



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

IKO Permatec LI
IKO PLC



EPD HUB, HUB-1377

Published on 10.05.2024, last updated on 15.02.2025, valid until 09.05.2029

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 20223) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	IKO PLC
Address	Prospect Quarry, Grangemill, Matlock, DE4 4BW, United Kingdom
Contact details	GMTechnical@iko.com
Website	https://ikogroup.co.uk/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Louis Astley-Weir
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. 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	IKO Permatec LI (Anti Root)
Place of production	Prospect Quarry, Grangemill, Matlock, DE4 4BW, United Kingdom
Period for data	Calendar year 2021
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	<1.1%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	33

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Tonne of manufactured bituminous mixture
Declared unit mass	1000 kg
Mass of packaging	25kg
GWP-fossil, A1-A3 (kgCO ₂ e)	325
GWP-total, A1-A3 (kgCO ₂ e)	154
Secondary material, inputs (%)	46.3
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	7200
Net freshwater use, A1-A3 (m ³)	71.2

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	36.55
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	ND	ND	ND	ND	ND	ND	ND	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

Not declared = ND.

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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

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)

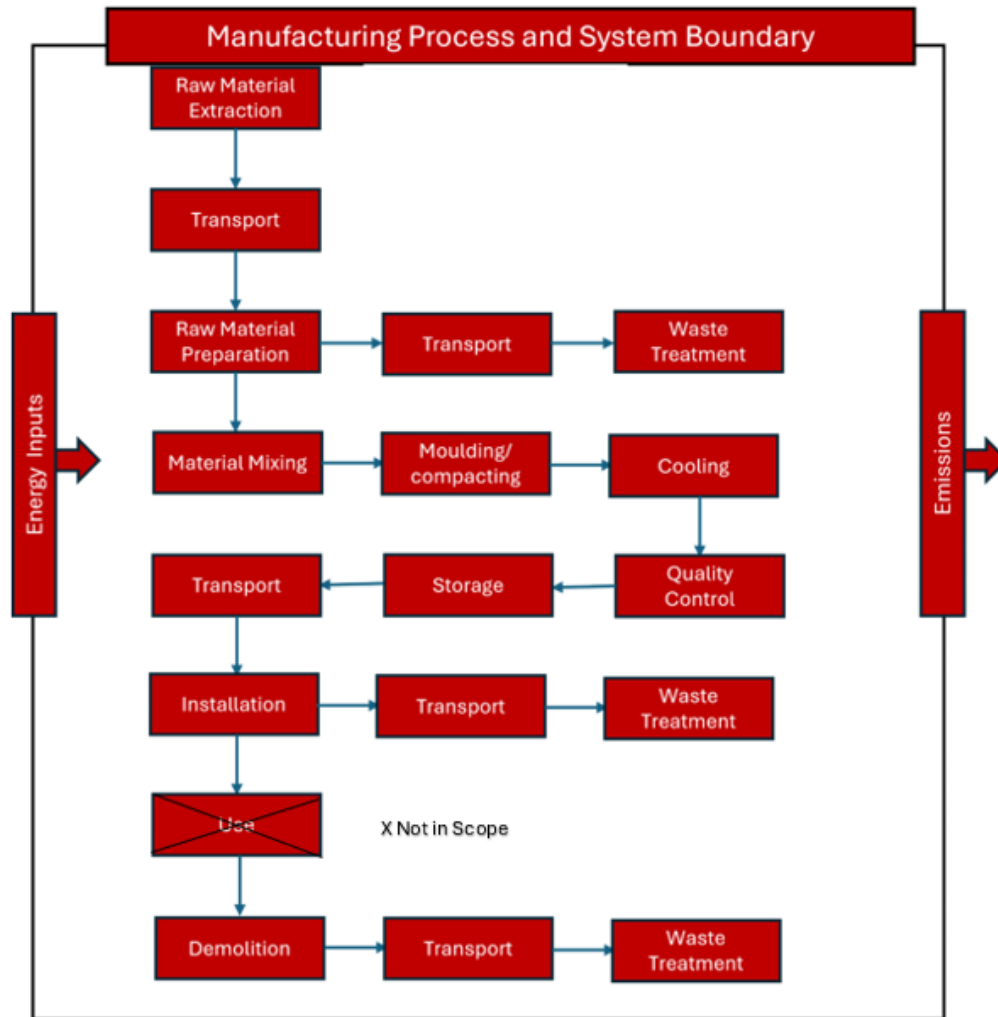
This EPD does not cover the use phase.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

t 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.



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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

Industrial processes from raw material acquisition and pre-processing, production, product distribution and installation, and end-of-life management are included. For easier modelling and because of lack of accuracy in data and available modelling resources few constituents under 0,1% of product mass are excluded. These include ancillary materials which are used in manufacturing only in very small amounts and have no serious impact on the emissions of the product. Further, water used for cleaning and maintenance of the equipment, transportation and waste streams of the packaging materials used for delivering the raw materials to the factory are omitted since the quantified mass contribution is less than 0.1%.

The production of capital equipment is included. Construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

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

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on average results of product group - by total mass
Variation in GWP-fossil for A1-A3, %	<1.1%

This average EPD is a sales-weighted average of the Permatec L land Permatec L I 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 for EPD Hub V3 and EPD Process Certification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	1.17E+02	6.24E+00	3.06E+01	1.54E+02	2.21E+01	4.16E+01	ND	ND	ND	ND	ND	ND	ND	7.21E-01	5.39E+00	0.00E+00	1.51E+02	-4.76E+00
GWP – fossil	kg CO ₂ e	2.51E+02	6.23E+00	6.78E+01	3.25E+02	2.21E+01	4.31E+00	ND	ND	ND	ND	ND	ND	ND	7.21E-01	5.38E+00	0.00E+00	1.64E+01	-4.78E+00
GWP – biogenic	kg CO ₂ e	-1.34E+02	0.00E+00	-3.73E+01	-1.72E+02	0.00E+00	3.73E+01	ND	ND	ND	ND	ND	ND	ND	7.36E-05	1.22E-03	0.00E+00	1.34E+02	2.03E-02
GWP – LULUC	kg CO ₂ e	1.24E-01	3.00E-03	4.67E-02	1.73E-01	9.88E-03	6.54E-04	ND	ND	ND	ND	ND	ND	ND	7.39E-05	2.41E-03	0.00E+00	2.42E-03	-4.01E-03
Ozone depletion pot.	kg CFC ₁₁ e	3.56E-06	9.11E-08	1.39E-06	5.03E-06	3.26E-07	6.03E-08	ND	ND	ND	ND	ND	ND	ND	1.10E-08	7.95E-08	0.00E+00	3.41E-07	-2.36E-07
Acidification potential	mol H ⁺ e	9.67E-01	7.94E-02	4.10E-01	1.46E+00	7.53E-02	3.69E-02	ND	ND	ND	ND	ND	ND	ND	6.51E-03	1.84E-02	0.00E+00	6.94E-02	-1.33E-02
EP-freshwater ²⁾	kg Pe	1.88E-02	3.81E-04	5.10E-03	2.43E-02	1.72E-03	2.99E-04	ND	ND	ND	ND	ND	ND	ND	2.08E-05	4.19E-04	0.00E+00	7.29E-04	-5.47E-04
EP-marine	kg Ne	2.10E-01	2.08E-02	5.26E-02	2.84E-01	2.47E-02	1.75E-02	ND	ND	ND	ND	ND	ND	ND	3.02E-03	6.03E-03	0.00E+00	1.17E-01	-3.18E-03
EP-terrestrial	mol Ne	2.08E+00	2.30E-01	4.98E-01	2.81E+00	2.69E-01	1.87E-01	ND	ND	ND	ND	ND	ND	ND	3.31E-02	6.56E-02	0.00E+00	3.00E-01	-3.56E-02
POCP (“smog”) ³⁾	kg NMVOCe	9.42E-01	6.93E-02	2.34E-01	1.25E+00	1.11E-01	5.47E-02	ND	ND	ND	ND	ND	ND	ND	9.86E-03	2.70E-02	0.00E+00	1.17E-01	-1.87E-02
ADP-minerals & metals ⁴⁾	kg Sbe	3.40E-04	1.33E-05	9.61E-05	4.50E-04	6.16E-05	3.25E-06	ND	ND	ND	ND	ND	ND	ND	2.59E-07	1.50E-05	0.00E+00	2.35E-05	-2.63E-05
ADP-fossil resources	MJ	4.74E+03	8.54E+01	1.04E+03	5.87E+03	3.21E+02	5.15E+01	ND	ND	ND	ND	ND	ND	ND	9.43E+00	7.81E+01	0.00E+00	2.38E+02	-1.43E+02
Water use ⁵⁾	m ³ e depr.	1.18E+02	3.63E-01	8.89E+00	1.27E+02	1.58E+00	9.45E-01	ND	ND	ND	ND	ND	ND	ND	2.36E-02	3.86E-01	0.00E+00	1.84E+00	-1.13E+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, EF 3.1

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	3.91E-06	1.73E-05	2.21E-06	9.76E-07	ND	ND	ND	ND	ND	ND	ND	1.85E-07	5.39E-07	0.00E+00	1.63E-06	-9.75E-08
Ionizing radiation ⁶⁾	kBq 11235e	6.62E+00	6.28E-02	9.75E+00	1.64E+01	2.79E-01	3.33E-02	ND	ND	ND	ND	ND	ND	ND	4.18E-03	6.80E-02	0.00E+00	3.89E-01	-2.66E+00
Ecotoxicity (freshwater)	CTUe	8.79E+02	1.02E+01	9.77E+01	9.87E+02	4.53E+01	6.23E+00	ND	ND	ND	ND	ND	ND	ND	5.19E-01	1.10E+01	0.00E+00	2.10E+01	-8.38E+00
Human toxicity, cancer	CTUh	6.72E-08	1.13E-09	5.16E-08	1.20E-07	3.65E-09	1.22E-09	ND	ND	ND	ND	ND	ND	ND	7.41E-11	8.88E-10	0.00E+00	1.94E-09	-9.19E-10
Human tox. non-cancer	CTUh	9.90E-07	4.42E-08	3.91E-07	1.43E-06	2.08E-07	5.51E-08	ND	ND	ND	ND	ND	ND	ND	1.17E-09	5.06E-08	0.00E+00	5.58E-08	-3.25E-08
SQP ⁷⁾	-	7.15E+01	6.05E+01	3.17E+03	3.30E+03	3.23E+02	6.14E+00	ND	ND	ND	ND	ND	ND	ND	6.61E-01	7.87E+01	0.00E+00	5.71E+02	-4.18E+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 ⁸⁾	MJ	2.04E+02	1.00E+00	3.02E+02	5.08E+02	4.39E+00	-4.05E+02	ND	ND	ND	ND	ND	ND	ND	5.97E-02	1.07E+00	0.00E+00	7.29E+00	-2.21E+01
Renew. PER as material	MJ	1.92E+03	0.00E+00	3.27E+02	2.25E+03	0.00E+00	-3.27E+02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	-1.92E+03	0.00E+00
Total use of renew. PER	MJ	2.13E+03	1.00E+00	6.29E+02	2.76E+03	4.39E+00	-7.32E+02	ND	ND	ND	ND	ND	ND	ND	5.97E-02	1.07E+00	0.00E+00	-1.92E+03	-2.21E+01
Non-re. PER as energy	MJ	2.44E+04	8.54E+01	9.44E+02	2.54E+04	3.21E+02	-3.35E+01	ND	ND	ND	ND	ND	ND	ND	9.43E+00	7.81E+01	0.00E+00	-1.85E+03	-1.43E+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	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	-3.73E+02	-4.25E+01
Total use of non-re. PER	MJ	2.68E+04	8.54E+01	1.04E+03	2.80E+04	3.21E+02	-1.30E+02	ND	ND	ND	ND	ND	ND	ND	9.43E+00	7.81E+01	0.00E+00	-2.22E+03	-1.86E+02
Secondary materials	kg	4.63E+02	3.77E-02	2.40E+00	4.66E+02	1.36E-01	3.40E-02	ND	ND	ND	ND	ND	ND	ND	3.92E-03	3.32E-02	0.00E+00	1.00E-01	1.04E+00
Renew. secondary fuels	MJ	3.38E+00	3.42E-04	1.11E+01	1.45E+01	1.73E-03	1.23E-04	ND	ND	ND	ND	ND	ND	ND	1.02E-05	4.22E-04	0.00E+00	1.60E-03	-1.09E-04
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³	7.09E+01	1.04E-02	2.17E-01	7.12E+01	4.74E-02	8.64E-03	ND	ND	ND	ND	ND	ND	ND	6.23E-04	1.15E-02	0.00E+00	-4.49E+00	-2.73E-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	7.05E+00	1.34E-01	1.15E+00	8.34E+00	5.43E-01	2.28E-01	ND	ND	ND	ND	ND	ND	ND	1.05E-02	1.32E-01	0.00E+00	5.31E-01	-1.65E-01
Non-hazardous waste	kg	4.97E+01	2.31E+00	4.51E+02	5.03E+02	1.00E+01	2.59E+01	ND	ND	ND	ND	ND	ND	ND	1.43E-01	2.45E+00	0.00E+00	5.79E+03	-2.19E+01
Radioactive waste	kg	3.01E-02	1.54E-05	2.17E-03	3.23E-02	6.83E-05	8.28E-06	ND	ND	ND	ND	ND	ND	ND	1.02E-06	1.67E-05	0.00E+00	9.08E-05	-5.81E-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	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy – Electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.68E+01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy – Heat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E+02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

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	3.27E+02	6.20E+00	6.76E+01	4.01E+02	2.20E+01	4.29E+00	ND	ND	ND	ND	ND	ND	ND	7.17E-01	5.35E+00	0.00E+00	1.60E+01	-4.72E+00
Ozone depletion Pot.	kg CFC ₁₁ e	9.20E-06	7.26E-08	1.11E-06	1.04E-05	2.60E-07	4.79E-08	ND	ND	ND	ND	ND	ND	ND	8.75E-09	6.34E-08	0.00E+00	2.72E-07	-1.92E-07
Acidification	kg SO ₂ e	1.38E+00	6.29E-02	3.54E-01	1.80E+00	5.75E-02	2.60E-02	ND	ND	ND	ND	ND	ND	ND	4.58E-03	1.40E-02	0.00E+00	5.09E-02	-1.05E-02
Eutrophication	kg PO ₄ ³ e	6.30E-01	8.30E-03	3.03E-01	9.41E-01	1.40E-02	6.48E-03	ND	ND	ND	ND	ND	ND	ND	1.07E-03	3.41E-03	0.00E+00	2.55E-02	-4.55E-03
POCP (“smog”)	kg C ₂ H ₄ e	1.76E-01	3.53E-03	2.23E-02	2.02E-01	5.13E-03	1.97E-03	ND	ND	ND	ND	ND	ND	ND	3.43E-04	1.25E-03	0.00E+00	5.53E-03	-1.29E-03
ADP-elements	kg Sbe	2.92E-04	1.30E-05	9.43E-05	3.99E-04	6.01E-05	3.07E-06	ND	ND	ND	ND	ND	ND	ND	2.51E-07	1.46E-05	0.00E+00	2.27E-05	-2.60E-05
ADP-fossil	MJ	4.55E+03	8.44E+01	9.06E+02	5.54E+03	3.16E+02	5.09E+01	ND	ND	ND	ND	ND	ND	ND	9.36E+00	7.70E+01	0.00E+00	2.32E+02	-1.08E+02

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	2.51E+02	6.24E+00	6.79E+01	3.25E+02	2.21E+01	4.31E+00	ND	ND	ND	ND	ND	ND	ND	7.21E-01	5.38E+00	0.00E+00	1.64E+01	-4.78E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO₂ is set to zero.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
10.05.2024

