

# ENVIRONMENTAL PRODUCT DECLARATION

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

IKO enertherm ALU 100 mm  
IKO Insulations BV



**EPD HUB, HUB-0478**

Publishing date 30 May 2023, last updated on 30 May 2023, valid until 30 May 2028

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	IKO Insulations BV
Address	Wielewaalweg 3, 4791 PD Klundert, Netherlands
Contact details	info@enertherm.eu
Website	www.enertherm.eu

### 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 EN 16783 Thermal insulation products
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	Marleen Baes, IKO Insulations BV
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	IKO enertherm ALU 100 mm
Additional labels	IKO enertherm KRALU IKO enertherm ALU F4 IKO enertherm ALU FB
Product reference	-
Place of production	Klundert, Netherlands
Period for data	2021
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m <sup>2</sup>
Declared unit mass	3.3 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	9,04
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	8,63
Secondary material, inputs (%)	0.187
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	56.6
Total water use, A1-A3 (m <sup>3</sup> e)	2,66

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

IKO Insulations is part of the international IKO Group. The IKO group is a leading manufacturer of asphalt shingles, roofing membranes, PIR insulation and liquid waterproofing in both North America and Europe. More information on [www.iko.com](http://www.iko.com).

Within the IKO Group, IKO Insulations develops, produces and distributes innovative PIR (Polyisocyanurate) based insulation products under the IKO enertherm brand. Manufacturing In Europe is centred in three state-of-the-art factories.

### PRODUCT DESCRIPTION

The studied product is a thermal insulation board with a 100 mm thick rigid polyurethane foam core coated both sides with a multilayer gas-tight aluminium complex. It is referenced under the following names: IKO enertherm ALU 100 mm, IKO enertherm ALU FB 100 mm, IKO enertherm ALU F4 100 mm, IKO enertherm KRALU 100 mm. The EPD is calculated for 1 m<sup>2</sup> of insulation board with a thickness of 100 mm an Rd value of 4.50 m<sup>2</sup>.K/W.

Further information can be found at [www.enertherm.eu](http://www.enertherm.eu).

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	2	Europe
Minerals	0	
Fossil materials	91	Europe
Bio-based materials	7	Europe

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.1
Biogenic carbon content in packaging, kg C	0

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m <sup>2</sup>
Mass per declared unit	3.3 kg
Functional unit	1 m <sup>2</sup> of the product with 100 mm thickness and thermal conductivity of 4.50 m <sup>2</sup> .K/W
Reference service life	50

### 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 insulation boards are produced on a continuous double-belt laminator by mixing and pouring the raw materials on a conveyor. The insulation board is top and bottom faced with a multilayer ALU-foil. Boards are side trimmed and cut the required length. The finished insulation boards are stacked on EPS blocks and wrapped in PE foil and moved to storage. Off-cuts are compressed as briquettes of which 81% is re-used and 19% is incinerated.

## 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 average transportation distance of 400 km from factory to construction sites takes deliveries in the Netherlands, Belgium and Germany into account.

A weight loss from cutting process during installation of 3.5% is considered (A5). 80% weight loss of the product is assumed to be incinerated and 20% landfilled. 45% of the packaging waste (PE film) is considered to be recycled, 50% incinerated and 5% landfilled. 95% of the EPS legs packaging is assumed to be incinerated and 5% landfilled.

Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry which is the most common.

## PRODUCT USE AND MAINTENANCE (B1-B7)

No maintenance is required during the lifetime of the product. Air, soil, and water impacts during the use phase have not been studied.

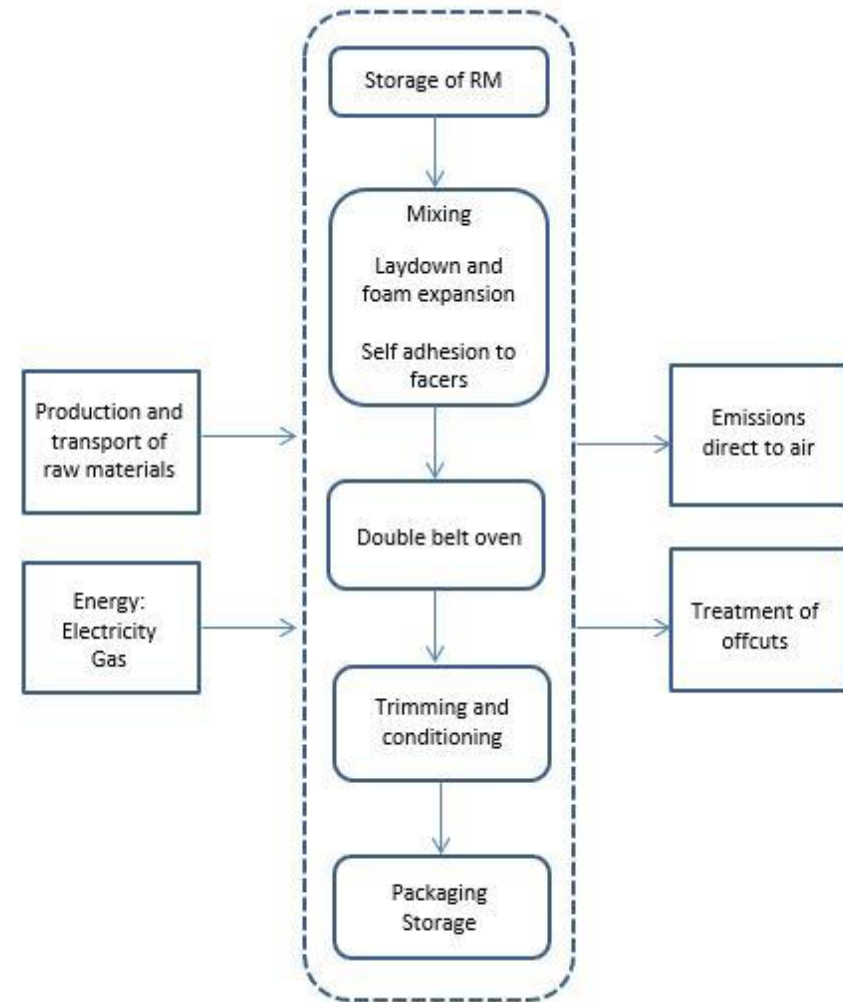
## PRODUCT END OF LIFE (C1-C4, D)

Consumed energy and other sources for demolition process of the product are considered to be negligible (C1) The transportation distance to a disposal area is estimated at 50 km for landfill and incineration (C2). Based on PlasticsEurope report issued in 2022, the assumed end of life scenario is 80% incineration with energy recovery (C3) and 20% landfill (C4).

In Module D the benefits of incineration of PU foam, briquette and packaging were modelled, namely electricity and heat production with a

fuel efficiency of 73%. In addition, the benefits of re-using production waste (briquettes) was modelled.

## 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 materials	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
Variation in GWP-fossil for A1-A3	- %

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. Ecoinvent, PlasticsEurope 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	7,98E0	2,03E-1	4,44E-1	8,63E0	1,21E-1	6,44E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,1E-2	6,81E0	1,47E-1	-4,26E0
GWP – fossil	kg CO <sub>2</sub> e	8,4E0	2,03E-1	4,34E-1	9,04E0	1,22E-1	6,45E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,1E-2	6,53E0	7,64E-2	-4,27E0
GWP – biogenic	kg CO <sub>2</sub> e	-4,39E-1	1,08E-4	9,41E-3	-4,29E-1	8,84E-5	1,37E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,16E-2
GWP – LULUC	kg CO <sub>2</sub> e	1,89E-2	7,2E-5	1,51E-4	1,91E-2	3,66E-5	6,76E-4	MND	MND	MND	MND	MND	MND	MND	0E0	7,42E-6	5,53E-5	1,25E-5	-9,96E-4
Ozone depletion pot.	kg CFC-11e	1,07E-7	4,62E-8	1,5E-8	1,68E-7	2,86E-8	8,93E-9	MND	MND	MND	MND	MND	MND	MND	0E0	4,82E-9	3,41E-8	2,34E-9	-2,25E-7
Acidification potential	mol H <sup>+</sup> e	2,13E-2	8,3E-4	1,07E-3	2,32E-2	5,11E-4	1,06E-3	MND	MND	MND	MND	MND	MND	MND	0E0	8,66E-5	5,53E-3	9,43E-5	-2,75E-2
EP-freshwater <sup>2)</sup>	kg Pe	2,19E-4	1,7E-6	1,58E-5	2,37E-4	9,9E-7	8,54E-6	MND	MND	MND	MND	MND	MND	MND	0E0	1,82E-7	2,41E-6	3,8E-7	-2,07E-4
EP-marine	kg Ne	4,72E-3	2,47E-4	2,31E-4	5,2E-3	1,54E-4	3,36E-4	MND	MND	MND	MND	MND	MND	MND	0E0	2,56E-5	3,07E-3	8,25E-4	-3,45E-3
EP-terrestrial	mol Ne	5,1E-2	2,72E-3	2,64E-3	5,63E-2	1,7E-3	3,2E-3	MND	MND	MND	MND	MND	MND	MND	0E0	2,83E-4	2,94E-2	3,14E-4	-4,08E-2
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	1,81E-2	8,34E-4	5,87E-3	2,48E-2	5,47E-4	1,17E-3	MND	MND	MND	MND	MND	MND	MND	0E0	8,9E-5	6,97E-3	1,2E-4	-1,12E-2
ADP-minerals & metals <sup>4)</sup>	kg Sbe	1,39E-5	5,49E-6	1,49E-6	2,09E-5	2,08E-6	1,03E-6	MND	MND	MND	MND	MND	MND	MND	0E0	5,25E-7	3,18E-6	9,11E-8	-5,69E-6
ADP-fossil resources	MJ	2,56E2	3,06E0	6,91E0	2,66E2	1,89E0	9,58E0	MND	MND	MND	MND	MND	MND	MND	0E0	3,21E-1	3,41E0	2,17E-1	-4,62E1
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	-1,27E1	9,86E-3	1,11E-1	-1,26E1	7,04E-3	-4,25E-1	MND	MND	MND	MND	MND	MND	MND	0E0	1,14E-3	4,02E-1	8,21E-3	-3,7E-1

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	2,04E-7	1,42E-8	5,97E-9	2,24E-7	1,1E-8	9,61E-9	MND	MND	MND	MND	MND	MND	MND	0E0	1,62E-9	1,82E-8	1,34E-9	-2,29E-7
Ionizing radiation <sup>6)</sup>	kBq U235e	2,67E-1	1,34E-2	1,59E-2	2,96E-1	8,27E-3	1,11E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,4E-3	4,07E-3	8,67E-4	-8,63E-2
Ecotoxicity (freshwater)	CTUe	9,98E1	2,36E0	4,09E0	1,06E2	1,45E0	4,7E0	MND	MND	MND	MND	MND	MND	MND	0E0	2,5E-1	1,69E1	1,04E1	-8,4E1
Human toxicity, cancer	CTUh	3,51E-9	6,87E-11	7,69E-11	3,66E-9	3,7E-11	1,67E-10	MND	MND	MND	MND	MND	MND	MND	0E0	7,1E-12	5,79E-10	6,73E-12	-1,04E-9
Human tox. non-cancer	CTUh	2,29E-7	2,67E-9	2,52E-9	2,34E-7	1,71E-9	9,31E-9	MND	MND	MND	MND	MND	MND	MND	0E0	2,87E-10	2,32E-8	3,32E-10	-3,5E-8
SQP <sup>7)</sup>	-	1,69E0	2,55E0	3,03E-1	4,54E0	2,86E0	3,56E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,57E-1	4,44E-1	5,89E-1	-3,73E0

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	1,82E1	4,32E-2	4,04E-1	1,87E1	2,38E-2	6,6E-1	MND	MND	MND	MND	MND	MND	MND	0E0	4,56E-3	6,11E-2	9E-3	-1,02E1
Renew. PER as material	MJ	4,2E0	0E0	-1,12E-1	4,09E0	0E0	-4,97E-3	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-3,26E0	-8,16E-1	-9,6E-2
Total use of renew. PER	MJ	2,24E1	4,32E-2	2,92E-1	2,28E1	2,38E-2	6,55E-1	MND	MND	MND	MND	MND	MND	MND	0E0	4,56E-3	-3,2E0	-8,07E-1	-1,03E1
Non-re. PER as energy	MJ	1,77E2	3,06E0	4,71E0	1,85E2	1,89E0	6,76E0	MND	MND	MND	MND	MND	MND	MND	0E0	3,21E-1	3,41E0	2,17E-1	-4,54E1
Non-re. PER as material	MJ	7,84E1	0E0	-2,48E-2	7,84E1	0E0	-2,17E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-6,09E1	-1,52E1	-4,2E0
Total use of non-re. PER	MJ	2,56E2	3,06E0	4,69E0	2,64E2	1,89E0	4,59E0	MND	MND	MND	MND	MND	MND	MND	0E0	3,21E-1	-5,75E1	-1,5E1	-4,96E1
Secondary materials	kg	5,62E-3	0E0	5,62E-4	6,18E-3	0E0	2,16E-4	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,67E-2
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>	2,47E0	5,24E-4	1,85E-1	2,66E0	3,94E-4	9,34E-2	MND	MND	MND	MND	MND	MND	MND	0E0	6,08E-5	1,26E-2	2,03E-4	-8,94E-3

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	1,64E-1	3,11E-3	2,26E-2	1,9E-1	1,84E-3	1,11E-2	MND	MND	MND	MND	MND	MND	MND	0E0	3,34E-4	0E0	7,75E-4	-3,38E-1
Non-hazardous waste	kg	3,56E0	2,14E-1	6,71E-1	4,44E0	2,03E-1	3,15E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,77E-2	0E0	6,59E-1	-7,73E0
Radioactive waste	kg	1,22E-4	2,1E-5	8,7E-6	1,51E-4	1,3E-5	6,31E-6	MND	MND	MND	MND	MND	MND	MND	0E0	2,19E-6	0E0	1,13E-6	-1,08E-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	7,9E-2	7,9E-2	0E0	2,77E-3	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	1,7E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	3,25E-1	3,25E-1	0E0	2,64E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	4,69E1	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	8,08E0	2,01E-1	4,21E-1	8,7E0	1,21E-1	6,33E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,08E-2	6,51E0	9,6E-2	-4,15E0
Ozone depletion Pot.	kg CFC <sub>11e</sub>	1,1E-7	3,67E-8	1,36E-8	1,6E-7	2,27E-8	8,17E-9	MND	MND	MND	MND	MND	MND	MND	0E0	3,84E-9	3,09E-8	1,89E-9	-1,87E-7
Acidification	kg SO <sub>2</sub> e	1,75E-2	4,07E-4	8,82E-4	1,88E-2	2,48E-4	8,3E-4	MND	MND	MND	MND	MND	MND	MND	0E0	4,29E-5	3,84E-3	8,52E-5	-2,4E-2
Eutrophication	kg PO <sub>4</sub> <sup>3e</sup>	4,3E-3	8,37E-5	5,13E-4	4,89E-3	5E-5	5,66E-4	MND	MND	MND	MND	MND	MND	MND	0E0	8,91E-6	1,99E-3	7,69E-3	-6,31E-3
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	2,27E-3	2,68E-5	8,41E-5	2,38E-3	1,57E-5	8,82E-5	MND	MND	MND	MND	MND	MND	MND	0E0	2,77E-6	4,1E-5	2,38E-5	-1E-3
ADP-elements	kg Sbe	1,39E-5	5,49E-6	1,49E-6	2,09E-5	2,08E-6	1,03E-6	MND	MND	MND	MND	MND	MND	MND	0E0	5,25E-7	3,18E-6	9,11E-8	-5,69E-6
ADP-fossil	MJ	2,56E2	3,06E0	6,91E0	2,66E2	1,89E0	9,58E0	MND	MND	MND	MND	MND	MND	MND	0E0	3,21E-1	3,41E0	2,17E-1	-4,62E1

### ENVIRONMENTAL IMPACTS – ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Radioactive waste, high	kg	4,47E-6	3,79E-8	2,82E-7	4,79E-6	2,26E-8	1,72E-7	MND	MND	MND	MND	MND	MND	MND	0E0	4,1E-9	3,99E-8	8,58E-9	-1,37E-6
Radioactive waste, int/low	kg	1,17E-4	2,1E-5	8,41E-6	1,47E-4	1,3E-5	6,14E-6	MND	MND	MND	MND	MND	MND	MND	0E0	2,19E-6	5,36E-6	1,12E-6	-1,06E-4

### ENVIRONMENTAL IMPACTS – FRENCH NATIONAL COMPLEMENTS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADP-elements	kg Sbe	3,61E-5	5,49E-6	1,49E-6	4,31E-5	2,07E-6	1,81E-6	MND	MND	MND	MND	MND	MND	MND	0E0	5,24E-7	3,15E-6	9,06E-8	-5,67E-6
Hazardous waste disposed	kg	1,42E-1	1,97E-3	5,72E-3	1,49E-1	1,17E-3	1,47E-2	MND	MND	MND	MND	MND	MND	MND	0E0	2,11E-4	2,25E-1	1,14E-3	-6,53E-2
Non-haz. waste disposed	kg	3,56E0	2,14E-1	6,71E-1	4,44E0	2,03E-1	3,15E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,77E-2	2,54E0	6,59E-1	-7,73E0
Air pollution	m <sup>3</sup>	3,52E2	2,03E1	6,69E1	4,39E2	1,56E1	1,86E1	MND	MND	MND	MND	MND	MND	MND	0E0	2,35E0	4,17E1	1,75E0	-3,55E2
Water pollution	m <sup>3</sup>	1,55E0	6,79E-2	5,09E-2	1,67E0	4,2E-2	7,44E-2	MND	MND	MND	MND	MND	MND	MND	0E0	7,11E-3	2,8E-1	2,54E-2	-5,46E-1

### ENVIRONMENTAL IMPACTS – TRACI 2.1. / 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	8,11E0	2,01E-1	4,23E-1	8,74E0	1,2E-1	6,35E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,08E-2	6,52E0	1,03E-1	-4,17E0
Ozone Depletion	kg CFC <sub>11</sub> e	1,27E-7	4,89E-8	1,78E-8	1,94E-7	3,03E-8	1E-8	MND	MND	MND	MND	MND	MND	MND	0E0	5,11E-9	3,58E-8	2,53E-9	-2,48E-7
Acidification	kg SO <sub>2</sub> e	1,81E-2	7,22E-4	9,11E-4	1,98E-2	4,45E-4	9,23E-4	MND	MND	MND	MND	MND	MND	MND	0E0	7,53E-5	5,17E-3	8,85E-5	-2,28E-2
Eutrophication	kg Ne	2,55E-3	1,02E-4	1,56E-4	2,81E-3	6,26E-5	1,69E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,06E-5	9,61E-4	8,34E-4	-2,05E-3
POCP ("smog")	kg O <sub>3</sub> e	2,83E-1	1,56E-2	1,45E-2	3,13E-1	9,76E-3	1,8E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,62E-3	1,69E-1	1,74E-3	-2,18E-1
ADP-fossil	MJ	3,81E1	4,38E-1	7,54E-1	3,93E1	2,71E-1	1,42E0	MND	MND	MND	MND	MND	MND	MND	0E0	4,58E-2	5,11E-1	2,56E-2	-3,08E0

## 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  
30.05.2023

