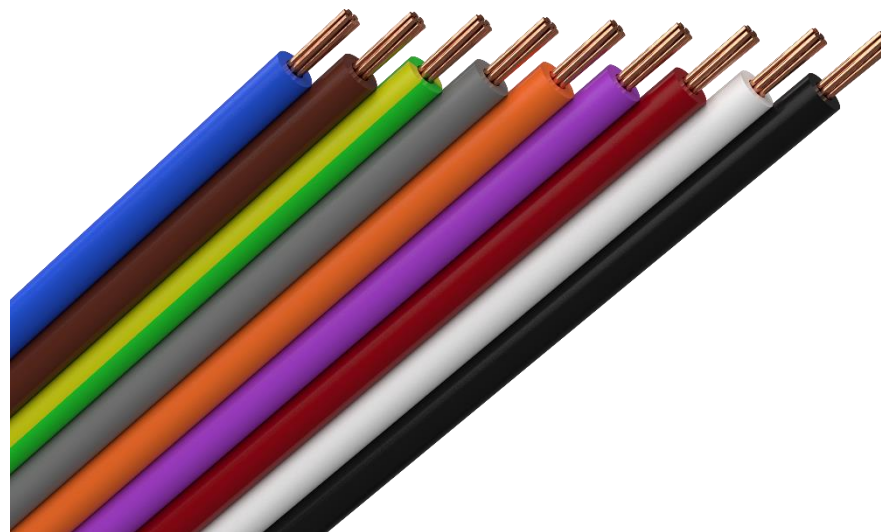


ENVIRONMENTAL PRODUCT DECLARATION

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

FQ (H07Z1-R) 2,5
Amo Installationskabel AB



100% self-sufficient in environmentally-labelled electricity!

We at Amokabel work for responsible business operations, which means that we are constantly aware of how the company affects society and the environment.

☰ 3 500 000 kWh  3 100 000 kWh  940 000 kWh
2 Hydro power stations 2 Wind power stations 2 Solar power stations

EPD HUB, HUB-0342

Publishing date 09 March 2023, last updated date 09 March 2023, valid until 09 March 2028

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Amo Installationskabel AB
Address	Kabelvägen 5, Alstermo, Sweden
Contact details	richard.andersen@amokabel.com
Website	https://amokabel.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	Electrical product
Category of EPD	Sister EPD, Verified by third party (Parent EPD: HUB-0343)
Scope of the EPD	Cradle to gate with options A4 modules C1-C4, D
EPD author	Richard Andersen
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	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	FQ (H07Z1-R) 2,5
Product reference	02032
Place of production	Alstermo, Sweden
Period for data	2021-2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	Not relevant

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Km
Declared unit mass	31.04 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	7,32E1
GWP-total, A1-A3 (kgCO ₂ e)	7,3E1
Secondary material, inputs (%)	4.88
Secondary material, outputs (%)	105.0
Total energy use, A1-A3 (kWh)	325.0
Total water use, A1-A3 (m ³ e)	1.27

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Amo Installationskabel AB is part of Amokabel, a Scandinavian cable group with four companies that manufacture a wide spectrum of wires, cables, and consumer-packaged products. Amokabel manufactures cables for the sectors Subsea; Industry; Power networks; Installation. We are the industry leader when it comes to innovation, customer service and short lead times. With focus on high quality and innovative design of new products with minimal environmental impact.

Our division within Amokabel is specialized in building- and installations-cables varying from singlecore wires to larger industrial installations-cables that are rated up to 1kV.

We offer customer-based packaging-solutions and pride ourselves on our speed and flexibility both when it comes to customer service and production-processes. Our customers are mainly based in Sweden, Norway, Finland and Denmark.

PRODUCT DESCRIPTION

H07Z1-R is a 70°C HFFR PE insulated stranded copper conductor. Suitable for fixed installation. To be installed in conduit or duct systems, or as connection wire to be used in switch cabinets and similar applications.

Further information can be found at <https://amokabel.com/>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	21kg, 65,54%	Helsingborg, SWE
Fossil materials	11,04kg, 34,46%	Europe

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	0.3129

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Km
Mass per declared unit	31.04 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

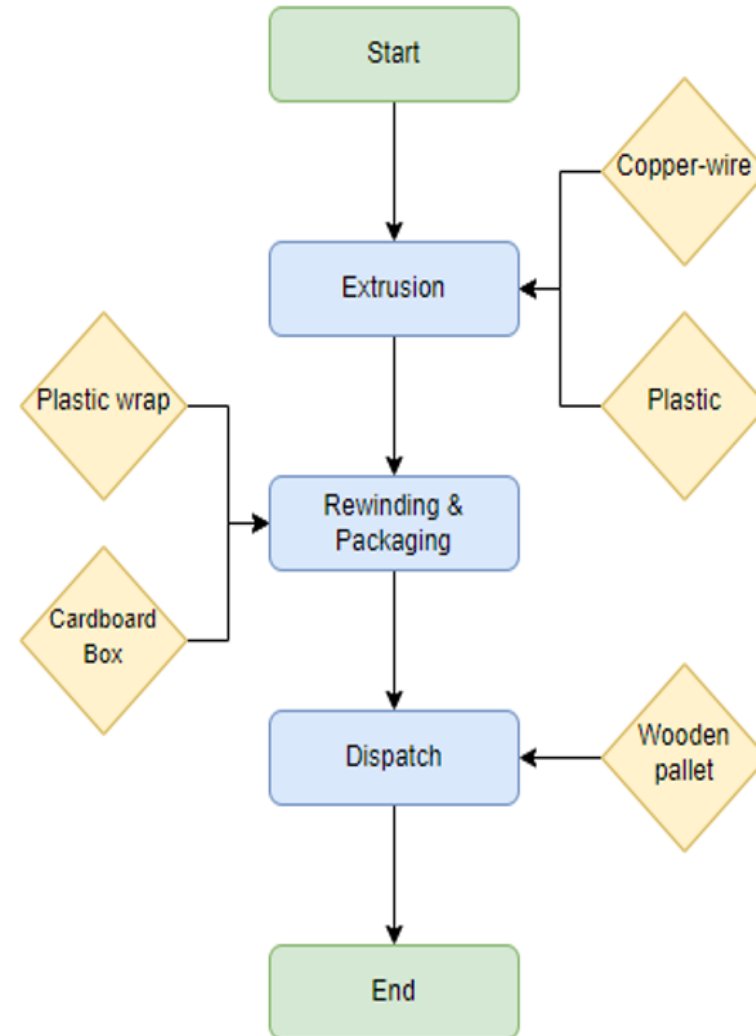
SYSTEM BOUNDARY

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 PROCESS FLOWCHART



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 cable is made of metals and plastic materials. The materials are transported to Amokabel, where in a sister-company the copper wires are drawn to the required dimension and the cores are stranded. Then in Amokabel's production facility insulation material (PE) is extruded. The manufacturing processes require electricity and fuels for the different equipment as well as heating. The study considers the losses of main raw materials occurring during the manufacturing process.

The finished product is packaged before being sent to the wholeseller on a wooden pallet.

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.

Transportation distance is defined according to the PCR. Average distance of transportation from production plant to wholeseller sites are calculated as a weighted average and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 100 % 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. Also, volume capacity utilisation factor is assumed to be 100 % for the nested packaged products. Transportation impacts that occur from delivery of the product cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions.

Module A5 is out of scope of this EPD, only packaging waste are considered to leave the system.

Environmental impacts from installation in the construction site include waste packaging materials (A5) and release of biogenic carbon dioxide from waste processing of cardboard and wood pallets. Electricity consumption for installation of cable is considered to be negligible. Installation-loss has not been included in this study.

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)

Energy consumption is assumed to be negligible for the process of cable de-construction. It is assumed that the waste is collected separately and transported to the waste treatment center. Transportation distance to treatment is assumed as 100 km and the transportation method is assumed to be lorry (C2). As per common practice, the power cable is shredded and the metals and plastics from the product is sorted. Module C3 accounts for energy and resource inputs for sorting and treating these waste streams - 95% of metals (Copper) are assumed to be recycled while 90% of plastics (PE) are incinerated for energy recovery. Due to the material and energy recovery potential of the materials, a part of the end-of-life product is converted into recycled raw materials while electric and heat energy are generated from incineration.

The remaining materials from the product - 5% of metals and 10% of plastics - are assumed to be sent to sanitary landfill to account for a conservative scenario.

The wood pallet and polyethylene film are incinerated and recycled respectively, where the energy recovered from incineration displaces electricity and heat production. The benefits and loads of incineration and recycling are included in Module D for packaging materials as well.

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	Not applicable
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	Not Relevant

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

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 ₂ e	7,13E1	1,49E0	2,33E-1	7,3E1	1,15E0	4,19E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,91E-1	6,24E0	1,34E-1	0E0
GWP – fossil	kg CO ₂ e	7,11E1	1,49E0	6,25E-1	7,32E1	1,16E0	4,04E-2	MND	MND	MND	MND	MND	MND	MND	0E0	2,91E-1	6,28E0	1,34E-1	-3,92E1
GWP – biogenic	kg CO ₂ e	1,44E-1	8,56E-4	-3,97E-1	-2,52E-1	8,42E-4	3,79E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,11E-4	-4,16E-2	9,59E-5	8,39E-1
GWP – LULUC	kg CO ₂ e	6,28E-2	5,41E-4	4,66E-3	6,8E-2	3,49E-4	1,52E-5	MND	MND	MND	MND	MND	MND	MND	0E0	8,76E-5	6,17E-3	8,89E-6	-2,13E-2
Ozone depletion pot.	kg CFC-11e	4,47E-6	3,42E-7	8,42E-8	4,9E-6	2,73E-7	5,52E-9	MND	MND	MND	MND	MND	MND	MND	0E0	6,85E-8	4,48E-7	5,9E-9	-1,73E-6
Acidification potential	mol H ⁺ e	2,13E0	1,08E-2	3,24E-3	2,15E0	4,87E-3	2,08E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,22E-3	2,74E-2	1,59E-4	-1,47E0
EP-freshwater ²⁾	kg Pe	1,72E-2	1,21E-5	4,55E-5	1,73E-2	9,44E-6	7,74E-7	MND	MND	MND	MND	MND	MND	MND	0E0	2,37E-6	2E-4	3,09E-7	-1,13E-2
EP-marine	kg Ne	1,85E-1	3,2E-3	1,19E-3	1,9E-1	1,47E-3	7,27E-5	MND	MND	MND	MND	MND	MND	MND	0E0	3,69E-4	6,16E-3	1,86E-4	-1,34E-1
EP-terrestrial	mol Ne	2,77E0	3,54E-2	1,07E-2	2,82E0	1,62E-2	7,67E-4	MND	MND	MND	MND	MND	MND	MND	0E0	4,07E-3	6,98E-2	5,84E-4	-2,08E0
POCP (“smog”) ³⁾	kg NMVOCe	6,88E-1	1,01E-2	2,45E-3	7E-1	5,21E-3	2,61E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,31E-3	2,06E-2	1,95E-4	-4,82E-1
ADP-minerals & metals ⁴⁾	kg Sbe	2,85E-2	3,15E-5	9,09E-6	2,85E-2	1,98E-5	1,21E-6	MND	MND	MND	MND	MND	MND	MND	0E0	4,97E-6	1,3E-4	1,78E-7	-2,43E-2
ADP-fossil resources	MJ	1,45E3	2,27E1	1,05E1	1,48E3	1,8E1	4,43E-1	MND	MND	MND	MND	MND	MND	MND	0E0	4,53E0	6,86E1	4,36E-1	-9,01E2
Water use ⁵⁾	m ³ e depr.	9,71E1	7,89E-2	2,48E-1	9,74E1	6,71E-2	3,59E-3	MND	MND	MND	MND	MND	MND	MND	0E0	1,68E-2	1,32E0	1,95E-2	-7,12E1

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	2,08E2	2,98E-1	7,22E0	2,16E2	2,27E-1	2,07E-2	MND	MND	MND	MND	MND	MND	MND	0E0	5,7E-2	5,72E0	6,83E-3	-1,25E2
Renew. PER as material	MJ	0E0	0E0	3,92E0	3,92E0	0E0	-3,48E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	2,08E2	2,98E-1	1,11E1	2,2E2	2,27E-1	-3,46E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,7E-2	5,72E0	6,83E-3	-1,25E2
Non-re. PER as energy	MJ	9,23E2	2,27E1	1,05E1	9,56E2	1,8E1	4,43E-1	MND	MND	MND	MND	MND	MND	MND	0E0	4,53E0	6,86E1	4,36E-1	-4,28E2
Non-re. PER as material	MJ	5,28E2	0E0	0E0	5,28E2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-3,72E2	0E0	-4,73E2
Total use of non-re. PER	MJ	1,45E3	2,27E1	1,05E1	1,48E3	1,8E1	4,43E-1	MND	MND	MND	MND	MND	MND	MND	0E0	4,53E0	-3,03E2	4,36E-1	-9,01E2
Secondary materials	kg	1,51E0	0E0	0E0	1,51E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	2,67E1
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	1,25E0	4,26E-3	1,91E-2	1,27	3,76E-3	1,07E-4	MND	MND	MND	MND	MND	MND	MND	0E0	9,43E-4	2,28E-2	4,8E-4	-9,26E-1

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	2,76E1	2,32E-2	2,88E-2	2,77E1	1,75E-2	1,73E-3	MND	MND	MND	MND	MND	MND	MND	0E0	4,4E-3	0E0	6,85E-4	-2,12E1
Non-hazardous waste	kg	1,32E3	1,98E0	1,13E0	1,32E3	1,94E0	5,39E-2	MND	MND	MND	MND	MND	MND	MND	0E0	4,87E-1	0E0	2,15E0	-9,38E2
Radioactive waste	kg	3,37E-3	1,55E-4	4,84E-5	3,58E-3	1,24E-4	2,84E-6	MND	MND	MND	MND	MND	MND	MND	0E0	3,11E-5	0E0	2,68E-6	-9,95E-4

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	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	3,27E1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	1,35E-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 ₂ e	6,85E1	1,48E0	6,22E-1	7,06E1	1,15E0	4,4E-2	MND	MND	MND	MND	MND	MND	MND	0E0	2,89E-1	6,13E0	9,73E-2	-3,71E1
Ozone depletion Pot.	kg CFC ₁₁ e	4,3E-6	2,72E-7	7,64E-8	4,65E-6	2,17E-7	4,54E-9	MND	MND	MND	MND	MND	MND	MND	0E0	5,44E-8	3,84E-7	4,7E-9	-1,65E-6
Acidification	kg SO ₂ e	1,73E0	6,27E-3	2,07E-3	1,74E0	2,36E-3	1,57E-4	MND	MND	MND	MND	MND	MND	MND	0E0	5,92E-4	1,92E-2	2,89E-4	-1,15E0
Eutrophication	kg PO ₄ ³ e	8,88E-1	9,66E-4	1,47E-3	8,9E-1	4,77E-4	9E-5	MND	MND	MND	MND	MND	MND	MND	0E0	1,2E-4	1,35E-2	5,26E-3	-6,18E-1
POCP ("smog")	kg C ₂ H ₄ e	6,95E-2	2,68E-4	1,35E-4	6,99E-2	1,5E-4	9,99E-6	MND	MND	MND	MND	MND	MND	MND	0E0	3,75E-5	1,2E-3	2,09E-5	-4,54E-2
ADP-elements	kg Sbe	2,85E-2	3,15E-5	9,09E-6	2,85E-2	1,98E-5	1,21E-6	MND	MND	MND	MND	MND	MND	MND	0E0	4,97E-6	1,3E-4	1,78E-7	-2,43E-2
ADP-fossil	MJ	1,45E3	2,27E1	1,05E1	1,48E3	1,8E1	4,43E-1	MND	MND	MND	MND	MND	MND	MND	0E0	4,53E0	6,86E1	4,36E-1	-9,01E2

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
09.03.2023

