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3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

Cembrit Holding A/S
Gasværksvej 24
9000 Aalborg
CVR-nr. 58711713



Issued:
28-06-2021

Valid to:
11-01-2026

Programme

EPD Danmark
www.epddanmark.dk



- Industry EPD
- Product EPD

Basis of calculation

This EPD is developed in accordance with the European standard EN 15804:2012+A2:2019.

Comparability

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804:2019+A2. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804:2012+A2:2019 and if the background systems are not based on the same database.

Validity

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

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.

Declared products

Cembrit Solid
Cembrit Cover
Cembrit Patina Original
Cembrit Patina Inline
Cembrit Patina Rough
Cembrit Deco

EPD type

- Cradle-to-gate with modules C1-C4 and D
- Cradle-to-gate with options, modules C1-C4 and D
- Cradle-to-grave and module D
- Cradle-to-gate
- Cradle-to-gate with options

Number of declared datasets/product variations: 6

Production site

Bécsi út 7
2536 Nyergesújfalu
Hungary

Products use

Cembrit fibre cement decorative rain screen claddings for mounting on facades or roofs on wooden or metal substructures with the principle of back-ventilated curtain facades.

Declared unit

1 m² facade board with a thickness of 8mm

Year of data

2019

CEN standard EN 15804:2012+A2:2019 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: Kim Christiansen

Henrik Fred Larsen
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-construction 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	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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 with a thickness of 8 mm. 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
Cement	40-83%
Filler	0-21%
Sand	0-34%
Cellulose/fibres	0-15%
Paint/pigments	1-5%

Representativity

This declaration including data collection and the modelled foreground system, represents the production of 1 m² of Cembrit facade board on the production site located in Hungary. Product specific data are based on average values collected in 2019. Background data are mainly based 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, which meets the requirements in EN 15804:2012+A2:2019.

Hazardous substances

Cembrit facade boards do 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 facade boards are covered by the 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 manufacturer's website:

<https://www.cembrit.com/>

Reference Service Life (RSL)

Cembrit's facade boards have an expected average lifetime of 50 years when installed and used correctly and a guaranteed lifetime of 15 years.

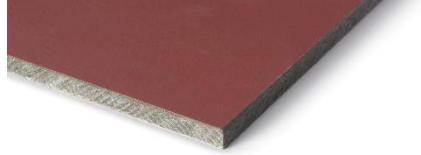
Picture of products

Cembrit Colourful design line

Cembrit Solid



Cembrit Cover



Cembrit Patina design line

Cembrit Patina Original



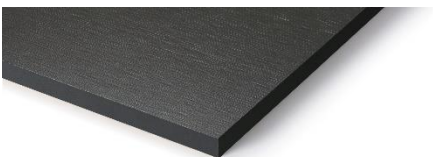
Cembrit Patina Inline



Cembrit Patina Rough



Cembrit Deco



LCA background

Declared unit

The LCI and LCIA results in this EPD relates to 1 m² of Cembrit facade boards with a thickness of 8 mm for types: Cembrit Solid, Cembrit Cover, Cembrit Patina Original, Cembrit Patina Inline, Cembrit Patina Rough and Cembrit Deco.

Cembrit also produces Cembrit Patina Original in 6 mm. Cembrit Patina Inline is produced with a thickness of 8/9.5 mm and a calculated average thickness of 8.9 mm. In this EPD a conversion was made so that the area weight and results are calculated and shown for 8 mm boards for the sake of comparison.

Results for these two variations; Cembrit Patina Original and Cembrit Patina Inline, can be converted to 6 mm board and 8/9.5 mm board

respectively using the conversion factor described in the results.

Name	Value	Unit	Conversion factor to 1 kg.
Declared unit	1	m ²	
Average production area weight			
Cembrit Solid	14.1	kg/m ²	0.0707
Cembrit Cover	14.2	kg/m ²	0.0705
Cembrit Patina Original	11.9	kg/m ²	0.084
Cembrit Patina Rough	11.9	kg/m ²	0.084
Cembrit Patina inline	11.7	kg/m ²	0.086
Cembrit Deco	11.9	kg/m ²	0.084

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804:2012+A2:2019.

Flow chart

THE LIFE CYCLE OF CEMBRIT FACADE PRODUCTS



System boundary

This EPD is based on a cradle-to-grave + module D, in which >99 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804:2012+A2:2019, 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.

Data collection and measurements includes all processes, materials or emissions that are known to make a significant contribution to the environmental impact of producing facade boards at Cembrit A/S. All these emissions were considered in the model. Therefore, there has been no exclusion of inputs and outputs above these limits.

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 facade boards are produced by the use of the Hatschek method: the base materials (binder, fibres, etc) are processed into a homogeneous mixture with water and transferred to the vats of the Hatschek machine. Rotating sieve cylinders in the vats collect a thin layer of solid material and transfer the layer to a rotating felt for dewatering and further on to the accumulating format roller. The format roller is gradually covered by layers of fibre cement. Once the required thickness of the boards is reached, the fibre cement layer, still moist and mouldable, is unwound and taken from the roll. Further

information on the Hatschek method may be found here:

<http://www.fibreconsulting.com/publications/011011.hatschekfilmsummary.pdf>

After the pre-curing period, the autoclaved Patina boards are dried in an autoclave, which runs on natural gas. The AirCured board types (Solid and Cover) are air-dried. After the drying process the products are ready to be sanded, trimming edges, cutting to customised size, painted, edge-sealed, hydrophobated (only autoclaved products), ending with quality controls and packing processes.

Construction process stage (A4-A5) includes:

A4 – Transportation simulating transportation to a construction site in Europe. This scenario uses an average truck, transporting goods at a distance of 2,300 km. This distance is Cembrit's longest route of delivery, hence the distance covers all routes. Transportation of the packaging waste from the construction site to the municipal waste incinerator are also included in this module.

A5 – Accounts for the environmental impacts associated with the disposal of packaging handled at the construction site. It is assumed incinerated at an incineration plant which is assumed to be the most likely and realistic situation. Disposal of product waste is assumed to be landfilled. Furthermore, environmental impacts associated with trucks and fuel for the construction installation. The mounting of facade boards is done by using smaller electrical tools e.g. screwdriver. It is estimated that the energy for the hand tool is very low and below the cut-off criteria of 1% and is therefore excluded.

Use stage (B1-B7) includes:

Modules are not relevant for this product.

End of Life (C1-C4) includes:

C1 – Accounts for the environmental impacts associated with dismantling and demolition of the facade boards. Fuel used for demolition equipment and transport on site vehicles.

C2 – Transportation of the discarded products from the construction site to a landfilling site. The transport is estimated to be 100 km in an average truck.

C3 – The facade boards are sent to landfill and therefore there is no environmental impacts associated with waste processing of materials flows intended for reuse, recycling or energy recovery.

C4 – Environmental impacts associated with the processes at the landfill.

Re-use, recovery and recycling potential (D) includes:

D - The facade boards are sent to landfill after use. The product has therefore no impact during this stage and no associated environmental impacts. The Cembrit facade boards are expected to be reusable over time, but this is not included in the actual LCA calculation.

LCA results

Cembrit Solid

ENVIRONMENTAL IMPACTS PER m ² CEMBRIT SOLID										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1.62E+01	2.03E+00	6.27E-02	0.00E+00	8.82E-03	1.09E-01	0.00E+00	1.99E-01	0.00E+00
GWP-fossil	[kg CO ₂ eq.]	1.65E+01	1.99E+00	4.75E-02	0.00E+00	9.15E-03	1.07E-01	0.00E+00	2.15E-01	0.00E+00
GWP-biogenic	[kg CO ₂ eq.]	-3.38E-01	2.17E-02	1.51E-02	0.00E+00	-4.02E-04	1.16E-03	0.00E+00	-1.71E-02	0.00E+00
GWP-luluc	[kg CO ₂ eq.]	1.70E-02	1.63E-02	2.04E-05	0.00E+00	7.11E-05	8.74E-04	0.00E+00	6.19E-04	0.00E+00
ODP	[kg CFC 11 eq.]	3.78E-08	3.70E-16	-3.81E-16	0.00E+00	1.61E-18	1.98E-17	0.00E+00	7.98E-16	0.00E+00
AP	[mol H ⁺ eq.]	3.87E-02	2.25E-03	-2.98E-05	0.00E+00	4.49E-05	1.25E-04	0.00E+00	1.54E-03	0.00E+00
EP-freshwater	[kg PO ₄ eq.]	1.89E-04	6.15E-06	-1.23E-07	0.00E+00	2.68E-08	3.29E-07	0.00E+00	3.70E-07	0.00E+00
EP-marine	[kg N eq.]	1.04E-02	6.74E-04	1.38E-06	0.00E+00	2.08E-05	3.84E-05	0.00E+00	3.97E-04	0.00E+00
EP-terrestrial	[mol N eq.]	1.12E-01	8.03E-03	6.38E-05	0.00E+00	2.30E-04	4.55E-04	0.00E+00	4.37E-03	0.00E+00
POCP	[kg NMVOC eq.]	2.93E-02	1.85E-03	5.90E-06	0.00E+00	5.82E-05	1.03E-04	0.00E+00	1.20E-03	0.00E+00
ADPm ¹	[kg Sb eq.]	2.95E-05	1.63E-07	-5.61E-09	0.00E+00	7.10E-10	8.73E-09	0.00E+00	1.93E-08	0.00E+00
ADPf ¹	[MJ]	1.54E+02	2.69E+01	-4.72E-01	0.00E+00	1.17E-01	1.44E+00	0.00E+00	2.82E+00	0.00E+00
WDP ¹	[m ³]	2.04E+01	1.97E-02	3.99E-03	0.00E+00	8.57E-05	1.05E-03	0.00E+00	2.26E-02	0.00E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use									
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									

Additional environmental impacts, as declared in the project report of this EPD, may be declared in this EPD:

ADDITIONAL ENVIRONMENTAL IMPACTS PER m ² CEMBRIT SOLID										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PM	[Disease incidence]	4.44E-07	1.52E-08	-4.99E-11	0.00E+00	5.05E-10	8.28E-10	0.00E+00	1.91E-08	0.00E+00
IRP ²	[kBq U235 eq.]	9.85E-01	7.35E-03	-8.22E-03	0.00E+00	3.20E-05	3.93E-04	0.00E+00	3.31E-03	0.00E+00
ETP-fw ¹	[CTUe]	8.46E+01	2.01E+01	-1.11E-01	0.00E+00	8.77E-02	1.08E+00	0.00E+00	1.61E+00	0.00E+00
HTP-c ¹	[CTUh]	2.94E-09	4.16E-10	-4.15E-12	0.00E+00	1.81E-12	2.23E-11	0.00E+00	2.39E-10	0.00E+00
HTP-nc ¹	[CTUh]	2.69E-07	2.11E-08	-1.08E-10	0.00E+00	1.06E-10	1.13E-09	0.00E+00	2.63E-08	0.00E+00
SQP ¹	-	7.90E+01	9.45E+00	-5.13E-01	0.00E+00	4.11E-02	5.06E-01	0.00E+00	5.89E-01	0.00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.									

RESOURCE USE PER m ² CEMBRIT SOLID										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PERE	[MJ]	2.29E+01	1.56E+00	-2.32E-01	0.00E+00	6.78E-03	8.33E-02	0.00E+00	3.70E-01	0.00E+00
PERM	[MJ]	5.58E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.29E+01	1.56E+00	-2.32E-01	0.00E+00	6.78E-03	8.33E-02	0.00E+00	3.70E-01	0.00E+00
PENRE	[MJ]	1.54E+02	2.70E+01	-4.71E-01	0.00E+00	1.18E-01	1.45E+00	0.00E+00	2.82E+00	0.00E+00
PENRM	[MJ]	2.12E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.54E+02	2.70E+01	-4.71E-01	0.00E+00	1.18E-01	1.45E+00	0.00E+00	2.82E+00	0.00E+00
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	5.03E-01	1.81E-03	1.88E-05	0.00E+00	7.90E-06	9.71E-05	0.00E+00	7.12E-04	0.00E+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 = Net use of fresh water									

WASTE CATEGORIES AND OUTPUT FLOWS PER m ² CEMBRIT SOLID										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
HWD	[kg]	2.15E-07	1.25E-06	5.09E-09	0.00E+00	5.44E-09	6.69E-08	0.00E+00	4.30E-08	0.00E+00
NHWD	[kg]	4.50E+00	4.28E-03	7.82E-03	0.00E+00	1.87E-05	2.29E-04	0.00E+00	1.42E+01	0.00E+00
RWD	[kg]	1.11E-02	4.98E-05	-4.96E-05	0.00E+00	2.17E-07	2.67E-06	0.00E+00	3.21E-05	0.00E+00

CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[kg]	1.19E+00	0.00E+00	4.40E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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; EE = Exported energy									

BIOGENIC CARBON CONTENT PER DECLARED UNIT (1 m ²)		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.9
Biogenic carbon content in accompanying packaging	kg C	0.4

Cembrit Cover

ENVIRONMENTAL IMPACTS PER m ² CEMBRIT COVER										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1.61E+01	2.02E+00	6.34E-02	0.00E+00	8.79E-03	1.08E-01	0.00E+00	1.98E-01	0.00E+00
GWP-fossil	[kg CO ₂ eq.]	1.65E+01	1.98E+00	4.69E-02	0.00E+00	9.12E-03	1.06E-01	0.00E+00	2.14E-01	0.00E+00
GWP-biogenic	[kg CO ₂ eq.]	-3.71E-01	2.16E-02	1.64E-02	0.00E+00	-4.01E-04	1.16E-03	0.00E+00	-1.70E-02	0.00E+00
GWP-luluc	[kg CO ₂ eq.]	1.70E-02	1.63E-02	1.97E-05	0.00E+00	7.09E-05	8.71E-04	0.00E+00	6.17E-04	0.00E+00
ODP	[kg CFC 11 eq.]	3.77E-08	3.69E-16	-3.85E-16	0.00E+00	1.61E-18	1.98E-17	0.00E+00	7.95E-16	0.00E+00
AP	[mol H ⁺ eq.]	3.88E-02	2.24E-03	-3.03E-05	0.00E+00	4.47E-05	1.24E-04	0.00E+00	1.54E-03	0.00E+00
EP-freshwater	[kg PO ₄ eq.]	1.90E-04	6.13E-06	-1.24E-07	0.00E+00	2.67E-08	3.28E-07	0.00E+00	3.68E-07	0.00E+00
EP-marine	[kg N eq.]	1.04E-02	6.72E-04	1.26E-06	0.00E+00	2.07E-05	3.82E-05	0.00E+00	3.96E-04	0.00E+00

EP-terrestrial	[mol N eq.]	1.12E-01	8.00E-03	6.26E-05	0.00E+00	2.29E-04	4.54E-04	0.00E+00	4.35E-03	0.00E+00
POCP	[kg NMVOC eq.]	2.93E-02	1.84E-03	5.56E-06	0.00E+00	5.80E-05	1.03E-04	0.00E+00	1.20E-03	0.00E+00
ADPm ¹	[kg Sb eq.]	2.94E-05	1.63E-07	-5.67E-09	0.00E+00	7.08E-10	8.70E-09	0.00E+00	1.93E-08	0.00E+00
ADPf ¹	[MJ]	1.55E+02	2.68E+01	-4.76E-01	0.00E+00	1.17E-01	1.44E+00	0.00E+00	2.81E+00	0.00E+00
WDP ¹	[m ³]	2.31E+01	1.96E-02	4.07E-03	0.00E+00	8.54E-05	1.05E-03	0.00E+00	2.25E-02	0.00E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use									
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									

Additional environmental impacts, as declared in the project report of this EPD, may be declared in this EPD:

ADDITIONAL ENVIRONMENTAL IMPACTS PER m ² CEMBRIT COVER										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PM	[Disease incidence]	4.49E-07	1.52E-08	-5.59E-11	0.00E+00	5.03E-10	8.25E-10	0.00E+00	1.90E-08	0.00E+00
IRP ²	[kBq U235 eq.]	9.90E-01	7.33E-03	-8.29E-03	0.00E+00	3.19E-05	3.92E-04	0.00E+00	3.30E-03	0.00E+00
ETP-fw ¹	[CTUe]	8.51E+01	2.01E+01	-1.12E-01	0.00E+00	8.74E-02	1.07E+00	0.00E+00	1.61E+00	0.00E+00
HTP-c ¹	[CTUh]	2.96E-09	4.15E-10	-4.21E-12	0.00E+00	1.81E-12	2.22E-11	0.00E+00	2.38E-10	0.00E+00
HTP-nc ¹	[CTUh]	2.70E-07	2.10E-08	-1.11E-10	0.00E+00	1.06E-10	1.13E-09	0.00E+00	2.62E-08	0.00E+00
SQP ¹	-	8.56E+01	9.42E+00	-5.17E-01	0.00E+00	4.10E-02	5.04E-01	0.00E+00	5.87E-01	0.00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. ² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.									

RESOURCE USE PER m ² CEMBRIT COVER										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PERE	[MJ]	2.34E+01	1.55E+00	-2.34E-01	0.00E+00	6.75E-03	8.30E-02	0.00E+00	3.69E-01	0.00E+00
PERM	[MJ]	8.36E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.34E+01	1.55E+00	-2.34E-01	0.00E+00	6.75E-03	8.30E-02	0.00E+00	3.69E-01	0.00E+00
PENRE	[MJ]	1.55E+02	2.69E+01	-4.76E-01	0.00E+00	1.17E-01	1.44E+00	0.00E+00	2.81E+00	0.00E+00
PENRM	[MJ]	2.21E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.55E+02	2.69E+01	-4.76E-01	0.00E+00	1.17E-01	1.44E+00	0.00E+00	2.81E+00	0.00E+00
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	5.67E-01	1.81E-03	2.01E-05	0.00E+00	7.87E-06	9.68E-05	0.00E+00	7.10E-04	0.00E+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 = Net use of fresh water									

WASTE CATEGORIES AND OUTPUT FLOWS PER m ² CEMBRIT COVER										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
HWD	[kg]	2.13E-07	1.25E-06	5.07E-09	0.00E+00	5.42E-09	6.67E-08	0.00E+00	4.29E-08	0.00E+00

NHWD	[kg]	4.51E+00	4.27E-03	7.82E-03	0.00E+00	1.86E-05	2.29E-04	0.00E+00	1.41E+01	0.00E+00
RWD	[kg]	1.12E-02	4.97E-05	-5.00E-05	0.00E+00	2.16E-07	2.66E-06	0.00E+00	3.20E-05	0.00E+00

CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[kg]	1.11E+00	0.00E+00	4.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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; EE = Exported energy									

BIOGENIC CARBON CONTENT PER DECLARED UNIT (1 m ²)		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.9
Biogenic carbon content in accompanying packaging	kg C	0.5

Cembrit Patina Original

The declared unit is for 1 m² of Cembrit Patina Original with a thickness of 8 mm. A conversion factor 0.75 must be applied, when calculating results LCIA results for Cembrit Patina Original with a thickness of 6 mm.

ENVIRONMENTAL IMPACTS PER m ² CEMBRIT PATINA ORIGINAL										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1.18E+01	1.73E+00	8.29E-02	0.00E+00	7.52E-03	9.26E-02	0.00E+00	1.69E-01	0.00E+00
GWP-fossil	[kg CO ₂ eq.]	1.21E+01	1.70E+00	6.26E-02	0.00E+00	7.80E-03	9.09E-02	0.00E+00	1.83E-01	0.00E+00
GWP-biogenic	[kg CO ₂ eq.]	-2.68E-01	1.85E-02	2.03E-02	0.00E+00	-3.42E-04	9.89E-04	0.00E+00	-1.45E-02	0.00E+00
GWP-luluc	[kg CO ₂ eq.]	1.12E-02	1.39E-02	-1.08E-05	0.00E+00	6.06E-05	7.45E-04	0.00E+00	5.28E-04	0.00E+00
ODP	[kg CFC 11 eq.]	7.84E-08	3.16E-16	-5.37E-16	0.00E+00	1.37E-18	1.69E-17	0.00E+00	6.80E-16	0.00E+00
AP	[mol H ⁺ eq.]	3.43E-02	1.92E-03	-6.70E-05	0.00E+00	3.82E-05	1.06E-04	0.00E+00	1.32E-03	0.00E+00
EP-freshwater	[kg PO ₄ eq.]	3.18E-04	5.24E-06	-1.87E-07	0.00E+00	2.28E-08	2.80E-07	0.00E+00	3.15E-07	0.00E+00
EP-marine	[kg N eq.]	8.15E-03	5.74E-04	-9.68E-06	0.00E+00	1.77E-05	3.27E-05	0.00E+00	3.39E-04	0.00E+00
EP-terrestrial	[mol N eq.]	8.77E-02	6.84E-03	-3.88E-05	0.00E+00	1.96E-04	3.88E-04	0.00E+00	3.72E-03	0.00E+00
POCP	[kg NMVOC eq.]	2.36E-02	1.58E-03	-2.42E-05	0.00E+00	4.96E-05	8.81E-05	0.00E+00	1.03E-03	0.00E+00
ADPm ¹	[kg Sb eq.]	9.31E-05	1.39E-07	-8.28E-09	0.00E+00	6.05E-10	7.44E-09	0.00E+00	1.65E-08	0.00E+00
ADPf ¹	[MJ]	1.38E+02	2.29E+01	-7.29E-01	0.00E+00	9.99E-02	1.23E+00	0.00E+00	2.41E+00	0.00E+00
WDP ¹	[m ³]	1.53E+01	1.68E-02	5.50E-03	0.00E+00	7.30E-05	8.97E-04	0.00E+00	1.92E-02	0.00E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use									
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									

Additional environmental impacts, as declared in the project report of this EPD, may be declared in this EPD:

ADDITIONAL ENVIRONMENTAL IMPACTS PER m ² CEMBRIT PATINA ORIGINAL										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PM	[Disease incidence]	3.93E-07	1.30E-08	-3.51E-10	0.00E+00	4.30E-10	7.05E-10	0.00E+00	1.63E-08	0.00E+00
IRP ²	[kBq U235 eq.]	9.31E-01	6.26E-03	-1.16E-02	0.00E+00	2.73E-05	3.35E-04	0.00E+00	2.82E-03	0.00E+00
ETP-fw ¹	[CTUe]	9.73E+01	1.72E+01	-2.04E-01	0.00E+00	7.48E-02	9.19E-01	0.00E+00	1.37E+00	0.00E+00
HTP-c ¹	[CTUh]	7.67E-09	3.55E-10	-6.85E-12	0.00E+00	1.54E-12	1.90E-11	0.00E+00	2.04E-10	0.00E+00
HTP-nc ¹	[CTUh]	7.76E-07	1.80E-08	-2.11E-10	0.00E+00	9.05E-11	9.64E-10	0.00E+00	2.24E-08	0.00E+00
SQP ¹	-	1.05E+02	8.05E+00	-7.45E-01	0.00E+00	3.51E-02	4.31E-01	0.00E+00	5.02E-01	0.00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.									

RESOURCE USE PER m ² CEMBRIT PATINA ORIGINAL										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PERE	[MJ]	2.46E+01	1.33E+00	-3.30E-01	0.00E+00	5.78E-03	7.10E-02	0.00E+00	3.15E-01	0.00E+00
PERM	[MJ]	1.91E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.46E+01	1.33E+00	-3.30E-01	0.00E+00	5.78E-03	7.10E-02	0.00E+00	3.15E-01	0.00E+00
PENRE	[MJ]	1.38E+02	2.30E+01	-7.28E-01	0.00E+00	1.00E-01	1.23E+00	0.00E+00	2.41E+00	0.00E+00
PENRM	[MJ]	3.58E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.38E+02	2.30E+01	-7.28E-01	0.00E+00	1.00E-01	1.23E+00	0.00E+00	2.41E+00	0.00E+00
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	3.71E-01	1.55E-03	2.08E-05	0.00E+00	6.73E-06	8.27E-05	0.00E+00	6.07E-04	0.00E+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 = Net use of fresh water									

WASTE CATEGORIES AND OUTPUT FLOWS PER m ² CEMBRIT PATINA ORIGINAL										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
HWD	[kg]	6.25E-07	1.07E-06	4.15E-09	0.00E+00	4.64E-09	5.70E-08	0.00E+00	3.67E-08	0.00E+00
NHWD	[kg]	4.17E+00	3.65E-03	1.10E-02	0.00E+00	1.59E-05	1.95E-04	0.00E+00	1.21E+01	0.00E+00
RWD	[kg]	1.07E-02	4.25E-05	-6.99E-05	0.00E+00	1.85E-07	2.27E-06	0.00E+00	2.74E-05	0.00E+00

CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[kg]	8.02E-01	0.00E+00	6.14E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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; EE = Exported energy									

BIOGENIC CARBON CONTENT PER DECLARED UNIT (1 m ²)		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.4
Biogenic carbon content in accompanying packaging	kg C	0.5

Cembrit Patina Inline

The declared unit is for 1 m² of Cembrit Patina Inline with a thickness of 8 mm. A conversion factor 1.11 must be applied, when calculating results LCIA results for Cembrit Patina Inline with a thickness of 8/9.5 mm. The conversion factor is based on a calculated average thickness of 8.9 mm.

ENVIRONMENTAL IMPACTS PER m ² CEMBRIT PATINA INLINE										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1.07E+01	1.68E+00	8.07E-02	0.00E+00	7.31E-03	9.01E-02	0.00E+00	1.65E-01	0.00E+00
GWP-fossil	[kg CO ₂ eq.]	1.10E+01	1.65E+00	6.09E-02	0.00E+00	7.59E-03	8.84E-02	0.00E+00	1.78E-01	0.00E+00
GWP-biogenic	[kg CO ₂ eq.]	-2.44E-01	1.80E-02	1.98E-02	0.00E+00	-3.33E-04	9.62E-04	0.00E+00	-1.41E-02	0.00E+00
GWP-luluc	[kg CO ₂ eq.]	9.87E-03	1.35E-02	-1.05E-05	0.00E+00	5.89E-05	7.25E-04	0.00E+00	5.13E-04	0.00E+00
ODP	[kg CFC 11 eq.]	7.21E-08	3.07E-16	-5.22E-16	0.00E+00	1.34E-18	1.64E-17	0.00E+00	6.61E-16	0.00E+00
AP	[mol H ⁺ eq.]	3.05E-02	1.86E-03	-6.51E-05	0.00E+00	3.72E-05	1.03E-04	0.00E+00	1.28E-03	0.00E+00
EP-freshwater	[kg PO ₄ eq.]	2.90E-04	5.10E-06	-1.82E-07	0.00E+00	2.22E-08	2.73E-07	0.00E+00	3.06E-07	0.00E+00
EP-marine	[kg N eq.]	7.38E-03	5.59E-04	-9.42E-06	0.00E+00	1.72E-05	3.18E-05	0.00E+00	3.29E-04	0.00E+00
EP-terrestrial	[mol N eq.]	7.95E-02	6.66E-03	-3.77E-05	0.00E+00	1.91E-04	3.77E-04	0.00E+00	3.62E-03	0.00E+00
POCP	[kg NMVOC eq.]	2.13E-02	1.53E-03	-2.36E-05	0.00E+00	4.82E-05	8.57E-05	0.00E+00	9.97E-04	0.00E+00
ADPm ¹	[kg Sb eq.]	8.23E-05	1.35E-07	-8.06E-09	0.00E+00	5.89E-10	7.24E-09	0.00E+00	1.60E-08	0.00E+00
ADPf ¹	[MJ]	1.19E+02	2.23E+01	-7.09E-01	0.00E+00	9.72E-02	1.19E+00	0.00E+00	2.34E+00	0.00E+00
WDP ¹	[m ³]	1.28E+01	1.63E-02	5.35E-03	0.00E+00	7.10E-05	8.73E-04	0.00E+00	1.87E-02	0.00E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use									
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									

Additional environmental impacts, as declared in the project report of this EPD, may be declared in this EPD:

ADDITIONAL ENVIRONMENTAL IMPACTS PER m ² CEMBRIT PATINA INLINE										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PM	[Disease incidence]	3.51E-07	1.26E-08	-3.41E-10	0.00E+00	4.19E-10	6.86E-10	0.00E+00	1.58E-08	0.00E+00
IRP ²	[kBq U235 eq.]	7.91E-01	6.09E-03	-1.13E-02	0.00E+00	2.65E-05	3.26E-04	0.00E+00	2.74E-03	0.00E+00
ETP-fw ¹	[CTUe]	8.67E+01	1.67E+01	-1.99E-01	0.00E+00	7.27E-02	8.94E-01	0.00E+00	1.34E+00	0.00E+00
HTP-c ¹	[CTUh]	6.27E-09	3.45E-10	-6.66E-12	0.00E+00	1.50E-12	1.85E-11	0.00E+00	1.98E-10	0.00E+00
HTP-nc ¹	[CTUh]	6.25E-07	1.75E-08	-2.05E-10	0.00E+00	8.80E-11	9.37E-10	0.00E+00	2.18E-08	0.00E+00
SQP ¹	-	8.83E+01	7.83E+00	-7.24E-01	0.00E+00	3.41E-02	4.19E-01	0.00E+00	4.88E-01	0.00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									

² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

RESOURCE USE PER m ² CEMBRIT PATINA INLINE										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PERE	[MJ]	2.09E+01	1.29E+00	-3.21E-01	0.00E+00	5.62E-03	6.91E-02	0.00E+00	3.06E-01	0.00E+00
PERM	[MJ]	1.88E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.09E+01	1.29E+00	-3.21E-01	0.00E+00	5.62E-03	6.91E-02	0.00E+00	3.06E-01	0.00E+00
PENRE	[MJ]	1.19E+02	2.24E+01	-7.08E-01	0.00E+00	9.76E-02	1.20E+00	0.00E+00	2.34E+00	0.00E+00
PENRM	[MJ]	6.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.19E+02	2.24E+01	-7.08E-01	0.00E+00	9.76E-02	1.20E+00	0.00E+00	2.34E+00	0.00E+00
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	3.10E-01	1.50E-03	2.02E-05	0.00E+00	6.55E-06	8.05E-05	0.00E+00	5.90E-04	0.00E+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 = Net use of fresh water									

WASTE CATEGORIES AND OUTPUT FLOWS PER m ² CEMBRIT PATINA INLINE										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
HWD	[kg]	5.54E-07	1.04E-06	4.03E-09	0.00E+00	4.51E-09	5.55E-08	0.00E+00	3.57E-08	0.00E+00
NHWD	[kg]	4.02E+00	3.55E-03	1.07E-02	0.00E+00	1.55E-05	1.90E-04	0.00E+00	1.18E+01	0.00E+00
RWD	[kg]	8.93E-03	4.13E-05	-6.80E-05	0.00E+00	1.80E-07	2.21E-06	0.00E+00	2.66E-05	0.00E+00

CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[kg]	7.86E-01	0.00E+00	5.97E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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; EE = Exported energy									

BIOGENIC CARBON CONTENT PER DECLARED UNIT (1 m ²)		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.4
Biogenic carbon content in accompanying packaging	kg C	0.5

Cembrit Patina Rough

ENVIRONMENTAL IMPACTS PER m ² CEMBRIT PATINA ROUGH										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1.02E+01	1.72E+00	8.26E-02	0.00E+00	7.48E-03	9.22E-02	0.00E+00	1.69E-01	0.00E+00
GWP-fossil	[kg CO ₂ eq.]	1.04E+01	1.69E+00	6.24E-02	0.00E+00	7.76E-03	9.05E-02	0.00E+00	1.82E-01	0.00E+00
GWP-biogenic	[kg CO ₂ eq.]	-2.44E-01	1.84E-02	2.02E-02	0.00E+00	-3.41E-04	9.85E-04	0.00E+00	-1.45E-02	0.00E+00
GWP-luluc	[kg CO ₂ eq.]	9.89E-03	1.39E-02	-1.07E-05	0.00E+00	6.03E-05	7.42E-04	0.00E+00	5.25E-04	0.00E+00

ODP	[kg CFC 11 eq.]	7.28E-08	3.14E-16	-5.35E-16	0.00E+00	1.37E-18	1.68E-17	0.00E+00	6.77E-16	0.00E+00
AP	[mol H ⁺ eq.]	3.07E-02	1.91E-03	-6.67E-05	0.00E+00	3.80E-05	1.06E-04	0.00E+00	1.31E-03	0.00E+00
EP-freshwater	[kg PO ₄ eq.]	2.97E-04	5.21E-06	-1.86E-07	0.00E+00	2.27E-08	2.79E-07	0.00E+00	3.13E-07	0.00E+00
EP-marine	[kg N eq.]	7.22E-03	5.72E-04	-9.64E-06	0.00E+00	1.76E-05	3.25E-05	0.00E+00	3.37E-04	0.00E+00
EP-terrestrial	[mol N eq.]	7.77E-02	6.81E-03	-3.86E-05	0.00E+00	1.95E-04	3.86E-04	0.00E+00	3.70E-03	0.00E+00
POCP	[kg NMVOC eq.]	2.05E-02	1.57E-03	-2.41E-05	0.00E+00	4.93E-05	8.77E-05	0.00E+00	1.02E-03	0.00E+00
ADPm ¹	[kg Sb eq.]	6.88E-05	1.38E-07	-8.24E-09	0.00E+00	6.03E-10	7.41E-09	0.00E+00	1.64E-08	0.00E+00
ADPf ¹	[MJ]	1.20E+02	2.28E+01	-7.25E-01	0.00E+00	9.94E-02	1.22E+00	0.00E+00	2.39E+00	0.00E+00
WDP ¹	[m ³]	1.49E+01	1.67E-02	5.48E-03	0.00E+00	7.27E-05	8.93E-04	0.00E+00	1.91E-02	0.00E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use									
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									

Additional environmental impacts, as declared in the project report of this EPD, may be declared in this EPD:

ADDITIONAL ENVIRONMENTAL IMPACTS PER m ² CEMBRIT PATINA ROUGH										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PM	[Disease incidence]	3.57E-07	1.29E-08	-3.49E-10	0.00E+00	4.28E-10	7.02E-10	0.00E+00	1.62E-08	0.00E+00
IRP ²	[kBq U235 eq.]	8.26E-01	6.24E-03	-1.15E-02	0.00E+00	2.71E-05	3.34E-04	0.00E+00	2.80E-03	0.00E+00
ETP-fw ¹	[CTUe]	8.54E+01	1.71E+01	-2.03E-01	0.00E+00	7.44E-02	9.14E-01	0.00E+00	1.37E+00	0.00E+00
HTP-c ¹	[CTUh]	2.14E-09	3.53E-10	-6.82E-12	0.00E+00	1.54E-12	1.89E-11	0.00E+00	2.03E-10	0.00E+00
HTP-nc ¹	[CTUh]	1.41E-07	1.79E-08	-2.10E-10	0.00E+00	9.01E-11	9.59E-10	0.00E+00	2.23E-08	0.00E+00
SQP ¹	-	6.90E+01	8.02E+00	-7.41E-01	0.00E+00	3.49E-02	4.29E-01	0.00E+00	4.99E-01	0.00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.									

RESOURCE USE PER m ² CEMBRIT PATINA ROUGH										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PERE	[MJ]	1.73E+01	1.32E+00	-3.29E-01	0.00E+00	5.75E-03	7.07E-02	0.00E+00	3.14E-01	0.00E+00
PERM	[MJ]	1.96E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.73E+01	1.32E+00	-3.29E-01	0.00E+00	5.75E-03	7.07E-02	0.00E+00	3.14E-01	0.00E+00
PENRE	[MJ]	1.20E+02	2.29E+01	-7.25E-01	0.00E+00	9.98E-02	1.23E+00	0.00E+00	2.40E+00	0.00E+00
PENRM	[MJ]	1.46E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.20E+02	2.29E+01	-7.25E-01	0.00E+00	9.98E-02	1.23E+00	0.00E+00	2.40E+00	0.00E+00
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	3.58E-01	1.54E-03	2.07E-05	0.00E+00	6.70E-06	8.24E-05	0.00E+00	6.04E-04	0.00E+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 = Net use of fresh water									

WASTE CATEGORIES AND OUTPUT FLOWS PER m ² CEMBRIT PATINA ROUGH										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
HWD	[kg]	4.62E-07	1.06E-06	4.13E-09	0.00E+00	4.62E-09	5.67E-08	0.00E+00	3.65E-08	0.00E+00
NHWD	[kg]	3.76E+00	3.63E-03	1.10E-02	0.00E+00	1.58E-05	1.94E-04	0.00E+00	1.20E+01	0.00E+00
RWD	[kg]	1.03E-02	4.23E-05	-6.95E-05	0.00E+00	1.84E-07	2.26E-06	0.00E+00	2.73E-05	0.00E+00
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[kg]	1.39E-01	0.00E+00	6.11E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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; EE = Exported energy									

BIOGENIC CARBON CONTENT PER DECLARED UNIT (1 m ²)		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.4
Biogenic carbon content in accompanying packaging	kg C	0.5

Cembrit Deco

ENVIRONMENTAL IMPACTS PER m ² CEMBRIT DECO										
Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1.00E+01	1.73E+00	8.49E-02	0.00E+00	7.51E-03	9.26E-02	0.00E+00	1.69E-01	0.00E+00
GWP-fossil	[kg CO ₂ eq.]	1.03E+01	1.70E+00	6.41E-02	0.00E+00	7.79E-03	9.08E-02	0.00E+00	1.83E-01	0.00E+00
GWP-biogenic	[kg CO ₂ eq.]	-2.58E-01	1.85E-02	2.08E-02	0.00E+00	-3.42E-04	9.88E-04	0.00E+00	-1.45E-02	0.00E+00
GWP-luluc	[kg CO ₂ eq.]	1.01E-02	1.39E-02	-1.27E-05	0.00E+00	6.05E-05	7.44E-04	0.00E+00	5.27E-04	0.00E+00
ODP	[kg CFC 11 eq.]	7.51E-08	3.15E-16	-5.51E-16	0.00E+00	1.37E-18	1.69E-17	0.00E+00	6.79E-16	0.00E+00
AP	[mol H ⁺ eq.]	3.05E-02	1.92E-03	-6.97E-05	0.00E+00	3.82E-05	1.06E-04	0.00E+00	1.31E-03	0.00E+00
EP-freshwater	[kg PO ₄ eq.]	3.02E-04	5.23E-06	-1.93E-07	0.00E+00	2.28E-08	2.80E-07	0.00E+00	3.15E-07	0.00E+00
EP-marine	[kg N eq.]	7.19E-03	5.74E-04	-1.04E-05	0.00E+00	1.77E-05	3.27E-05	0.00E+00	3.38E-04	0.00E+00
EP-terrestrial	[mol N eq.]	7.74E-02	6.84E-03	-4.50E-05	0.00E+00	1.96E-04	3.87E-04	0.00E+00	3.72E-03	0.00E+00
POCP	[kg NMVOC eq.]	2.03E-02	1.57E-03	-2.62E-05	0.00E+00	4.95E-05	8.81E-05	0.00E+00	1.02E-03	0.00E+00
ADPm ¹	[kg Sb eq.]	6.90E-05	1.39E-07	-8.51E-09	0.00E+00	6.05E-10	7.44E-09	0.00E+00	1.65E-08	0.00E+00
ADPf ¹	[MJ]	1.07E+02	2.29E+01	-7.50E-01	0.00E+00	9.98E-02	1.23E+00	0.00E+00	2.40E+00	0.00E+00
WDP ¹	[m ³]	1.48E+01	1.68E-02	5.65E-03	0.00E+00	7.29E-05	8.97E-04	0.00E+00	1.92E-02	0.00E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use									
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									

Additional environmental impacts, as declared in the project report of this EPD, may be declared in this EPD:

ADDITIONAL ENVIRONMENTAL IMPACTS PER m² CEMBRIT DECO

Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PM	[Disease incidence]	3.52E-07	1.34E-08	-3.71E-10	0.00E+00	4.30E-10	7.05E-10	0.00E+00	1.63E-08	0.00E+00
IRP ²	[kBq U235 eq.]	8.10E-01	6.36E-03	-1.19E-02	0.00E+00	2.72E-05	3.35E-04	0.00E+00	2.82E-03	0.00E+00
ETP-fw ¹	[CTUe]	8.89E+01	1.74E+01	-2.11E-01	0.00E+00	7.47E-02	9.18E-01	0.00E+00	1.37E+00	0.00E+00
HTP-c ¹	[CTUh]	2.07E-09	3.61E-10	-7.07E-12	0.00E+00	1.54E-12	1.90E-11	0.00E+00	2.03E-10	0.00E+00
HTP-nc ¹	[CTUh]	1.35E-07	1.83E-08	-2.18E-10	0.00E+00	9.04E-11	9.63E-10	0.00E+00	2.24E-08	0.00E+00
SQP ¹	-	6.53E+01	8.18E+00	-7.65E-01	0.00E+00	3.50E-02	4.31E-01	0.00E+00	5.01E-01	0.00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.									

RESOURCE USE PER m² CEMBRIT DECO

Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PERE	[MJ]	1.74E+01	1.33E+00	-3.39E-01	0.00E+00	5.77E-03	7.09E-02	0.00E+00	3.15E-01	0.00E+00
PERM	[MJ]	1.90E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.74E+01	1.33E+00	-3.39E-01	0.00E+00	5.77E-03	7.09E-02	0.00E+00	3.15E-01	0.00E+00
PENRE	[MJ]	1.07E+02	2.30E+01	-7.50E-01	0.00E+00	1.00E-01	1.23E+00	0.00E+00	2.40E+00	0.00E+00
PENRM	[MJ]	2.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.07E+02	2.30E+01	-7.50E-01	0.00E+00	1.00E-01	1.23E+00	0.00E+00	2.40E+00	0.00E+00
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	3.58E-01	1.54E-03	2.12E-05	0.00E+00	6.72E-06	8.27E-05	0.00E+00	6.06E-04	0.00E+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 = Net use of fresh water									

WASTE CATEGORIES AND OUTPUT FLOWS PER m² CEMBRIT DECO

Parameter	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
HWD	[kg]	4.70E-07	1.06E-06	4.13E-09	0.00E+00	4.63E-09	5.70E-08	0.00E+00	3.66E-08	0.00E+00
NHWD	[kg]	3.84E+00	3.65E-03	1.13E-02	0.00E+00	1.59E-05	1.95E-04	0.00E+00	1.21E+01	0.00E+00
RWD	[kg]	9.94E-02	4.24E-05	-7.17E-05	0.00E+00	1.85E-07	2.27E-06	0.00E+00	2.74E-05	0.00E+00

CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[kg]	7.84E-01	0.00E+00	6.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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; EE = Exported energy									

BIOGENIC CARBON CONTENT PER DECLARED UNIT (1 m²)

Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.4
Biogenic carbon content in accompanying packaging	kg C	0.5

Additional information

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type and consumption	0.57-0.68	L diesel
Transport distance	2,300	km
Capacity utilisation (including empty runs)	80	%
Gross density of products transported	11.90 – 14.18	kg/m ²
Capacity utilisation volume factor	0.55	-

Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials	0	kg
Water use	0	m ³
Other resource use	0	kg
Fuel consumption	0.002 – 0.003	kg
Waste materials	0.98 – 0.13	kg
Output materials	0	kg
Direct emissions to air, soil or water	0	kg

Reference service life

RSL information	Unit
Reference service Life	40-60 Years

Use (B1-B7)

Modules not relevant

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	0	kg
Collected with mixed waste	0	kg
For reuse	0	kg
For recycling	0	kg
For energy recovery	0	kg
For final disposal	11.90 – 14.18	kg

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

Cembrit has performed horizontal dynamic surface leaching test on the facade boards (Cembrit Deco excluded), to determine the release of dangerous substances according to CEN/TS 16637-2:2014. This Technical Specification specifies a dynamic surface leaching test for determination of surface dependent release of substances from monolithic or plate-like or sheet-like construction products or granular construction products with low hydraulic conductivity under standardised conditions. To learn more about the performed leaching test, contact Cembrit Holding A/S.

References

Publisher	 epddanmark www.epddanmark.dk
Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	Julie Rønholt and Linda Høibye COWI A/S www.cowi.com
LCA software /background data	GaBi Professional 2020 and EcoInvent 3.6 2019
3rd party verifier	Kim Christiansen – kimconsult.dk

General programme instructions

Version 2.0

www.epddanmark.dk

EN 15804

DS/EN 15804:2012 + A2:2019 - "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"