ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

CEDRAL Siding: CEDRAL LAP

Eternit N.V.

EPD HUB, HUB-4116
Published on 12.10.2025, last updated on 12.10.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Eternit N.V.
Address	Kuiermanstraat 1; 1880 Kapelle-op-den-Bos; Belgium
Contact details	info@etexgroup.com
Website	https://www.etexgroup.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Els De Mulder, PRTC NV., Etex Group
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly Gonzalez Vazquez as an authorized verifier for EPD Hub

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	CEDRAL LAP
Place(s) of raw material origin	Mainly Europe
Place of production	Kuiermansstraat 1, 1880 Kapelle-op-den-Bos, Belgium
Place(s) of installation and use	Europe
Period for data	January 2023 - December 2023
Averaging in EPD	Single product
Variation in GWP-fossil for A1-A3 (%)	Not applicable
A1-A3 Specific data (%)	83 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m² of CEDRAL lap with thickness of 10 mm
Declared unit mass	16.4 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	7.10
GWP-total, A1-A3 ($kgCO_2e$)	4.70
Secondary material, inputs (%)	5.81
Secondary material, outputs (%) landfill scenario/ recycling scenario	0 / 100
Total energy use, A1-A3 (kWh)	23.2
Net freshwater use, A1-A3 (m^3)	0.08

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

The manufacturer is leading supplier of quality products for architecturally sophisticated facades, roofs and building boards made of fibre cement. The manufacturer has an environment, health and safety management system which is ISO 14001 and ISO 45001 certified. The quality management system of the company and the production facility are certified according to ISO 9001. The manufacturer is part of the global Etex Group of Companies, which operates across Europe, Africa, Near & Middle East and South America. The Etex group operates more than 160 sites in 45 countries and employs over 13500 people worldwide.

PRODUCT DESCRIPTION

CEDRAL sidings are steam-hardened reinforced fibre cement planks produced at Kapelle-op-den-Bos production plant, Belgium. They are mainly made of sand, cement, cellulose and wollastonite.

They exist in two finishes: smooth or structured (wood relief). Planks are coated and available in various colours.

Cedral sidings are used as board-like façade cladding for back-ventilated façades. For both smooth and structured panels several installation methods are provided in horizontal and vertical applications. The CEDRAL LAP can be applied with and without overlap (undulating lay pattern, flat lay pattern, lapped lay pattern and open joint fixing).

Within Etex, there is the commitment to reduce the use of virgin and non-renewable materials by optimizing our current processes related to waste management and developing responsible sourcing, through innovation and partnerships.
For the reference year 2023, CEDRAL sidings contain 18.2 % circular content:

- 6,7 % pre-consumer recycled content
- 7,0 % renewable material content
- 4,5 % waste derived material content

Further information can be found in the Recycled Content & Circular Content Declaration available upon request.

This EPD is representative and relevant for all CEDRAL LAP sidings, produced at Kapelle-op-den-Bos production plant, Belgium covering the full colour range.

This EPD presents the environmental impacts for the production of 1 m² of CEDRAL LAP with a thickness of 10 mm, installed without overlap and weight of 16.4 kg per installed m², a reference service life of 60 years and its related impacts over the cradle to grave life-cycle modules.
The environmental impacts of the product with another installation method can be considered as proportional to the weight of the installed product.

Further information can be found at https://www.cedral.world.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	90.5	World, Europe
Fossil materials	2.8	Europe
Bio-based materials	6.7	World, Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.39
Biogenic carbon content in packaging, kg C	0.27

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m² of CEDRAL LAP with thickness of 10 mm
Mass per declared unit	14.9 kg
Functional unit	1 m² of CEDRAL LAP with thickness of 10 mm, installed without overlap, a reference service life of 60 years and its related impacts over the cradle to grave life-cycle modules.
Reference service life	60 years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
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		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials for the final product (packaging for raw materials was neglectable) and other ancillary materials (such as the process water; other consumables used during production were neglectable).
Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage.
The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The fibre cement production waste is partly internally recycled and partly sent to recycling by truck over 50km.

Transport for raw materials considers the distance from the manufacturing location of the raw material to the production plant and the modelling of the relevant transportation type (e.g. bulk sea fret, road lorry, train, ...) for each raw material.
More than 85 % of the raw materials are sourced from suppliers within a radius of 150 from our factory.

Regarding the energy used, natural gas, steam and electricity were consumed during manufacturing. The electricity used in the manufacturing plant is 100% sourced from the renewable sources.
The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

For the transportation from the production plant to the building site (A4), a scenario is assumed with a transportation distance of 100 km and using a lorry as transportation method. For other transportation distances with lorry the impacts can be easily calculated by multiplying the impacts in module A4 with the lorry transport distance to the specific location and dividing by 100.

Installation (A5) of the product is according to the following scenario(s): fixation of the CEDRAL LAP to a substructure without overlap. To take into

account the impacts of a certain overlap one should multiply the results declared in this EPD with a specific correction factor.
This correction factor can be calculated based on the weight of the sidings needed for covering 1 m² divided by the declared weight of 1 m² of CEDRAL LAP in this EPD being 16.4 kg.
This EPD declares the screws and energy consumption to fixate the CEDRAL LAP, but does not include the substructure as several substructures are possible.
During the installation, some losses may occur. For this study, an average loss rate of 5 % is used (scenario considered for the fibre cement losses: landfill, truck transport 50 km).
All packaging material is transported to EoL according to the following scenarios: landfill 50 km; recycling 100 km. Also waste treatment of the packaging materials is included assuming 90% re-use/10% recycling for the wooden pallet, 100% recycling for the cardboard and 50% landfill/50% recycling for the plastic strap.

PRODUCT USE AND MAINTENANCE (B1-B7)

The product has an estimated reference service life of 60 years, providing the product is installed as per Etex recommendations. In such case, the product will last during its life of use generally without any requirements for maintenance, repair, replacement, or refurbishment, providing normal and no accidental conditions of usage are encountered. The product will also not need any operational energy nor operational water to fulfil its duty, once installed in the building.

The only impact during the use phase is that of carbonation, where some CO_2 is adsorbed from the atmosphere over the lifetime. Depending on the application, the degree of carbonation will vary. The carbonation is calculated for the outdoor use scenario and reported in the B1 module.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Two possible end-of-life scenarios are considered:

Scenario 1: 100% landfilling scenario: 100% of product(+ fixing) from demolition wastes are going to landfill at end of life (C4).

Scenario 2: 100% recycling scenario: 100% of product (+fixing) from demolition wastes are going to recycling at end of life (C3).

For the dismantling of the product in C1, the same amount of energy was considered as for fixing the product during installation is.

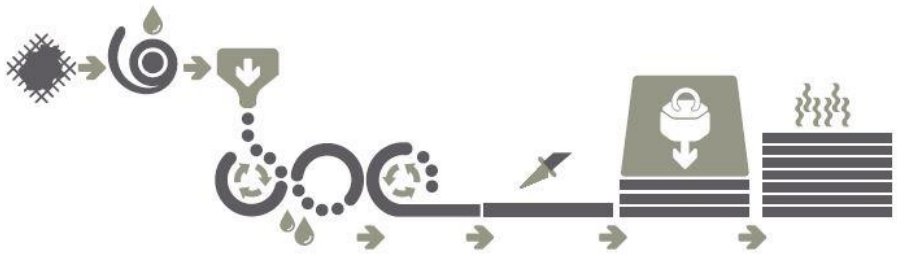
The transport of the waste to the end-of-life (C2) is considered to be 50 km from the plant in the landfilling scenarios and 100 km from the plant in the recycling scenario. Outside the system boundaries, module D shows benefits and loads from the recycling processes. In scenario 1 these are related to the 100% recycling of the packaging materials (wooden pallet, strap and cardboard). In scenario 2 these are related to the 100% recycling of the product, the packaging materials and the fixing materials.

MANUFACTURING PROCESS

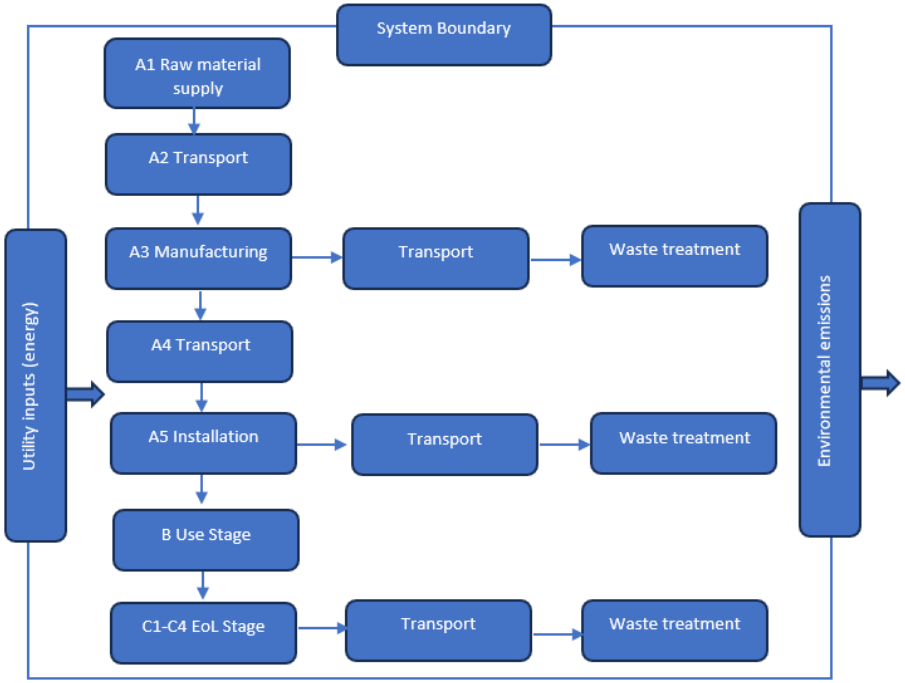
DESCRIPTION

CEDRAL LAP sidings are manufactured through the Hatschek process where the raw materials are first mixed together with water to form a slurry. No potable water is used in the industrial processes. The slurry is then pumped into several vats with rotating cylindrical sieves on the surface of which a film of fibre cement is formed through a sieving mechanism as they rotate, which is then transferred to a felt belt traveling overhead. This thin layer of fibre cement is then dewatered before being transferred via the felt belt to a forming drum on which several layers of fibre cement are collected and squeezed together until the required thickness is achieved. Once this occurs, this fresh sheet of fibre cement is cut by an automatic cutting knife. A conveyor then transports the sheet to where all the sheets are stacked for curing. The board is autoclaved under saturated steam pressure and dried before finishing. Finally, the sidings are coated with acrylic paint.

All material which is cut off or sanded away or waste from damaged or broken sidings is fully recycled within the company or by an external company as raw material for cement production.



See below the included life cycle stages within the system boundary of this study:



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3 %	Not applicable

All CEDRAL Lap sidings covered in this EPD are produced in the same factory. The results declared in this EPD are for CEDRAL LAP, 10 mm, installed without overlap. To take into account the impacts of a certain overlap one should multiply the results declared in this EPD with a specific correction factor as discussed under paragraph "TRANSPORT AND INSTALLATION".

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

- Electricity transmission and distribution losses :
https://data.worldbank.org/indicator/EG.ELC.LOSS.ZS

- CO2 uptake by carbonation :

EN16757 Sustainability of construction works - Environmental product declarations - Product Category rules for concrete and concrete elements; annex BB

https://www.greenbooklive.com/filelibrary/EN_15804/BRE-PN514-EN15804-A2-PCR-V3.1.pdf

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
GWP – total[1)]	kg CO_2e	4,70E+00	3,24E-01	1,53E+00	-1,98E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,96E-03	1,56E-01	3,12E-01	0,00E+00	1,94E+00	1,54E+00	0,00E+00	-1,02E-01	-1,48E+00
GWP – fossil	kg CO_2e	7,10E+00	3,24E-01	5,54E-01	-1,98E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,92E-03	1,56E-01	3,11E-01	0,00E+00	5,05E-01	1,02E-01	0,00E+00	-1,95E-03	-3,92E-02
GWP – biogenic	kg CO_2e	-2,41E+00	6,51E-05	9,77E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,33E-05	3,13E-05	6,26E-05	0,00E+00	1,44E+00	1,44E+00	0,00E+00	-1,00E-01	-1,44E+00
GWP – LULUC	kg CO_2e	1,12E-02	1,16E-04	6,66E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,82E-05	5,59E-05	1,12E-04	0,00E+00	3,03E-04	5,85E-05	0,00E+00	5,11E-07	5,44E-06
Ozone depletion pot.	kg $CFC\text{-}_{11}e$	1,73E-07	6,45E-09	9,72E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,09E-10	3,10E-09	6,20E-09	0,00E+00	2,78E-09	2,97E-09	0,00E+00	-2,86E-08	-2,90E-08
Acidification potential	mol H^+e	2,46E-02	6,75E-04	2,36E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,48E-05	3,24E-04	6,48E-04	0,00E+00	2,76E-03	7,26E-04	0,00E+00	-1,03E-05	-8,55E-04
EP-freshwater[2)]	kg Pe	6,34E-04	2,18E-05	4,19E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,52E-06	1,05E-05	2,10E-05	0,00E+00	2,32E-04	8,42E-06	0,00E+00	-3,50E-09	-1,53E-06
EP-marine	kg Ne	6,49E-03	1,62E-04	5,96E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,46E-06	7,78E-05	1,56E-04	0,00E+00	5,10E-04	2,77E-04	0,00E+00	-1,02E-06	-3,01E-04
EP-terrestrial	mol Ne	7,24E-02	1,75E-03	5,16E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,90E-05	8,40E-04	1,68E-03	0,00E+00	5,55E-03	3,02E-03	0,00E+00	-1,35E-05	-4,27E-03
POCP ("smog")[3)]	kg NMVOCe	2,20E-02	1,12E-03	1,62E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,61E-05	5,39E-04	1,08E-03	0,00E+00	2,11E-03	1,08E-03	0,00E+00	-6,79E-06	-9,39E-04
ADP-minerals & metals4)	kg Sbe	1,21E-05	1,08E-06	6,26E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,00E-08	5,18E-07	1,04E-06	0,00E+00	1,01E-05	1,63E-07	0,00E+00	-3,17E-08	-2,05E-07
ADP-fossil resources	MJ	6,80E+01	4,56E+00	5,97E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,38E-01	2,19E+00	4,38E+00	0,00E+00	5,38E+00	2,51E+00	0,00E+00	-3,66E-02	-4,28E-01
Water use[5)]	m^3e depr.	3,07E+00	2,27E-02	1,87E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,76E-03	1,09E-02	2,18E-02	0,00E+00	1,24E-01	7,25E-03	0,00E+00	4,59E-04	-1,33E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
Particulate matter	Incidence	1,82E-07	2,39E-08	1,32E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,24E-10	1,15E-08	2,29E-08	0,00E+00	4,24E-08	1,65E-08	0,00E+00	-9,86E-11	-1,25E-08
Ionizing radiation[6)]	kBq U235e	1,97E-01	5,88E-03	1,49E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,81E-03	2,83E-03	5,65E-03	0,00E+00	2,52E-02	1,58E-03	0,00E+00	2,03E-04	3,54E-03
Ecotoxicity (freshwater)	CTUe	6,40E+01	6,07E-01	3,54E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,10E-02	2,91E-01	5,83E-01	0,00E+00	2,46E+00	2,11E-01	0,00E+00	4,78E-03	-4,22E-01
Human toxicity, cancer	CTUh	1,58E-09	5,44E-11	9,36E-11	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,00E-12	2,61E-11	5,23E-11	0,00E+00	9,88E-10	1,89E-11	0,00E+00	-1,10E-13	5,41E-11
Human tox. non-cancer	CTUh	8,90E-08	2,89E-09	5,13E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-10	1,39E-09	2,77E-09	0,00E+00	1,06E-08	4,34E-10	0,00E+00	-3,02E-11	-8,13E-11
SQP[7)]	-	6,20E+01	2,76E+00	3,79E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,07E-02	1,32E+00	2,65E+00	0,00E+00	2,46E+02	4,95E+00	0,00E+00	-5,43E-02	-2,65E-01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
Renew. PER as energy[8)]	MJ	2,41E+01	7,99E-02	1,72E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,78E-02	3,83E-02	7,67E-02	0,00E+00	4,78E-01	2,43E-02	0,00E+00	2,62E-02	3,91E-02
Renew. PER as material	MJ	2,13E+01	0,00E+00	-8,51E+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	0,00E+00	0,00E+00	0,00E+00	-1,28E+01	-1,28E+01	0,00E+00	9,00E-01	9,00E-01
Total use of renew. PER	MJ	4,54E+01	7,99E-02	-6,79E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,78E-02	3,83E-02	7,67E-02	0,00E+00	-1,23E+01	-1,28E+01	0,00E+00	9,26E-01	9,39E-01
Non-re. PER as energy	MJ	4,90E+01	4,56E+00	2,76E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,38E-01	2,19E+00	4,38E+00	0,00E+00	5,38E+00	2,51E+00	0,00E+00	-7,91E-02	-4,70E-01
Non-re. PER as material	MJ	8,05E+00	0,00E+00	-5,37E+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	0,00E+00	0,00E+00	0,00E+00	-2,69E+00	-2,69E+00	0,00E+00	2,49E+00	2,49E+00
Total use of non-re. PER	MJ	5,71E+01	4,56E+00	-5,09E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,38E-01	2,19E+00	4,38E+00	0,00E+00	2,69E+00	-1,75E-01	0,00E+00	2,41E+00	2,02E+00
Secondary materials	kg	1,50E+00	2,12E-03	9,99E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,28E-05	1,02E-03	2,03E-03	0,00E+00	4,28E-02	6,32E-04	0,00E+00	2,37E-03	3,58E-02
Renew. secondary fuels	MJ	6,50E+00	2,68E-05	3,25E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,82E-07	1,29E-05	2,57E-05	0,00E+00	3,51E-05	1,31E-05	0,00E+00	3,54E-05	2,85E-05
Non-ren. secondary fuels	MJ	4,09E+00	0,00E+00	2,04E-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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	8,42E-02	6,22E-04	5,04E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,19E-04	2,98E-04	5,97E-04	0,00E+00	2,93E-03	2,61E-03	0,00E+00	1,73E-05	-2,25E-04

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
Hazardous waste	kg	2,48E-01	6,63E-03	1,43E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,49E-04	3,18E-03	6,37E-03	0,00E+00	1,35E-01	2,78E-03	0,00E+00	-5,29E-05	4,10E-03
Non-hazardous waste	kg	1,88E+01	1,40E-01	1,32E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,70E-02	6,72E-02	1,34E-01	0,00E+00	1,28E+00	6,34E-02	0,00E+00	1,14E-02	-1,02E-02
Radioactive waste	kg	6,34E-05	1,46E-06	5,49E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,78E-07	7,02E-07	1,40E-06	0,00E+00	6,38E-06	3,85E-07	0,00E+00	5,22E-08	9,13E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
Components for re-use	kg	6,40E-01	0,00E+00	5,97E-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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	8,79E-01	0,00E+00	1,67E-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	0,00E+00	0,00E+00	0,00E+00	1,64E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	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	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	0,00E+00
Exported energy	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	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	0,00E+00
Exported energy – Electricity	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	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	0,00E+00
Exported energy – Heat	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	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	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
Global Warming Pot.	kg CO_2e	6,99E+00	3,22E-01	5,43E-01	-1,98E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,93E-03	1,55E-01	3,09E-01	0,00E+00	5,02E-01	1,01E-01	0,00E+00	-1,79E-03	-3,88E-02
Ozone depletion Pot.	kg CFC-$_{11}e$	1,51E-07	5,14E-09	8,40E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,12E-11	2,47E-09	4,93E-09	0,00E+00	2,40E-09	2,36E-09	0,00E+00	-1,91E-08	-1,94E-08
Acidification	kg SO_2e	2,18E-02	5,42E-04	1,98E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,97E-05	2,60E-04	5,20E-04	0,00E+00	2,27E-03	5,37E-04	0,00E+00	-8,89E-06	-5,58E-04
Eutrophication	kg PO_4^3e	5,11E-02	1,37E-04	2,63E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,84E-06	6,57E-05	1,31E-04	0,00E+00	3,32E-04	1,71E-04	0,00E+00	1,43E-05	-1,18E-04
POCP (“smog”)	kg C_2H_4e	7,52E-03	5,73E-05	4,28E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,62E-06	2,75E-05	5,51E-05	0,00E+00	2,86E-04	5,08E-05	0,00E+00	2,14E-07	-3,55E-05
ADP-elements	kg Sbe	1,33E-05	1,06E-06	6,36E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,97E-08	5,07E-07	1,01E-06	0,00E+00	1,01E-05	1,59E-07	0,00E+00	-3,21E-08	-2,07E-07
ADP-fossil	MJ	6,47E+01	4,46E+00	5,55E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,07E-02	2,14E+00	4,29E+00	0,00E+00	4,95E+00	2,49E+00	0,00E+00	-4,03E-02	-4,91E-01

ENVIRONMENTAL IMPACTS – FRENCH NATIONAL COMPLEMENTS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
ADP-elements	kg Sbe	1,14E-05	1,06E-06	8,16E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,97E-08	5,07E-07	1,01E-06	0,00E+00	1,01E-05	1,60E-07	0,00E+00	-3,21E-08	-2,07E-07
Hazardous waste disposed	kg	2,48E-01	6,63E-03	1,43E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,49E-04	3,18E-03	6,37E-03	0,00E+00	1,35E-01	2,78E-03	0,00E+00	-5,29E-05	4,10E-03
Non-haz. waste disposed	kg	1,87E+01	1,40E-01	1,30E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,70E-02	6,72E-02	1,34E-01	0,00E+00	1,28E+00	6,34E-02	0,00E+00	1,14E-02	-1,02E-02
Air pollution	m^3	6,75E+02	5,83E+01	4,49E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,93E+00	2,80E+01	5,60E+01	0,00E+00	2,60E+02	2,34E+01	0,00E+00	-1,69E-01	-1,58E+02
Water pollution	m^3	2,93E+01	2,53E+00	1,97E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,13E-01	1,21E+00	2,42E+00	0,00E+00	1,57E+00	1,28E+00	0,00E+00	-1,58E-02	-1,05E-01

ENVIRONMENTAL IMPACTS – GWP-GHG

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
GWP-GHG[9)]	kg CO_2e	7,11E+00	3,24E-01	5,54E-01	-1,98E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,94E-03	1,56E-01	3,11E-01	0,00E+00	5,05E-01	1,02E-01	0,00E+00	-1,95E-03	-3,92E-02

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

ENVIRONMENTAL IMPACTS – BEPALINGSMETHODE, NETHERLANDS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
Shadow price	€	1,08E+00	3,66E-02	6,33E-02	-9,90E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,17E-03	1,76E-02	3,52E-02	0,00E+00	1,56E-01	1,55E-02	0,00E+00	-7,59E-05	-7,67E-03
Terrestrial ecotoxicity	DCB eq	1,61E-02	1,09E-03	1,11E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,58E-05	5,26E-04	1,05E-03	0,00E+00	3,54E-03	3,63E-04	0,00E+00	-2,74E-05	-1,30E-04
Seawater ecotoxicity	DCB eq	6,44E+02	4,25E+01	4,30E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,98E+00	2,04E+01	4,08E+01	0,00E+00	1,96E+02	1,57E+01	0,00E+00	-3,48E-01	-5,48E+00
Freshwater ecotoxicity	DCB eq	4,39E-02	3,82E-03	3,31E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,06E-04	1,84E-03	3,67E-03	0,00E+00	5,29E-02	1,25E-03	0,00E+00	-3,57E-05	5,85E-04
Human ecotoxicity	DCB eq	1,33E+00	1,36E-01	1,11E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,56E-03	6,52E-02	1,30E-01	0,00E+00	1,07E+00	5,30E-02	0,00E+00	-4,27E-04	-1,99E-02
EEE	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	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	0,00E+00
ETE	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	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	0,00E+00
ADP Fossil Fuels	kg Sbe	2,99E-02	2,15E-03	2,69E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,40E-05	1,03E-03	2,06E-03	0,00E+00	2,38E-03	1,20E-03	0,00E+00	-1,94E-05	-2,36E-04

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality / *Electricity CO2e / kWh*	Electricity production, hydro, run-of-river (Reference product: electricity, high voltage); Italy; EI 3.10.1/ 0,0044kg CO2e/kW Electricity production, hydro, run-of-river (Reference product: electricity, high voltage); Spain; EI 3.10.1/ 0,0044kg CO2e/kWh Electricity production, hydro, run-of-river (Reference product: electricity, high voltage); Portugal; EI 3.10.1/ 0,0044kg CO2e/kWh Electricity production, hydro, run-of-river (Reference product: electricity, high voltage); Finland; EI 3.10.1/ 0,0044kg CO2e/kWh Electricity production, hydro, run-of-river (Reference product: electricity, high voltage); Slovakia; EI 3.10.1/ 0,0044kg CO2e/kWh Electricity production, hydro, reservoir, non-alpine region (Reference product: electricity, high voltage); Iceland; EI 3.10.1/ 0,006kg CO2e/kWh Electricity production, hydro, reservoir, alpine region (Reference product: electricity, high voltage); Norway; EI 3.10.1/ 0,0061kg CO2e/kWh Electricity production, hydro, reservoir, alpine region (Reference product: electricity, high voltage); France; EI 3.10.1/ 0,0061kg CO2e/kWh Electricity production, wind, 1-3MW turbine, onshore (Reference product: electricity, high voltage); Denmark; EI 3.10.1/ 0,0135kg CO2e/kWh Electricity production, wind, 1-3MW turbine, onshore (Reference product: electricity, high voltage); Portugal; EI 3.10.1/ 0,0147kg CO2e/kWh Electricity production, wind, 1-3MW turbine, onshore (Reference product: electricity, high voltage); Spain; EI 3.10.1/ 0,0154kg CO2e/kWh Electricity production, wind, 1-3MW turbine, onshore (Reference product: electricity, high voltage); France; EI 3.10.1/ 0,0167kg CO2e/kWh Electricity production, wind, <1MW turbine, onshore (Reference product: electricity, high voltage); Europe; EI 3.10.1/ 0,0175kg CO2e/kWh Electricity production, wind, 1-3MW turbine, onshore (Reference product: electricity, high voltage); Croatia; EI 3.10.1/ 0,0183kg CO2e/kWh Electricity production, wind, 1-3MW turbine, onshore (Reference product: electricity, high voltage); Italy; EI 3.10.1/ 0,0203kg CO2e/kWh Electricity production, wind, 1-3MW turbine, onshore (Reference product: electricity, high voltage); Germany; EI 3.10.1/ 0,0206kg CO2e/kWh Electricity production, wind, 1-3MW turbine, onshore (Reference product: electricity, high voltage); Estonia; EI 3.10.1/ 0,0207kg CO2e/kWh Electricity production, solar tower power plant, 20 MW (Reference product: electricity, high voltage); Spain; EI 3.10.1/ 0,0481kg CO2e/kWh Electricity production, photovoltaic, 570kWp open ground installation, multi-Si (Reference product: electricity, low voltage); Italy; EI 3.10.1/ 0,0767kg CO2e/kWh Electricity production, photovoltaic, 570kWp open ground installation, multi-Si (Reference product: electricity, low voltage); Germany; EI 3.10.1/ 0,1kg CO2e/kWh Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted (Reference product: electricity, low voltage); Belgium; EI 3.10.1/ 0,11kg CO2e/kWh Heat and power co-generation, biogas, gas engine (Reference product: electricity, high voltage); France; EI 3.10.1/ 0,12kg CO2e/kWh Heat and power co-generation, biogas, gas engine (Reference product: electricity, high voltage); Belgium; EI 3.10.1/ 0,12kg CO2e/kWh
District heating data source and quality / *District heating CO2e / MJ*	Heat production, natural gas, at industrial furnace >100kW (Reference product: heat, district or industrial, natural gas); Belgium; EI 3.10.1 / *0.0773 kg CO2e/MJ*

Transport scenario documentation A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	diesel powered truck
Average transport distance, km	100
Capacity utilization (including empty return) %	Ecoinvent scenario
Bulk density of transported products	Ecoinvent scenario
Volume capacity utilization factor	<1

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation	0,032 kg stainless steel screws
Water use / m^3	/
Other resource use / kg	/
Description of energy type and consumption during the installation process	0,018 kWh low voltage electricity
Waste materials on the building site before waste processing, generated by the product's installation	0.63 kg wooden pallet packaging 0.12 kg PE packaging 0.82 kg fibre cement
Output materials	0.69 kg collection for recycling 0.88 kg collection for disposal
Direct emissions to ambient air, soil and water / kg	/

End of life scenario documentation

Scenario information in landfill scenario	Value
Collection process – kg collected separately	/
Collection process – kg collected with mixed waste	16.4 kg
Recovery process – kg for re-use	/
Recovery process – kg for recycling	/
Recovery process – kg for energy recovery	/
Disposal (total) – kg for final deposition	16.4 kg
Scenario assumptions for transport to landfill	Diesel powered truck, 50km

Scenario information in recycling scenario	Value
Collection process – kg collected separately	16.4 kg
Collection process – kg collected with mixed waste	/
Recovery process – kg for re-use	/
Recovery process – kg for recycling	16.4 kg
Recovery process – kg for energy recovery	/
Disposal (total) – kg for final deposition	/
Scenario assumptions for transport to recycling	Diesel powered truck, 100km

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Magaly Gonzalez Vazquez as an authorized verifier for EPD Hub Limited
12.10.2025

VERIFIED ISO 14025