

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804 + A1

Owner of the Declaration

KORE Insulation

Declaration number: EPDIE-19-14

ECO Platform EPD no: 818

Issue date 31st January 2019

Valid to 31st January 2024

EPD Programme - EPD Ireland

Programme Operator - Irish Green Building Council

www.epdireland.org




KORE

Build Better, Together.

KORE INSULATION

EPS70 White, EPS70 Silver, EPS100
White, EPS100 Silver, EPS150
White, EPS200, EPS300

1 General information

PROGRAMME OPERATOR	OWNER OF DECLARATION
Irish Green Building Council, 19 Mountjoy Square, Dublin D01 E8P5	KORE Insulation Airpacks Ltd, The Green, Kilnaleck, Co. Cavan, A82 T291 Ireland +049 433 6998 info@kore-icf.com / https://www.kore-system.com/
DECLARATION NUMBER	PRODUCTION SITE
EPDIRE-19-14	KORE Insulation Airpacks Ltd, The Green, Kilnaleck, Co. Cavan, A82 T291
ECOPLATFORM NO.	DECLARED UNIT
818	The declared unit is defined as 1 m ² of EPS insulation plate. The service life of the product is taken as 50 years.
APPLICABLE PRODUCT CATEGORY RULES	DECLARED PRODUCT
Product Category Rules : Part A. Implementation and use of I.S. EN 15804:2012 and CEN TR 16970:2016 in Ireland. EPD Ireland, Irish Green Building Council, July 2018. EN 16783:2017 Thermal Insulation Products - Product Category Rules (pcr) for Factory Made and In-situ Formed Products	KORE insulation materials :EPS70 White, EPS70 Silver, EPS100 White, EPS100 Silver, EPS150 White, EPS200, EPS300
DATE OF ISSUE	SCOPE OF EPD
31.01.2019	Manufacturer specific product
DATE OF EXPIRY	LCA CONSULTANT OR PERSON RESPONSIBLE FOR LCA
31.01.2024	EcoReview, Kilkenny, Co. Kilkenny, Ireland, +353 87 258 9783 / +31 646 264 9327 info@ecoreview.ie / www.ecoreview.eu
TYPE OF EPD :SINGLE OR MULTI PRODUCT	LCA SOFTWARE AND DEVELOPER IF APPLICABLE
Multi Product	Ecochain
PRODUCT CLASSIFICATION OR NACE CODE	NAME AND VERSION OF INVENTORY USE
Thermal Insulation products.	EcoInvent 3.4
COMPARABILITY	
Environmental Product Declarations from different programmes may not be directly comparable if not compliant with EN 15804:2012+A1:2013. 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+A1:2013	
The CEN Norm /EN 15804 serves as the core PCR	
Independent verification of the declaration according to ISO 14025	
Internally <input type="checkbox"/> Externally <input checked="" type="checkbox"/>	
SIGNATURE OF PROGRAMME OPERATOR	SIGNATURE VERIFIER
Pat Barry - CEO - Irish Green Building Council  	Jane Anderson - ConstructionLCA Ltd 

2 Scope and Type of EPD:

All relevant inputs and outputs such as emissions, energy and materials, have been taken into account in this LCA. In accordance with I.S. EN 15804, the total neglected input flows per module do not exceed 5% of energy usage and mass. The EcoChain tool incorporates the Ecolnvent background database. Thus the Ecoinvent boundary approach is relevant.

The system boundary defines the stages of the life of the construction product included in the study. This EPD covers the Cradle to Gate stages. These are modules A1 to A3 as illustrated in the table below.

PRODUCT STAGE			CONSTRUCTION ON PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

X - Module declared

MND - Module not declared

3 Product description

This EPD covers 7 EPS insulation products. The constituent raw materials of these insulation products are expandable polystyrene beads. The raw materials for all the insulation products are the same (expandable polystyrene (EPS) beads, white and silver) but come from different manufacturers, and the finished product is the same, differing only in density. The EPS70 and EPS100 are made in both white and silver versions. The weight of the expanded white and silver beads are the same, as are the target densities of their finished products. The table below lists the finished insulation products, and their specific technical properties. A single bead type is used in each production run of a specific insulation product. Constituent beads are not intermixed.

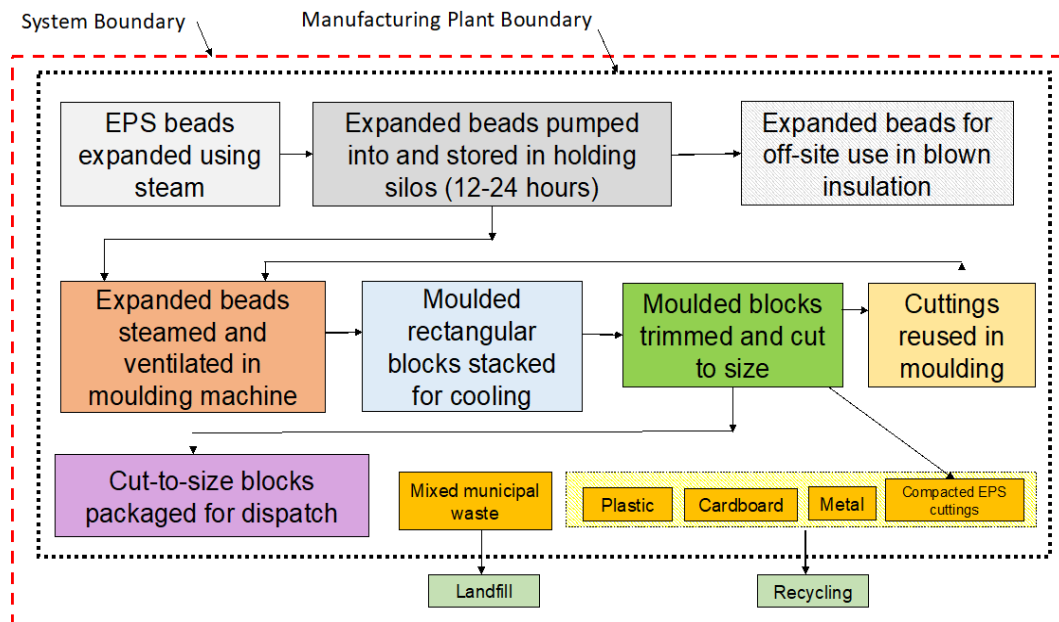
	R-VALUE	Thickness mm	Density (kg/m ³)	Volume in 1 m ²	Weight kg	Thermal Conductivity W/m.K
SD EPS70 White	2.7	100	15.2	0.1	1.52	0.037
SD EPS70 Silver	3.2258	100	15.2	0.1	1.52	0.031
HD EPS100 White	2.7777	100	20.3	0.1	2.03	0.036
HD EPS100 Silver	3.2258	100	20.3	0.1	2.03	0.031
EHD EPS150 White	1.4286	50	24.4	0.05	1.22	0.035
UHD EPS200	1.8181	60	30.5	0.06	1.83	0.033
UUHD EPS300	3.125	100	42.7	0.1	4.27	0.032

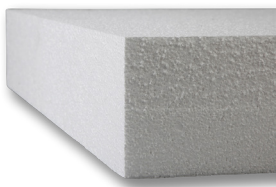
The KORE products meet the EN 13163:2012+A2:2016 standard. The thermal conductivity has been determined in accordance with the EN 12667 standard

Product description continued

The EPS beads raw materials, upon delivery to site, are stored in a hopper. Beads (selected for a particular finished product) are transferred to a steam chamber where they are heated by steam, and expanded to up to 40 times their original size. The expanded beads are then transferred to, and stored in large holding bags, for a period of 12 to 24 hours, depending on intended end use. A portion of the beads are stored separately and used directly in blown insulation in off-site applications. The beads for block making are then transferred to a block moulding machine. The greater the number of pellets placed in the moulding machine, the greater the density of the finished block. In the block moulding machine the pellets are steam-fused together and moulded to a fixed size block, 3.7m x 1.27m x 1.05m (4.933m³). The moulded blocks are then left to sit for several days or weeks, before being brought to one of several cutting stations where the blocks are initially trimmed back to a standard block size of 3.612m x 1.202m x 1.02m (4.428m³). They are then further trimmed and cut into the specific size required for the intended application, i.e. for use in walls, floor, roof cavities, or other. The cut pieces are then bagged and loaded onto trailers for dispatch to customers. Off-cuts from the trimming and cutting process are re-used in the block moulding. The off-cuts comprise 10% of the material that comes out of the moulding machine for the EPS70, EPS100 and EPS150 products. Offcuts from the EPS200 and EPS300 are not re-used within the manufacturing process. These enter the waste stream, and are compacted and sent off-site for recycling. Also plastic, cardboard and metals are recycled, and municipal solid wastes are sent to landfill.

The manufacturing process flowchart is shown below.





4 LCA results - KORE EPS70 (white), thickness 100 mm, R-value 2.703 m²*k/w - Mandatory impact and LCI indicators

The results of the underlying LCA is provided in this section as environmental impacts, resource use, output flows and additional information on biogenic carbon. All pre-set parameters of EN 15804 are required. CML Version 4.4 is used as the characterisation methodology. Additional information about biogenic carbon is optional.

Environmental Impact Per M²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO ₂ -Eq.]	5.46E+00	1.53E-01	1.01E+00	6.63E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ODP	[kg CFC11-Eq.]	1.04E-07	2.75E-08	1.50E-07	2.81E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
AP	[kg SO ₂ -Eq.]	1.73E-02	5.40E-04	7.05E-03	2.49E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP	[kg (PO ₄) -Eq.]	1.46E-03	6.14E-05	1.37E-03	2.90E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP	[kg ethene-Eq.]	9.24E-04	2.83E-05	2.77E-02	2.86E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPE	[kg Sb-Eq.]	6.44E-02	1.11E-03	5.52E-03	7.10E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPF	[MJ]	1.35E+02	2.41E+00	1.50E+01	1.53E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources.

Note - MND - Module not declared INA - Indicator not assessed



4 LCA results - KORE EPS70 (silver), thickness 100 mm, R-value 3.226 m²*k/w - Mandatory impact and LCI indicators

The results of the underlying LCA is provided in this section as environmental impacts, resource use, output flows and additional information on biogenic carbon. All pre-set parameters of EN 15804 are required. CML Version 4.4 is used as the characterisation methodology. Additional information about biogenic carbon is optional.

Environmental Impact Per M²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO2-Eq.]	5.46E+00	1.53E-01	1.01E+00	6.63E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ODP	[kg CFC11-Eq.]	1.04E-07	2.75E-08	1.50E-07	2.81E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
AP	[kg SO2-Eq.]	1.73E-02	5.40E-04	7.05E-03	2.49E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP	[kg (PO4) -Eq.]	1.46E-03	6.14E-05	1.37E-03	2.90E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP	[kg ethene-Eq.]	9.24E-04	2.83E-05	2.77E-02	2.86E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPE	[kg Sb-Eq.]	6.44E-02	1.11E-03	5.52E-03	7.10E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPF	[MJ]	1.35E+02	2.41E+00	1.50E+01	1.53E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources.

Note - MND - Module not declared INA - Indicator not assessed



4 LCA results - KORE EPS100 (white), thickness 100 mm, R-value 2.778 m²*k/w - Mandatory impact and LCI indicators

The results of the underlying LCA is provided in this section as environmental impacts, resource use, output flows and additional information on biogenic carbon. All pre-set parameters of EN 15804 are required. CML Version 4.4 is used as the characterisation methodology. Additional information about biogenic carbon is optional.

Environmental Impact Per M²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO2-Eq.]	7.27E+00	1.80E-01	1.21E+00	8.66E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ODP	[kg CFC11-Eq.]	1.38E-07	3.13E-08	1.83E-07	3.53E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
AP	[kg SO2-Eq.]	2.30E-02	1.44E-03	8.50E-03	3.29E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP	[kg (PO4) -Eq.]	1.95E-03	1.38E-04	1.68E-03	3.76E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP	[kg ethene-Eq.]	1.23E-03	5.61E-05	3.69E-02	3.82E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPE	[kg Sb-Eq.]	8.57E-02	1.28E-03	6.81E-03	9.38E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPF	[MJ]	1.80E+02	2.78E+00	1.80E+01	2.01E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources.

Note - MND - Module not declared INA - Indicator not assessed



4 LCA results - KORE EPS100 (silver), thickness 100 mm, R-value 3.226 m²*k/w - Mandatory impact and LCI indicators

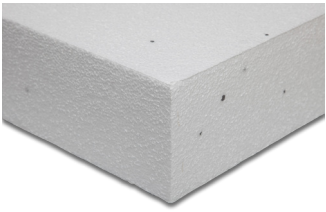
The results of the underlying LCA is provided in this section as environmental impacts, resource use, output flows and additional information on biogenic carbon. All pre-set parameters of EN 15804 are required. CML Version 4.4 is used as the characterisation methodology. Additional information about biogenic carbon is optional.

Environmental Impact Per M²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO ₂ -Eq.]	7.27E+00	1.80E-01	1.21E+00	8.66E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ODP	[kg CFC11-Eq.]	1.38E-07	3.13E-08	1.83E-07	3.53E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
AP	[kg SO ₂ -Eq.]	2.30E-02	1.44E-03	8.50E-03	3.29E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP	[kg (PO ₄) -Eq.]	1.95E-03	1.38E-04	1.68E-03	3.76E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP	[kg ethene-Eq.]	1.23E-03	5.61E-05	3.69E-02	3.82E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPE	[kg Sb-Eq.]	8.57E-02	1.28E-03	6.81E-03	9.38E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPF	[MJ]	1.80E+02	2.78E+00	1.80E+01	2.01E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources.

Note - MND - Module not declared INA - Indicator not assessed



4 LCA results - KORE EPS150, thickness 50 mm, R-value 1.429 m²*k/w - Mandatory impact and LCI indicators

The results of the underlying LCA is provided in this section as environmental impacts, resource use, output flows and additional information on biogenic carbon. All pre-set parameters of EN 15804 are required. CML Version 4.4 is used as the characterisation methodology. Additional information about biogenic carbon is optional.

Results Of The Lca - Environmental Impact Per M²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO2-Eq.]	4.37E+00	1.40E-01	6.83E-01	5.19E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ODP	[kg CFC11-Eq.]	8.29E-08	2.49E-08	1.05E-07	2.13E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
AP	[kg SO2-Eq.]	1.38E-02	6.67E-04	4.83E-03	1.93E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP	[kg (PO4) -Eq.]	1.17E-03	7.02E-05	9.62E-04	2.20E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP	[kg ethene-Eq.]	7.39E-04	3.08E-05	2.22E-02	2.30E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPE	[kg Sb-Eq.]	5.15E-02	1.01E-03	3.92E-03	5.64E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPF	[MJ]	1.08E+02	2.19E+00	1.02E+01	1.21E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources.

Note - MND - Module not declared INA - Indicator not assessed



4 LCA results - KORE EPS200, thickness 60 mm, R-value 1.818 m²*k/w - Mandatory impact and LCI indicators

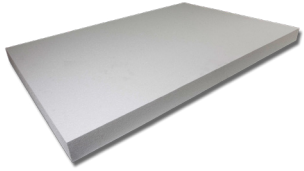
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Environmental Impact Per M²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO ₂ -Eq.]	6.55E+00	2.09E-01	9.60E-01	7.72E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ODP	[kg CFC11-Eq.]	1.24E-07	3.73E-08	1.51E-07	3.12E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
AP	[kg SO ₂ -Eq.]	2.07E-02	1.00E-03	6.84E-03	2.86E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP	[kg (PO ₄) -Eq.]	1.76E-03	1.05E-04	1.37E-03	3.24E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP	[kg ethene-Eq.]	1.11E-03	4.61E-05	3.33E-02	3.44E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPE	[kg Sb-Eq.]	7.72E-02	1.51E-03	5.63E-03	8.44E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPF	[MJ]	1.63E+02	3.29E+00	1.43E+01	1.80E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources.

Note - MND - Module not declared INA - Indicator not assessed



4 LCA results - KORE EPS300, thickness 100 mm, R-value 3.125 m²*k/w - Mandatory impact and LCI indicators

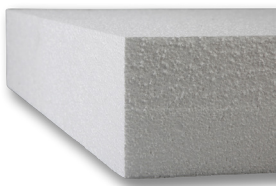
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Environmental Impact Per M²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO2-Eq.]	1.53E+01	4.88E-01	2.07E+00	1.78E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ODP	[kg CFC11-Eq.]	2.90E-07	8.71E-08	3.32E-07	7.09E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
AP	[kg SO2-Eq.]	4.84E-02	2.33E-03	1.49E-02	6.56E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP	[kg (PO4) -Eq.]	4.10E-03	2.46E-04	3.02E-03	7.36E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP	[kg ethene-Eq.]	2.59E-03	1.08E-04	7.76E-02	8.03E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPE	[kg Sb-Eq.]	1.80E-01	3.52E-03	1.25E-02	1.96E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADPF	[MJ]	3.79E+02	7.67E+00	3.10E+01	4.18E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources.

Note - MND - Module not declared INA - Indicator not assessed



Kore EPS70 (White), Thickness 100 mm, R-Value 2.703 m²*k/w - Resource use per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	9.89E-01	3.11E-02	9.10E-01	1.93E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERT	[MJ]	9.89E-01	3.11E-02	9.10E-01	1.93E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRE	[MJ]	9.18E+01	2.46E+00	1.47E+01	1.09E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRM	[MJ]	4.89E+01	0.00E+00	0.00E+00	4.89E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRT	[MJ]	1.41E+02	2.46E+00	1.47E+01	1.58E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SM	[kg]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NRSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
FW	[m ³]	-8.99E-03	1.35E-04	4.15E-03	-4.71E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water. INA = Indicator not assessed. MND = Module not declared.

SM, RFS and NRSF are not calculated by the EcoChain software



Kore EPS70 (Silver), Thickness 100 mm, R-Value 3.226 m²*k/w - Resource use per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	9.89E-01	3.11E-02	9.10E-01	1.93E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERT	[MJ]	9.89E-01	3.11E-02	9.10E-01	1.93E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRE	[MJ]	9.18E+01	2.46E+00	1.47E+01	1.09E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRM	[MJ]	4.89E+01	0.00E+00	0.00E+00	4.89E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRT	[MJ]	1.41E+02	2.46E+00	1.47E+01	1.58E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SM	[kg]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NRSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
FW	[m ³]	-8.99E-03	1.35E-04	4.15E-03	-4.71E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water. INA = Indicator not assessed. MND = Module not declared.

SM, RFS and NRSF are not calculated by the EcoChain software



Kore EPS100 (White), Thickness 100 mm, R-Value 2.778 m²*k/w - Resource use per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	1.32E+00	4.26E-02	9.60E-01	2.32E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERT	[MJ]	1.32E+00	4.26E-02	9.60E-01	2.32E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRE	[MJ]	1.22E+02	2.84E+00	1.76E+01	1.42E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRM	[MJ]	6.54E+01	0.00E+00	0.00E+00	6.54E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRT	[MJ]	1.87E+02	2.84E+00	1.76E+01	2.08E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SM	[kg]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NRSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
FW	[m ³]	-1.20E-02	1.67E-04	5.29E-03	-6.55E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water. INA = Indicator not assessed. MND = Module not declared.

SM, RFS and NRSF are not calculated by the EcoChain software

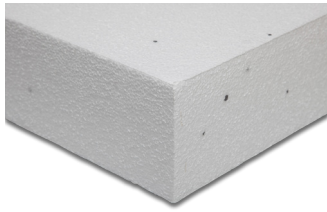


Kore EPS100 (Silver), Thickness 100 mm, R-Value 3.226 m²*k/w - Resource use per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	1.32E+00	4.26E-02	9.60E-01	2.32E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERT	[MJ]	1.32E+00	4.26E-02	9.60E-01	2.32E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRE	[MJ]	1.22E+02	2.84E+00	1.76E+01	1.42E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRM	[MJ]	6.54E+01	0.00E+00	0.00E+00	6.54E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRT	[MJ]	1.87E+02	2.84E+00	1.76E+01	2.08E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SM	[kg]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NRSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
FW	[m ³]	-1.20E-02	1.67E-04	5.29E-03	-6.55E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water. INA = Indicator not assessed. MND = Module not declared.

SM, RFS and NRSF are not calculated by the EcoChain software



Kore EPS150, Thickness 50 mm, R-Value 1.429 m²*k/w - Resource use per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	7.92E-01	2.97E-02	5.01E-01	1.32E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERT	[MJ]	7.92E-01	2.97E-02	5.01E-01	1.32E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRE	[MJ]	7.33E+01	2.23E+00	1.00E+01	8.55E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRM	[MJ]	3.93E+01	0.00E+00	0.00E+00	3.93E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRT	[MJ]	1.13E+02	2.23E+00	1.00E+01	1.25E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SM	[kg]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NRSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
FW	[m ³]	-7.22E-03	1.25E-04	3.11E-03	-3.99E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water. INA = Indicator not assessed. MND = Module not declared.

SM, RFS and NRSF are not calculated by the EcoChain software



Kore EPS200, Thickness 60 mm, R-Value 1.818 m²*k/w - Resource use per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	1.19E+00	4.45E-02	6.37E-01	1.87E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERT	[MJ]	1.19E+00	4.45E-02	6.37E-01	1.87E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRE	[MJ]	1.10E+02	3.35E+00	1.42E+01	1.27E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRM	[MJ]	5.89E+01	0.00E+00	0.00E+00	5.89E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRT	[MJ]	1.69E+02	3.35E+00	1.42E+01	1.86E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SM	[kg]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NRSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
FW	[m ³]	-1.08E-02	1.87E-04	4.55E-03	-6.10E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water. INA = Indicator not assessed. MND = Module not declared.

SM, RFS and NRSF are not calculated by the EcoChain software

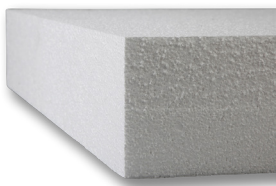


Kore EPS300, Thickness 100 mm, R-Value 3.125 m²*k/w - Resource use per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	2.77E+00	1.04E-01	1.18E+00	4.06E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PERT	[MJ]	2.77E+00	1.04E-01	1.18E+00	4.06E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRE	[MJ]	2.57E+02	7.82E+00	3.07E+01	2.96E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRM	[MJ]	1.37E+02	0.00E+00	0.00E+00	1.37E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
PENRT	[MJ]	3.94E+02	7.82E+00	3.07E+01	4.33E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SM	[kg]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NRSF	[MJ]	INA	INA	INA	INA	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
FW	[m ³]	-2.53E-02	4.37E-04	1.03E-02	-1.45E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water. INA = Indicator not assessed. MND = Module not declared.

SM, RFS and NRSF are not calculated by the EcoChain software



Kore EPS70 (White), Thickness 100 mm, R-Value 2.703 m²*k/w - Output flows and waste categories per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	-3.45E-04	1.70E-05	9.38E-05	-2.34E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NHWD	[kg]	1.02E-01	1.05E-01	2.48E-02	2.31E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RWD	[kg]	6.95E-06	1.56E-05	8.82E-05	1.11E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software



Kore EPS70 (Silver), Thickness 100 mm, R-Value 3.226 m²*k/w - Output flows and waste categories per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	-3.45E-04	1.70E-05	9.38E-05	-2.34E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NHWD	[kg]	1.02E-01	1.05E-01	2.48E-02	2.31E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RWD	[kg]	6.95E-06	1.56E-05	8.82E-05	1.11E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software



Kore EPS100 (White), Thickness 100 mm, R-Value 2.778 m²*k/w - Output flows and waste categories per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	-4.61E-04	1.95E-05	1.14E-04	-3.27E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NHWD	[kg]	1.35E-01	9.24E-02	2.83E-02	2.56E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RWD	[kg]	9.28E-06	1.79E-05	1.07E-04	1.34E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software

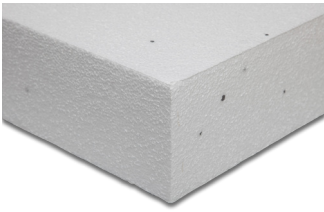


Kore EPS100 (Silver), Thickness 100 mm, R-Value 3.226 m²*k/w - Output flows and waste categories per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	-4.61E-04	1.95E-05	1.14E-04	-3.27E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NHWD	[kg]	1.35E-01	9.24E-02	2.83E-02	2.56E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RWD	[kg]	9.28E-06	1.79E-05	1.07E-04	1.34E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software



Kore EPS150, Thickness 50 mm, R-Value 1.429 m²*k/w - Output flows and waste categories per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	-2.77E-04	1.54E-05	6.52E-05	-1.96E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NHWD	[kg]	8.13E-02	8.92E-02	1.55E-02	1.86E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RWD	[kg]	5.58E-06	1.41E-05	6.13E-05	8.10E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software



Kore EPS200, Thickness 60 mm, R-Value 1.818 m²*k/w - Output flows and waste categories per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	-4.15E-04	2.31E-05	9.28E-05	-3.00E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NHWD	[kg]	1.22E-01	1.34E-01	2.11E-02	2.77E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RWD	[kg]	8.36E-06	2.12E-05	8.73E-05	1.17E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software

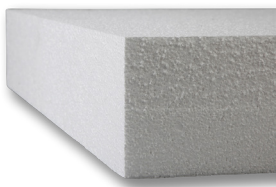


Kore EPS300, Thickness 100 mm, R-Value 3.125 m²*k/w - Output flows and waste categories per m²

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	-9.69E-04	5.39E-05	2.03E-04	-7.12E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NHWD	[kg]	2.85E-01	3.12E-01	4.34E-02	6.40E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RWD	[kg]	1.95E-05	4.95E-05	1.91E-04	2.60E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software



5 LCA results - Optional impact indicators

Kore EPS70 (White), Thickness 100 Mm, R-Value 2.703 m²*k/w - Environmental impact per m²

CML Version 4.4 is used as the characterisation methodology

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Human toxicity potential	kg 1,4-DB-eq	4.70E-01	6.36E-02	5.60E-01	1.09E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Freshwater aquatic ecotoxicity potential	kg 1,4-DB-eq	1.61E-02	1.94E-03	6.59E-03	2.46E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Marine aquatic ecotoxicity potential	kg 1,4-DB-eq	2.59E+02	2.99E+01	6.93E+01	3.58E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Terrestrial ecotoxicity potential	kg 1,4-DB-eq	2.32E-03	3.32E-04	2.07E-03	4.72E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Note - MND - Module not declared INA - Indicator not assessed



5 LCA results - Optional impact indicators

Kore EPS70 (Silver), Thickness 100 mm, R-Value 3.226 m²*k/w - Environmental impact per m²

CML Version 4.4 is used as the characterisation methodology

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Human toxicity potential	kg 1,4-DB-eq	4.70E-01	6.36E-02	5.60E-01	1.09E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Freshwater aquatic ecotoxicity potential	kg 1,4-DB-eq	1.61E-02	1.94E-03	6.59E-03	2.46E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Marine aquatic ecotoxicity potential	kg 1,4-DB-eq	2.59E+02	2.99E+01	6.93E+01	3.58E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Terrestrial ecotoxicity potential	kg 1,4-DB-eq	2.32E-03	3.32E-04	2.07E-03	4.72E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Note - MND - Module not declared INA - Indicator not assessed



5 LCA results - Optional impact indicators

Kore EPS100 (White), Thickness 100 mm, R-Value 2.778 m²*k/w - Environmental impact per m²

CML Version 4.4 is used as the characterisation methodology

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Human toxicity potential	kg 1,4-DB-eq	6.26E-01	8.49E-02	6.84E-01	1.39E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Freshwater aquatic ecotoxicity potential	kg 1,4-DB-eq	2.14E-02	2.16E-03	7.98E-03	3.16E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Marine aquatic ecotoxicity potential	kg 1,4-DB-eq	3.44E+02	3.83E+01	8.44E+01	4.67E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Terrestrial ecotoxicity potential	kg 1,4-DB-eq	3.09E-03	3.83E-04	2.32E-03	5.79E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Note - MND - Module not declared INA - Indicator not assessed



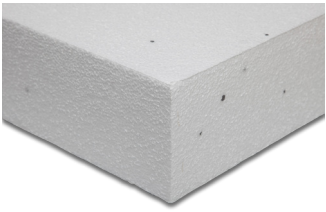
5 LCA results - Optional impact indicators

Kore EPS100 (Silver), Thickness 100 mm, R-Value 3.226 m²*k/w - Environmental impact per m²

CML Version 4.4 is used as the characterisation methodology

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Human toxicity potential	kg 1,4-DB-eq	6.26E-01	8.49E-02	6.84E-01	1.39E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Freshwater aquatic ecotoxicity potential	kg 1,4-DB-eq	2.14E-02	2.16E-03	7.98E-03	3.16E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Marine aquatic ecotoxicity potential	kg 1,4-DB-eq	3.44E+02	3.83E+01	8.44E+01	4.67E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Terrestrial ecotoxicity potential	kg 1,4-DB-eq	3.09E-03	3.83E-04	2.32E-03	5.79E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Note - MND - Module not declared INA - Indicator not assessed



5 LCA results - Optional impact indicators

Kore EPS150, Thickness 50 mm, R-Value 1.429 m²*k/w - Environmental impact per m²

CML Version 4.4 is used as the characterisation methodology

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Human toxicity potential	kg 1,4-DB-eq	3.76E-01	6.03E-02	3.91E-01	8.28E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Freshwater aquatic ecotoxicity potential	kg 1,4-DB-eq	1.29E-02	1.75E-03	4.55E-03	1.92E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Marine aquatic ecotoxicity potential	kg 1,4-DB-eq	2.07E+02	2.80E+01	4.83E+01	2.83E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Terrestrial ecotoxicity potential	kg 1,4-DB-eq	1.86E-03	3.02E-04	1.26E-03	3.41E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Note - MND - Module not declared INA - Indicator not assessed



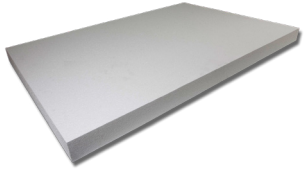
5 LCA results - Optional impact indicators

Kore EPS200, Thickness 60 mm, R-Value 1.818 m²*k/w - Environmental impact per m²

CML Version 4.4 is used as the characterisation methodology

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Human toxicity potential	kg 1,4-DB-eq	5.64E-01	9.04E-02	5.58E-01	1.21E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Freshwater aquatic ecotoxicity potential	kg 1,4-DB-eq	1.93E-02	2.62E-03	6.46E-03	2.84E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Marine aquatic ecotoxicity potential	kg 1,4-DB-eq	3.10E+02	4.20E+01	6.88E+01	4.21E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Terrestrial ecotoxicity potential	kg 1,4-DB-eq	2.78E-03	4.53E-04	1.68E-03	4.92E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Note - MND - Module not declared INA - Indicator not assessed



5 LCA results - Optional impact indicators

Kore EPS300, Thickness 100 mm, R-Value 3.125 m²*k/w - Environmental impact per m²

CML Version 4.4 is used as the characterisation methodology

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Human toxicity potential	kg 1,4-DB-eq	1.32E+00	2.11E-01	1.22E+00	2.75E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Freshwater aquatic ecotoxicity potential	kg 1,4-DB-eq	4.50E-02	6.11E-03	1.41E-02	6.53E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Marine aquatic ecotoxicity potential	kg 1,4-DB-eq	7.24E+02	9.80E+01	1.51E+02	9.73E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Terrestrial ecotoxicity potential	kg 1,4-DB-eq	6.49E-03	1.06E-03	3.39E-03	1.09E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Note - MND - Module not declared INA - Indicator not assessed

7 Calculation rules:

Methodology and reproducibility

The process descriptions and quantities in this study are reproducible in accordance to the reference standards that have been used. The references of all sources, both primary and public sources and literature, have been documented in the LCA report. In addition, to facilitate the reproducibility of this LCA, a full set of data records has been generated which can be accessed via the EcoChain tool. This data portfolio contains a summary of all the data used in this LCA, and correspondingly, in the KORE insulation EcoChain account.

Data quality

Data flows have been modeled as realistically as possible. Data quality assessment is based on the principle that the primary data used for processes occurring at the production site is selected in the first instance. Where this is not available, other reference data is selected from appropriate sources.

Data collection period

The dataset is representative for the production processes used in 2017

8 Scenarios and additional technical information

A1. Raw materials supply

This module considers the extraction and processing of all raw materials and energy which occur upstream to the KORE Insulation manufacturing process, as well as waste processing up to the end-of waste state.

A2. Transport of raw materials to manufacturer

This includes the transport distance of the raw materials to the manufacturing facility via road, boat and/or train.

A3. Manufacturing

This module covers the manufacturing of KORE Insulation and includes all processes linked to production such as, mixing, packing and internal transportation. Use of electricity, fuels and auxiliary materials used during production is taken into account as well.

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

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.

10 References

I.S. EN 16783:2017 Thermal Insulation Products - Product Category Rules (pcr) for Factory Made and In-situ Formed Products for Preparing Environmental Product Declarations

CML - Department of Industrial Ecology, CML-IA Characterisation Factors, Dated August 2016, Leiden University, Leiden, Netherlands Available at: <https://www.universiteitleiden.nl/en/research/research-output/science/cml-ia-characterisation-factors>

EcoChain, 2017, web: <http://app.ecochain.com>.

EN 15804: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products', I.S. EN 15804:2012+A1:2013.

ISO 14040: Environmental management - Life cycle assessment – Principles and Framework', International Organization for Standardization, ISO14040:2006.

ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines', International Organization for Standardization, ISO14044:2006.

ISO 14025: Environmental labels and declarations -- Type III environmental declarations -- Principles and Procedures.

Product Category Rules : Part A. Implementation and use of I.S. EN 15804:2012 and CEN TR 16970:2016 in Ireland. EPD Ireland, Irish Green Building Council, July 2018.