

# ENVIRONMENTAL PRODUCT DECLARATION

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

## IKO Permatec Hot Melt Waterproofing System



EPD HUB, HUB-0294

Publishing date 24 February 2023, last updated date 24 February 2023, valid until 24 February 2028

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer <small>VP-001</small>	IKO PLC
Address <small>VP-002</small>	Prospect Quarry, Grangemill, Matlock, DE4 4BW
Contact details <small>VP-003</small>	GMTechnical@iko.com
Website	<a href="https://ikogroup.co.uk/">https://ikogroup.co.uk/</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 1.0, 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	Steven Dalton
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.H, 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	IKO Permatec
Additional labels	
Product reference	24110080 & 24116080
Place of production	Grangemill, UK
Period for data	Calendar year 2021
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	1.1 %

### ENVIRONMENTAL DATA SUMMARY

<b>Declared unit</b>	1 Tonne of manufactured Bituminous mixture
<b>Declared unit mass</b>	1000 kg
<b>GWP-fossil, A1-A3 (kgCO<sub>2</sub>e)</b>	4.26E2
<b>GWP-total, A1-A3 (kgCO<sub>2</sub>e)</b>	3.77E2
<b>Secondary material, inputs (%)</b>	46.4
<b>Secondary material, outputs (%)</b>	0.0
<b>Total energy use, A1-A3 (kWh)</b>	1680.0
<b>Total water use, A1-A3 (m<sup>3</sup>e)</b>	1.74

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

IKO is a global company with 3,500 employees worldwide. But we are unique in our market-place as we manufacture our products here in the UK.

Between our four manufacturing sites in the UK, we produce a range of roofing, insulation and waterproofing systems along with our fast growing highway maintenance range. We currently distribute to more than 38 countries worldwide.

UK manufacturing means no shortage of stock and quick site deliveries thanks to our large capacity warehouse facilities across four sites. We are here whenever you need us! With IKO, you can achieve your sustainability goals as all our raw materials are responsibly sourced and where possible, locally sourced.

Our products are constantly innovating to ensure functionality and performance is at the forefront of our offering. All our manufacturing sites have research and development teams, and customer feedback is essential to our work so we can improve our products and meet the demands of the market.

### PRODUCT DESCRIPTION

IKO Permateg Hot Melt Roofing System is based on a formulated waterproofing membrane made from a combination of refined bitumen, synthetic rubber and other additives. The membrane is applied in two layers to provide a waterproofing layer with a nominal coating thickness of 6 mm. Durability — under normal service conditions, the system will remain waterproof for the design service life of the roof in which it is incorporated - 60 years

Further information can be found at <https://ikogroup.co.uk/>.

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals		
Minerals	43.9	UK
Fossil materials	56.1	UK, EU, Asia
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	10.77

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Tonne of manufactured Bituminous mixture
Mass per declared unit	1000 kg
Functional unit	
Reference service life	60 years

### 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	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.

The hotmelt waterproofing is manufactured by blending bitumen, limestone filler, recycled rubber crumb and other additives. The resultant mixture is then dispensed into moulds and allowed to cool.

Once cooled, the material is removed from its mould and stacked onto pallets, where it is wrapped before being shipped to a construction site. The manufacturing process results in no waste being generated.

## 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 of transportation from production plant to building site is assumed as 200 km 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. Transportation does not cause losses as product are assumed to be loaded properly. Also, volume capacity utilisation factor is assumed to be 100 % for the nested product.

For installation in the building site, it is assumed that 0.01 kWh of energy is consumed per kg of product installed..

## 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.

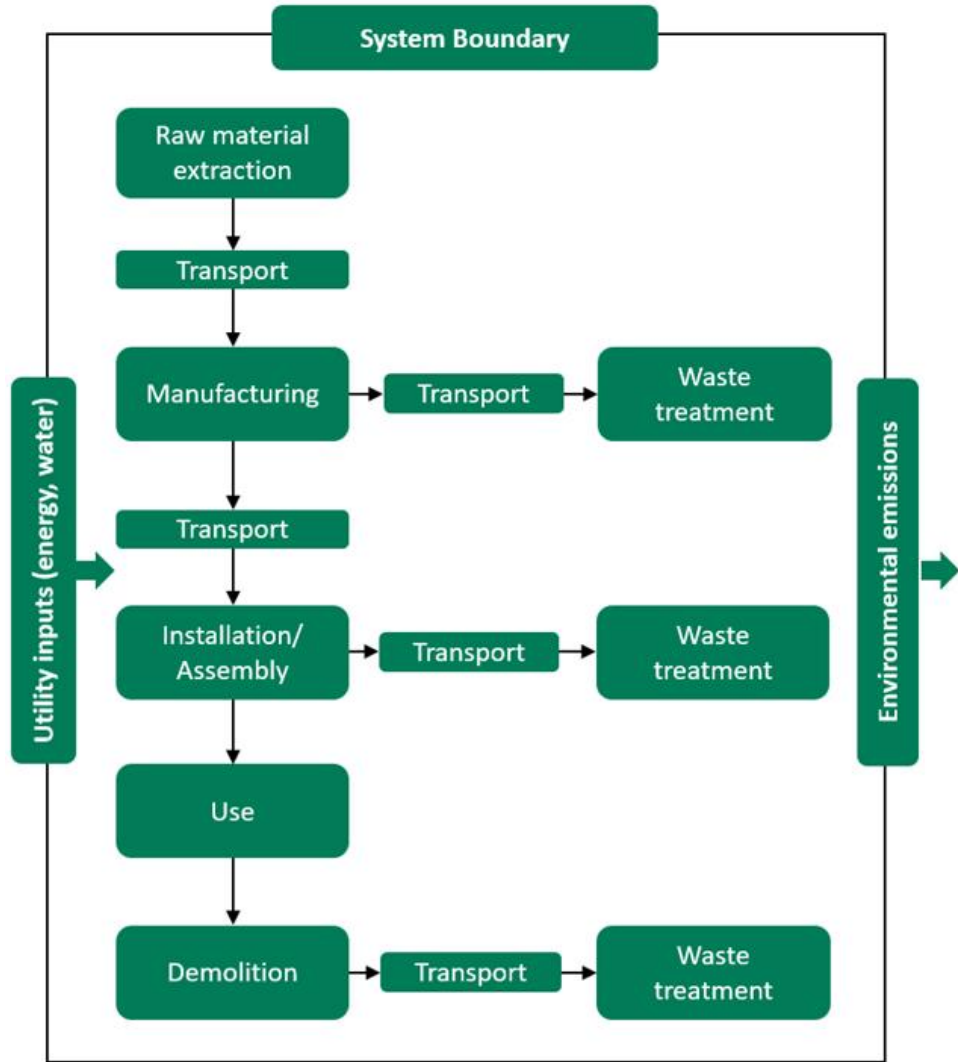
## PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase the waterproofing is unlikely to be separated from the substrate it has been applied onto (C1).

It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight as the declared product. All of the end-of-life product is assumed to be sent to waste processing facilities for treatment. Transportation distance to the waste treatment facility is estimated as 50 km and the transportation method is lorry which is the most common (C2).

The product is then sent to landfill (C3-4).

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

### AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3	1.1 %

This average EPD is a sales-weighted average of the IKO Permateg and IKO Permateg Anti-Root products, both produced at the Grangemill site. Both products are produced in the same way, only their mix design varies.

### 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 <sup>1)</sup>	kg CO <sub>2</sub> e	3.26E2	3.12E1	2E1	3.77E2	1.85E1	5.15E1	MND	MND	MND	MND	MND	MND	MND	6.6E-1	6.38E0	0E0	1.8E1	-2.44E1
GWP – fossil	kg CO <sub>2</sub> e	3.24E2	3.12E1	7.07E1	4.26E2	1.86E1	6.56E-1	MND	MND	MND	MND	MND	MND	MND	6.59E-1	6.37E0	0E0	1.79E1	-1.99E1
GWP – biogenic	kg CO <sub>2</sub> e	1.86E0	6.95E-3	-5.08E1	-4.89E1	1.35E-2	5.08E1	MND	MND	MND	MND	MND	MND	MND	1.83E-4	3.9E-3	0E0	1.13E-1	-4.46E0
GWP – LULUC	kg CO <sub>2</sub> e	5.52E-2	1.46E-2	4.82E-2	1.18E-1	5.61E-3	7.19E-4	MND	MND	MND	MND	MND	MND	MND	5.57E-5	2.25E-3	0E0	5.18E-3	-3.44E-2
Ozone depletion pot.	kg CFC-11e	1.6E-5	6.78E-6	1.22E-5	3.5E-5	4.38E-6	7.05E-8	MND	MND	MND	MND	MND	MND	MND	1.42E-7	1.46E-6	0E0	3.27E-6	-1.25E-6
Acidification potential	mol H <sup>+</sup> e	1.68E0	6.04E-1	4.87E-1	2.77E0	7.82E-2	2.72E-3	MND	MND	MND	MND	MND	MND	MND	6.9E-3	2.62E-2	0E0	9.38E-2	-1.48E-1
EP-freshwater <sup>2)</sup>	kg Pe	3.46E-3	1.89E-4	1.35E-3	5E-3	1.52E-4	2.85E-5	MND	MND	MND	MND	MND	MND	MND	2.67E-6	5.5E-5	0E0	1.86E-4	-8.57E-4
EP-marine	kg Ne	2.73E0	1.54E-1	6.05E-2	2.94E0	2.36E-2	6.13E-4	MND	MND	MND	MND	MND	MND	MND	3.05E-3	7.77E-3	0E0	3.58E-2	-1.61E-2
EP-terrestrial	mol Ne	1.52E0	1.71E0	5.89E-1	3.82E0	2.6E-1	6.85E-3	MND	MND	MND	MND	MND	MND	MND	3.34E-2	8.59E-2	0E0	3.36E-1	-1.92E-1
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	1.55E0	4.54E-1	2E-1	2.2E0	8.37E-2	2.09E-3	MND	MND	MND	MND	MND	MND	MND	9.18E-3	2.7E-2	0E0	9.91E-2	-5.62E-2
ADP-minerals & metals <sup>4)</sup>	kg Sbe	1.3E-3	3.61E-4	2.16E-4	1.88E-3	3.18E-4	7.21E-6	MND	MND	MND	MND	MND	MND	MND	1.01E-6	1.59E-4	0E0	1.13E-4	-2.81E-5
ADP-fossil resources	MJ	2.66E4	4.4E2	1.12E3	2.82E4	2.9E2	9.55E0	MND	MND	MND	MND	MND	MND	MND	9.07E0	9.72E1	0E0	2.48E2	-2.98E2
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	3.58E3	1.25E0	5.51E0	3.59E3	1.08E0	1.36E-1	MND	MND	MND	MND	MND	MND	MND	1.69E-2	3.45E-1	0E0	1.11E1	-3.34E0

## 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	6.64E3	1.83E-6	4.4E-6	6.64E3	1.69E-6	3.67E-8	MND	MND	MND	MND	MND	MND	MND	1.83E-7	4.92E-7	0E0	1.74E-6	-1.26E-6
Ionizing radiation <sup>6)</sup>	kBq U235e	1.83E1	1.91E0	8.34E0	2.86E1	1.27E0	5.38E-2	MND	MND	MND	MND	MND	MND	MND	3.89E-2	4.25E-1	0E0	9.7E-1	-2.4E0
Ecotoxicity (freshwater)	CTUe	2.06E3	3.04E2	8.22E2	3.19E3	2.21E2	8.01E0	MND	MND	MND	MND	MND	MND	MND	5.32E0	7.59E1	0E0	2.01E2	-4.23E2
Human toxicity, cancer	CTUh	1.11E-6	1.31E-8	4.17E-8	1.17E-6	5.67E-9	5.82E-10	MND	MND	MND	MND	MND	MND	MND	1.91E-10	2.15E-9	0E0	6.65E-9	-4.53E-9
Human tox. non-cancer	CTUh	1.5E2	3.11E-7	5.77E-7	1.5E2	2.62E-7	9.51E-9	MND	MND	MND	MND	MND	MND	MND	4.7E-9	8.71E-8	0E0	1.37E-7	-1.27E-7
SQP <sup>7)</sup>	-	3.87E1	3.5E2	5.17E1	4.41E2	4.38E2	4.99E0	MND	MND	MND	MND	MND	MND	MND	2.33E-1	1.08E2	0E0	8.85E2	-1.38E1

### 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 <sup>8)</sup>	MJ	7.56E1	4.21E0	1.83E2	2.63E2	3.65E0	8.94E-1	MND	MND	MND	MND	MND	MND	MND	4.91E-2	1.38E0	0E0	4.1E0	-7.41E1
Renew. PER as material	MJ	0E0	0E0	4.89E2	4.89E2	0E0	-4.89E2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	4.89E2
Total use of renew. PER	MJ	7.56E1	4.21E0	6.71E2	7.51E2	3.65E0	-4.88E2	MND	MND	MND	MND	MND	MND	MND	4.91E-2	1.38E0	0E0	4.1E0	4.15E2
Non-re. PER as energy	MJ	4.26E3	4.4E2	1.09E3	5.79E3	2.9E2	9.55E0	MND	MND	MND	MND	MND	MND	MND	9.07E0	9.72E1	0E0	2.48E2	-2.5E2
Non-re. PER as material	MJ	2.19E4	0E0	4.74E1	2.2E4	0E0	-4.74E1	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	-2.19E4	-4E-1
Total use of non-re. PER	MJ	2.62E4	4.4E2	1.14E3	2.78E4	2.9E2	-3.79E1	MND	MND	MND	MND	MND	MND	MND	9.07E0	9.72E1	0E0	-2.17E4	-2.5E2
Secondary materials	kg	4.63E2	0E0	3.12E-1	4.64E2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	9.96E-1
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 <sup>3</sup>	1.1E0	6.67E-2	5.7E-1	1.74	6.03E-2	2.69E-3	MND	MND	MND	MND	MND	MND	MND	8.01E-4	1.84E-2	0E0	2.8E-1	-4.22E-2

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	2.07E1	4.51E-1	1.66E0	2.28E1	2.82E-1	3.66E-2	MND	MND	MND	MND	MND	MND	MND	9.76E-3	1.01E-1	0E0	4.38E-1	-1.35E0
Non-hazardous waste	kg	5.34E1	2.74E1	3.27E1	1.14E2	3.11E1	1.64E0	MND	MND	MND	MND	MND	MND	MND	1.04E-1	8.41E0	0E0	1E3	-6.23E0
Radioactive waste	kg	2.45E-1	3.06E-3	7.37E-3	2.55E-1	1.99E-3	5.21E-5	MND	MND	MND	MND	MND	MND	MND	6.35E-5	6.65E-4	0E0	1.49E-3	-1.3E-3

### 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	1.7E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	3.4E1	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 <sub>2</sub> e	3.02E2	3.1E1	6.99E1	4.03E2	1.85E1	6.45E-1	MND	MND	MND	MND	MND	MND	MND	6.54E-1	6.32E0	0E0	1.54E1	-1.92E1
Ozone depletion Pot.	kg CFC <sub>11</sub> e	1.11E-5	5.38E-6	1.02E-5	2.67E-5	3.48E-6	6.34E-8	MND	MND	MND	MND	MND	MND	MND	1.13E-7	1.16E-6	0E0	2.61E-6	-1.23E-6
Acidification	kg SO <sub>2</sub> e	1.38E0	4.63E-1	4.19E-1	2.26E0	3.79E-2	1.95E-3	MND	MND	MND	MND	MND	MND	MND	9.73E-4	1.3E-2	0E0	3.32E-1	-1.3E-1
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	4.59E-1	5.47E-2	4.73E-2	5.61E-1	7.66E-3	1.77E-3	MND	MND	MND	MND	MND	MND	MND	1.71E-4	2.7E-3	0E0	3.17E-1	-2.3E-2
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	7.37E-2	1.3E-2	1.84E-2	1.05E-1	2.4E-3	1.24E-4	MND	MND	MND	MND	MND	MND	MND	1E-4	8.39E-4	0E0	3.87E-3	-5.71E-3
ADP-elements	kg Sbe	1.3E-3	3.61E-4	2.16E-4	1.88E-3	3.18E-4	7.21E-6	MND	MND	MND	MND	MND	MND	MND	1.01E-6	1.59E-4	0E0	1.13E-4	-2.81E-5
ADP-fossil	MJ	2.66E4	4.4E2	1.12E3	2.82E4	2.9E2	9.55E0	MND	MND	MND	MND	MND	MND	MND	9.07E0	9.72E1	0E0	2.48E2	-2.98E2

## 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  
24.02.2023

