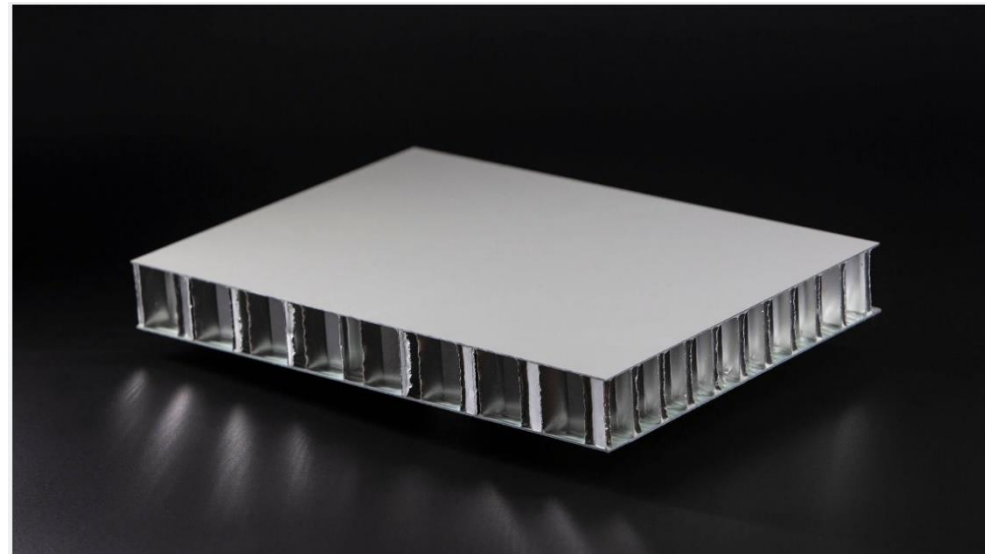


ENVIRONMENTAL PRODUCT DECLARATION

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

Potmacore honeycomb panel
Potma Oy



EPD HUB, HUB-0727

Publishing date 28 September 2023, last updated on 28 September 2023, valid until 28 September 2028.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Potma Oy
Address	Teollisuustie 10, 95700 Pello
Contact details	matti.lassila@potma.fi
Website	www.potma.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 1.0, 1 Feb 2022
Sector	Manufactured 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	Viivi Kettula
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
EPD verifier	Magaly González Vázquez, 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	Potmacore honeycomb panel
Place of production	Pello, Finland
Period for data	1.1.2022-31.12.2022
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	6.87
GWP-total, A1-A3 (kgCO ₂ e)	6.89
Secondary material, inputs (%)	2.45
Secondary material, outputs (%)	100.0
Total energy use, A1-A3 (kWh)	35.1
Total water use, A1-A3 (m ³ e)	5.81E-02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Potma is a Finnish family-owned company located in Pello in Finnish Lapland. We have invested heavily in expanding our product range and automation in the 2000's. As a result, Potma's business have grown in several markets: honeycomb panels made in the Arctic Circle can nowadays be found in the walls, ceilings and interior decoration materials of luxury cruise ships, offshore drilling rigs, lifts, clean rooms and trains. We also manufacture marking tapes for ice sports.

PRODUCT DESCRIPTION

An aluminium honeycomb plate consisting of an adhesively bonded aluminium honeycomb core with two aluminium thin plates bonded on either side of the honeycomb core. The end result is a glued together light, rigid and load-bearing aluminium honeycomb sheet, which is cut to the dimensions specified by the customer. If required, this can be coated with a surface layer of the customer's choice, e.g. a laminate sheet, resulting in a finished honeycomb panel with a laminate finish. The product is then ready for direct installation, e.g. as a wall material for a cruise ship.

More information at <https://www.potma.fi/en/honeycomb-panels/a>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	80%	EU
Minerals	10%	EU

Fossil materials	10%	EU
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	0.00526

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of Potmacore honeycomb panel
Mass per declared unit	1 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			Assembl y 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.

Only a few different raw materials are used and all of them are coming from the area of EU. Main raw material is aluminium which is coming from a few different suppliers. The raw materials have been transported by lorries.

The production process can be divided into the following main stages:

1. Honeycomb core manufacturing
2. Sawing a honeycomb core
3. Honeycomb assembly/gluing
4. Trimming/sawing to honeycomb dimensions

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to customer (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Transportation impacts occurred from final products delivery to customer cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions. Average distance of transportation from production plant to customer is assumed as 300 km and the transportation method is assumed to be a lorry. Vehicle capacity utilization volume factor is assumed to be 100 %.

The information sources and key assumptions are described below:

Raw material transport: This information came from purchasing department and raw material supplier. Used Ecoinvent data 3.6. Lorry generic EURO 5. Internal transport: Not have any. The environmental impact from installation stage is negligible but it covers the impacts resulting from packaging waste.

PRODUCT USE AND MAINTENANCE (B1-B7)

Product use and maintenance is considered negligible due to their minor existence.

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, in the demolition phase 100% of the used product is assumed to be collected as separate. (C1). All of end-of-life product is assumed to be sent to the closest facilities (C2). 100% of the end-of-life product is sent to recycling (C3). Due to the 100% recycling potential, the benefits for recycling aluminium are considered, and the end-of-life product is converted into recycled raw materials (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	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable

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 3.6 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	5,67E+00	1,95E-01	1,02E+00	6,89E+00	3,89E-02	1,85E-02	MND	MND	MND	MND	MND	MND	MND	3,30E-03	6,38E-03	4,05E-02	0,00E+00	-6,80E+00
GWP – fossil	kg CO ₂ e	5,63E+00	1,95E-01	1,04E+00	6,87E+00	3,88E-02	1,14E-03	MND	MND	MND	MND	MND	MND	MND	3,30E-03	6,37E-03	4,00E-02	0,00E+00	-6,59E+00
GWP – biogenic	kg CO ₂ e	-4,47E-02	1,19E-04	-1,93E-02	-6,39E-02	2,38E-05	1,74E-02	MND	MND	MND	MND	MND	MND	MND	9,17E-07	3,90E-06	4,98E-04	0,00E+00	-4,30E-02
GWP – LULUC	kg CO ₂ e	8,48E-02	6,88E-05	5,31E-05	8,50E-02	1,37E-05	1,10E-06	MND	MND	MND	MND	MND	MND	MND	2,79E-07	2,25E-06	4,17E-05	0,00E+00	-1,66E-01
Ozone depletion pot.	kg CFC ₁₁ e	7,26E-07	4,47E-08	1,84E-07	9,54E-07	8,90E-09	1,36E-10	MND	MND	MND	MND	MND	MND	MND	7,12E-10	1,46E-09	4,50E-09	0,00E+00	-8,35E-07
Acidification potential	mol H ⁺ e	4,07E-02	8,03E-04	1,78E-03	4,33E-02	1,60E-04	6,84E-06	MND	MND	MND	MND	MND	MND	MND	3,45E-05	2,62E-05	2,67E-04	0,00E+00	-4,38E-02
EP-freshwater ²⁾	kg Pe	2,62E-04	1,68E-06	1,53E-06	2,65E-04	3,35E-07	3,02E-08	MND	MND	MND	MND	MND	MND	MND	1,33E-08	5,50E-08	1,41E-06	0,00E+00	-3,56E-04
EP-marine	kg Ne	6,63E-03	2,38E-04	4,29E-04	7,29E-03	4,74E-05	2,55E-06	MND	MND	MND	MND	MND	MND	MND	1,52E-05	7,77E-06	6,24E-05	0,00E+00	-4,67E-03
EP-terrestrial	mol Ne	7,09E-02	2,63E-03	4,69E-03	7,82E-02	5,23E-04	2,42E-05	MND	MND	MND	MND	MND	MND	MND	1,67E-04	8,59E-05	6,97E-04	0,00E+00	-5,16E-02
POCP (“smog”) ³⁾	kg NMVOCe	1,95E-02	8,25E-04	1,70E-03	2,20E-02	1,64E-04	7,15E-06	MND	MND	MND	MND	MND	MND	MND	4,59E-05	2,70E-05	2,07E-04	0,00E+00	-1,96E-02
ADP-minerals & metals ⁴⁾	kg Sbe	1,33E-05	4,87E-06	4,97E-07	1,87E-05	9,69E-07	2,21E-08	MND	MND	MND	MND	MND	MND	MND	5,03E-09	1,59E-07	3,11E-07	0,00E+00	-2,88E-05
ADP-fossil resources	MJ	1,65E+01	2,98E+00	1,53E+01	3,47E+01	5,93E-01	1,75E-02	MND	MND	MND	MND	MND	MND	MND	4,54E-02	9,72E-02	5,62E-01	0,00E+00	-1,00E+02
Water use ⁵⁾	m ³ e depr.	1,52E+00	1,06E-02	1,35E-01	1,67E+00	2,10E-03	1,93E-04	MND	MND	MND	MND	MND	MND	MND	8,46E-05	3,45E-04	1,60E-02	0,00E+00	-4,56E-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	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	3,64E-07	1,51E-08	3,47E-09	3,82E-07	3,00E-09	9,34E-11	MND	MND	MND	MND	MND	MND	MND	9,14E-10	4,92E-10	3,63E-09	0,00E+00	-4,16E-07
Ionizing radiation ⁶⁾	kBq U235e	4,25E-01	1,30E-02	1,49E-03	4,39E-01	2,59E-03	4,38E-05	MND	MND	MND	MND	MND	MND	MND	1,94E-04	4,25E-04	1,91E-03	0,00E+00	-6,92E-01
Ecotoxicity (freshwater)	CTUe	1,37E+02	2,32E+00	1,83E+00	1,41E+02	4,63E-01	2,48E-02	MND	MND	MND	MND	MND	MND	MND	2,66E-02	7,59E-02	6,20E+02	0,00E+00	-1,20E+02
Human toxicity, cancer	CTUh	1,22E-08	6,58E-11	5,49E-11	1,24E-08	1,31E-11	1,87E-12	MND	MND	MND	MND	MND	MND	MND	9,53E-13	2,15E-12	3,47E-11	0,00E+00	-1,31E-08
Human tox. non-cancer	CTUh	2,81E-07	2,67E-09	1,18E-09	2,85E-07	5,31E-10	4,72E-11	MND	MND	MND	MND	MND	MND	MND	2,35E-11	8,71E-11	9,81E-10	0,00E+00	3,01E-09
SQP ⁷⁾	-	7,40E+00	3,32E+00	9,15E-02	1,08E+01	6,60E-01	1,10E-02	MND	MND	MND	MND	MND	MND	MND	1,16E-03	1,08E-01	9,56E-01	0,00E+00	-4,89E+00

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	2,28E+01	4,23E-02	8,03E-02	2,29E+01	8,41E-03	7,18E-04	MND	MND	MND	MND	MND	MND	MND	2,45E-04	1,38E-03	3,32E-02	0,00E+00	-4,27E+01
Renew. PER as material	MJ	2,74E-01	0,00E+00	1,85E-01	4,59E-01	0,00E+00	-1,85E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-2,74E-01	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,30E+01	4,23E-02	2,66E-01	2,33E+01	8,41E-03	-1,84E-01	MND	MND	MND	MND	MND	MND	MND	2,45E-04	1,38E-03	-2,41E-01	0,00E+00	-4,27E+01
Non-re. PER as energy	MJ	8,53E+01	2,98E+00	1,51E+01	1,03E+02	5,93E-01	1,75E-02	MND	MND	MND	MND	MND	MND	MND	4,54E-02	9,72E-02	5,62E-01	0,00E+00	-1,00E+02
Non-re. PER as material	MJ	1,11E+00	0,00E+00	1,40E-01	1,25E+00	0,00E+00	-1,40E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,10E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	8,64E+01	2,98E+00	1,53E+01	1,05E+02	5,93E-01	-1,22E-01	MND	MND	MND	MND	MND	MND	MND	4,54E-02	9,72E-02	-5,38E-01	0,00E+00	-1,00E+02
Secondary materials	kg	2,45E-02	0,00E+00	8,73E-05	2,46E-02	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	8,71E-01
Renew. 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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	5,44E-02	5,64E-04	3,12E-03	5,81E-02	1,12E-04	6,83E-06	MND	MND	MND	MND	MND	MND	MND	4,01E-06	1,84E-05	4,48E-04	0,00E+00	-4,09E-02

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	1,13E+00	3,10E-03	5,40E-03	1,13E+00	6,16E-04	1,44E-04	MND	MND	MND	MND	MND	MND	MND	4,88E-05	1,01E-04	0,00E+00	0,00E+00	-1,69E+00
Non-hazardous waste	kg	1,18E+01	2,57E-01	6,17E-02	1,21E+01	5,12E-02	1,36E-02	MND	MND	MND	MND	MND	MND	MND	5,22E-04	8,41E-03	0,00E+00	0,00E+00	-1,64E+01
Radioactive waste	kg	3,84E-04	2,03E-05	1,33E-06	4,06E-04	4,05E-06	6,00E-08	MND	MND	MND	MND	MND	MND	MND	3,18E-07	6,65E-07	0,00E+00	0,00E+00	-5,89E-04

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	7,97E-03	7,97E-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 recycling	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	1,00E+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	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

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	1,15E+00	1,93E-01	9,86E-01	2,33E+00	3,85E-02	1,24E-03	MND	MND	MND	MND	MND	MND	MND	3,27E-03	6,32E-03	3,88E-02	0,00E+00	-6,63E+00
Ozone depletion Pot.	kg CFC ₁₁ e	1,87E-07	3,56E-08	1,37E-07	3,60E-07	7,08E-09	1,11E-10	MND	MND	MND	MND	MND	MND	MND	5,63E-10	1,16E-09	3,68E-09	0,00E+00	-8,37E-07
Acidification	kg SO ₂ e	8,25E-03	3,98E-04	1,50E-03	1,01E-02	7,92E-05	4,99E-06	MND	MND	MND	MND	MND	MND	MND	4,87E-06	1,30E-05	2,47E-04	0,00E+00	-3,78E-02
Eutrophication	kg PO ₄ ³ e	3,54E-03	8,27E-05	1,87E-04	3,81E-03	1,65E-05	5,21E-06	MND	MND	MND	MND	MND	MND	MND	8,57E-07	2,70E-06	5,54E-05	0,00E+00	-1,41E-02
POCP ("smog")	kg C ₂ H ₄ e	5,30E-04	2,57E-05	9,65E-05	6,53E-04	5,12E-06	3,38E-07	MND	MND	MND	MND	MND	MND	MND	5,01E-07	8,39E-07	1,44E-05	0,00E+00	-3,87E-03
ADP-elements	kg Sbe	1,33E-05	4,87E-06	4,97E-07	1,87E-05	9,69E-07	2,21E-08	MND	MND	MND	MND	MND	MND	MND	5,03E-09	1,59E-07	3,11E-07	0,00E+00	-2,88E-05
ADP-fossil	MJ	1,65E+01	2,98E+00	1,53E+01	3,47E+01	5,93E-01	1,75E-02	MND	MND	MND	MND	MND	MND	MND	4,54E-02	9,72E-02	5,62E-01	0,00E+00	-1,00E+02

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 González Vázquez, as an authorized verifier acting for EPD Hub Limited
28.09.2023

