

ENVIRONMENTAL PRODUCT DECLARATION

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

BI-FOLD SHOWER DOOR

Vihtan Oy



EPD HUB, HUB-2359

Published on 13.12.2024, last updated on 13.12.2024, valid until 12.12.2029

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Vihtan Oy
Address	Sälpäkuja 7, 90620 Oulu, Finland
Contact details	tilaus@vihtan.fi
Website	https://www.vihtan.fi/

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 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	
Scope of the EPD	Cradle to gate with options, A4, and modules C1-C4, D
EPD author	Jori Jokela
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ 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	BI-FOLD SHOWER DOOR
Additional labels	OCEAN 5, PISARA 5, PURO 5 (Please see Appendix 1)
Product reference	PISARA 5 700x2019mm
Place of production	Oulu, Finland
Period for data	Year 2023
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass	21,06 kg
GWP-fossil, A1-A3 (kgCO₂e)	70,5
GWP-total, A1-A3 (kgCO₂e)	68,2
Secondary material, inputs (%)	0,51
Secondary material, outputs (%)	47,2
Total energy use, A1-A3 (kWh)	226
Net freshwater use, A1-A3 (m³)	0,49

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Vihtan is a leading Finnish manufacturer specializing in shower doors and glass solutions. Our products feature modern, practical Finnish design, tailored to meet the needs of today's homes.

Our wide range of high-quality products includes shower screens, glass interior doors, sauna doors, sliding glass doors, and glass walls, providing versatile solutions for various interior spaces. In addition to standard products, we provide custom-made solutions to fit specific needs. All our products are manufactured in Finland and carry the Key Flag Symbol, a mark of Finnish craftsmanship and quality.

Our focus is on reliability and flexibility, ensuring quick delivery of standard-sized products within a week to support bathroom renovation and construction projects. Our commitment to customer satisfaction drives us to deliver products that are not only functional and easy to use but also aesthetically pleasing and designed to enhance the overall living experience.

PRODUCT DESCRIPTION

The shower door with 6 mm toughened safety glass and aluminium profile has $\pm 90^\circ$ opening for easy access. Lifting hinges ensure smooth opening and closing of the doors. The shower door can be folded to very compact space thanks to hinges in the middle. The modern shower door is perfect for complementing any bathroom and is easy to install either left or right-hand orientation without any extra work.

This is a representative EPD for multiple products, with dimensions ranging from 700x2019mm to 900x2287mm. The products included are listed after the results tables. This declaration is based on the PISARA 5 700x2019mm product.

Further information can be found at <https://www.vihtan.fi/>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	13,1	PRC
Minerals	85,6	PRC
Fossil materials	1,3	Europe
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	0,645

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit
Mass per declared unit	21,06 kg

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	Deconstruction/ demolition	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.

Transport distances for raw materials are calculated based on distances between known raw material manufacturers and product manufacturing site. LCA study for country specific electricity mixes (Finland) on IEA profile 2022

(LCA study for country specific electricity mixes based on IEA, OneClickLCA 2024) were used as energy sources profile.

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.

Weighted average of transport distances to customers is used in A4. The transports are assumed to take place by lorry. Installation contains only packaging waste impacts and have been declared in C-phase. Cardboard/paper packing materials will be recycled as materials for energy recovery and plastics will be recycled as materials for plastics recycling or as materials for energy recovery (C3).

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)

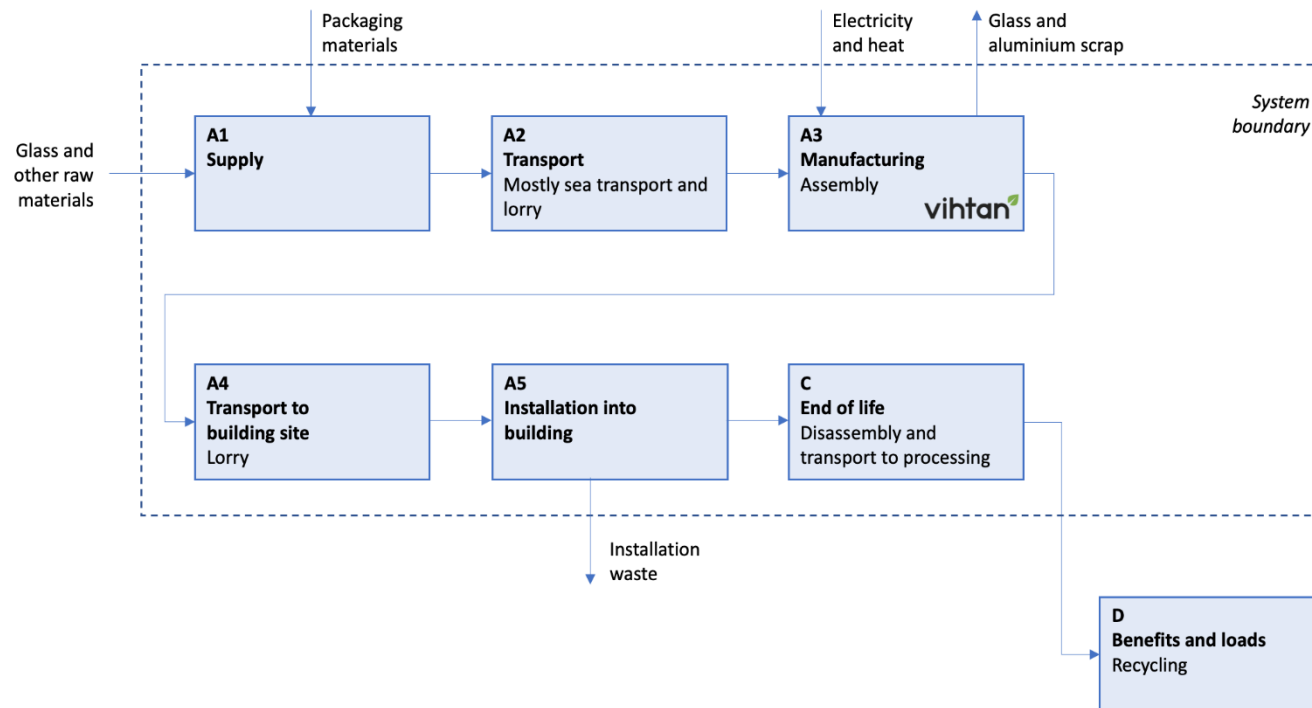
This study considers that the shower screen at its EoL is dismantled manually and separately from other construction waste, hence no energy nor material is required. It is assumed that 100% of the shower screen products are collected (C1). Distance for transportation to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2).

End of life scenario for materials is modelled based on data from standard EN17213:2020. At EoL, 95% of the product's aluminium and metal components are assumed to be recycled (C3) and 5% goes to landfill. For glass components, 30% are assumed to be recycled and 70% goes to landfill. Plastic components (95% incinerated) and packaging with cardboard materials (91% recycled), can be recycled as materials or utilized in energy production.

Later reusable (D) metals, glass, plastics and packaging materials are utilized to manufacture new products or are utilized as energy.

MANUFACTURING PROCESS AND SYSTEM BOUNDARY

Tempered glass sheets and other raw materials are delivered to the manufacturing site by lorry, mostly preceded by sea freight. Products are assembled at the manufacturing site. The finished end products are carefully packaged and arranged for delivery. After the transport, the products are ready for direct installation on site.



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 material	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Primary data represents the manufacturing site in Oulu, Finland. Products of different dimensions with similar material composition are covered by scaling. The dimensions-based results for products and packaging can be scaled to each product unit size. The different dimensions are listed in Appendix 1. The data of 700x2019mm PISARA 5 product was used to calculate the impacts for the product. The primary data has calculated of the PISARA 5 consumption of raw materials and energy, and production of waste.

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

Type of average	No averaging
Averaging method	Not applicable

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. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases 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	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	6,32E+01	4,43E+00	5,70E-01	6,82E+01	1,78E+00	0,00E+00	1,30E-01	3,22E+00	3,51E-01	-1,27E+01
GWP – fossil	kg CO ₂ e	6,31E+01	4,43E+00	2,93E+00	7,05E+01	1,78E+00	0,00E+00	1,30E-01	1,09E+00	1,37E-01	-1,24E+01
GWP – biogenic	kg CO ₂ e	0,00E+00	0,00E+00	-2,37E+00	-2,37E+00	0,00E+00	0,00E+00	4,95E-05	2,14E+00	2,14E-01	-9,42E-02
GWP – LULUC	kg CO ₂ e	1,29E-01	3,14E-03	9,95E-03	1,42E-01	7,10E-04	0,00E+00	5,06E-05	1,19E-04	1,21E-04	-3,02E-01
Ozone depletion pot.	kg CFC-11e	3,73E-06	8,88E-07	2,09E-07	4,83E-06	4,12E-07	0,00E+00	3,12E-08	1,08E-08	4,11E-08	-1,32E-06
Acidification potential	mol H ⁺ e	4,87E-01	1,36E-01	1,94E-02	6,42E-01	5,05E-03	0,00E+00	3,93E-04	8,10E-04	1,13E-03	-8,27E-02
EP-freshwater ²⁾	kg Pe	1,71E-03	1,68E-05	3,22E-04	2,05E-03	1,27E-05	0,00E+00	9,42E-07	4,55E-06	1,71E-06	-6,55E-04
EP-marine	kg Ne	7,57E-02	3,33E-02	5,20E-03	1,14E-01	1,01E-03	0,00E+00	8,28E-05	2,75E-04	6,99E-04	-9,11E-03
EP-terrestrial	mol Ne	8,76E-01	3,70E-01	5,08E-02	1,30E+00	1,12E-02	0,00E+00	9,20E-04	2,70E-03	4,28E-03	-1,01E-01
POCP (“smog”) ³⁾	kg NMVOCe	2,36E-01	9,62E-02	9,73E-03	3,42E-01	4,30E-03	0,00E+00	3,58E-04	7,16E-04	1,28E-03	-3,80E-02
ADP-minerals & metals ⁴⁾	kg Sbe	3,24E-04	6,71E-06	1,26E-05	3,43E-04	6,43E-06	0,00E+00	3,95E-07	2,59E-06	4,20E-07	-3,18E-05
ADP-fossil resources	MJ	6,42E+02	5,62E+01	5,69E+01	7,55E+02	2,64E+01	0,00E+00	2,01E+00	1,38E+00	3,02E+00	-1,97E+02
Water use ⁵⁾	m ³ e depr.	1,65E+01	1,74E-01	3,25E+00	2,00E+01	1,24E-01	0,00E+00	9,31E-03	7,18E-02	1,48E-02	-2,49E+01

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	C1	C2	C3	C4	D
Particulate matter	Incidence	5,59E-06	1,52E-07	1,93E-07	5,93E-06	1,43E-07	0,00E+00	1,28E-08	1,01E-08	2,32E-08	-9,01E-07
Ionizing radiation ⁶⁾	kBq 11235e	2,35E+00	2,61E-01	6,51E-01	3,26E+00	1,39E-01	0,00E+00	1,04E-02	1,75E-02	1,36E-02	-3,58E+00
Ecotoxicity (freshwater)	CTUe	1,60E+03	3,65E+01	4,94E+01	1,68E+03	2,21E+01	0,00E+00	1,68E+00	7,70E+00	8,82E+01	-2,27E+02
Human toxicity, cancer	CTUh	5,72E-08	2,59E-09	1,11E-09	6,09E-08	6,79E-10	0,00E+00	4,74E-11	2,81E-10	9,34E-11	8,28E-09
Human tox. non-cancer	CTUh	1,13E-06	2,45E-08	2,95E-08	1,18E-06	2,16E-08	0,00E+00	1,67E-09	6,17E-09	1,67E-09	-5,44E-07
SQP ⁷⁾	-	1,97E+02	1,03E+01	6,84E+01	2,76E+02	1,88E+01	0,00E+00	1,90E+00	3,26E+00	7,66E+00	-1,61E+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	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	5,77E+01	4,17E-01	1,70E+01	7,51E+01	3,85E-01	0,00E+00	2,73E-02	1,50E-01	4,19E-02	-7,89E+01
Renew. PER as material	MJ	1,00E-04	0,00E+00	2,04E+01	2,04E+01	0,00E+00	0,00E+00	0,00E+00	-1,86E+01	-1,84E+00	2,36E-01
Total use of renew. PER	MJ	5,77E+01	4,17E-01	3,74E+01	9,55E+01	3,85E-01	0,00E+00	2,73E-02	-1,84E+01	-1,80E+00	-7,87E+01
Non-re. PER as energy	MJ	6,37E+02	5,62E+01	4,52E+01	7,38E+02	2,64E+01	0,00E+00	2,01E+00	1,38E+00	3,02E+00	-1,93E+02
Non-re. PER as material	MJ	6,15E+00	0,00E+00	1,17E+01	1,79E+01	0,00E+00	0,00E+00	0,00E+00	-1,47E+01	-3,21E+00	3,66E+00
Total use of non-re. PER	MJ	6,43E+02	5,62E+01	5,69E+01	7,56E+02	2,64E+01	0,00E+00	2,01E+00	-1,33E+01	-1,93E-01	-1,90E+02
Secondary materials	kg	1,07E-01	2,52E-02	1,58E+00	1,71E+00	9,00E-03	0,00E+00	6,22E-04	2,11E-03	1,03E-03	-3,27E+00
Renew. secondary fuels	MJ	1,75E-02	7,88E-05	1,19E-01	1,36E-01	9,91E-05	0,00E+00	6,26E-06	7,65E-05	1,97E-05	-1,46E-03
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	4,46E-01	3,85E-03	4,16E-02	4,91E-01	3,37E-03	0,00E+00	2,61E-04	1,98E-03	3,31E-03	-5,44E-01

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	8,75E+00	7,58E-02	1,37E-01	8,96E+00	3,01E-02	0,00E+00	2,25E-03	1,49E-02	2,18E-04	-2,63E+00
Non-hazardous waste	kg	6,79E+01	6,62E-01	3,83E+00	7,23E+01	5,35E-01	0,00E+00	3,94E-02	1,60E+00	1,28E+01	-3,00E+01
Radioactive waste	kg	1,66E-03	3,97E-04	2,53E-04	2,31E-03	1,82E-04	0,00E+00	1,38E-05	7,17E-06	2,63E-07	-1,22E-03

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	1,66E-01	1,66E-01	0,00E+00	0,00E+00	0,00E+00	9,42E+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	0,00E+00	5,15E-01	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	0,00E+00	5,65E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	6,18E+01	4,40E+00	2,98E+00	6,92E+01	1,76E+00	0,00E+00	1,29E-01	1,11E+00	2,79E-01	-1,22E+01
Ozone depletion Pot.	kg CFC ₁₁ e	3,12E-06	7,03E-07	1,78E-07	4,00E-06	3,26E-07	0,00E+00	2,47E-08	9,01E-09	3,26E-08	-1,13E-06
Acidification	kg SO ₂ e	4,08E-01	1,09E-01	1,44E-02	5,31E-01	4,14E-03	0,00E+00	3,21E-04	6,20E-04	8,55E-04	-7,14E-02
Eutrophication	kg PO ₄ ³ e	8,25E-02	1,22E-02	6,49E-03	1,01E-01	8,94E-04	0,00E+00	6,87E-05	6,01E-04	1,87E-03	-2,64E-02
POCP ("smog")	kg C ₂ H ₄ e	2,01E-02	2,81E-03	8,94E-04	2,38E-02	2,09E-04	0,00E+00	1,55E-05	3,79E-05	6,32E-05	-7,35E-03
ADP-elements	kg Sbe	2,76E-04	6,58E-06	1,10E-05	2,94E-04	6,28E-06	0,00E+00	3,85E-07	2,56E-06	4,05E-07	-2,86E-05
ADP-fossil	MJ	6,42E+02	5,62E+01	5,66E+01	7,55E+02	2,64E+01	0,00E+00	2,01E+00	1,38E+00	3,02E+00	-1,97E+02

Appendix 1. Scaling table of Bi-fold Shower Doors.

Model names	Size	Mass	A1-A3 GWP-fossil kg CO2 eq/unit	A1-A3 GWP-total kg CO2 eq/unit
OCEAN 5	700x2019mm	21,132	71,8	69,6
OCEAN 5	800x2019mm	24,102	74,7	72,4
OCEAN 5	900x2019mm	27,072	78,8	76,6
PISARA 5	700x2019mm	21,062	70,5	68,2
PISARA 5	800x2019mm	24,032	74,6	72,4
PISARA 5	900x2019mm	27,002	78,7	76,5
PURO 5	700x2037mm	21,622	79,6	77,4
PURO 5	800x2037mm	24,592	82,8	80,6
PURO 5	900x2037mm	27,562	87,9	85,7
OCEAN 5	700x2269mm	23,960	83,6	81,4
OCEAN 5	800x2269mm	27,300	88,2	86
OCEAN 5	900x2269mm	30,648	92,9	90,7
PURO 5	700x2287mm	25,258	104	102
PURO 5	800x2287mm	28,603	107	105
PURO 5	900x2287mm	31,948	112	110

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
10.12.2024

