

ENVIRONMENTAL PRODUCT DECLARATION

of Thermal Liteblock

as per ISO 14025:2010 and EN 15804:2012+A1:2013

GENERAL:

Owner of the declaration:	Roadstone, Cookstown Rd, Fortunestown, Dublin, Ireland
Manufacturing sites	Belgard, Ireland
Programme holder:	The International EPD® System EPD International AB Box 210 60, 100 31 Stockholm, Sweden www.environdec.com
Declared product / declared unit:	1 m ³ of Thermal Liteblock product
Product Category Rules:	IS EN 15804:2012+A1:2013; PCR 2012:01 Construction products and construction services; version 2.33; IS EN 16757:2017; PCR 2012:01-Sub-PCR-G Concrete and concrete elements S-P-02442
EPD Registration Number:	
Issue date:	18 December 2020
Valid to:	17 December 2025

VERIFIER:

PCR 2012:01 Construction products and
construction services; version 2.33 (EN 15804:
2012+A1:2013) and PCR 2012:01-Sub-PCR-G
Concrete and concrete elements (EN 16757:2017)
serve as the core PCR (Product Category Rules).

**Independent verification of the
declaration, according to EN ISO
14025:2010**

Internally Externally

Third party verifier:
Jane Anderson, ConstructionLCA

Signature: *Jane Anderson*



PRODUCT:

The declared product, Thermal Liteblock, is a lightweight concrete block with thermal and structural properties. It is used to reduce thermal bridging in key locations in conjunction with the Roadstone Concrete Block range, to achieve energy efficient buildings.

The raw materials used to manufacture Thermal Liteblock are: cement, lightweight (expanded clay) aggregates, natural aggregates, admixtures, bottom ash and water. The manufacturing process involves mixing of raw materials followed by curing in moulds.

Thermal Liteblock is available in two strength classes and a variety of dimensions.

Explanatory information can be found on the company website, www.roadstone.ie including specific product sheets which contains further information on the safe and effective use and disposal of the Thermal Liteblock product.

TECHNICAL DATA:

Roadstone Thermal Liteblock is CE marked to system 2+ in accordance with the requirements of I.S. EN771-3: Specification for masonry units - Part 3: Aggregate concrete masonry units (dense and light-weight concrete). UNC CPC code 37550.

Table 1: Thermal Liteblock typical characteristics

Characteristic	Declared performance		Technical standard
	13 N Thermal Liteblock	7.5 N Thermal Liteblock	
Strength	13.0 N	7.5 N	IS EN 772-1
Thermal conductivity	0.35 W/mK ($\lambda_{10,dry}$)	0.33 W/mK ($\lambda_{10,dry}$)	IS EN 1745
Fire resistance classification	4hrs	2hrs	IS EN 1996-1-2
Moisture movement	< 0.6 mm/m		IS EN 772-14
Shear bond strength	0.15N/mm ² (Tabulated)		IS EN 998-2

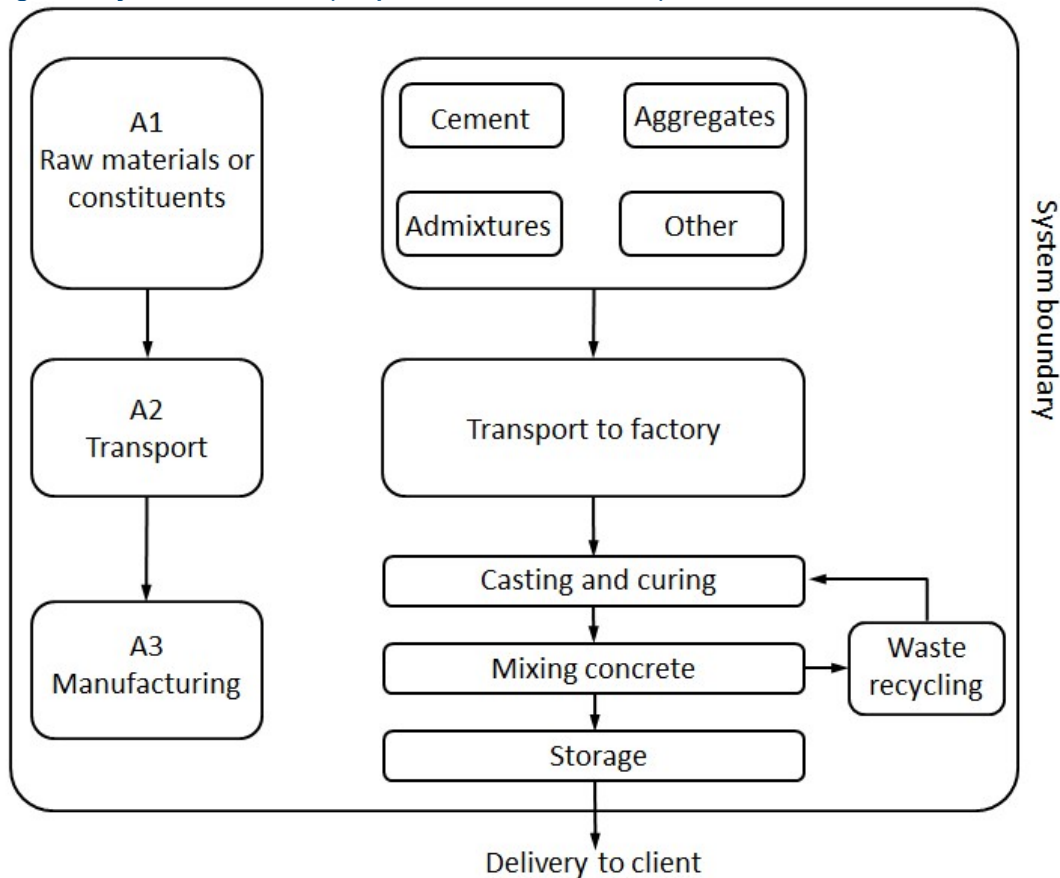
Thermal Liteblock contains no substances that are part of the European Chemical Agency List for Substances of Very High Concern for Authorisation.

LCA RULES:

The declared unit is 1 m³ of concrete product.

The system boundary which defines the unit processes for a precast concrete product to be included in the LCA system model are illustrated in EN16757:2017, i.e.

Figure 1: System boundaries (adapted from EN 16757:2017)



The life cycle stages covered in this EPD are the information modules A1-A3 (cradle-to-gate), i.e.

- A1, raw material extraction and processing, processing of secondary material input (e.g. recycling, processes),
- A2, transport to the manufacturer,
- A3, manufacturing including provision of all materials, products and energy, as well as waste processing up to the end-of waste state or disposal of final residues during the product stage.

As this study covers the production stage information (from A1 to A3) of the product and therefore no “use” stage is declared, a reference service life is not declared.

Thermal Liteblock is manufactured at two Roadstone facilities at Belgard in Ireland. Data selection for the life cycle modelling of concrete in this EPD uses both specific data from Roadstone for materials, processes, fuels and transport; data for cement from Irish Cement Limited; and in some cases, generic background data (for upstream processes)¹.

The specific production dataset chosen for this EPD is the production data for the year 2019.

For life cycle modelling of the considered product, the verified GCCA online tool for EPDs of concrete and cement is used, version 2.0 (which includes the use of ecoinvent data v3.3 (2016)). The life cycle assessment in the tool has been implemented in compliance with EN 15804:2012+A1:2013, the General Programme Instructions for the International EPD® System, the product category rules PCR 2012:01 (version 2.3 date 15.11.2018) “Construction products and Construction services” and PCR 2012:01-Sub-PCR-H (version date 22.11.2018) “Cement and building limes (EN 16908:2017)” and PCR 2012:01-Sub-PCR-G (version date 22.11.2018) “Concrete and concrete elements (EN 16757:2017)”.

¹ All generic background data was provided by GCCA EPD tool v2.0, except for the electricity mix which was taken from www.seai.ie.

Cut-off rules

Processes that have been excluded from the LCA:

- Manufacture of moulds (considered to be part of capital equipment)
- Pallets and pallet straps (less than 1% of total mass)
- Forklift fuel (less than 1% of primary energy usage)
- Fuel for office heating (less than 1% of primary energy usage).

LCA SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION:

The development of scenarios can only be made on the finished product (e.g. the constructed building) and not on individual Thermal Liteblock products.

LCA RESULTS:

RESULTS OF THE LCA - 1 m³ THERMAL LITEBLOCK 13 N

Environmental impacts	A1-A3	Unit
Global warming potential, GWP (100 years)	4.11E2 (2.27E1)	kg CO2-eq
Depletion potential of the stratospheric ozone layer, ODP	1.30E-5 (0.00)	kg CFC 11-eq
Acidification potential of soil and water, AP	4.41 (2.12E-1)	kg SO2-eq
Eutrophication potential, EP	4.53E-1 (2.17E-2)	kg PO43-eq
Formation potential of tropospheric ozone, POCP	2.29E-1 (1.18E-2)	kg ethylene-eq
Abiotic depletion potential for non-fossil resources, ADP-elements	2.66E-4 (0.00)	kg Sb-eq
Abiotic depletion potential for fossil resources, ADP-fossil fuels	2.15E3 (0.00)	MJ
Resource use	A1-A3	Unit
Renewable primary energy used as energy resource	5.97E2	MJ
Renewable primary energy used as raw materials	0.00E0	MJ
Total renewable primary energy	5.97E2	MJ
Non-renewable primary energy used as energy resource	2.51E3	MJ
Non-renewable primary energy used as raw materials	0.00E0	MJ
Total non-renewable primary energy	2.51E3	MJ
Secondary material	7.43E2	kg
Renewable secondary fuels	1.73E2	MJ
Non-renewable secondary fuels	2.50E2	MJ
Net fresh water	1.97E1	m ³
Waste	A1-A3	Unit
Hazardous waste disposed	0.00	kg
Hazardous waste disposed	1.85E3	kg
Radioactive waste disposed	5.71E0	kg
Output flows	A1-A3	Unit
Components for re-use	0.00	kg
Materials for recycling	1.85E0	kg
Materials for energy recovery	3.53E-3	kg
Exported energy	0.00	MJ

RESULTS OF THE LCA - 1 m³ THERMAL LITEBLOCK 7.5 N

Environmental impacts	A1-A3	Unit
Global warming potential, GWP (100 years)	3.61E2 (1.82E1)	kg CO ₂ -eq
Depletion potential of the stratospheric ozone layer, ODP	1.18E-5 (0.00)	kg CFC 11-eq
Acidification potential of soil and water, AP	4.21 (1.70E-1)	kg SO ₂ -eq
Eutrophication potential, EP	4.23E-1 (1.74E-2)	kg PO ₄ -eq
Formation potential of tropospheric ozone, POCP	2.19E-1 (9.47E-3)	kg ethylene-eq
Abiotic depletion potential for non-fossil resources, ADP-elements	2.50E-4 (0.00)	kg Sb-eq
Abiotic depletion potential for fossil resources, ADP-fossil fuels	2.01E3 (0.00)	MJ
Resource use	A1-A3	Unit
Renewable primary energy used as energy resource	5.64E2	MJ
Renewable primary energy used as raw materials	0.00E0	MJ
Total renewable primary energy	5.64E2	MJ
Non-renewable primary energy used as energy resource	2.33E3	MJ
Non-renewable primary energy used as raw materials	0.00E0	MJ
Total non-renewable primary energy	2.33E3	MJ
Secondary material	7.32E2	kg
Renewable secondary fuels	1.39E2	MJ
Non-renewable secondary fuels	2.00E2	MJ
Net fresh water	1.90E1	m ³
Waste	A1-A3	Unit
Hazardous waste disposed	0.00	kg
Hazardous waste disposed	1.58E3	kg
Radioactive waste disposed	5.62	kg
Output flows	A1-A3	Unit
Components for re-use	0.00	kg
Materials for recycling	1.48	kg
Materials for energy recovery	2.83E-3	kg
Exported energy	0.00	MJ

In the results above for environmental impacts, the impacts from wastes used as alternative fuels in cement manufacturing are included. As additional information, the part from wastes used as alternative fuels in cement manufacturing only is also reported separately, in brackets ().

To convert from the results given above per m³ to an individual block in the Thermal Liteblock range, use the following dimensions:

Name	Dimensions			m ³ per block
	Length (mm)	Width (mm)	Height (mm)	
100mm Lite Block 7.5N	440	100	215	0.00946
100mm Lite Block 13N	440	100	215	0.00946
140mm Lite Soapbar 7.5N	440	100	140	0.00616
100mm Lite Soapbar 7.5N	440	100	100	0.00440
140mm Lite Solid 7.5N	440	140	215	0.01324
100mm Lite Soapbar 13N	440	100	100	0.00440
140mm Lite Soapbar 13N	440	100	140	0.00616

A comparison of EPD data is only possible if all the data sets to be compared were created according to EN 15804:2012+A1:2013 and the building context, i.e. the product-specific characteristics of performance, are taken into account. EPD of construction products may not be comparable if they do not comply with EN 15804.

Additional information on release of dangerous substances to indoor air, soil and water during the use stage

This EPD does not provide this information as the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not yet available.

REFERENCES:

IS EN ISO 14025:2010:

Environmental labels and declarations — Type III environmental declarations — Principles and procedures

IS EN 15804:2012+A1 2013:

Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

IS EN 16757:2017 / PCR 2012:01-Sub-PCR-G Concrete and concrete elements (version date 22.11.2018):

Sustainability of construction works — Environmental product declarations — Product Category Rules for concrete and concrete elements

IS EN 16908:2017 / PCR 2012:01-Sub-PCR-H Cement and building limes (version date 22.11.2018)

Cement and building lime. Environmental product declarations. Product category rules complementary to EN 15804

IS EN 771-3:2011:

Specification for masonry units. Aggregate concrete masonry units (Dense and light-weight aggregates) (+A1:2015)

Candidate List of Substances of Very High Concern for Authorisation European Chemical Agency, 2014

www.echa.europa.eu

Sustainable Energy Authority of Ireland

www.seai.ie