

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

EQUITONE [natura], [natura] PRO, [textura], [pictura], grey cement, coated
Etex



EQUITONE
Fibre cement facade materials

EPD HUB, HUB-2111

Publishing date 18 October 2024, last updated on 18 October 2024, valid until 18 October 2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Etex Germany Exteriors GmbH
Address	Dyckerhoffstraße 95-105, 59269 Beckum, Germany
Contact details	info@etexgroup.com
Website	https://www.equitone.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 und ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
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	Peggy Van De Velde, PRTC N.V., Etex Group
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

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	EQUITONE [natura], [natura] PRO, [textura], [pictura], grey cement, coated
Additional labels	
Product reference	
Place of production	Beckum, Germany
Period for data	Calendar year 2022
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	(-7) to (+20) %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m ² EQUITONE [natura] produced with grey cement with thickness 8mm
Declared unit mass	14.8 kg (20°C/65%RH)
GWP-fossil, A1-A3 (kgCO ₂ e)	14.0
GWP-total, A1-A3 (kgCO ₂ e)	12.8
Secondary material, inputs (%)	1.61
Secondary material, outputs (%) - landfilling scenario	0.1
Secondary material, outputs (%) - recycling scenario	100
Total energy use, A1-A3 (kWh)	45.9
Net freshwater use, A1-A3 (m ³)	0.21

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Etex Germany Exteriors GmbH is a leading supplier of quality products for architecturally sophisticated facades and roofs made of fibre cement and building boards made of fibre cement and cement-bonded particleboard.

Etex Germany Exteriors GmbH 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 energy management system of the company is certified according to ISO 50001.

Etex Germany Exteriors GmbH 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 13 500 people worldwide.

PRODUCT DESCRIPTION

This EPD is representative and relevant for the following EQUITONE range: EQUITONE [natura] 8 mm, EQUITONE [natura] PRO 8 mm, EQUITONE [textura] 8 mm and EQUITONE [pictura] 8 mm produced with grey cement. For those produced with white cement a separate EPD was created. All these EQUITONE panels are through-coloured large-size fibre cement facade materials.

The results declared in this EPD are for EQUITONE [natura] 8 mm using the anthracite base panel, which was chosen as representative product for the covered group. The representativeness of the EQUITONE [natura] 8 mm using the anthracite base panel has been checked by comparing its results with the results of all the other 8mm covered products in the EPD. The comparative analysis confirmed that the maximal variation is below the allowable limit for the GWP-fossil for A1-A3 and as a result, it can be considered as representative for all the 8mm products included in the EPD.

This EPD presents environmental impacts valid for 1m² with thickness 8mm of the product. The environmental impacts of the product with 12mm

thickness can be considered as proportional to the weight of the product. Accordingly, the environmental impacts for the 12mm can be obtained by multiplying the results by the conversion factor 1.5.

The panels are naturally hardened fibre cement panels comprising cellulose and polymer fibres for water retention, improved tensile load distribution and increased breaking load and distortion.

EQUITONE [natura] is a high-density fibre cement panel with a through coloured core, and a coloured semitransparent double layer acrylic finish which results in the structure (fibres) of the material shining through.

EQUITONE [natura] PRO is a high-density fibre cement panel with a through coloured core, and a coloured semi-transparent double layer acrylic finish which results in the structure (fibres) of the material shining through. The surface finish is matt with a UV hardened PU topcoat (front side), providing a hard, dirt resistant surface finish with a high abrasion resistance and a permanent and durable graffiti protection.

EQUITONE [textura] is a high-density fibre cement panel with a through coloured core, a coloured double layer acrylic finish, fillite filling and a hot-film sealing topcoat (front side) which provides a dirt resistant finish. The surface has a grainy structure. The rear receives a transparent back-sealing coating.

EQUITONE [pictura] is a high-density fibre cement panel with a through coloured core, and a coloured double layer acrylic coating. The surface finish is matt with a UV hardened PU topcoat (front side), providing a hard, dirt resistant surface finish with a high abrasion resistance and a permanent and durable graffiti protection.

EQUITONE leads in sustainable architecture with Cradle to Cradle Certified[®] fibre cement facades.

Further information can be found at <https://www.equitone.com>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals		
Minerals	92.9	Europe
Fossil materials	4.6	Europe
Bio-based materials	2.5	World

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.16
Biogenic carbon content in packaging, kg C	0.18

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m ² EQUITONE [natura] produced with grey cement with thickness 8mm
Mass per declared unit	14.8 kg (20°C/65%RH)
Functional unit	1m ² EQUITONE [natura] produced with grey cement with thickness 8mm installed in facades
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	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 and other ancillary materials (such as the various types of 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.

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. Over 65% of our raw materials are sourced from suppliers within a radius of 150 km from our factories.

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 (hydropower and solar panels).

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, a scenario was 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 panel to a substructure. This EPD declares the screws and energy consumption to fixate the panels, but does not include the substructure as several substructures are possible. During the installation, depending on how the EQUITONE panels are cut, there is a loss rate between 5-30%. For this study, an average loss rate of 10% is used (scenario considered : landfill, transport 50km). All packaging material for the EQUITONE panels is transported to EoL (scenario: landfill 50km/recycling 100km) and waste treatment is included.

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 CO₂ is adsorbed from the atmosphere over the life time of the panel. Depending on the application where the panels are used, the degree of carbonation will vary. The carbonation was calculated for the outdoor use scenarios 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 for the Equitone panels:

Scenario 1: 100% landfilling scenario: 100% of panels from demolition wastes are going to landfill at end of life.

Scenario 2: 100% recycling scenario: 100% of panels from demolition wastes are going to recycling at end of life.

In both scenarios, the screws used for installation are considered to be 100% recycled.

For the dismantling of the Equitone panels in C1, the same amount of energy was assumed as for the installation.

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 recycling of the packaging materials and the screws. In scenario 2 these are related to the recycling of the fibre cement board, the packaging materials and the screws.

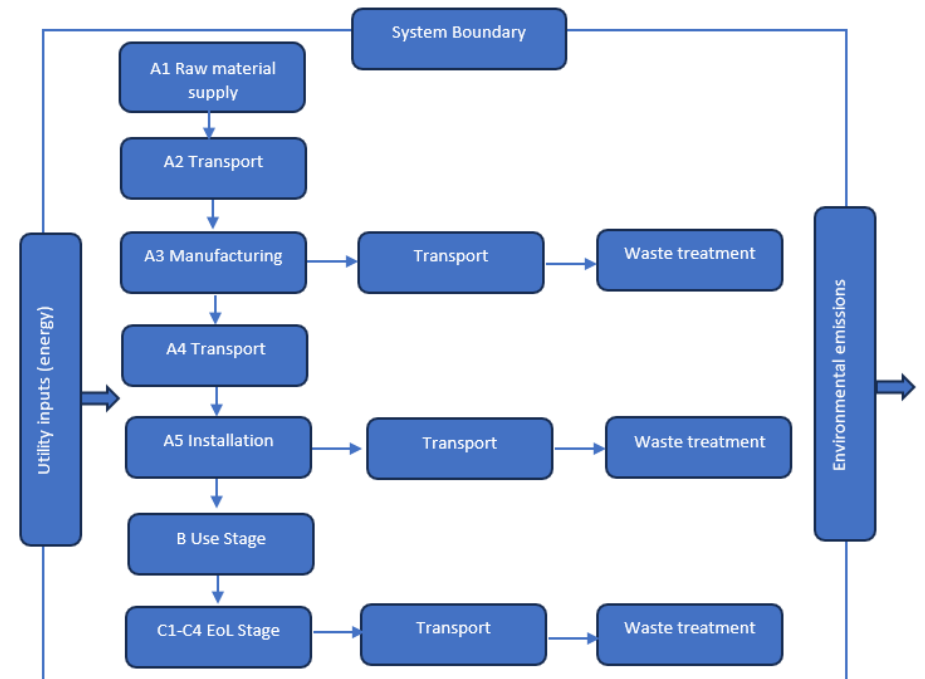
MANUFACTURING PROCESS

DESCRIPTION

The EQUITONE products are large format panels made of fibre cement. They are manufactured through the Hatschek process where the raw materials are first mixed together with water to form a slurry. For this we use a minimum of potable water in 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 with an interleaving steel plate. The stacked sheets are then highly compressed, resulting in a high density material. This is followed by a curing process where the panels harden under ambient temperature and without vapour pressure. Subsequently the EQUITONE products are then dried and coated.



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.

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	No allocation

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Representative product
Variation in GWP-fossil for A1-A3	(-7) to (+20) %

EQUITONE [natura], EQUITONE [natura] PRO, EQUITONE [textura] and EQUITONE [pictura] are produced in the same factory and are all through-coloured fibre cement facade panel. This EPD refers to all declared materials produced with grey cement. All products covered in this EPD have similar recipe, differences are limited to the pigmentation and finishing coatings received.

The results declared in this EPD are for EQUITONE [natura] 8 mm using the anthracite baseboard, which was chosen as representative product for the group as it represents the highest volume of the grouped products. LCA calculations were performed for each of the covered products and the results were compared to the results for the representative product. The variation analysis confirmed that the maximal variation was below the allowable limit for the GWP-fossil for A1-A3.

The products also exist in a 12 mm variant for which the environmental impacts can be considered as proportional to the weight of the product. Accordingly, the environmental impacts for the 12 mm can be easily obtained by multiplying the results in this EPD by the conversion factor 1.5.

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 v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

Two end-of-life scenarios have been calculated: “100% landfill” (referred in the tables as modules C2/1, C3/1, C4/1 and D/1) and “100% recycling” (referred in the tables as modules C2/2; C3/2; C4/2 and D/2).

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

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 ₂ e	1,28E+01	2,63E-01	2,21E+00	-4,56E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,37E-03	1,21E-01	2,53E-01	2,13E-04	6,20E-01	6,71E-01	0,00E+00	-7,71E-01	-1,40E+00
GWP – fossil	kg CO ₂ e	1,40E+01	2,63E-01	1,54E+00	-4,56E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,36E-03	1,21E-01	2,53E-01	3,37E-04	2,71E-02	7,81E-02	0,00E+00	-3,03E-03	-3,37E-02
GWP – biogenic	kg CO ₂ e	-1,27E+00	0,00E+00	6,74E-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	-1,24E-04	5,93E-01	5,93E-01	0,00E+00	-7,68E-01	-1,37E+00
GWP – LULUC	kg CO ₂ e	4,07E-03	1,10E-04	4,77E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,95E-06	4,84E-05	1,06E-04	4,42E-07	6,13E-05	7,38E-05	0,00E+00	2,68E-04	2,58E-04
Ozone depletion pot.	kg CFC-11e	5,22E-07	5,67E-08	6,66E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,63E-10	2,81E-08	5,45E-08	4,17E-11	1,45E-09	3,16E-08	0,00E+00	1,04E-09	-4,57E-09
Acidification potential	mol H ⁺ e	3,58E-02	7,74E-04	4,30E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,05E-05	3,44E-04	7,44E-04	4,28E-06	1,57E-04	7,35E-04	0,00E+00	3,20E-05	-7,43E-04
EP-freshwater ²⁾	kg Pe	3,87E-04	2,23E-06	4,00E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,65E-07	8,65E-07	2,14E-06	1,81E-08	2,79E-06	8,19E-07	0,00E+00	8,85E-07	6,66E-07
EP-marine	kg Ne	7,66E-03	1,54E-04	8,76E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,79E-06	6,86E-05	1,48E-04	9,05E-07	2,24E-05	2,54E-04	0,00E+00	-7,27E-07	-2,73E-04
EP-terrestrial	mol Ne	8,71E-02	1,72E-03	9,90E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,30E-05	7,63E-04	1,65E-03	1,05E-05	2,54E-04	2,80E-03	0,00E+00	-4,02E-05	-3,90E-03
POCP (“smog”) ³⁾	kg NMVOCe	2,55E-02	6,44E-04	2,92E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,19E-05	2,93E-04	6,19E-04	2,88E-06	7,09E-05	8,14E-04	0,00E+00	-8,87E-05	-8,98E-04
ADP-minerals & metals ⁴⁾	kg Sbe	3,11E-05	9,30E-07	6,10E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,67E-08	4,38E-07	8,94E-07	4,54E-08	2,75E-07	1,80E-07	0,00E+00	-4,82E-07	-6,10E-07
ADP-fossil resources	MJ	1,15E+02	3,81E+00	1,34E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,07E-01	1,80E+00	3,66E+00	4,57E-03	5,66E-01	2,14E+00	0,00E+00	2,19E-01	-1,63E-01
Water use ⁵⁾	m ³ e depr.	6,08E+00	1,68E-02	6,27E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,45E-03	8,44E-03	1,62E-02	8,86E-05	1,52E-02	6,80E-03	0,00E+00	3,02E-02	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, PEF

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	2,98E-07	2,09E-08	3,55E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,57E-11	9,76E-09	2,01E-08	5,60E-11	6,65E-10	1,48E-08	0,00E+00	-4,18E-10	-1,20E-08
Ionizing radiation ⁶⁾	kBq U235e	2,96E-01	1,78E-02	3,72E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,59E-03	9,46E-03	1,71E-02	5,10E-05	1,50E-02	9,69E-03	0,00E+00	1,15E-02	9,78E-03
Ecotoxicity (freshwater)	CTUe	5,02E+01	3,49E+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	7,17E-02	1,50E+00	3,36E+00	2,07E-02	4,10E-01	1,40E+00	0,00E+00	-2,19E-01	-3,32E+01
Human toxicity, cancer	CTUh	1,30E-08	9,84E-11	1,33E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,45E-12	4,62E-11	9,46E-11	6,34E-13	2,17E-11	3,49E-11	0,00E+00	8,21E-10	8,08E-10
Human tox. non-cancer	CTUh	3,45E-08	3,17E-09	4,29E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,43E-11	1,47E-09	3,05E-09	2,83E-11	4,70E-10	9,14E-10	0,00E+00	-1,83E-10	-5,49E-10
SQP ⁷⁾	-	8,03E+01	2,67E+00	9,07E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,59E-02	1,28E+00	2,57E+00	9,20E-03	3,29E-01	4,58E+00	0,00E+00	1,68E+00	1,46E+00

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	2,85E+01	4,53E-02	3,12E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,90E-02	2,62E-02	4,35E-02	8,10E-04	1,11E-01	1,86E-02	0,00E+00	1,51E-01	1,39E-01
Renew. PER as material	MJ	1,08E+01	0,00E+00	-5,88E+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	-4,95E+00	-4,95E+00	0,00E+00	6,39E+00	1,13E+01
Total use of renew. PER	MJ	3,94E+01	4,53E-02	-2,76E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,90E-02	2,62E-02	4,35E-02	8,10E-04	-4,84E+00	-4,93E+00	0,00E+00	6,54E+00	1,14E+01
Non-re. PER as energy	MJ	1,05E+02	3,81E+00	1,24E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,07E-01	1,80E+00	3,66E+00	4,57E-03	5,64E-01	2,14E+00	0,00E+00	2,11E-01	-1,71E-01
Non-re. PER as material	MJ	1,92E+01	0,00E+00	-1,76E+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	-1,74E+01	-1,74E+01	0,00E+00	1,18E+00	1,18E+00
Total use of non-re. PER	MJ	1,24E+02	3,81E+00	1,06E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,07E-01	1,80E+00	3,66E+00	4,57E-03	-1,68E+01	-1,53E+01	0,00E+00	1,39E+00	1,01E+00
Secondary materials	kg	7,55E-01	1,27E-03	8,77E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,10E-05	6,14E-04	1,22E-03	5,09E-06	1,42E-04	4,50E-04	0,00E+00	5,61E-02	5,59E-02
Renew. secondary fuels	MJ	9,45E+00	1,65E-05	9,45E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,93E-08	6,75E-06	1,58E-05	2,65E-07	7,42E-07	1,18E-05	0,00E+00	1,33E-06	-6,82E-06
Non-ren. secondary fuels	MJ	2,22E+01	0,00E+00	2,22E+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
Use of net fresh water	m ³	2,13E-01	4,54E-04	2,21E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,50E-05	2,30E-04	4,36E-04	2,68E-06	4,78E-04	2,35E-03	0,00E+00	8,86E-04	4,94E-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	3,22E-01	5,51E-03	3,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,93E-04	2,05E-03	5,30E-03	3,11E-05	2,17E-03	0,00E+00	0,00E+00	-1,43E-04	-1,13E-03
Non-hazardous waste	kg	5,76E+00	8,80E-02	2,14E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,05E-02	3,64E-02	8,46E-02	9,91E-04	1,27E-01	1,48E+01	0,00E+00	4,11E-02	3,28E-02
Radioactive waste	kg	1,09E-03	2,53E-05	1,39E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,32E-07	1,24E-05	2,44E-05	2,68E-08	4,08E-06	0,00E+00	0,00E+00	3,10E-06	6,33E-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	0,00E+00	0,00E+00	5,31E-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	0,00E+00
Materials for recycling	kg	2,26E-01	0,00E+00	1,49E-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	1,54E-02	1,49E+01	0,00E+00	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	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	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

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 ₂ e	1,29E+01	2,60E-01	1,42E+00	-4,56E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,31E-03	1,20E-01	2,50E-01	3,32E-04	2,68E-02	7,66E-02	0,00E+00	-1,44E-03	-3,14E-02
Ozone depletion Pot.	kg CFC-11e	7,54E-07	4,49E-08	8,80E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,28E-10	2,22E-08	4,32E-08	3,37E-11	1,25E-09	2,50E-08	0,00E+00	6,04E-10	-3,86E-09
Acidification	kg SO ₂ e	2,72E-02	6,35E-04	3,39E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,60E-05	2,82E-04	6,10E-04	3,46E-06	1,33E-04	5,55E-04	0,00E+00	3,12E-05	-4,75E-04
Eutrophication	kg PO ₄ ³ e	6,85E-03	1,40E-04	9,02E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,31E-05	6,09E-05	1,35E-04	1,14E-06	9,91E-05	1,20E-04	0,00E+00	2,88E-05	-9,54E-05
POCP (“smog”)	kg C ₂ H ₄ e	2,23E-03	3,15E-05	2,54E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,06E-06	1,43E-05	3,03E-05	1,31E-07	5,60E-06	2,33E-05	0,00E+00	-1,24E-05	-2,01E-05
ADP-elements	kg Sbe	3,24E-05	9,09E-07	6,26E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,66E-08	4,28E-07	8,74E-07	4,54E-08	2,74E-07	1,77E-07	0,00E+00	-4,90E-07	-6,17E-07
ADP-fossil	MJ	1,10E+02	3,81E+00	1,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,07E-01	1,80E+00	3,66E+00	4,57E-03	5,64E-01	2,14E+00	0,00E+00	2,18E-01	-1,64E-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	2,15E-05	9,09E-07	2,48E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,66E-08	4,28E-07	8,74E-07	4,54E-08	2,74E-07	1,77E-07	0,00E+00	-4,90E-07	-6,17E-07
Hazardous waste disposed	kg	3,23E-01	5,51E-03	3,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,93E-04	2,05E-03	5,30E-03	3,11E-05	2,17E-03	0,00E+00	0,00E+00	-1,43E-04	-1,13E-03
Non-haz. waste disposed	kg	5,52E+00	8,80E-02	2,10E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,05E-02	3,64E-02	8,46E-02	9,91E-04	1,27E-01	1,48E+01	0,00E+00	4,11E-02	3,28E-02
Air pollution	m³	7,32E+02	3,88E+01	8,38E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,48E+00	1,55E+01	3,73E+01	1,43E-01	8,15E+00	1,72E+01	0,00E+00	-8,34E+00	-1,11E+02
Water pollution	m³	1,52E+01	3,04E-01	1,87E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,23E-01	1,66E-01	2,92E-01	7,04E-03	5,18E-01	1,14E-01	0,00E+00	7,84E-01	7,46E-01

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

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 ₂ e	1,40E+01	2,63E-01	1,54E+00	-4,56E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,36E-03	1,21E-01	2,53E-01	3,37E-04	2,71E-02	7,81E-02	0,00E+00	-3,03E-03	-3,37E-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 characterization 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	€	5,78E-01	3,14E-02	6,85E-02	-2,28E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,09E-03	1,42E-02	3,02E-02	1,73E-04	5,45E-03	1,29E-02	0,00E+00	4,06E-04	-6,85E-03
Terrestrial ecotoxicity	DCB eq	8,41E-03	7,27E-04	1,08E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,91E-05	3,46E-04	6,98E-04	4,47E-06	2,45E-04	2,13E-04	0,00E+00	2,52E-04	1,98E-04
Seawater ecotoxicity	DCB eq	8,05E+02	3,97E+01	9,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,22E+00	1,60E+01	3,82E+01	2,18E-01	1,54E+01	1,35E+01	0,00E+00	5,39E+00	3,51E-01
Freshwater ecotoxicity	DCB eq	1,20E-01	3,97E-03	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,92E-05	1,89E-03	3,81E-03	8,85E-06	2,54E-04	1,33E-03	0,00E+00	1,43E-03	1,14E-03
Human ecotoxicity	DCB eq	2,48E+00	1,12E-01	2,86E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,90E-03	5,18E-02	1,08E-01	1,21E-03	1,18E-02	4,59E-02	0,00E+00	-5,50E-03	-2,83E-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	3,47E-02	1,83E-03	4,38E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,15E-05	8,67E-04	1,76E-03	2,20E-06	2,72E-04	1,03E-03	0,00E+00	1,05E-04	-7,89E-05

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? [Read more online](#)

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

18.10.2024

