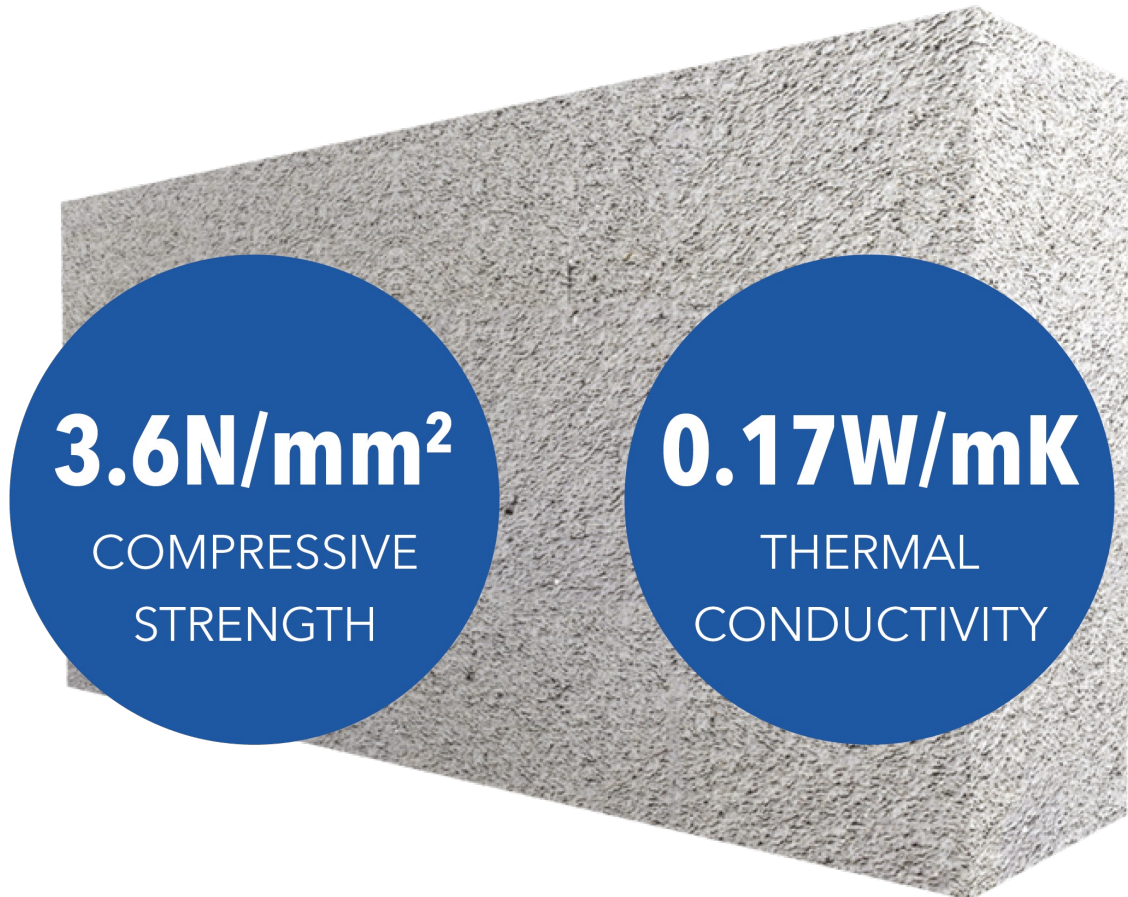


# ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN15804+A2

Aircrete block Standard



## AIRCRETE STANDARD BLOCKS



**Owner of the declaration:**  
MANNOKBUILD

**Product:**  
Aircrete block Standard

**Declared unit:**  
1 tonne

**This declaration is based on Product Category Rules:**  
EN 15804:2012+A2:2019, EPD Ireland PCR Part A, Version 2.1, 2022  
I.S. EN 16757:2022, PCR for concrete and concrete elements.

**Program operator:**  
EPD Ireland - Irish Green Building Council

**Declaration number:**  
EPDIE-24-146

**Issue date:**  
05.09.2024

**Valid to:**  
04.09.2029

## General information

### Product

Aircrete block Standard

### Program operator:

EPD Ireland - Irish Green Building Council  
19 Mountjoy Square, Dublin D01 E8P5  
Phone: +353 (01) 6815862  
web: <https://www.igbc.ie/epd-home/>

### Declaration number:

EPDIE-24-146

### This declaration is based on Product Category Rules:

EN 15804:2012+A2:2019, EPD Ireland PCR Part A, Version 2.1, 2022  
I.S. EN 16757:2022, PCR for concrete and concrete elements.

### Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. The EPD Program operator shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

### Type of EPD

Specific product EPD

### Declared unit:

1 tonne Aircrete block Standard

### Scope of the EPD:

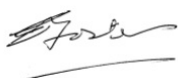
A1,A2,A3,A4,A5,B1,B2,B3,B4,B5,B6,B7,C1,C2,C3,C4,D

### Functional unit:

One tonne (1,000kg) of precast concrete block, at the factory gate

### Verification:

Independent verification of the declaration and data, according to ISO14025:2010



Third party verifier:  
Chris Foster, EuGeos SRL

### Owner of the declaration:

MANNOKBUILD  
Contact person:  
Phone: 08000 322 122  
e-mail: [info@mannokbuild.com](mailto:info@mannokbuild.com)

### Manufacturer:

MANNOKBUILD

### Place of production:

MANNOKBUILD  
187 Ballyconnell Road  
BT92 9GP Derrylin, Enniskillen, Co. Fermanagh, Northern Ireland

### Issue date:

05.09.2024

### Valid to:

04.09.2029

### Year of study:

2023

### Comparability:

Environmental Product Declarations from different programmes may not be directly comparable if not compliant with EN 15804:2012+A2:2019. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See clause 5.3 of EN 15804:2012+A2:2019

LCA consultant or person responsible for LCA:  
EcoReview, Peter Seymour

### Approved:

SIGNATURE OF PROGRAMME OPERATOR



Pat Barry, CEO - Irish Green Building Council

## Product

### Product description:

The Aircrete blocks are high performance thermal blocks which are precision manufactured using autoclaved aerated concrete (AAC). They are lightweight and provide superior thermal performance. They are used in housing and commercial/industrial construction applications, for construction of external walls, rising foundation walls, internal partition walls, and party walls.

### Product specification:

The Aircrete thermal blocks are manufactured in accordance with I.S. EN 771-4:2011+A1:2016, Specification for masonry units - Part 4: Autoclaved aerated concrete masonry units.

Further technical details on the blocks can be found at: <https://mannokbuild.com/aircrete-thermal-blocks/what-are-aircrete-thermal-blocks/>

### Technical data:

The main material components of the Aircrete lightweight thermal blocks are cement, sand, lime, aluminium powder and water. The density of the Standard B5 block is 650 kg/m<sup>3</sup>.

### Market/Geographical Area:

The main market for the Mannok Aircrete blocks is housing and commercial buildings. The blocks are supplied to the markets in Northern Ireland, Great Britain and the Republic of Ireland.

### Reference service life, product

No Reference Service Life is defined. The blocks are expected to be fit for use and be durable for 60+ years.

### Reference service life, building or construction works

## LCA: Calculation rules

### Declared unit:

1 tonne Aircrete block Standard  
kg per Declared unit 1000

### Cut-off criteria:

All relevant inputs and outputs - like emissions, energy and materials - have been taken into account in this LCA, and in accordance with EN15804+A2:2019. The study covers at least 95% of the materials and energy per module and at least 99% of the total use of materials and energy of each unit process. Long term emissions have been excluded from the study.

### Allocation:

The measurement of environmental impacts in this EPD uses the LCIA methodologies recommended for PEF 3.1. In this EPD, the waste processes are allocated in the relevant module. In the case of the use of secondary materials or energy recovered from secondary fuels, the system boundary between the system under study and the previous system (providing the secondary materials) is set where outputs of the previous system, e.g. materials, products, building elements or energy, reach the end-of-waste state. The modularity and the polluter payer principles have been followed.

Allocation of energies such as diesel, propane and electricity types and amounts to the various manufacturing processes has been provided by the manufacturer, along with production waste and direct emissions; allocation of impacts to the products is based on the product composition mass.

### Data quality:

The data Quality Levels, according to Table E.1 of EN 15804 +A2, Annex E, are:

Geographical representativeness: Very good: the production location of the blocks lies within the region for which the relevant Ecoinvent (version 3.8) environmental records have been selected.

Time representativeness: Very good: the data relating to the manufacturing of the blocks, and the data relating to the background processes for environmental impacts are recent (<2 years). The LCA dataset for the cement is from 2021 and is of the specific cement used in production.

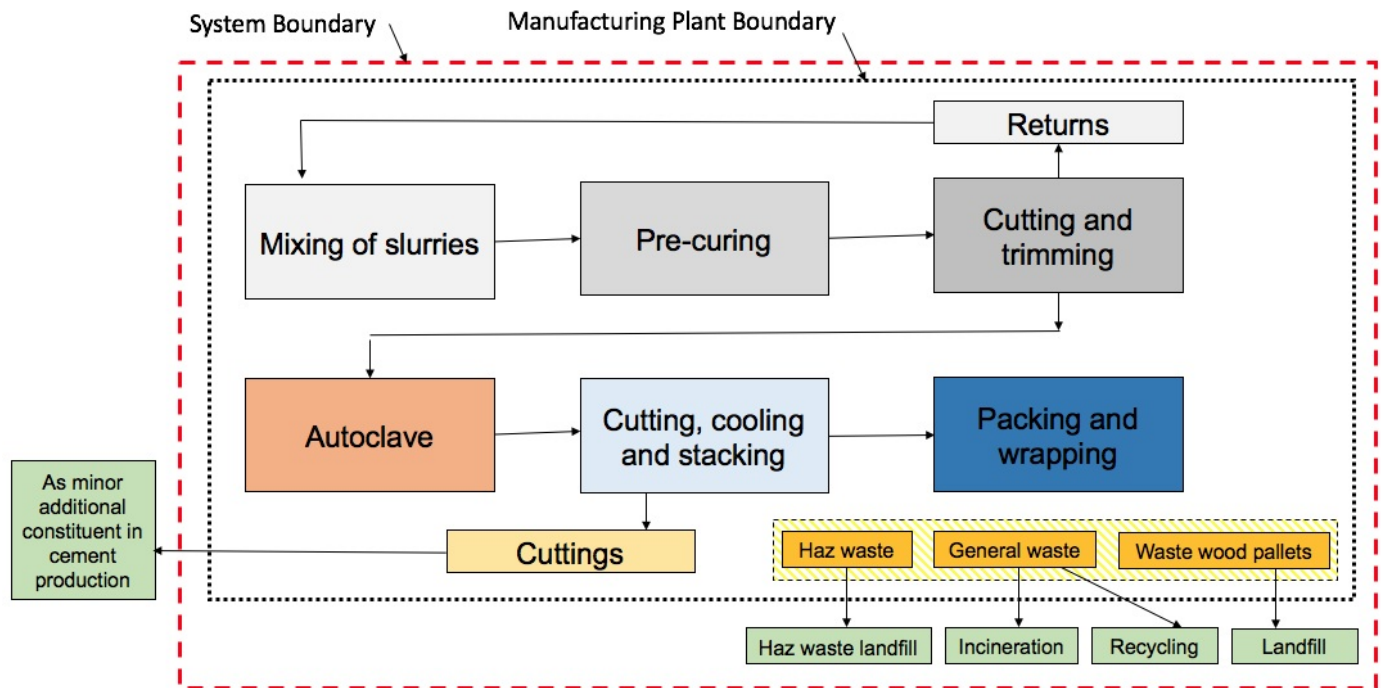
Technical representativeness: Very good: the processes and energies used in the process have been modelled exactly as described by Mannok Aircrete blocks and are based directly on the production data supplied by Mannok for the Aircrete block production.

### Scope and type of EPD (X = Module declared; ND = Module not declared)

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

#### System boundary:

This LCA covers the Product (A1, A2 and A3), Transport to site (A4), Construction Process (A5), Use (B1 to B7), End of Life (C1 to C4) and Benefits/loads beyond the system boundary (D) Stages, as indicated above. This is termed: "Cradle to grave, and module D". Specific details of the Product Stage (A1 to A3) are illustrated in the flow diagram below.



#### Additional technical information:

##### Electricity modelling

The fuel mix for the electricity supplied is 37,6% natural gas, and 62,4% renewable (onshore wind).

The CO2 intensities of these two types are: Natural gas 0,66 kg CO2 per kWh, and Renewable (onshore wind) 0,033 kg CO2 per kWh, (values from Ecoinvent v 3.8 values, market for electricity, wind (onshore)/natural gas, low voltage | Cutoff, U - RoW).

Thus the electricity used has a mean CO2 (GWpt) per kWh value of 0,268 kg CO2 per kWh.

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

### A4. Transport to customer

The A4 scenario used in this EPD is based on the blocks being manufactured in Co. Fermanagh, Northern Ireland, and transported to a location in Great Britain over a distance of 371 km by road, and 202 km by sea. This is the mean of 5 different routes used. The capacity utilisation of road freight is 46%. The density of the transported goods is 480 kg/m<sup>3</sup>.

### A5. Installation

Installation losses are 5% of block weight. Installation losses are assumed to be re-used on site as incidental loose fill.

As the declared unit for the concrete block products is one tonne (1,000kg) of precast concrete block, at the factory gate – this means that 50 kg of this 1,000 kg are production losses, thus 950 kg of product ends up in the structure. Calculations of the impacts in the B, C and D stages are based on the 950 kg mass per declared unit.

## B. Use Stage

In the Use Stage, carbonation is calculated, and assigned to module B1.

### B1. Use

Carbonation is calculated at 17,6 kg CO<sub>2</sub> per tonne of installed blocks, according to Appendix G of IS EN16757:2022, section G.3.2.

The remaining Use Stage modules, B2 - B7, are considered to have no impacts, and their impact values are zero.

## C. End of Life Scenarios, Module

It is assumed that 50% of the blocks are re-used on site as incidental construction fill, and 50% are transported off-site for use as incidental construction fill on other construction sites.

### C1. De-construction demolition

It is assumed that the blocks are removed with minimal energy, and thus zero energy or materials are used in C1.

### C2. Transport

In the transport phase C2, it is assumed that 50% of the blocks travel 50km to the point of re-use as incidental fill in other construction projects.

### C3. Waste processing

The energy used for crushing on site of one tonne of blocks is assumed to be 0,09 litres of diesel per tonne.

Calculation of impacts of C2 and C3 account for 95% of the product – to reflect the 5% production losses on installation.

### C4. Disposal

There is no disposal of the blocks at end of life. C4 is zero.

## D. Reuse – Recovery – Recycling potential

Benefits beyond the system boundary arise from 95% of the mass of the blocks replacing the production of virgin aggregates, for use as incidental construction fill.

Avoided electricity generation from incineration of pallets is based on generating 28 kWh electricity per declared unit (from NCV of wood of 17 MJ/kg, and an efficiency of conversion of energy to electricity of 25%).

### Biogenic Carbon

Biogenic carbon in the product system is effectively all contained in the wood pallets. The value of biogenic C per DU is 9.2 kg C per DU, at the factory gate.

There is a small deviations in the overall biogenic CO<sub>2</sub> balance across the full life cycle of the products (in the order of 0,6 kg CO<sub>2</sub>), resulting from small deviations within the datasets used.

Database used: Ecoinvent v 3.8

LCA tool used: Ecochain Helix v 4.3.1

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact										
Indicator		Unit	A1	A2	A3	A4	A5	B1	B2	B3
	GWP-total	kg CO <sub>2</sub> -eq	2.82E+02	4.10E+00	9.16E+00	6.24E+01	4.99E+01	-1.76E+01	0.00E+00	0.00E+00
	GWP-fossil	kg CO <sub>2</sub> -eq	3.15E+02	4.09E+00	9.10E+00	6.23E+01	1.67E+01	-1.76E+01	0.00E+00	0.00E+00
	GWP-biogenic	kg CO <sub>2</sub> -eq	-3.37E+01	3.73E-03	5.64E-02	5.49E-02	3.31E+01	0.00E+00	0.00E+00	0.00E+00
	GWP-luluc	kg CO <sub>2</sub> -eq	1.66E-01	1.64E-03	1.48E-03	2.55E-02	8.50E-03	0.00E+00	0.00E+00	0.00E+00
	ODP	kg CFC11 -eq	1.02E-05	9.48E-07	1.06E-06	1.44E-05	6.17E-07	0.00E+00	0.00E+00	0.00E+00
	AP	mol H+ -eq	7.77E-01	1.16E-02	2.83E-02	2.33E-01	4.45E-02	0.00E+00	0.00E+00	0.00E+00
	EP-FreshWater	kg P -eq	3.68E-03	2.92E-05	4.85E-05	4.38E-04	1.93E-04	0.00E+00	0.00E+00	0.00E+00
	EP-Marine	kg N -eq	1.79E-01	2.31E-03	8.67E-03	4.93E-02	1.13E-02	0.00E+00	0.00E+00	0.00E+00
	EP-Terrestrial	mol N -eq	2.04E+00	2.58E-02	9.51E-02	5.49E-01	1.27E-01	0.00E+00	0.00E+00	0.00E+00
	POCP	kg NMVOC -eq	5.64E-01	9.90E-03	2.89E-02	1.90E-01	3.50E-02	0.00E+00	0.00E+00	0.00E+00
	ADP-minerals&metals <sup>1</sup>	kg Sb-eq	2.80E-04	1.45E-05	1.15E-04	2.17E-04	2.10E-05	0.00E+00	0.00E+00	0.00E+00
	ADP-fossil <sup>1</sup>	MJ	1.34E+03	6.20E+01	1.34E+02	9.40E+02	7.94E+01	0.00E+00	0.00E+00	0.00E+00
	WDP <sup>1</sup>	m <sup>3</sup>	6.83E+01	1.89E-01	7.45E-01	2.83E+00	3.51E+00	0.00E+00	0.00E+00	0.00E+00

Indicator		Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
	GWP-total	kg CO <sub>2</sub> -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.07E+00	2.85E-01	0.00E+00	-1.49E+01
	GWP-fossil	kg CO <sub>2</sub> -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.06E+00	2.85E-01	0.00E+00	-1.47E+01
	GWP-biogenic	kg CO <sub>2</sub> -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.89E-03	1.07E-04	0.00E+00	-2.24E-01
	GWP-luluc	kg CO <sub>2</sub> -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.40E-03	2.84E-05	0.00E+00	-1.26E-02
	ODP	kg CFC11 -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-06	6.08E-08	0.00E+00	-1.08E-06
	AP	mol H+ -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E-02	2.96E-03	0.00E+00	-9.68E-02
	EP-FreshWater	kg P -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.14E-05	9.44E-07	0.00E+00	-2.28E-04
	EP-Marine	kg N -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.73E-03	1.31E-03	0.00E+00	-2.63E-02
	EP-Terrestrial	mol N -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.05E-02	1.44E-02	0.00E+00	-3.51E-01
	POCP	kg NMVOC -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.17E-02	3.95E-03	0.00E+00	-7.94E-02
	ADP-minerals&metals <sup>1</sup>	kg Sb-eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.32E-05	1.46E-07	0.00E+00	-1.04E-04
	ADP-fossil <sup>1</sup>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.59E+01	3.90E+00	0.00E+00	-2.20E+02
	WDP <sup>1</sup>	m <sup>3</sup>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.52E-01	6.11E-03	0.00E+00	-4.83E+00

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption







"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"







\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

### Remarks to environmental impacts

**Additional environmental impact indicators**

Indicator	Unit	A1	A2	A3	A4	A5	B1	B2	B3
 PM	Disease incidence	4.23E-06	3.29E-07	4.40E-07	4.91E-06	2.89E-07	0.00E+00	0.00E+00	0.00E+00
 IRP <sup>2</sup>	kgBq U235 -eq	3.54E+00	2.69E-01	1.07E-01	4.08E+00	1.98E-01	0.00E+00	0.00E+00	0.00E+00
 ETP-fw <sup>1</sup>	CTUe	2.40E+03	4.87E+01	9.42E+01	7.34E+02	1.32E+02	0.00E+00	0.00E+00	0.00E+00
 HTP-c <sup>1</sup>	CTUh	6.99E-08	1.57E-09	5.13E-09	2.43E-08	4.67E-09	0.00E+00	0.00E+00	0.00E+00
 HTP-nc <sup>1</sup>	CTUh	1.48E-06	4.92E-08	9.40E-08	7.36E-07	1.23E-07	0.00E+00	0.00E+00	0.00E+00
 SQP <sup>1</sup>	dimensionless	3.58E+03	4.32E+01	1.75E+01	6.42E+02	1.83E+02	0.00E+00	0.00E+00	0.00E+00











Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
 PM	Disease incidence	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.44E-07	7.92E-08	0.00E+00	-9.81E-07
 IRP <sup>2</sup>	kgBq U235 -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.30E-01	1.66E-02	0.00E+00	-9.33E-01
 ETP-fw <sup>1</sup>	CTUe	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.19E+01	2.28E+00	0.00E+00	-2.36E+03
 HTP-c <sup>1</sup>	CTUh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E-09	8.80E-11	0.00E+00	-5.11E-09
 HTP-nc <sup>1</sup>	CTUh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.99E-08	1.66E-09	0.00E+00	-1.51E-07
 SQP <sup>1</sup>	dimensionless	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.49E+01	4.97E-01	0.00E+00	-1.38E+02

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)











"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. 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.

Resource use										
Indicator		Unit	A1	A2	A3	A4	A5	B1	B2	B3
	PERE	MJ	3.46E+02	8.87E-01	7.15E+01	1.33E+01	4.13E+01	0.00E+00	0.00E+00	0.00E+00
	PERM	MJ	4.05E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	PERT	MJ	7.51E+02	8.87E-01	7.15E+01	1.33E+01	4.13E+01	0.00E+00	0.00E+00	0.00E+00
	PENRE	MJ	1.42E+03	6.59E+01	1.47E+02	9.98E+02	8.46E+01	0.00E+00	0.00E+00	0.00E+00
	PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	PENRT	MJ	1.42E+03	6.59E+01	1.47E+02	9.98E+02	8.46E+01	0.00E+00	0.00E+00	0.00E+00
	SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	FW	m <sup>3</sup>	1.83E+00	7.02E-03	2.01E-02	1.05E-01	9.78E-02	0.00E+00	0.00E+00	0.00E+00







  

Indicator		Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
	PERE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+00	2.20E-02	0.00E+00	-4.62E+01
	PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	PERT	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+00	2.20E-02	0.00E+00	-4.62E+01
	PENRE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.05E+01	4.15E+00	0.00E+00	-2.35E+02
	PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	PENRT	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.05E+01	4.15E+00	0.00E+00	-2.35E+02
	SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	FW	m <sup>3</sup>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.61E-03	2.23E-04	0.00E+00	-1.05E-01

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"











\*INA Indicator Not Assessed

End of life - Waste											
Indicator	Unit	A1	A2	A3	A4	A5	B1	B2	B3		
	HWD	kg	1.09E-03	1.62E-04	2.09E-04	2.41E-03	1.26E-04	0.00E+00	0.00E+00	0.00E+00	
	NHWD	kg	1.03E+01	3.25E+00	7.09E-01	4.80E+01	8.67E-01	0.00E+00	0.00E+00	0.00E+00	
	RWD	kg	4.80E-03	4.19E-04	1.57E-04	6.36E-03	2.70E-04	0.00E+00	0.00E+00	0.00E+00	
Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D	
	HWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-04	1.07E-05	0.00E+00	-1.33E-04
	NHWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.22E+00	5.21E-03	0.00E+00	-8.74E-01
	RWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.08E-04	2.70E-05	0.00E+00	-1.22E-03

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

\*Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

End of life - Output flow										
Indicator	Unit	A1	A2	A3	A4	A5	B1	B2	B3	
	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

\*Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in accompanying packaging	kg C	9.20E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## **Additional requirements**

### **Dangerous substances**

None of the substances contained in the product are listed in the "Candidate List of Substances of Very High Concern for authorisation", or they do not exceed the limit for registration with the European Chemicals Agency.

**Mandatory additional information on release of dangerous substances to indoor air, soil and water.**

## Bibliography






[1] EN 15804:2012+A2:2019: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products EN 15804:2012+A2:2019.

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[3] IS EN 16757:2022 Sustainability of construction works. Environmental product declarations. Product Category Rules for concrete and concrete elements.

[4] Ecochain Helix v 4.3.1, 2024, web: <http://app.Ecochain.com>

[5] Ecoinvent v 3.8

	<p><b>Program operator and publisher</b>          EPD Ireland - Irish Green Building Council          19 Mountjoy Square, Dublin D01 E8P5</p>	<p>Phone: +353 (01) 6815862          e-mail: <a href="mailto:epd@igbc.ie">epd@igbc.ie</a>          web: <a href="https://www.igbc.ie/epd-home/">https://www.igbc.ie/epd-home/</a></p>
	<p><b>Owner of the declaration:</b>          MANNOKBUILD          187 Ballyconnell Road, BT92 9GP Derrylin, Enniskillen, Co. Fermanagh</p>	<p>Phone: 08000 322 122          e-mail: <a href="mailto:info@mannokbuild.com">info@mannokbuild.com</a>          web: <a href="https://mannokbuild.com/aircrete-thermal-blocks/">https://mannokbuild.com/aircrete-thermal-blocks/</a></p>
	<p><b>Author of the Life Cycle Assessment</b>          EcoReview Ireland</p>	<p>Phone: +353 87 258 9783          e-mail: <a href="mailto:pseymour@ecoreview.ie">pseymour@ecoreview.ie</a>          web: <a href="http://ecoreview.ie">ecoreview.ie</a></p>
	<p><b>Developer of PDF generator</b>          LCA.no AS          Dokka 6A, 1671 Kråkerøy</p>	<p>Phone: +47 916 50 916          e-mail: <a href="mailto:post@lca.no">post@lca.no</a>          web: <a href="http://www.lca.no">www.lca.no</a></p>
	<p>ECO Platform          ECO Portal</p>	<p>web: <a href="http://www.eco-platform.org">www.eco-platform.org</a>          web: ECO Portal</p>