

Owner: Cembrit Holding A/S
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Valid to: 25-04-2021

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

Cembrit Holding A/S
Sohngårdsholmsvej 2
9000 Aalborg



Issued:
25-04-2016

Valid to:
25-04-2021

Programme operator

Danish Technological Institute
www.dti.dk



Basis of calculation

This EPD is developed in accordance with the European standard EN 15804.

Comparability

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Programme

EPD Danmark
www.epddanmark.dk



Validity

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Declared products

Cembrit Construction
Cembrit Construction, coated
Cembrit Multi Force
Cembrit Aqua Block
Cembrit Windstopper Extreme
Cembrit Windstopper Basic

Use

The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

Production site

Mineraalintie
FIN-08681 Lohja
Finland

EPD type

- Cradle-to-gate
- Cradle-to-gate with options
- Cradle-to-grave

Products use

Cembrit functional boards has a wide variety of applications, including internal walls and cladding, external wall structures, bathrooms etc.

CEN standard EN 15804 serves as the core PCR
Independent verification of the declaration and data, according to EN ISO 14025
<input type="checkbox"/> internal <input checked="" type="checkbox"/> external
Third party verifier:
 <hr/> Susanne Vedel Jørgensen

Declared unit

1 tonne

 Mathias Høeg
 EPD Danmark

Life cycle stages and modules (MND = module not declared)

Product		Construction process			Use								End of life			Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-contruction demolition	Transport	Waste processing	Disposal	Re-use, recovery and 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

Product information

Product description

The main product components are shown in the table below. Values are given as intervals covering the six declared product variations. Specific recipes and some input materials (0-2 mass-%) are not shown in this table due to reasons of confidentiality.

Material	Weight-% of declared product
Portland cement	35-60
Inert filler (limestone, mica)	32-61
Cellulose	4-6
PVA	0-2
Light filler	0-12
Packaging material*	kg per declared unit
PE film	1,18
Pallets	13,8
Cardboard	0,02

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 tonne of Cembrit fibre cement boards on the production site located in Finland. Product specific data are based on average values collected in the period from 01.01.2015 to 30.06.2015. As such, not a full years average is used. This deviation from normal practice is due to some major changes in the product compositions in the beginning of 2015. Background data are based mainly on GaBi and are less than 10 years old. For a few exceptions, GaBi data was supplemented with data from ecoinvent. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old. However two datasets from PlasticsEurope are more than 10 years old (2005). But as these make up a small percentage of the total mass input, and as the data from PlasticsEurope are considered as good quality, it is judged to be within a reasonable deviation from the requirements in EN15804.

Dangerous substances

Cembrit fibre cement boards does not contain substances listed in the "Candidate List of Substances of Very High Concern for authorisation"

(<http://echa.europa.eu/candidate-list-table>)

Essential characteristics (CE)

Cembrit fibre cement boards are covered by harmonised technical specification EN 12467. Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

Further technical information can be obtained by contacting the manufacturer or on the manufacturers website:

<http://www.cembrit.com>

Reference Service Life (RSL)

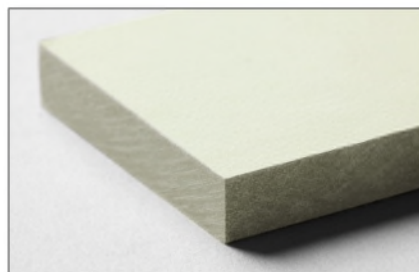
No RSL is declared. This EPD is based on a cradle-to-gate assessment.

Product illustrations

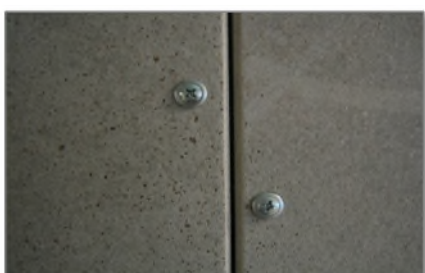
CONSTRUCTION



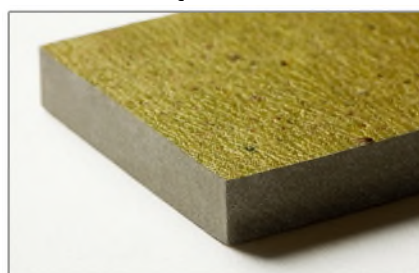
CONSTRUCTION, COATED



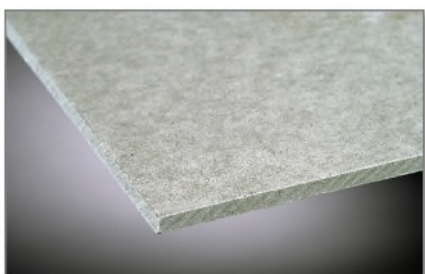
MULTI FORCE



AQUA BLOCK



WINDSTOPPER EXTREME



WINDSTOPPER BASIC



LCA background

Declared unit

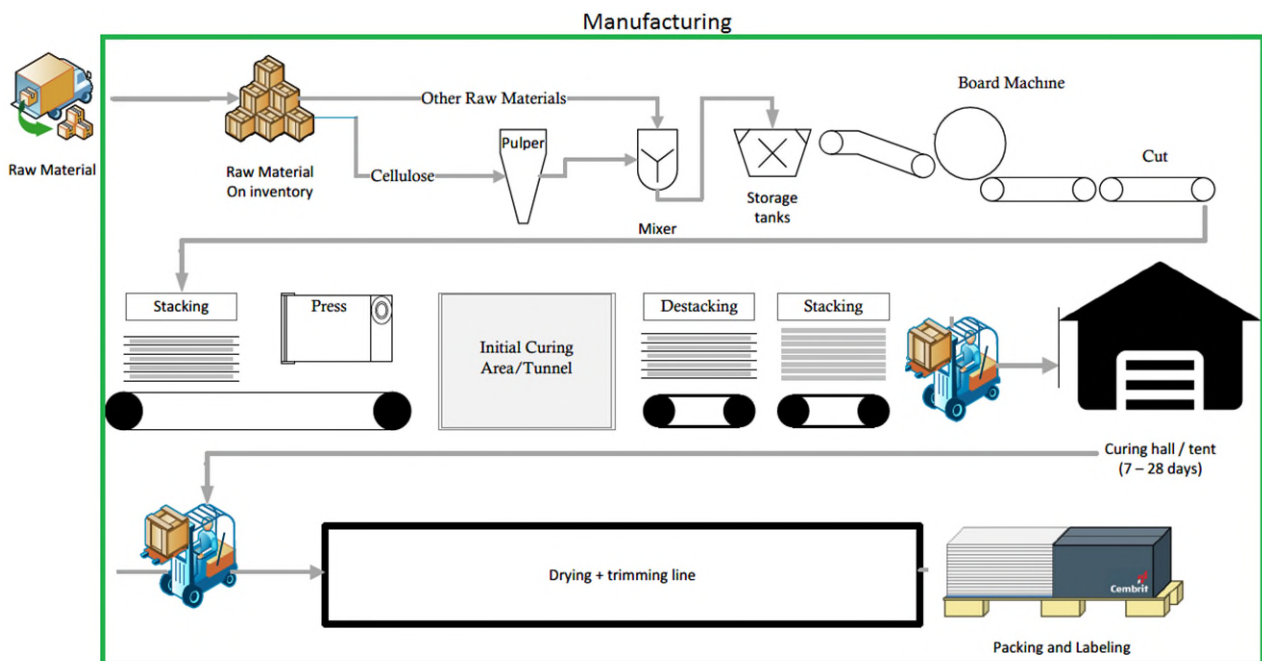
The LCI and LCIA results in this EPD relates to 1 tonne of Cembrit fibre cement board for the types: Cembrit Construction, Cembrit Construction coated, Cembrit Multi Force, Cembrit Aqua Block, Cembrit Windstopper Extreme and Cembrit Windstopper Basic

Name	Value	Unit
Declared unit	1	T
Apparent density Construction (DoP)	1.550	kg/m ³
Apparent density Construction coated (DoP)	1.550	kg/m ³
Apparent density Multi Force (DoP)	1.000	kg/m ³
Apparent density Aqua Block (DoP)	1.300	kg/m ³
Apparent density Windstopper extreme (DoP)	1.400	kg/m ³
Apparent density Windstopper basic (DoP)	1.300	kg/m ³
Conversion factor to 1 kg.	0,001	-

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804.

Flow diagram



System boundaries

This EPD is based on a cradle-to-gate LCA, in which >99 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging and waste processing up to the "end-of-waste" state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

Cembrit boards are produced according to a flow-on method, which is automated to a certain extent; the base materials are processed into a homogeneous mixture with water and applied to a running endless felt loop, from which part of the water is filtered through the felt material. The evacuated water is returned to the process, so that no waste water is produced. From the felt it is applied to a format roll which is gradually covered by layers of fibre cement material. Once the required board thickness is reached, the fibre cement layer, still moist and moldable, is unwound and taken from the roll.

The fiber cement "green sheet" board is cut, and remaining leftovers from this cutting process are returned to the manufacturing process, so that no waste is produced. The cut "green" board is piled up and typically compressed. The boards are then stored for curing and temporarily deposited in storage. Generally, storage period lasts maximum four weeks.

After the curing period, boards are dried in an oven, which runs on natural gas. After the drying process, products are ready to quality controls, trimming edges, cutting to pieces and packing processes.

LCA results

ENVIRONMENTAL IMPACTS PER TONNE							
Parameter	Unit	Construction	Construction, coated	Multi Force	Aqua Block	Windstopper Extreme	Windstopper Basic
		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
GWP	[kg CO ₂ -eq.]	6,54E+02	6,79E+02	5,82E+02	5,57E+02	5,41E+02	3,85E+02
ODP	[kg CFC11-eq.]	2,65E-07	2,70E-07	2,63E-07	2,61E-07	2,61E-07	2,52E-07
AP	[kg SO ₂ -eq.]	1,54E+00	1,69E+00	1,32E+00	1,44E+00	1,28E+00	9,48E-01
EP	[kg PO ₄ ³⁻ -eq.]	2,30E-01	2,38E-01	2,16E-01	2,10E-01	2,07E-01	1,56E-01
POCP	[kg ethene-eq.]	1,83E-01	1,99E-01	1,33E-01	1,45E-01	1,41E-01	9,81E-02
ADPE	[kg Sb-eq.]	8,49E-04	8,82E-04	6,87E-04	9,03E-04	6,79E-04	4,87E-04
ADPF	[MJ]	6,14E+03	6,76E+03	5,46E+03	5,15E+03	5,28E+03	3,53E+03
Caption	GWP = Global warming potential; ODP = Ozone depletion potential; AP = Acidification potential of soil and water; EP = Eutrophication potential; POCP = Photochemical ozone creation potential; ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources						

RESOURCE USE PER TONNE							
Parameter	Unit	Construction	Construction, coated	Multi Force	Aqua Block	Windstopper Extreme	Windstopper Basic
		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
PERE	[MJ]	3,96E+03	4,00E+03	4,31E+03	4,29E+03	4,32E+03	3,80E+03
PERM*	[MJ]	8,22E+02	8,02E+02	1,10E+03	1,08E+03	1,10E+03	8,22E+02
PERT	[MJ]	4,78E+03	4,80E+03	5,41E+03	5,37E+03	5,42E+03	4,62E+03
PENRE	[MJ]	6,74E+03	7,42E+03	6,35E+03	5,95E+03	6,06E+03	4,33E+03
PENRM**	[MJ]	4,02E+02	4,02E+02	5,10E+01	2,07E+02	1,56E+02	5,10E+01
PENRT	[MJ]	7,15E+03	7,83E+03	6,40E+03	6,16E+03	6,22E+03	4,38E+03
SM	[kg]	-	-	-	-	-	-
RSF	[MJ]	5,89E-02	9,46E-02	5,25E-02	4,84E-02	5,25E-02	4,06E-02
NRSF	[MJ]	5,40E+02	5,30E+02	4,50E+02	4,46E+02	4,31E+02	3,15E+02
FW	[m ³]	3,04E+00	3,20E+00	2,28E+00	2,44E+00	2,48E+00	2,05E+00
Caption	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						

* Contribution from packaging material per product type: 2,70E+02 MJ ** Contribution from packaging material per product type: 5,10E+01 MJ

OUTPUT FLOWS AND WASTE CATEGORIES PER TONNE							
Parameter	Unit	Construction	Construction, coated	Multi Force	Aqua Block	Windstopper Extreme	Windstopper Basic
		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
HWD	[kg]	1,13E-04	1,15E-04	1,48E-04	1,38E-04	1,40E-04	1,07E-04
NHWD	[kg]	2,48E+01	3,69E+01	2,44E+01	2,42E+01	2,44E+01	2,34E+01
RWD	[kg]	3,94E-01	4,16E-01	3,69E-01	3,63E-01	3,68E-01	3,32E-01
CRU	[kg]	-	-	-	-	-	-
MFR	[kg]	-	-	-	-	-	-
MER	[kg]	-	-	-	-	-	-
EEE	[MJ]	-	-	-	-	-	-
EET	[MJ]	-	-	-	-	-	-
Caption	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						

Additional information

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because 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 available.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because 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 available.

References

Publisher	 http://www.epddanmark.dk
Programme operator	Danish Technological Institute Sustainable Construction Kongsvang Allé 29 DK-8000 Aarhus C http://www.teknologisk.dk
LCA-practitioner	Danish Technological Institute Sustainable Construction Kongsvang Allé 29 DK-8000 Aarhus C http://www.teknologisk.dk
LCA software / background data	Thinkstep GaBi 7.2 2016 incl. databases + Ecoinvent 3 2016 http://www.gabi-software.com http://www.ecoinvent.org
3rd party verifier	Susanne Vedel Jørgensen – ALECTIA A/S

General programme instructions

Version 1.7

www.epddanmark.dk

EN 15804

DS/EN 15804 + A1:2013 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 15942

DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025

DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040

DS/EN ISO 14040:2008 – " Environmental management – Life cycle assessment – Principles and framework"

ISO 14044

DS/EN ISO 14044:2008 – " Environmental management – Life cycle assessment – Requirements and guidelines"