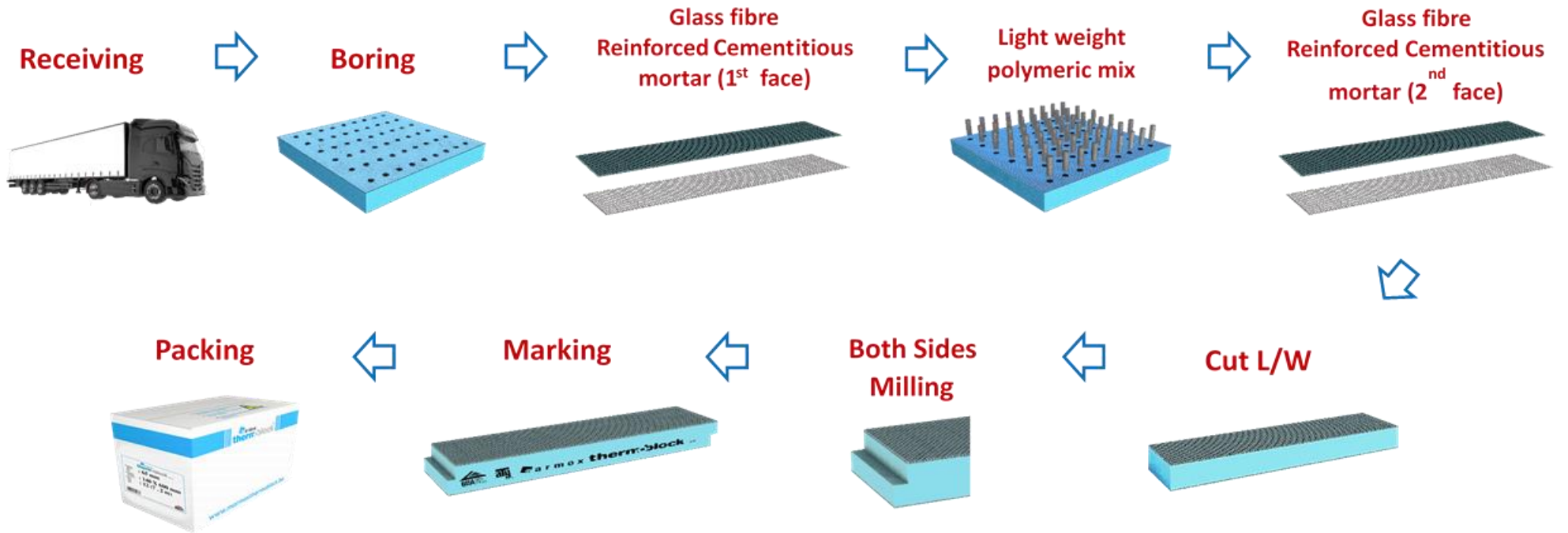
This EPD does not cover the use phase.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-c4, D)

For EOL modelling conservative scenario is used . Assumption is used for C1 - Energy needed to deconstruct the products is assumed to be 0.01 KWH/Kg mass ,moreover C2 distance is 50km , and conservative assumption that product will be landfilled at EOL is used for modelling hence treatment data point is added in C4 together with energy balancing. Module D does not claim any benefit and load beyond the system boundary .

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	Partly allocated by mass or volume
Packaging materials	Allocated by mass or volume
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	-

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 ₂ e	6,00E+00	2,77E-02	1,27E-01	6,15E+00	2,42E-01	8,45E-01	MND	MND	MND	MND	MND	MND	MND	8,75E-03	2,02E-02	0,00E+00	2,27E-02	0,00E+00
GWP – fossil	kg CO ₂ e	6,12E+00	2,76E-02	3,67E-01	6,52E+00	2,41E-01	4,71E-01	MND	MND	MND	MND	MND	MND	MND	8,75E-03	2,02E-02	0,00E+00	2,26E-02	0,00E+00
GWP – biogenic	kg CO ₂ e	-1,33E-01	1,27E-06	-2,41E-01	-3,74E-01	7,44E-05	3,74E-01	MND	MND	MND	MND	MND	MND	MND	1,60E-06	7,80E-06	0,00E+00	1,47E-05	0,00E+00
GWP – LULUC	kg CO ₂ e	1,12E-02	1,19E-04	9,87E-04	1,23E-02	1,43E-04	1,75E-04	MND	MND	MND	MND	MND	MND	MND	8,71E-07	7,44E-06	0,00E+00	2,14E-05	0,00E+00
Ozone depletion pot.	kg CFC ₁₁ e	6,19E-07	6,09E-09	6,00E-08	6,85E-07	5,15E-08	1,94E-08	MND	MND	MND	MND	MND	MND	MND	1,87E-09	4,64E-09	0,00E+00	9,16E-09	0,00E+00
Acidification potential	mol H ⁺ e	2,86E-02	1,23E-04	1,53E-03	3,03E-02	5,33E-03	1,41E-03	MND	MND	MND	MND	MND	MND	MND	9,09E-05	8,54E-05	0,00E+00	2,13E-04	0,00E+00
EP-freshwater ²⁾	kg Pe	1,72E-04	2,97E-07	1,17E-05	1,84E-04	1,15E-06	5,25E-06	MND	MND	MND	MND	MND	MND	MND	2,90E-08	1,65E-07	0,00E+00	2,37E-07	0,00E+00
EP-marine	kg Ne	6,81E-03	3,68E-05	5,10E-04	7,35E-03	1,33E-03	4,37E-04	MND	MND	MND	MND	MND	MND	MND	4,02E-05	2,54E-05	0,00E+00	7,37E-05	0,00E+00
EP-terrestrial	mol Ne	5,42E-02	4,02E-04	3,97E-03	5,85E-02	1,48E-02	4,70E-03	MND	MND	MND	MND	MND	MND	MND	4,41E-04	2,80E-04	0,00E+00	8,11E-04	0,00E+00
POCP (“smog”) ³⁾	kg NMVOCe	2,24E-02	1,30E-04	1,07E-03	2,36E-02	3,91E-03	1,21E-03	MND	MND	MND	MND	MND	MND	MND	1,21E-04	8,96E-05	0,00E+00	2,36E-04	0,00E+00
ADP-minerals & metals ⁴⁾	kg Sbe	6,75E-05	1,19E-07	1,40E-06	6,91E-05	4,19E-07	2,42E-06	MND	MND	MND	MND	MND	MND	MND	4,43E-09	4,73E-08	0,00E+00	5,20E-08	0,00E+00
ADP-fossil resources	MJ	1,09E+02	4,14E-01	5,51E+00	1,15E+02	3,27E+00	1,92E+00	MND	MND	MND	MND	MND	MND	MND	1,18E-01	3,03E-01	0,00E+00	6,21E-01	0,00E+00
Water use ⁵⁾	m ³ e depr.	3,54E+00	2,11E-03	1,26E-01	3,67E+00	1,20E-02	4,67E-01	MND	MND	MND	MND	MND	MND	MND	3,16E-04	1,36E-03	0,00E+00	1,97E-03	0,00E+00

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.

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 ⁶⁾	MJ	5,35E+00	7,10E-03	3,07E+00	8,42E+00	3,07E-02	1,32E-01	MND	MND	MND	MND	MND	MND	MND	6,73E-04	3,41E-03	0,00E+00	5,39E-03	0,00E+00
Renew. PER as material	MJ	1,20E+00	0,00E+00	2,11E+00	3,31E+00	0,00E+00	-3,29E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-2,27E-02	0,00E+00
Total use of renew. PER	MJ	6,54E+00	7,10E-03	5,18E+00	1,17E+01	3,07E-02	-3,15E+00	MND	MND	MND	MND	MND	MND	MND	6,73E-04	3,41E-03	0,00E+00	-1,73E-02	0,00E+00
Non-re. PER as energy	MJ	8,27E+01	4,14E-01	5,32E+00	8,84E+01	3,27E+00	2,19E+00	MND	MND	MND	MND	MND	MND	MND	1,18E-01	3,03E-01	0,00E+00	6,21E-01	0,00E+00
Non-re. PER as material	MJ	2,85E+01	0,00E+00	-2,74E+00	2,57E+01	0,00E+00	-2,12E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-2,55E+01	0,00E+00

Total use of non-re. PER	MJ	1,11E+02	4,14E-01	2,57E+00	1,14E+02	3,27E+00	1,97E+00	MND	MND	MND	MND	MND	MND	MND	MND	1,18E-01	3,03E-01	0,00E+00	-2,49E+01	0,00E+00
Secondary materials	kg	2,25E-02	1,32E-04	1,25E-01	1,47E-01	1,26E-03	3,24E-04	MND	MND	MND	MND	MND	MND	MND	MND	4,61E-05	8,41E-05	0,00E+00	1,30E-04	0,00E+00
Renew. secondary fuels	MJ	3,35E-02	1,24E-06	5,02E-02	8,36E-02	5,72E-06	1,01E-05	MND	MND	MND	MND	MND	MND	MND	MND	1,51E-07	8,49E-07	0,00E+00	3,41E-06	0,00E+00
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	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	8,68E-02	5,91E-05	2,14E-01	3,01E-01	3,02E-04	4,92E-03	MND	MND	MND	MND	MND	MND	MND	MND	7,15E-06	3,93E-05	0,00E+00	6,80E-04	0,00E+00

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	3,48E-01	6,17E-04	1,50E-02	3,63E-01	4,07E-03	8,36E-03	MND	MND	MND	MND	MND	MND	MND	1,58E-04	4,02E-04	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste	kg	6,80E+00	1,06E-02	5,43E-01	7,35E+00	4,66E-02	5,18E-01	MND	MND	MND	MND	MND	MND	MND	1,11E-03	6,60E-03	0,00E+00	4,30E+00	0,00E+00
Radioactive waste	kg	1,37E-04	2,80E-06	1,09E-05	1,50E-04	2,29E-05	9,02E-06	MND	MND	MND	MND	MND	MND	MND	8,29E-07	2,03E-06	0,00E+00	0,00E+00	0,00E+00

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	1,55E-03	0,00E+00	0,00E+00	1,55E-03	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 energy rec	kg	2,29E-05	0,00E+00	0,00E+00	2,29E-05	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

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
05.01.2024

