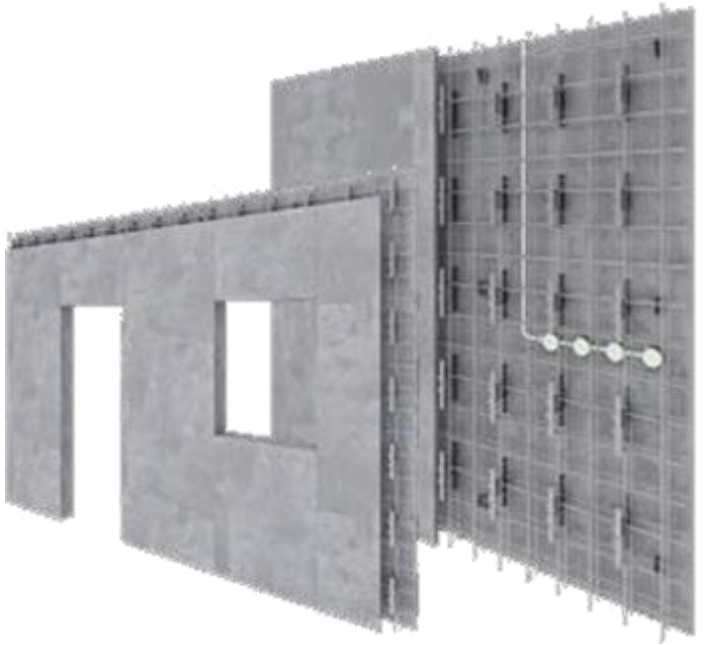
ENVIRONMENTAL PRODUCT DECLARATION

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

VST permanent formwork system
VST Production s.r.o.



EPD HUB, HUB-0471
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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	VST Production s.r.o.
Address	Novozámocká 179
Contact details	novak@vstsystem.sk
Website	www.vstsystem.sk

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	Silvia Vilčeková, Sarah Curpen
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	H.N, 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	VST permanent formwork system
Additional labels	-
Product reference	-
Place of production	Nitra, Slovak Republic
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	0%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m2
Declared unit mass	85.5 kg
GWP-fossil, A1-A3 (kgCO2e)	9,26E1
GWP-total, A1-A3 (kgCO2e)	8,46E1
Secondary material, inputs (%)	6.43
Secondary material, outputs (%)	26.6
Total energy use, A1-A3 (kWh)	313.0
Total water use, A1-A3 (m3e)	5,99E-1

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

VST Group has many years of experience in the composite formwork technology market and offers builders tailor-made solutions for modern construction thanks to innovative patented technology as well as components that are adapted to a specific project.
VST technology is primarily used in residential construction. In addition to the supply of building elements, VST also offers rough construction and engineering services for construction projects. In Germany and Austria, VST also offers all construction services up to turnkey construction. The first automated production line of VST BUILDING TECHNOLOGIES AG was opened in Nitra, Slovakia in the autumn of 2013. It is the most modern and largest plant to produce building elements such as walls and slabs in Europe.
At the VST production plant in Nitra, the patented VST composite formwork system for construction outside the building is produced according to individual customer projects. The automation of the production line represents a technological breakthrough in the industrialization of component production, as it makes the entire production process much more efficient and economical. On the one hand, the use of raw materials in production is reduced, and on the other hand, the need for labour is reduced.

PRODUCT DESCRIPTION

The VST permanent formwork system is a non-load-bearing permanent shuttering kit based on panels of thermal insulating material with regularly arranged steel spacers. The shuttering kit comprises of the following shuttering elements:
(1) Walls with and without openings,
(2) Column elements,
(3) Lintel elements,
(4) Ceiling, and
(5) Parapet and balustrade elements.

Ordinary portland cement cement-bonded particle boards (CBPB) are used. The shuttering elements are used to contain fresh concrete as a permanent shuttering. Under construction, they are loaded by the pressure of the casted fresh concrete. After hardening of the concrete core, the shuttering kit has no load-bearing function anymore. The panels of the shuttering kit then take over a part of the insulation function of the wall and serve as a substrate for additional finishes. The wall thickness of the shuttering varies between 15 cm to 30 cm. It also has sound insulation and fire resistance properties.

Application

The shuttering kit is intended to be used for construction of internal walls as well as external walls above and below ground that are load bearing (structural) or non-load bearing (non-structural), including those that are subject to fire regulations.

Technical Specifications

The shuttering elements are made of 24 mm thick cement bonded particleboard as leaves connected with steel clips as spacers.
The maximum dimensions of the shuttering elements are up to a height of 2.90 m, a length of 6.5 m and wall thickness of 30 cm.
Water vapour resistance: $\mu = 60$ according to EN ISO 10456
Thermal conductivity: $\lambda = 0.26$ W/(m.K) according to EN ISO 6946
Airborne sound insulation: 51 dB < Rw < 61 dB according to
EN ISO 10140-2.

Product Standards

EN 13501-1, EN ISO 10456, EN ISO 15148, EN 310, EN ISO 10140-2, EN 12354-1, EN ISO 717-1, EN ISO 6946, EN 323

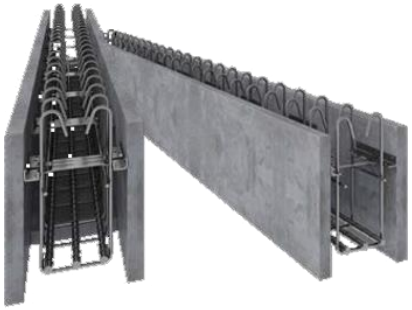
Physical Properties

Thermal resistance: Class A2 -s1, d0

Further information can be found at www.vstsystem.eu.

PRODUCT RAW MATERIAL MAIN COMPOSITION

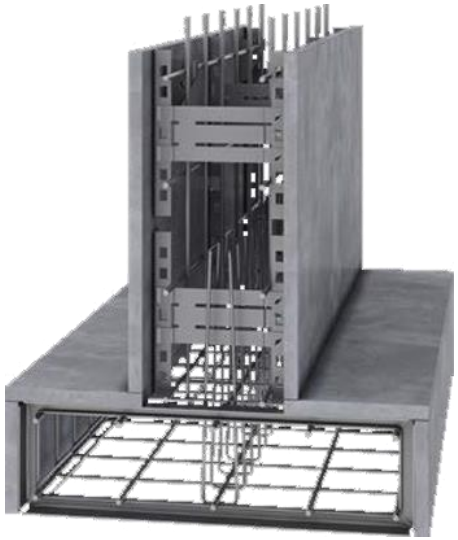
Raw material category	Amount, mass- %	Material origin
Metals	19.5	Štúrovo, Slovakia
Minerals	72.3	Vilnius, Slovakia
Fossil materials	0	-
Bio-based materials	8.2	Nitra, Slovakia



BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	6.97
Biogenic carbon content in packaging, kg C	0.3771



FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m2
Mass per declared unit	85.5 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	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. Components such as electrical boxes, heating system are not included as they are not typically added in the factory but rather on site. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A1 Raw material supply takes into account the extraction and processing of all raw materials and energy which occur upstream of the studied manufacturing process. Specifically, cement bonded particle board raw material supply covers production of the components and sourcing of raw materials for particle board production, e.g., cement, steel for steel spacers and steel wires.

A2 Transport to the manufacturer consider transportation impacts that include exhaust emissions resulting from the transport of all raw materials from suppliers to production plant. The transportation distances and methods were provided by manufacturer. Module includes road transportation (truck EURO6, 16-32t, consumption 35 l / 100 km).

A3 Manufacturing is carried out on two lines:
(1) Automatic line
(2) Manual line

Automatic line

Cement bonded particle boards with a standard size of 1200mm x 3200mm are placed on a conveyor system by a handling robot, where the input material - boards - is checked. The boards are automatically passed through an edge machine where a tongue and groove are milled on both long edges of the board as it passes and then the adhesive is applied. The individual boards are pulled together and pressed together to form an ''endless'' board.
After connecting the standard board elements, the ''endless'' board is immediately cut to the desired length of the wall element. The next operation is the cutting of all the necessary openings (window or door openings, openings for electro boxes or various transitions for air conditioning, or other technological openings). All these cuts are made with a water jet, while cutting with this technology brings countless advantages. High accuracy +/-0.5mm, cutting complicated shapes, possibility of cutting oblique cuts, no thermal change of material, width of cut 1.5mm, dust-free, etc.
Two screwdriving robots with gripping devices specially adapted for spacer profiles simultaneously screw the spacer profiles onto the slabs. After the slabs have been flipped into a vertical position, the slabs are moved to the workplace, where the reinforcement and all the necessary components are

fitted according to the production documentation (electrical pipes, electro-boxes, transport hinges, sanitary and heating pipes, etc.). The two halves of the wall are then pressed together. The finished walls are taken by overhead crane to the finishing station, where the final completion of the wall is carried out, an exit inspection is carried out and the wall is transferred to the transport rack.

Manual line

This line produces non-standard VST elements (walls, attics, beams, columns, staircases, etc.) which are manufactured according to individual customer requirements. The basis of the manual line is a universal saw with an automatic feeding system and a vacuum manipulator. The saw is placed in the middle of both production lines and cuts the cement-bonded particleboards to the required size. It also cuts the necessary holes (e.g. for windows or doors, electrodes and other technological holes). After the cuts have been made, the cement-bonded particle boards are moved to the screwing workplace, where the specially developed steel spacer profiles are screwed in. The spacer profiles are fastened with galvanised countersunk head screws without the screws penetrating the surface of the elements from the inside. This preserves the undamaged visual surface of the board, which is already ready for painting or application of a thin-layer trowel. Once the spacer profiles have been screwed in, the element halves are inserted into the press. The reinforcing mesh is installed before pressing. In addition, electrical pipes (including electrical boxes), various transitions and penetrations, and possibly heating and sanitary pipes are installed in the elements. Once all the components have been assembled, the two halves of the elements are pressed together, with the spacer profiles permanently joined to each other by means of a click system. The manufactured element (wall, column, beam, etc.) is then moved to the finishing station, where the element is finally finished according to the design documentation so that it is ready for transport and installation on site.

After the exit inspection, the component is loaded into the transport rack.

Manufacturing covers all processes linked to production, which comprises various related operations besides on-site activities such as grinding, painting and drying, packaging and internal transportation.
The energy carriers are modelled according to the manufacturer's log of energy consumption. The local electricity grid is used and the district heating from natural gas is modelled for the geographic location.
Packaging-related flows in the production process and all up-stream packaging are included in the manufacturing module, i.e. wooden pallets, paper and plastic film. The production of packaging material, the supply and transport of packaging material are also considered in the LCA model.

The environmental impacts considered for the production stage cover the manufacturing of the production materials and fuels used by machines. The environmental impacts of this stage have been calculated using the most recent data in regard to what applied in the factory. The data is from the year 2022. The study considers the losses of main raw materials occurring during the manufacturing process.

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 transportation distance is defined according to PCR. The weighted average of the travelling distance was used as the product is delivered to several locations. The weighted travelling distance calculated according to the production percentage delivered to each location was estimated as 1485 km and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, 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 taken into account 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.

A5 Installation
There is no loss of material during installation since the product is a prefabricated object made for pre-defined dimensions and ready for installation.
Installation processes are not included in the scope. However, packaging wastes from wood, paper and plastic are included in the analysis.

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)

C1 Demolition
The formwork system is disassembled using an electrical machinery. The electricity consumption of dismantling is 0.406 kWh.

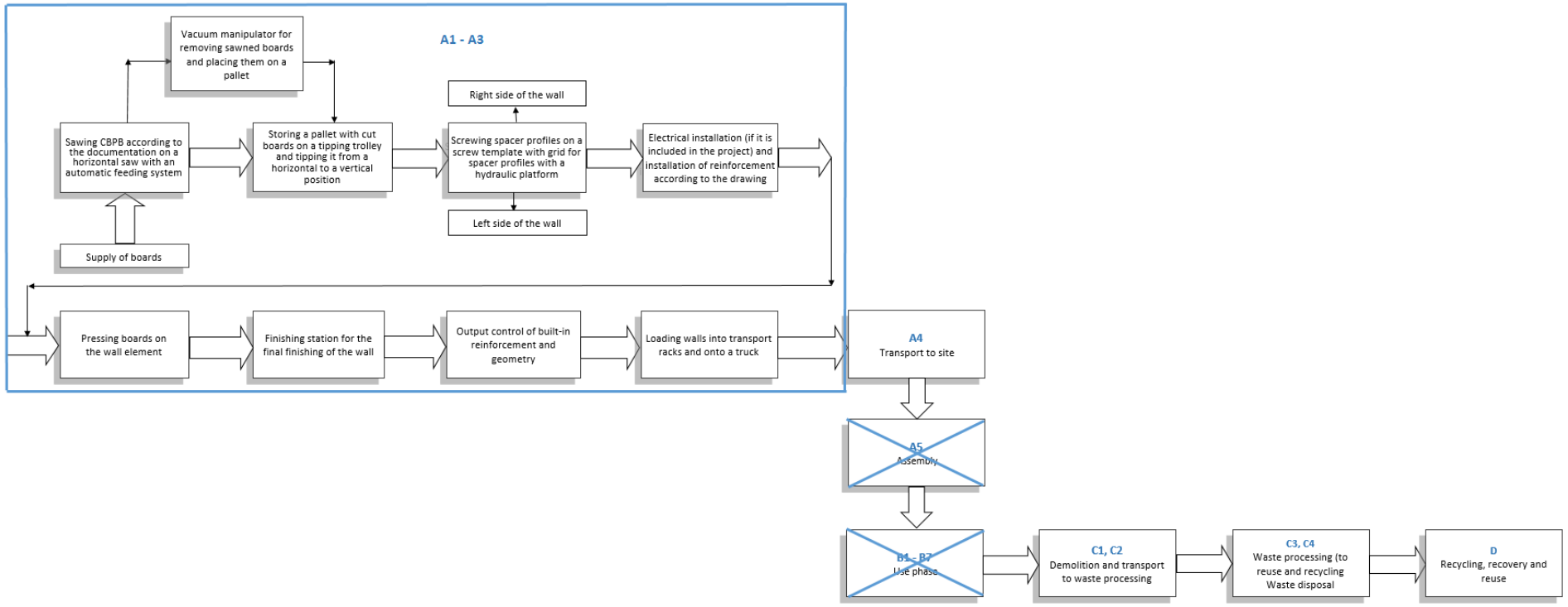
C2 Transport
Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is a typical truck with 24-ton payload capacity.

C3 Waste processing
It is assumed that 25% of the remaining cement bonded board is recycled as aggregate for construction and 95% of the steel is recycled to produce reinforcement steel.

C4 Disposal
75% cement bonded board and 5% of steel are assumed to be transported as construction waste to the closest landfill for final disposal.

D Benefits
Module considers benefits of energy recovery which replaces district heat and electricity.

MANUFACTURING PROCESS AND SYSTEM BOUNDARY



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	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	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 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	7,42E1	7,97E0	2,43E0	8,46E1	2,08E1	1,43E0	MND	MND	MND	MND	MND	MND	MND	2,12E-1	7,13E-1	3,72E0	3,02E1	6,78E-1
GWP – fossil	kg CO_2e	8,12E1	7,96E0	3,39E0	9,26E1	2,09E1	2,46E-2	MND	MND	MND	MND	MND	MND	MND	2,1E-1	7,13E-1	8,03E-1	3,71E0	-5,48E-1
GWP – biogenic	kg CO_2e	-7,14E0	5,65E-3	-9,68E-1	-8,1E0	1,13E-2	1,4E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,23E0
GWP – LULUC	kg CO_2e	7,9E-2	2,44E-3	2,36E-3	8,38E-2	7,56E-3	2,51E-5	MND	MND	MND	MND	MND	MND	MND	7,27E-4	2,53E-4	4,74E-4	2,64E-4	-1,32E-5
Ozone depletion pot.	kg $CFC_{-11}e$	4,16E-6	1,87E-6	5E-7	6,53E-6	4,76E-6	2,66E-9	MND	MND	MND	MND	MND	MND	MND	1,73E-8	1,62E-7	7,12E-8	1,37E-7	-1,35E-7
Acidification potential	mol H^+e	3,08E-1	3,28E-2	1,74E-2	3,58E-1	6,01E-2	9,39E-5	MND	MND	MND	MND	MND	MND	MND	1,5E-3	2,91E-3	8,92E-3	3,76E-2	-7,97E-4
EP-freshwater[2)]	kg Pe	1,46E-3	6,5E-5	1,79E-4	1,7E-3	1,78E-4	1,01E-6	MND	MND	MND	MND	MND	MND	MND	3,07E-5	5,96E-6	9,31E-5	5,95E-4	-4,92E-7
EP-marine	kg Ne	6,6E-2	9,76E-3	3,17E-3	7,89E-2	1,19E-2	2E-5	MND	MND	MND	MND	MND	MND	MND	1,63E-4	8,65E-4	3,39E-3	2,11E-2	-1,23E-4
EP-terrestrial	mol Ne	7,46E-1	1,08E-1	3,67E-2	8,91E-1	1,33E-1	2,24E-4	MND	MND	MND	MND	MND	MND	MND	1,85E-3	9,55E-3	3,51E-2	2,07E-1	-1,38E-3
POCP ("smog")[3)]	kg NMVOCe	2,93E-1	3,48E-2	1,07E-2	3,39E-1	5,1E-2	7,06E-5	MND	MND	MND	MND	MND	MND	MND	5,13E-4	2,93E-3	1,05E-2	6,43E-2	-7,11E-4
ADP-minerals & metals[4)]	kg Sbe	7,97E-4	1,43E-4	1,22E-5	9,53E-4	5,78E-4	3,4E-7	MND	MND	MND	MND	MND	MND	MND	1,64E-6	1,93E-5	2,3E-5	1,16E-5	-2,67E-7
ADP-fossil resources	MJ	7,4E2	1,24E2	1,08E2	9,72E2	3,17E2	3,42E-1	MND	MND	MND	MND	MND	MND	MND	4,65E0	1,07E1	6,51E0	9,91E0	-9,46E0
Water use[5)]	m^3e depr.	2,46E1	4,55E-1	7,34E0	3,24E1	1,04E0	4,56E-3	MND	MND	MND	MND	MND	MND	MND	5,4E-2	3,46E-2	8,14E-2	4,51E-2	-1,1E-1

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	1,45E2	1,57E0	9,36E0	1,56E2	4,53E0	3,19E-2	MND	MND	MND	MND	MND	MND	MND	4,18E-1	1,52E-1	8,68E-1	1,51E-1	-1,17E-2
Renew. PER as material	MJ	0E0	0E0	1,36E1	1,36E1	0E0	-1,36E1	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,36E1
Total use of renew. PER	MJ	1,45E2	1,57E0	2,29E1	1,69E2	4,53E0	-1,35E1	MND	MND	MND	MND	MND	MND	MND	4,18E-1	1,52E-1	8,68E-1	1,51E-1	1,36E1
Non-re. PER as energy	MJ	7,4E2	1,24E2	1,07E2	9,7E2	3,17E2	3,42E-1	MND	MND	MND	MND	MND	MND	MND	4,65E0	1,07E1	6,51E0	9,91E0	-8,01E0
Non-re. PER as material	MJ	0E0	0E0	1,45E0	1,45E0	0E0	-1,45E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	2,22E-16
Total use of non-re. PER	MJ	7,4E2	1,24E2	1,08E2	9,72E2	3,17E2	-1,11E0	MND	MND	MND	MND	MND	MND	MND	4,65E0	1,07E1	6,51E0	9,91E0	-8,01E0
Secondary materials	kg	5,47E0	0E0	2,14E-2	5,5E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	3,02E-2
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
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	4,91E-1	2,53E-2	8,21E-2	5,99E-1	5,47E-2	9,5E-5	MND	MND	MND	MND	MND	MND	MND	1,47E-3	1,84E-3	2,89E-3	6,19E-3	-1,35E-3

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	8,42E0	1,21E-1	7,66E-2	8,62E0	3,26E-1	1,28E-3	MND	MND	MND	MND	MND	MND	MND	1,26E-2	1,09E-2	0E0	7,18E-2	1,81E-3
Non-hazardous waste	kg	7,79E1	1,29E1	9,29E0	1E2	2,24E1	5,62E-2	MND	MND	MND	MND	MND	MND	MND	1,41E0	7,49E-1	0E0	6,26E1	8,12E-1
Radioactive waste	kg	7,97E-4	8,48E-4	1,2E-3	2,85E-3	2,17E-3	1,94E-6	MND	MND	MND	MND	MND	MND	MND	3,26E-5	7,37E-5	0E0	5,8E-5	-1,45E-7

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	0E0	0E0	0E0	0E0	0E0	5,81E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	2,27E1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	6,11E-1	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	8,02E1	7,89E0	3,34E0	9,14E1	2,08E1	2,44E-2	MND	MND	MND	MND	MND	MND	MND	2,07E-1	7,07E-1	1,22E0	7,49E0	-5,12E-1
Ozone depletion Pot.	kg $CFC_{-11}e$	3,8E-6	1,48E-6	3,84E-7	5,66E-6	3,79E-6	2,38E-9	MND	MND	MND	MND	MND	MND	MND	2,37E-8	1,29E-7	5,97E-8	1,1E-7	-1,01E-7
Acidification	kg SO_2e	1,95E-1	1,62E-2	1,44E-2	2,25E-1	4,23E-2	7,03E-5	MND	MND	MND	MND	MND	MND	MND	1,34E-3	1,43E-3	6,66E-3	3,34E-2	-7,07E-4
Eutrophication	kg PO_4^3e	1,02E-1	3,28E-3	1,25E-2	1,18E-1	8,74E-3	5,29E-5	MND	MND	MND	MND	MND	MND	MND	9,64E-4	2,94E-4	5,63E-2	4,96E-1	4,3E-5
POCP (“smog”)	kg C_2H_4e	2,74E-2	1,02E-3	7,87E-4	2,92E-2	2,53E-3	4,29E-6	MND	MND	MND	MND	MND	MND	MND	4,86E-5	9,41E-5	1,14E-3	9,05E-3	-6,23E-5
ADP-elements	kg Sbe	7,97E-4	1,43E-4	1,22E-5	9,53E-4	5,78E-4	3,4E-7	MND	MND	MND	MND	MND	MND	MND	1,64E-6	1,93E-5	2,3E-5	1,16E-5	-2,67E-7
ADP-fossil	MJ	7,4E2	1,24E2	1,08E2	9,72E2	3,17E2	3,42E-1	MND	MND	MND	MND	MND	MND	MND	4,65E0	1,07E1	6,51E0	9,91E0	-9,46E0

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
19.05.2023

VERIFIED ISO 14025