

Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

B&C 30



from
BMI Denmark



Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of a single product from a manufacturer
EPD registration number:	EPD-IES-0027536:001
Version date:	2026-02-16
Validity date:	2031-02-16

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

GENERAL INFORMATION

Programme Information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): PCR 2019:14 Construction products (EN 15804), version 2.0.1

PCR review was conducted by: The Technical Committee of the International EPD System.
See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile.

The review panel may be contacted via the Secretariat www.environdec.com/contact

c-PCR: 2019:14-c-PCR-003 Concrete and concrete elements (EN 16757) (1.0.0)

Third-party Verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

Individual EPD verification without a pre-verified LCA/EPD tool

Third-party verifier: Agnieszka Pikus, Greenwise

Approved by: International EPD System



Procedure for follow-up of data during EPD validity involves third party verifier:

Yes No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

BMI Denmark

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Description of the organisation

BMI Denmark is a leading provider of roofing and waterproofing solutions in Denmark, part of the broader BMI Group, which is Europe's largest manufacturer of flat and pitched roofing systems. The company offers a wide range of high-quality roofing products and services, including bitumen membranes, tiles, and roofing accessories.

Name and location of production site

The declared products are produced at BMI Denmark's production site in Hersom, Denmark.
Address: BMI Hersom, Teglgårdvej 11A, 9632 Møldrup, Denmark

PRODUCT INFORMATION

Product name: B&C 30 Roof tile

Product description and identification:

B&C 30 is a light-weight concrete roof tile, which weighs 29 kg/m² at minimum installation overlap, which is approximately 10 kg lighter than classic concrete roof tiles.

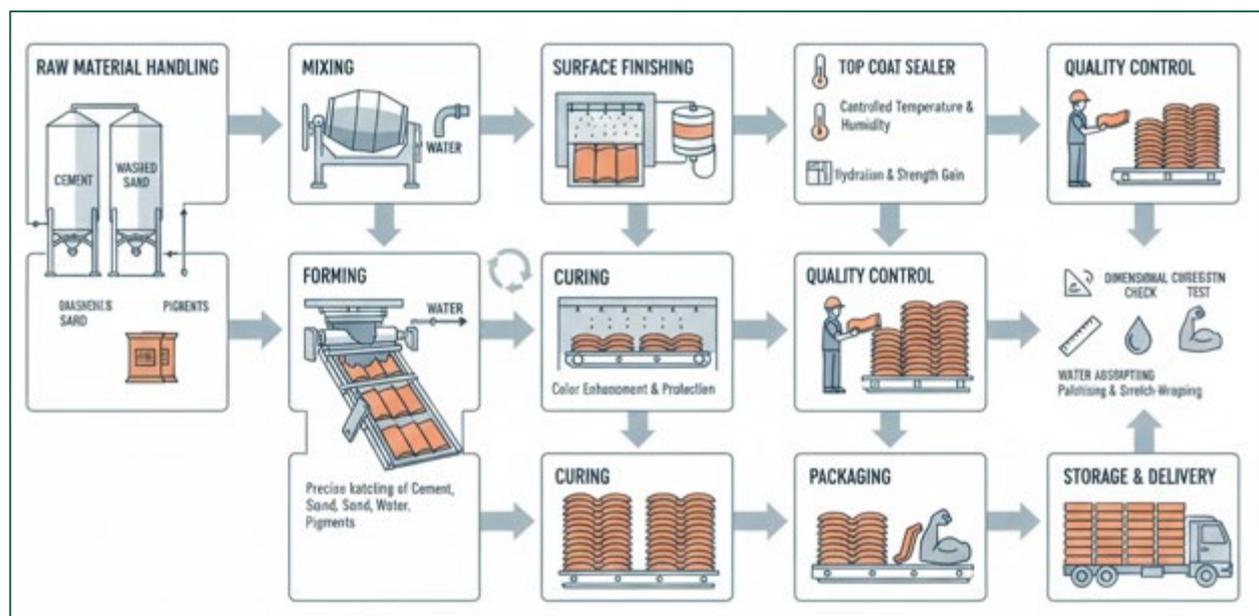


Fig 1. Basic description of the production process.

The roof tile is produced and tested according to DS/EN 490 and is expected to fulfil its function for 70 years. Installation instructions, product data sheets and other technical information are available on the BMI Denmark website and also for download.

Technical data

Length x Width	420 x 330 mm
Coverage width:	299 +/- 1 mm
Distance between battens (17,5-22°)	312-320 mm
Distance between battens (>22°)	312-370 mm
Hanging length	400 mm
Weight per tile	3.0 kg
Consumption per m ² roof	9 roof tiles
Weight per m ²	26.7 kg

UN CPC code:

3754 Tiles, flagstones, bricks and similar articles of cement, concrete or artificial stone.

CONTENT DECLARATION

Raw material

Product content	Mass (kg)	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/ declared unit
Cement	4-5	0	0	0
Sand	19-22	0	0	0
Fly ash and Microsilica	1.5-3	5	0	0
Water	<1	0	0	0
Colour pigments, additives, release oil, paint ,etc	<1	0	0	0
TOTAL	26.7	0	0	0

Packaging materials

Packaging materials	Mass (kg)	Mass-% (versus the product)	Biogenic material * (kg C/ declared unit)
Hotmelt	0.005	0.02	0
PP banding	0.028	0.1	0
PE shrink hood	0.057	0.2	0
Paper, cardboard	0.003	0.1	0.001
TOTAL	0.09	0.34	0.001

*1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂.

Origin of electricity

The used electricity (DK residual mix 2024) has the following sources; Fossil 83.7%, Renewable 4.9% and Nuclear 11.5%. The CO₂ emission factor is 573 g CO₂/kWh. (Source: "European Residual Mixes 2024", report from Association of Issuing Bodies (AIB)).

Dangerous substances from the candidate list of SVHC for Authorisation

No substances in concentrations >0.1% of the product weight included in the products listed in the "Candidate List of Substances of Very High Concern for Authorization" are used in the production of the product covered by this environmental product declaration.

LCA INFORMATION

Functional unit / declared unit

1 m² of concrete roofing tiles from cradle-to-grave and D with activities needed for a study period of 70 years for the building produced by BMI Hersom, Denmark. The weight per 1 m² concrete roof tiles is 26.7 kg and the conversion factor to 1 kg is 0.037 m².

Reference service life

70 years

Geographical scope

All inventories are modelled with respect to their specific origin when applicable. All life cycle stages are modelled per Denmark.

Database(s) and LCA software used

LCA method R<THINK:	EN15804+A2:2019
LCA software:	Simapro 9.1.1 (aligned with EF 3.1)
Characterization method:	EN 15804 +A2 Method v1.0
LCA database profiles:	EcolInvent version 3.9.1
EPD/LCA Tool used:	R<THINK, Nibe, The Netherlands

Description of system boundaries

The system boundary of the EPD follows the modularity approach defined by the EN 15804:2012+A2:2019. The type of EPD is cradle-to-grave and module D. List and explanation of the modules are declared in this EPD. No capital goods and/or infrastructure are included within the system boundaries.

Allocation used

Mass balance approaches (MBAs), to claim, for example, biobased, renewable, and/or recycled product content, are not applied.

Cut-off Criteria

Product stage (A1-A3)

The production stage consists of the extraction of all raw materials, transportation of the raw materials, processing the raw materials into materials and the production of the product. The required energy for production, external treatments, ancillary materials, packaging material and production emissions are included. The total neglected input flows for A1-A3 do not exceed the limit of 5% of energy use and mass.

Construction process stage (A4-A5)

This stage consists of the transport (177 km) of the product from the production plant to the construction site. It also includes installation waste. The additional needed production, transport and end-of-life of the installation waste is included. The end-of-life of packaging material up to the end-of-waste state or disposal of final residues is also included. The installation of the product including manufacture, transportation and end-of-life of ancillary materials and any energy or water use required for installation or operation of the construction site are taken into account. The total neglected input flows for A4-A5 do not exceed the limit of 5% of energy use and mass. The included scenarios, according to the LCA Report, are currently in use and represent the most likely alternatives.

Use stage (B1-B7)

In this EPD, the carbonation effect on concrete is accounted in the use stage (module B1) in accordance with EN 16757. During the use stage, the outer layers of the roof tiles gradually absorb approximately 43% of the CO₂ emissions generated during the production phase (A1-A3) are permanently re-absorbed by the product over its full life cycle. Further carbonization occurs in stage D.

There are no environmental impacts caused by the product during the modules B2-B7. There is no need for maintenance (B2), repair (B3), replacements (B4) or refurbishments (B5) during the use of the product in standard conditions. The product does not consume energy (B6) or water (B7) during its operational life. The included scenarios, according to the LCA Report, are currently in use and are representative for the most probable alternatives.

End of life stage (C1-C4)

When the end of the life stage of the building is reached, the de-construction/demolition begins. This EPD includes de-construction/demolition (C1), the necessary transport (C2) from the demolition site to the sorting location and distance to final disposal. The end of life stage includes the final disposal to landfill (C4), incineration (C3) and needed recycling processes up to the end-of-waste point (C3).

In these calculations it is considered that 99% will be recycled and 1 % will end up in landfill. However it has been assumed, with conservative assumptions, that the results are representative for the 100% recycling scenario. Loads and benefits of recycling, landfill and exported energy are part of module D. The total neglected input flows for C1-C4 do not exceed the limit of 5% of energy use and mass. The included scenarios, according to the LCA Report, are currently in use and are representative for the most probable alternatives.

Benefits and loads beyond the system boundary (D)

This stage contains the potential loads and benefits of recycling and re-use of raw materials/products. The loads contain the needed recycling processes from end-of-waste-point up to the point-of-equivalence of the substituted primary raw material and a load for secondary material that will be lost at the end-of-life stage. In this EPD, the carbonation effect on concrete (uptake of CO₂) is accounted in stage D in accordance with EN 16757. During this stage, the crushed concrete material will absorb approximately 12% of the CO₂ emissions generated during the production phase (A1-A3).

Process flow diagram

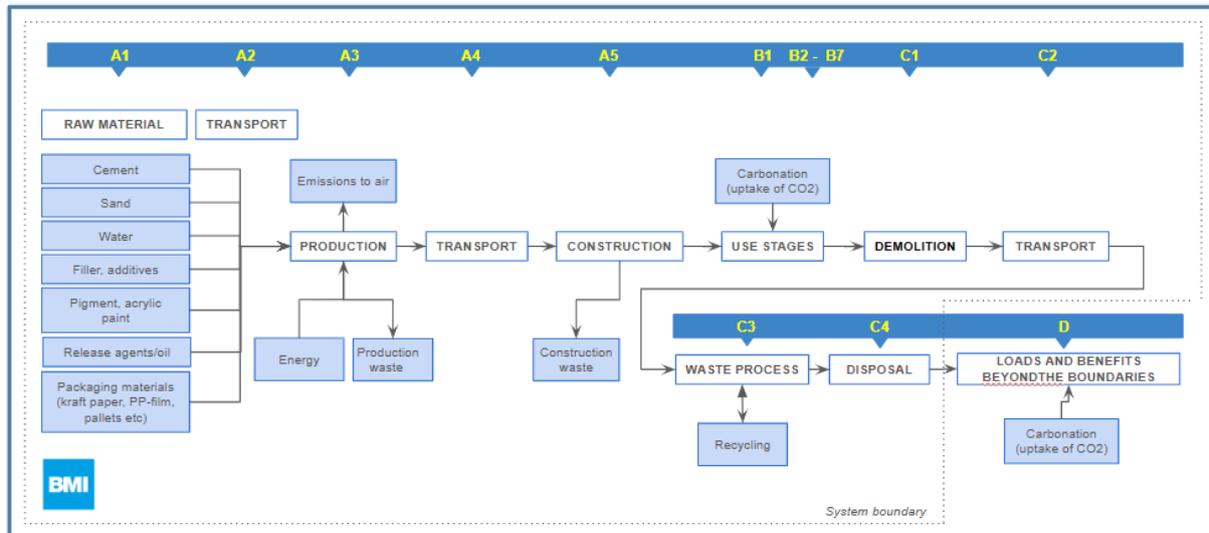


Fig 2. Process flow diagram illustrating the different steps in the products development related to the different product life stages (A1-D).

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage		Construction stage			Use stage							End of life stage				Benefits and loads beyond the stage system boundaries	
	Raw material supply	Transport	Manufacturing	Transport to site	Assembly	Use	Maintenance	Repair	Replacement	Refurnishment	Operational energy use	Operational water use	Deconstruction	Transport	Waste processing	Disposal	Reuse-, recovery-, recycling potential	
Modules	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK
Specific data used **	<54%		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*The share of primary (specific) data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that do not capture all relevant aspects of data quality. The indicator is not comparable across product categories.

Data Quality Assessment (DQA)

The quality level of geographical representativeness is considered to be “very good”. The quality level of technical representativeness is considered to be “good” just like the time representativeness. The overall data quality for this EPD is therefore considered as “good”. All relevant process-specific data were collected during data collection. This allows for a precise LCA result with little assumptions about input-data being made. In all possible cases, primary data from suppliers was used, which has very good data quality because it comes directly from the source.

Additional explanation about share of specific (primary) data

Process	Source Type	Source	Reference year	Data category	Share of primary data of GWP-CHG result for A1-A3 *
Manufacturing of product	Collected data	EPD Owner	2023-24	Primary data	5%
Generation of electricity used in manufacturing of product	Database	Ecoinvent v3.9.1	2022	Primary data	10%
Natural gas	Database	Ecoinvent v3.9.1	2022	Primary data	6%
Transport of raw material to manufacturing site	Database	Ecoinvent v3.9.1	2022	Primary data	8%
Production cement	Specific	EPD *	2025	Primary data	25%
Production fillers, pigment, paint	Database	Ecoinvent v3.9.1	2022	Representative generic data	0%
Total share of primary data of GWG-CHG for A1-A3					<54%

**The reported share of primary data is associated with uncertainty, as an EPD used as data source lack information on the share of primary data.*

ENVIRONMENTAL PERFORMANCE

LCA results* of the product(s) - main environmental performance results

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	5,29E+00	4,76E-01	2,99E-01	-1,80E+00	0	0	0	0	0	0	0	2,48E-01	3,96E-02	1,61E-03	-5,99E-01
GWP-fossil	kg CO ₂ eq.	5,30E+00	4,76E-01	2,27E-01	0	0	0	0	0	0	0	0	2,48E-01	3,95E-02	1,61E-03	-5,98E-01
GWP-biogenic	kg CO ₂ eq.	-6,16E-02	1,59E-04	7,19E-02	0	0	0	0	0	0	0	0	7,96E-05	3,74E-05	7,18E-07	-4,93E-04
GWP-luluc	kg CO ₂ eq.	5,51E-02	2,32E-04	1,71E-04	0	0	0	0	0	0	0	0	1,19E-04	8,83E-06	9,50E-07	-4,26E-04
ODP	kg CFC 11 eq.	1,87E-07	1,08E-08	6,23E-09	0	0	0	0	0	0	0	0	7,25E-09	1,13E-09	7,43E-11	-1,29E-08
AP	mol H ⁺ eq.	2,23E-02	1,18E-03	1,81E-04	0	0	0	0	0	0	0	0	8,32E-04	2,49E-04	1,23E-05	-3,14E-03
EP-freshw ater	kg P eq.	8,55E-04	3,99E-06	2,87E-06	0	0	0	0	0	0	0	0	2,00E-06	8,07E-07	1,58E-08	-1,29E-05
EP-marine	kg N eq.	3,20E-03	3,14E-04	4,67E-05	0	0	0	0	0	0	0	0	2,83E-04	1,05E-04	4,67E-06	-8,70E-04
EP-terrestrial	mol N eq.	5,42E-02	3,29E-03	5,60E-04	0	0	0	0	0	0	0	0	3,04E-03	1,15E-03	5,03E-05	-1,02E-02
POCP	kg NMVOC eq.	1,50E-02	1,92E-03	1,65E-04	0	0	0	0	0	0	0	0	1,22E-03	3,41E-04	1,74E-05	-3,16E-03
ADP-mm**	kg Sb eq.	1,94E-05	1,33E-06	1,73E-07	0	0	0	0	0	0	0	0	1,00E-06	1,57E-07	2,80E-09	-2,52E-06
ADP-fossil**	MJ	5,58E+01	7,22E+00	3,91E-01	0	0	0	0	0	0	0	0	3,52E+00	5,40E-01	4,04E-02	-8,22E+00
WDP**	m ³	1,57E+00	3,45E-02	1,43E-02	0	0	0	0	0	0	0	0	1,43E-02	2,94E-03	1,79E-03	-4,78E-01
Acronyms	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-freshw ater = 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-mm = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

*The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). **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 experience with the indicator. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	5,29E+00	4,76E-01	2,99E-01	-1,80E+00	0	0	0	0	0	0	0	2,48E-01	3,96E-02	1,61E-03	-5,99E-01

Resource use indicators

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	7,73E+00	1,06E-01	4,19E-02	0	0	0	0	0	0	0	0	5,42E-02	4,44E-02	3,41E-04	-6,98E-01
PERM	MJ	2,21E+00	0	5,52E-03	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	9,94E+00	1,06E-01	4,74E-02	0	0	0	0	0	0	0	0	5,42E-02	4,44E-02	3,41E-04	-6,98E-01
PENRE	MJ	4,87E+01	7,22E+00	3,73E-01	0	0	0	0	0	0	0	0	3,53E+00	5,42E-01	4,05E-02	-8,10E+00
PENRM	MJ	7,24E+00	0	1,81E-02	0	0	0	0	0	0	0	0	0	0	0	-1,29E-01
PENRT	MJ	5,59E+01	7,22E+00	3,91E-01	0	0	0	0	0	0	0	0	3,53E+00	5,42E-01	4,05E-02	-8,23E+00
SM	kg	3,10E-01	0	7,76E-04	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	2,22E+00	0	5,55E-03	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	4,09E+00	0	1,02E-02	0	0	0	0	0	0	0	0	0	0	0	0
FW	m ³	7,85E-02	1,13E-03	5,29E-04	0	0	0	0	0	0	0	0	4,99E-04	1,51E-04	4,29E-05	-1,17E-02
Acronyms	PERE = Use of renew able primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renew able primary energy resources used as raw materials; PERT = Total use of renew able primary energy resources; PENRE = Use of non-renew able primary energy excluding non-renew able primary energy resources used as raw materials; PENRM = Use of non-renew able primary energy resources used as raw materials; PENRT = Total use of non-renew able primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renew able secondary fuels; FW = Use of net fresh water															

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Waste indicators

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,75E-04	4,49E-05	1,50E-06	0	0	0	0	0	0	0	0	2,19E-05	2,68E-06	2,06E-07	-4,90E-05
Non-hazardous waste disposed	kg	8,52E-01	6,33E-01	1,37E-01	0	0	0	0	0	0	0	0	1,74E-01	8,06E-02	2,67E-01	-1,95E-01
Radioactive waste disposed	kg	6,14E-05	2,20E-06	6,71E-07	0	0	0	0	0	0	0	0	2,02E-06	6,25E-07	1,89E-08	-7,84E-06

Output flow indicators

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	7,92E-01	0	7,68E-02	0	0	0	0	0	0	0	0	0	2,64E+01	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	2,04E-02	0	0	0	0	0	0	0	0	0	0	0	0	0	6,01E-01
Exported energy, thermal	MJ	3,52E-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1,03E+00

ABBREVIATIONS

Abbreviation	Definition
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
ECI	Environmental Cost Indicator
EF	Environmental Footprint
EN	European Norm (Standard)
EPD	Environmental Product Declaration
GHS	Globally harmonized system of classification and labelling of chemicals
GPI	General Programme Instructions
GRI	Global Reporting Initiative
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
ND	Not Declared
NMD	Nationale Milieu Database (Dutch National Environmental Database)
PCR	Product Category Rules
RSL	Reference service life
SVHC	Substances of Very High Concern

REFERENCES

- EN 15804+A2 EN 15804+A2: 2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products
- EN 16757:2022: Sustainability of construction works - Environmental product declarations Product Category Rules for concrete and concrete elements
- PCR 2019:14 Construction products (EN 15804+A2:2019 core PCR) (2.0.1)
- 2019:14-c-PCR-003 Concrete and concrete elements (1.0.0)
- General Programme Instructions of the International EPD® System. Version 5.0.1
- EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework;
- EN ISO 14044 ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines;
- EN ISO 14025 ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures
- Åhsberg, L (2026). Life Cycle Assessment – LCA background reports B&C 30, BMI Denmark

VERSION HISTORY

Original Version of the EPD, 2026-02-16

