

# ENVIRONMENTAL PRODUCT DECLARATION

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

## Areco Spirit Panel (Sandwich-element) 100 mm

Areco Profiles Oy



EPD HUB, HUB-2310

Published on 11.17.2024, last updated on 11.17.2024, valid until 11.17.2029

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	Areco Profiles Oy
Address	Tehdastie 17, 31400 Somero, Finland
Contact details	info@areco.fi
Website	<a href="https://www.arecoprofiles.fi/fi/">https://www.arecoprofiles.fi/fi/</a>

### 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
Scope of the EPD	Cradle to gate with options, A4, and modules C1-C4, D
EPD author	Jori Jokela, Macon Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <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	Areco Spirit Panel (Sandwich-element) 100 mm
Additional labels	ASP-S, ASP-S+, ASP-L, ASP-E, ASP-EX, ASP-T
Product reference	-
Place of production	Somero, Finland
Period for data	2022
Averaging in EPD	No averaging

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m <sup>2</sup>
Declared unit mass	17,7 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	30,6
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	30,5
Secondary material, inputs (%)	1,34
Secondary material, outputs (%)	74,4
Total energy use, A1-A3 (kWh)	123
Net freshwater use, A1-A3 (m <sup>3</sup> )	1,25

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

Areco Profiles Oy is one of the leading manufacturers of building panel products.

We provide comprehensive range of sheet metal components for the commercial and industrial construction. We have five factories in four countries, which makes us one of the key players in the building panel segment.

Areco Spirit Panels are manufactured in Finland at the Somero plant. Deliveries of elements cover both the Nordic and the Baltic countries.

Production of the Areco Spirit Panel element began in 2009 and the element is a CE-marked construction product used throughout in Europe. Continuous quality control with a third party guarantees the reliable quality of the elements.

### PRODUCT DESCRIPTION

This EPD represents Areco Spirit Panel product group produced at Areco Profiles Oy facility in Somero, Finland. The product names are: Areco Spirit Panel (Sandwich element) ASP-S, ASP-S+, ASP-L, ASP-E, ASP-EX, ASP-T. Product names differ in terms of construction characteristics: e.g. fire classification, u-value, purpose of installation. Panel thicknesses is 100 mm. The product under investigation is a sandwich-element which is used as an outer wall, partition or ceilings element. Areco Spirit Panel is a coloured steel sheet coated sandwich element consisting of a mineral wool (stone wool) core.

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

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	47	Finland
Minerals	50	Finland
Fossil materials	3	Finland
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	0,05

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m <sup>2</sup>
Mass per declared unit	17,7 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.

The environmental impacts of raw material supply (A1) include emissions generated when raw materials are taken from nature, transported to industrial units for processing and processed, along with waste handling from the various production processes. All major upstream processes are taken into consideration, including infrastructure. Loss of raw material and energy transmission losses are also taken into account. This stage includes all the aforementioned for the raw materials which end up in the final product (i.e. steel, zinc layer, polymer coating, adhesive and packaging) as well as the electricity and heat production which are consumed during the manufacturing at the plant.

## 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.

Manufacturing plant is taking place near the capital region of Finland. Therefore the transportation distance from manufacturing site to construction site in Helsinki is assumed as 110 km and the transportation method is assumed to be lorry. 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.

The installation of the elements is handled by the customer/constructor. Construction work itself is not taken into account in life-cycle calculations. Packaging waste goes to building material recycling by constructors via their waste management systems. Packaging wastes are declared as part of the End of Life modules (C3/C4).

### 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)

Demolition is assumed to have small effects due to easy dismantling as elements by man work and lorry crane, no heavy demolition machinery needed. It is assumed that 100% of the elements are collected (C1).

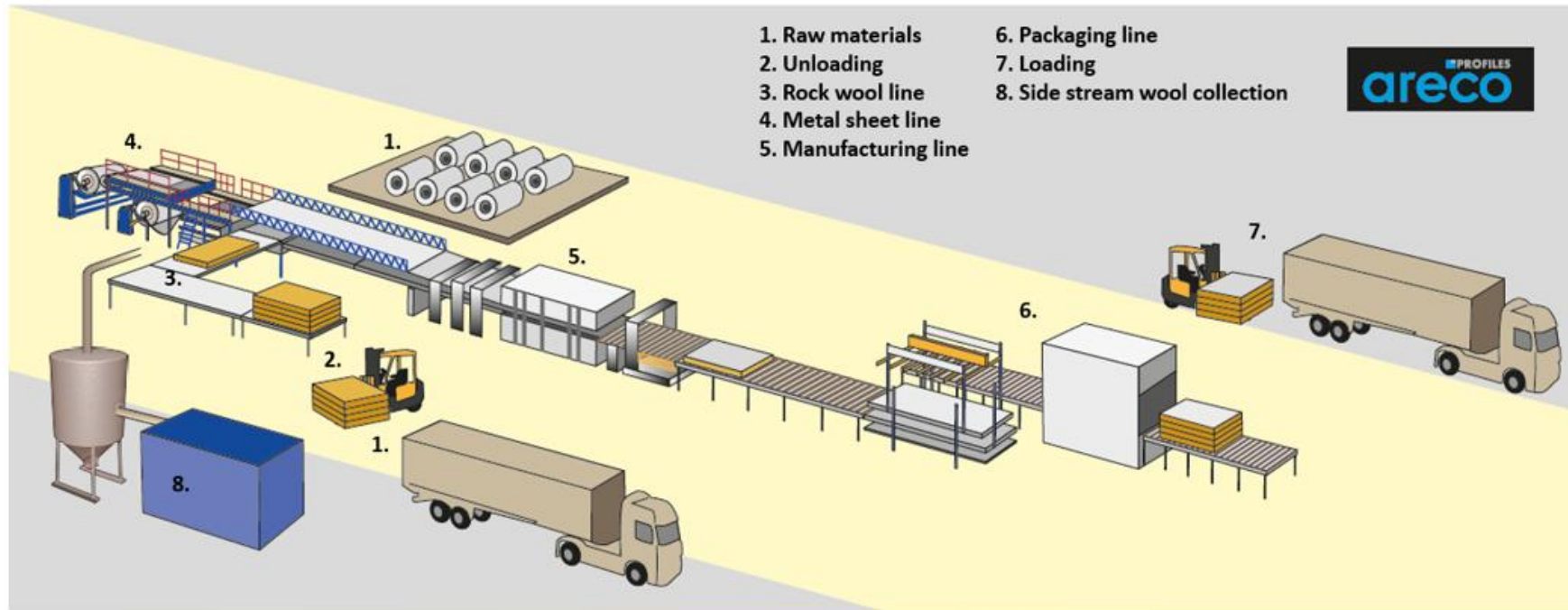
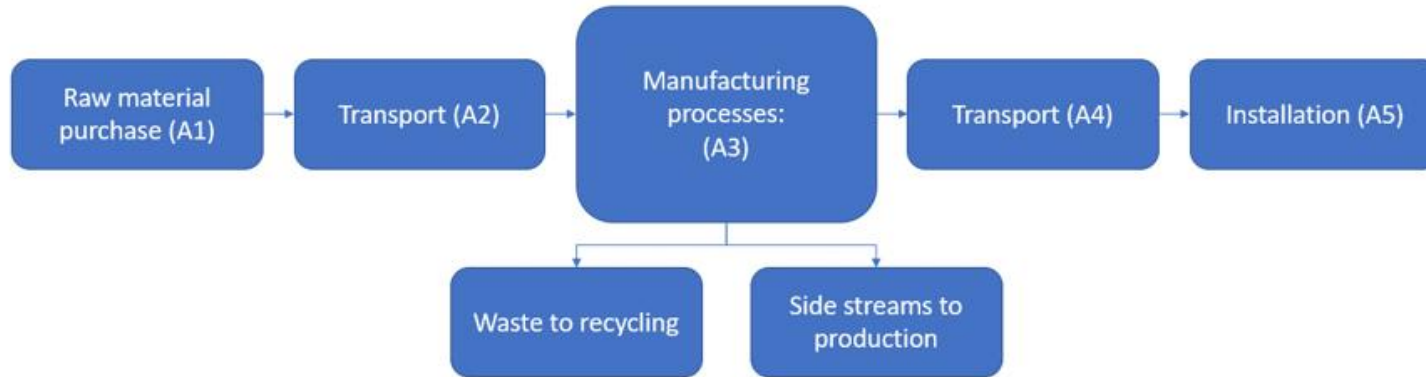
Distance for transportation to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2).

100% of the steel is assumed to be delivered for steel recycling (C3). 50% of the mineral wool is assumed to be recycled (C3) and it is assumed that 50% of is taken to landfill for final disposal (mineral wool part containing adhesive) (D4). High recycling rates are justified because of high recycling requirements and high recycling rates of Finland.

Due to the recycling process the end-of-life product is converted into a recycled steel and geopolymer (D). Benefits and loads from packaging recycling and incineration with energy recovery are also considered in module 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 material	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. 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 <sup>1)</sup>	kg CO <sub>2</sub> e	3,00E+01	1,44E-01	3,22E-01	3,05E+01	1,72E-01	5,89E-02	8,09E-02	4,58E-01	9,81E-02	-1,34E+01
GWP – fossil	kg CO <sub>2</sub> e	3,00E+01	1,44E-01	5,03E-01	3,06E+01	1,71E-01	5,89E-02	8,09E-02	3,46E-01	2,93E-02	-1,34E+01
GWP – biogenic	kg CO <sub>2</sub> e	0,00E+00	0,00E+00	-1,81E-01	-1,81E-01	0,00E+00	0,00E+00	0,00E+00	1,12E-01	6,88E-02	3,48E-03
GWP – LULUC	kg CO <sub>2</sub> e	1,09E-02	5,40E-05	3,37E-04	1,13E-02	6,43E-05	5,87E-06	3,01E-05	2,47E-04	2,39E-05	-2,25E-03
Ozone depletion pot.	kg CFC-11e	3,48E-07	3,59E-08	2,78E-08	4,12E-07	4,28E-08	1,26E-08	1,94E-08	2,31E-08	1,01E-08	-5,21E-07
Acidification potential	mol H <sup>+</sup> e	1,21E-01	4,60E-04	2,35E-03	1,24E-01	5,46E-04	6,12E-04	2,99E-04	2,37E-03	2,36E-04	-5,52E-02
EP-freshwater <sup>2)</sup>	kg Pe	1,91E-04	1,03E-06	5,70E-05	2,49E-04	1,22E-06	1,95E-07	6,20E-07	1,00E-05	2,70E-07	-5,50E-04
EP-marine	kg Ne	2,39E-02	1,02E-04	4,90E-04	2,45E-02	1,21E-04	2,71E-04	7,88E-05	5,09E-04	8,37E-05	-1,12E-02
EP-terrestrial	mol Ne	3,46E-01	1,13E-03	5,50E-03	3,53E-01	1,34E-03	2,97E-03	8,71E-04	5,87E-03	9,00E-04	-1,31E-01
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	6,73E-02	4,43E-04	1,93E-03	6,97E-02	5,26E-04	8,17E-04	3,03E-04	1,61E-03	2,63E-04	-6,64E-02
ADP-minerals & metals <sup>4)</sup>	kg Sbe	1,60E-03	3,53E-07	2,72E-06	1,61E-03	4,20E-07	2,99E-08	1,94E-07	2,48E-05	5,87E-08	-2,52E-04
ADP-fossil resources	MJ	3,78E+02	2,30E+00	1,39E+01	3,95E+02	2,74E+00	7,93E-01	1,25E+00	2,54E+00	6,88E-01	-1,19E+02
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	4,72E+00	1,06E-02	3,13E-01	5,05E+00	1,26E-02	2,13E-03	5,70E-03	5,59E-02	2,23E-03	-2,44E+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	C1	C2	C3	C4	D
Renew. PER as energy <sup>8)</sup>	MJ	8,43E+01	2,98E-02	1,39E+00	8,57E+01	3,55E-02	4,53E-03	1,52E-02	4,46E-01	6,14E-03	-1,02E+01
Renew. PER as material	MJ	6,36E+00	0,00E+00	6,98E-01	7,05E+00	0,00E+00	0,00E+00	0,00E+00	-4,05E+00	-3,01E+00	1,80E-01
Total use of renew. PER	MJ	9,06E+01	2,98E-02	2,09E+00	9,28E+01	3,55E-02	4,53E-03	1,52E-02	-3,60E+00	-3,00E+00	-1,00E+01
Non-re. PER as energy	MJ	3,46E+02	2,30E+00	9,19E+00	3,58E+02	2,74E+00	7,93E-01	1,25E+00	2,54E+00	6,88E-01	-1,17E+02
Non-re. PER as material	MJ	3,21E+01	0,00E+00	3,96E+00	3,61E+01	0,00E+00	0,00E+00	0,00E+00	-1,16E+01	-2,44E+01	1,68E+00
Total use of non-re. PER	MJ	3,78E+02	2,30E+00	1,32E+01	3,94E+02	2,74E+00	7,93E-01	1,25E+00	-9,10E+00	-2,38E+01	-1,15E+02
Secondary materials	kg	2,38E-01	6,48E-04	1,38E-03	2,40E-01	7,72E-04	3,10E-04	3,51E-04	2,94E-03	1,47E-04	7,65E+00
Renew. secondary fuels	MJ	7,71E-05	5,72E-06	1,12E-03	1,20E-03	6,81E-06	1,01E-06	3,31E-06	1,46E-04	3,92E-06	-1,22E-03
Non-ren. secondary fuels	MJ	2,88E-08	0,00E+00	0,00E+00	2,88E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m <sup>3</sup>	2,39E-01	3,05E-04	1,01E+00	1,25E+00	3,63E-04	4,81E-05	1,64E-04	1,50E-03	7,53E-04	-2,98E-02

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	7,40E-01	2,47E-03	1,46E-02	7,57E-01	2,94E-03	1,06E-03	1,50E-03	1,74E-02	0,00E+00	-4,41E+00
Non-hazardous waste	kg	5,87E+00	4,29E-02	2,67E-01	6,18E+00	5,11E-02	7,45E-03	2,53E-02	6,30E-01	4,72E+00	-2,21E+01
Radioactive waste	kg	6,51E-03	1,59E-05	3,62E-05	6,56E-03	1,89E-05	5,58E-06	8,52E-06	1,47E-05	0,00E+00	2,85E-05

### 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	9,90E-01	9,90E-01	0,00E+00	0,00E+00	0,00E+00	1,31E+01	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	5,10E-02	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	9,94E-01	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 <sub>2</sub> e	2,94E+01	1,43E-01	4,87E-01	3,01E+01	1,70E-01	5,83E-02	8,01E-02	3,43E-01	3,05E-02	-1,27E+01
Ozone depletion Pot.	kg CFC <sub>11</sub> e	3,72E-07	2,84E-08	2,60E-08	4,27E-07	3,39E-08	9,97E-09	1,54E-08	1,87E-08	8,01E-09	-5,80E-07
Acidification	kg SO <sub>2</sub> e	8,42E-02	3,73E-04	1,90E-03	8,65E-02	4,43E-04	4,36E-04	2,37E-04	1,91E-03	1,79E-04	-4,47E-02
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	1,91E-02	7,90E-05	1,00E-03	2,02E-02	9,39E-05	1,01E-04	5,23E-05	6,63E-04	3,14E-04	-2,27E-02
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	7,85E-03	1,74E-05	2,39E-04	8,10E-03	2,06E-05	9,55E-06	1,01E-05	7,24E-05	8,58E-06	-7,58E-03
ADP-elements	kg Sbe	1,60E-03	3,43E-07	2,49E-06	1,60E-03	4,08E-07	2,94E-08	1,88E-07	2,48E-05	5,78E-08	-2,51E-04
ADP-fossil	MJ	3,66E+02	2,30E+00	1,36E+01	3,82E+02	2,74E+00	7,93E-01	1,25E+00	2,54E+00	6,88E-01	-1,19E+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.

#SIGNATURE#