

# ENVIRONMENTAL PRODUCT DECLARATION

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

## IKO Permateg LI (Low Impact) Hot Melt Waterproofing System



EPD HUB, HUB-1377

Publishing on 10.05.2024, last updated on 10.05.2024, valid until 10.11.2025.

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	IKO PLC
Address	Prospect Quarry, Grangemill, Matlock, Derbyshire DE4 4BW, UK
Contact details	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 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Design phase EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Steve 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	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	IKO Permatec LI
Additional labels	-
Product reference	-
Place of production	UK
Period for data	Calendar year 2021
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	1.1%

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Tonne of manufactured bituminous mixture
Declared unit mass	1000 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	3.32E+02
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	1.61E+02
Secondary material, inputs (%)	46.3
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	7170
Net fresh water use, A1-A3 (m <sup>3</sup> )	71.4

## 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 LI Hot Melt Roofing System is a reduced embodied carbon waterproofing system 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/>.

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### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	43.9	UK
Fossil materials	48.6	UK, EU, Asia
Bio-based materials	7.5	UK, EU, Asia

### 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 VP-011	1 Tonne of manufactured bituminous mixture
Mass per declared unit VP-012	1000 kg
Functional unit	-
Reference service life	60 Years

### SUBSTANCES, REACH - VERY HIGH CONCERN VP

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) VP

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 molds and allowed to cool. Once cooled, the material is removed from its mold 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.

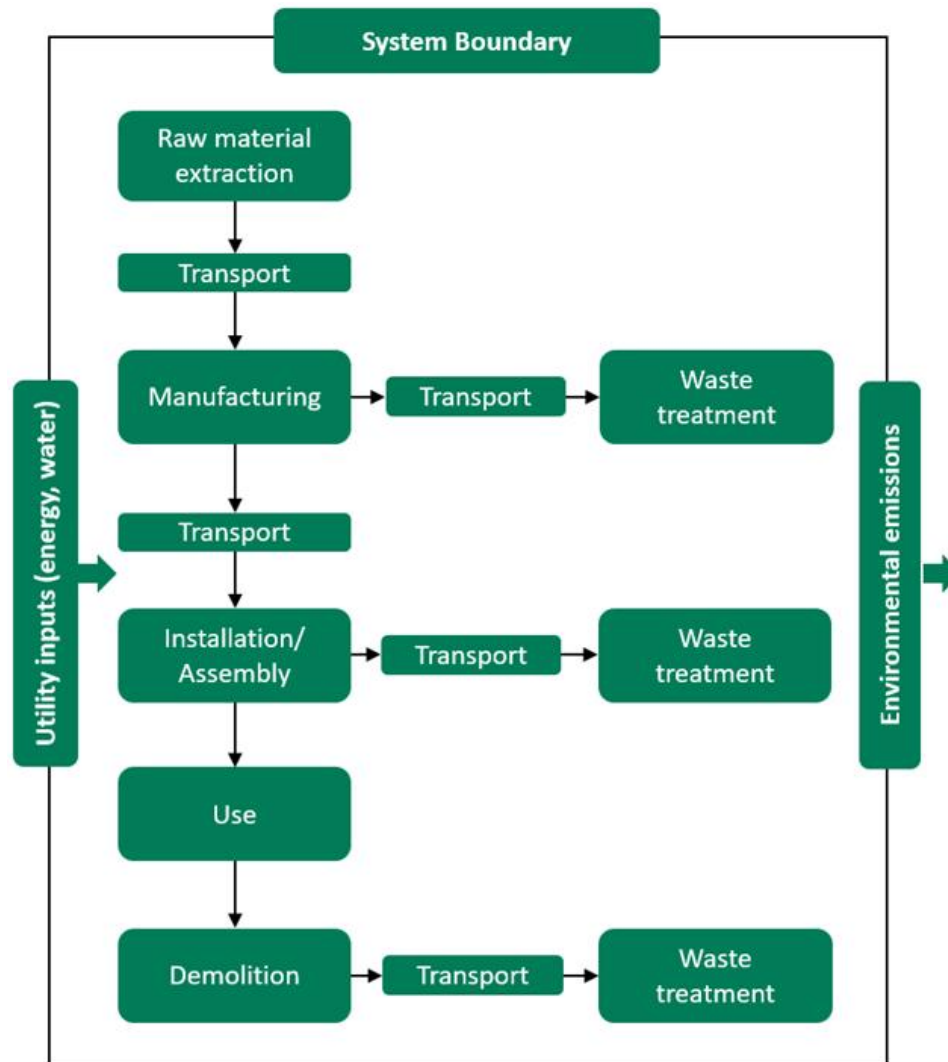
### PRODUCT END OF LIFE (C1-c4, D)

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

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 landfill (C4). Transportation distance to the waste treatment facility is estimated as 50 km and the transportation method is lorry which is the most common (C2). Module D benefits and loads have been accounted for the plastic packaging recycling and also for the pallet incineration.



## 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 Permatec LI and Permatec LI 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 v3.8 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 – total1)	kg CO2e	1.24E+02	5.54E+00	3.08E+01	1.61E+02	1.92E+01	4.14E+01	MND	MND	MND	MND	MND	MND	MND	6.62E-01	4.70E+00	0.00E+00	1.50E+02	-6.63E+00
GWP – fossil	kg CO2e	2.58E+02	5.54E+00	6.81E+01	3.32E+02	1.92E+01	4.01E+00	MND	MND	MND	MND	MND	MND	MND	6.62E-01	4.69E+00	0.00E+00	1.54E+01	-6.68E+00
GWP – biogenic	kg CO2e	-1.34E+02	0.00E+00	-3.74E+01	-1.71E+02	0.00E+00	3.74E+01	MND	MND	MND	MND	MND	MND	MND	1.21E-04	1.81E-03	0.00E+00	1.34E+02	5.62E-02
GWP – LULUC	kg CO2e	1.25E-01	2.79E-03	5.23E-02	1.80E-01	7.09E-03	6.53E-04	MND	MND	MND	MND	MND	MND	MND	6.59E-05	1.73E-03	0.00E+00	2.09E-03	-4.60E-03
Ozone depletion pot.	kg CFC-11e	9.71E-06	1.21E-06	1.20E-05	2.29E-05	4.42E-06	7.40E-07	MND	MND	MND	MND	MND	MND	MND	1.41E-07	1.08E-06	0.00E+00	3.10E-06	-2.74E-07
Acidification potential	mol H+e	9.89E-01	8.16E-02	4.72E-01	1.54E+00	8.14E-02	3.89E-02	MND	MND	MND	MND	MND	MND	MND	6.88E-03	1.99E-02	0.00E+00	7.58E-02	-2.16E-02
EP-freshwater2)	kg Pe	4.66E-03	3.59E-05	1.18E-03	5.88E-03	1.57E-04	2.03E-05	MND	MND	MND	MND	MND	MND	MND	2.19E-06	3.84E-05	0.00E+00	7.20E-05	-7.89E-05
EP-marine	kg Ne	2.15E-01	2.08E-02	5.83E-02	2.94E-01	2.42E-02	1.72E-02	MND	MND	MND	MND	MND	MND	MND	3.04E-03	5.90E-03	0.00E+00	3.24E-02	-4.19E-03
EP-terrestrial	mol Ne	2.11E+00	2.31E-01	5.60E-01	2.90E+00	2.67E-01	1.88E-01	MND	MND	MND	MND	MND	MND	MND	3.34E-02	6.51E-02	0.00E+00	2.99E-01	-4.89E-02
POCP (“smog”)3)	kg NMVOCe	9.11E-01	6.28E-02	1.87E-01	1.16E+00	8.54E-02	5.13E-02	MND	MND	MND	MND	MND	MND	MND	9.18E-03	2.08E-02	0.00E+00	8.74E-02	-1.85E-02
ADP-minerals & metals4)	kg Sbe	3.52E-04	1.10E-05	1.19E-04	4.83E-04	4.51E-05	4.64E-06	MND	MND	MND	MND	MND	MND	MND	3.36E-07	1.10E-05	0.00E+00	2.84E-05	-3.06E-05
ADP-fossil resources	MJ	4.58E+03	7.81E+01	1.09E+03	5.74E+03	2.89E+02	4.87E+01	MND	MND	MND	MND	MND	MND	MND	8.91E+00	7.05E+01	0.00E+00	2.19E+02	-2.15E+02
Water use5)	m3e depr.	1.24E+02	3.11E-01	1.29E+01	1.37E+02	1.29E+00	1.76E+00	MND	MND	MND	MND	MND	MND	MND	2.39E-02	3.15E-01	0.00E+00	1.93E+00	-2.31E+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.

## 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	1.29E-05	4.66E-07	4.09E-06	1.75E-05	2.21E-06	9.78E-07	MND	MND	MND	MND	MND	MND	MND	1.84E-07	5.41E-07	0.00E+00	1.62E-06	-1.69E-07
Ionizing radiation <sup>6)</sup>	kBq U235e	7.63E+00	3.68E-01	1.39E+01	2.19E+01	1.37E+00	2.22E-01	MND	MND	MND	MND	MND	MND	MND	4.09E-02	3.36E-01	0.00E+00	1.32E+00	-3.02E+00
Ecotoxicity (freshwater)	CTUe	2.28E+03	6.34E+01	7.91E+02	3.14E+03	2.60E+02	3.55E+01	MND	MND	MND	MND	MND	MND	MND	5.35E+00	6.34E+01	0.00E+00	1.42E+02	-4.62E+01
Human toxicity, cancer	CTUh	7.49E-08	2.39E-09	6.57E-08	1.43E-07	6.38E-09	2.52E-09	MND	MND	MND	MND	MND	MND	MND	2.05E-10	1.56E-09	0.00E+00	6.24E-09	-1.69E-09
Human tox. non-cancer	CTUh	1.43E-06	5.71E-08	5.42E-07	2.03E-06	2.57E-07	7.31E-08	MND	MND	MND	MND	MND	MND	MND	3.87E-09	6.27E-08	0.00E+00	7.74E-08	-4.26E-08
SQP <sup>7)</sup>	-	8.90E+01	6.38E+01	3.19E+03	3.34E+03	3.33E+02	8.71E+00	MND	MND	MND	MND	MND	MND	MND	1.16E+00	8.12E+01	0.00E+00	5.83E+02	-3.20E+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	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy <sup>8)</sup>	MJ	2.00E+02	7.67E-01	2.82E+02	4.83E+02	3.25E+00	4.50E-01	MND	MND	MND	MND	MND	MND	MND	5.09E-02	7.94E-01	0.00E+00	9.20E+00	-1.61E+01
Renew. PER as material	MJ	1.92E+03	0.00E+00	3.27E+02	2.25E+03	0.00E+00	-3.27E+02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-1.92E+03	0.00E+00
Total use of renew. PER	MJ	2.12E+03	7.67E-01	6.09E+02	2.73E+03	3.25E+00	-3.26E+02	MND	MND	MND	MND	MND	MND	MND	5.09E-02	7.94E-01	0.00E+00	-1.91E+03	-1.61E+01
Non-re. PER as energy	MJ	2.42E+04	7.81E+01	1.03E+03	2.53E+04	2.89E+02	4.87E+01	MND	MND	MND	MND	MND	MND	MND	8.91E+00	7.05E+01	0.00E+00	2.19E+02	-1.30E+02
Non-re. PER as material	MJ	2.46E+03	0.00E+00	9.68E+01	2.56E+03	0.00E+00	-9.68E+01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-2.46E+03	-8.49E+01
Total use of non-re. PER	MJ	2.67E+04	7.81E+01	1.13E+03	2.79E+04	2.89E+02	-4.82E+01	MND	MND	MND	MND	MND	MND	MND	8.91E+00	7.05E+01	0.00E+00	-2.24E+03	-2.15E+02
Secondary materials	kg	4.63E+02	2.63E-02	2.36E+00	4.65E+02	8.01E-02	3.15E-02	MND	MND	MND	MND	MND	MND	MND	3.49E-03	1.96E-02	0.00E+00	8.27E-02	2.11E+00
Renew. secondary fuels	MJ	3.38E+00	1.78E-04	1.11E+01	1.45E+01	8.09E-04	1.29E-04	MND	MND	MND	MND	MND	MND	MND	1.14E-05	1.97E-04	0.00E+00	3.83E-03	-1.83E-05
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	m3	7.11E+01	8.42E-03	3.07E-01	7.14E+01	3.74E-02	-1.28E-03	MND	MND	MND	MND	MND	MND	MND	5.41E-04	9.13E-03	0.00E+00	2.83E-01	-5.68E-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	1.71E+01	1.05E-01	1.36E+00	1.86E+01	3.83E-01	8.11E-02	MND	MND	MND	MND	MND	MND	MND	1.19E-02	9.34E-02	0.00E+00	0.00E+00	-2.32E-01
Non-hazardous waste	kg	4.14E+01	1.43E+00	2.56E+01	6.84E+01	6.29E+00	2.47E+01	MND	MND	MND	MND	MND	MND	MND	8.38E-02	1.54E+00	0.00E+00	1.00E+03	-2.10E+02
Radioactive waste	kg	3.21E-02	5.33E-04	7.40E-03	4.00E-02	1.93E-03	3.18E-04	MND	MND	MND	MND	MND	MND	MND	6.27E-05	4.71E-04	0.00E+00	0.00E+00	-7.69E-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	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
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E+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 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	2.44E+02	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 <sub>2</sub> e	3.25E+02	5.49E+00	6.76E+01	3.98E+02	1.90E+01	3.95E+00	MND	MND	MND	MND	MND	MND	MND	6.55E-01	4.64E+00	0.00E+00	1.38E+01	-6.40E+00
Ozone depletion Pot.	kg CFC-11e	1.45E-05	9.58E-07	9.56E-06	2.50E-05	3.50E-06	5.88E-07	MND	MND	MND	MND	MND	MND	MND	1.12E-07	8.55E-07	0.00E+00	2.45E-06	-2.40E-07
Acidification	kg SO <sub>2</sub> e	1.40E+00	6.49E-02	4.07E-01	1.87E+00	6.32E-02	2.77E-02	MND	MND	MND	MND	MND	MND	MND	4.90E-03	1.54E-02	0.00E+00	5.69E-02	-1.76E-02
Eutrophication	kg PO <sub>4</sub> 3e	1.98E-01	8.56E-03	5.03E-02	2.57E-01	1.44E-02	9.98E-03	MND	MND	MND	MND	MND	MND	MND	1.14E-03	3.52E-03	0.00E+00	3.92E-01	-3.73E-03
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	1.67E-01	1.82E-03	1.87E-02	1.88E-01	2.47E-03	6.61E-04	MND	MND	MND	MND	MND	MND	MND	1.07E-04	6.03E-04	0.00E+00	3.06E-03	-1.48E-03
ADP-elements	kg Sbe	3.71E-04	1.07E-05	1.18E-04	5.00E-04	4.36E-05	4.48E-06	MND	MND	MND	MND	MND	MND	MND	3.30E-07	1.07E-05	0.00E+00	2.73E-05	-3.07E-05
ADP-fossil	MJ	4.59E+03	7.81E+01	1.09E+03	5.75E+03	2.89E+02	4.87E+01	MND	MND	MND	MND	MND	MND	MND	8.91E+00	7.05E+01	0.00E+00	2.19E+02	-2.15E+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 compliance 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  
10.05.2024

