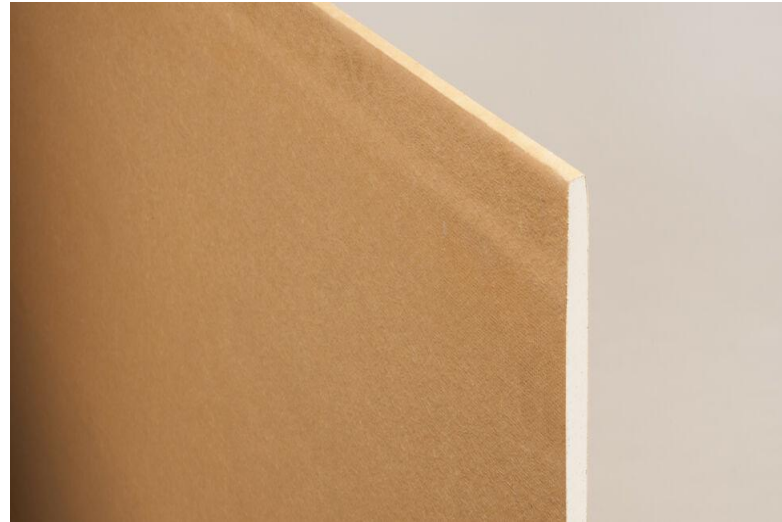


ENVIRONMENTAL PRODUCT DECLARATION

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

LaHydro 12.5mm

Etex Building Performance GmbH.



EPD HUB, HUB-2492

Publishing date 22 December 2024, last updated on 22 December 2024, valid until 22 December 2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Etex Building Performance GmbH.
Address	Scheifenkamp 16, 40878 Ratingen, Germany
Contact details	mail.bp.de@etexgroup.com
Website	https://www.siniat.de/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and 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	Parisa Rafiaani, 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	LaHydro 12.5mm
Additional labels	-
Product reference	-
Place of production	Peitz, Germany
Period for data	Calendar year 2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	Not applicable

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m ² of board with thickness 12.5mm
Declared unit mass	10.84 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	2.80
GWP-total, A1-A3 (kgCO ₂ e)	2.16
Secondary material, inputs (%)	65.58
Secondary material, outputs (%) - Landfilling scenario	0.16
Secondary material, outputs (%) - Recycling scenario	97.8
Total energy use, A1-A3 (kWh)	13.6
Net freshwater use, A1-A3 (m ³)	0.04

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Etex Building Performance GmbH is part of the global Etex Group of Companies, which operates across Europe, Africa, Near & Middle East and South America. Etex Building Performance GmbH. manufactures drywall products and systems for partitions, ceilings, wall linings and external sheathing purposes under the Siniat brand. Our products are used by builders through to some of the most acclaimed architects and construction companies in the country.

PRODUCT DESCRIPTION

LaHydro is a gypsum hard board made of aerated calcium sulphate di-hydrate with fillers, glass fibres and hydrophobic additives enclosed with non-woven cellulose liners. Core and liners are bonded with starch. LaHydro is classified as gypsum boards, type GM-FH1I according to DIN EN 15283-1 and equivalent to type GKFI according to DIN 18180 for wall and ceiling cladding in interior areas exposed to moisture and in outdoor areas not directly exposed to the weather. This EPD covers the 12.5 mm LaHydro board produced in the Peitz plant in Germany.

Geographic Representativeness of the EPD is Europe where the declared product is manufactured, used, or handled at the end of the product's lifespan.

Further information can be found at <https://www.siniat.de/>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0.00	-
Minerals	93.00	Europe
Fossil materials	6.30	Europe
Bio-based materials	0.70	Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.07
Biogenic carbon content in packaging, kg C	0.10

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m ² of board with thickness 12.5mm
Mass per declared unit	10.84 kg
Functional unit	1m ² of board to be installed on a sub-construction
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 and other ancillary materials. 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. Regarding the energy used, both natural gas and electricity were consumed during manufacturing. 100% of the electricity is sourced from renewable sources (100% hydropower). No process liquid water is released to the environment whereas water vapour is released in the atmosphere during calcination and drying. Specific manufacturing waste data is reported by each manufacturing location into the Etex internal information system. Based on this data, a representative production loss ratio was considered in the LCA calculations.

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 calculated by multiplying the impacts in module A4 with the lorry transport distance to the specific location and dividing by 100. Vehicle capacity utilization volume factor is assumed to be 100 % which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients.

Transportation does not cause losses as product is packaged properly. Also, volume capacity utilization factor is assumed to be 100 % for the nested packaged products.

The two most common installation uses for the Siniat plasterboards are on sub-construction partitions and ceilings. There are a variety of building systems and components used to deliver the required performance characteristics and which are outside the scope of this declaration. However, the use of screw fixings and jointing materials is common to all applications and the consumption of these are declared within this section as installation resources. A small quantity of water is also consumed in the mixing of jointing materials plus a small amount of electricity used for screwdriver machine during installation. The installation process does not produce any emissions apart from solid wastes and water evaporation. For both plasterboard and jointing materials, a site wastage rate of 5% is assumed. 100 % of the plasterboard waste is assumed to be recycled as per the final Ashdown Agreement 2016 report assumes no landfilling of plasterboard waste arising from installation.

PRODUCT USE AND MAINTENANCE (B1-B7)

The product has a reference service life of 60 years, providing the product is installed as per Etex Building Performance GmbH recommendations. In such case, the product will last during its life of use without any requirements for maintenance, repair, replacement or refurbishment throughout this period, 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.

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 Siniat plasterboards. 100% recycling scenario= 100% of gypsum boards from demolition wastes are going to recycling at end of life. 100% Landfilling scenario: 100% of gypsum boards from demolition wastes are going to landfill at end of life. The transport of the gypsum waste to the end-of-life is considered to be 50 km from the plant in both landfilling and recycling scenarios. No energy has been considered for C1, it has been assumed that demolition is carried out without power tools or is using negligible amounts of energy.

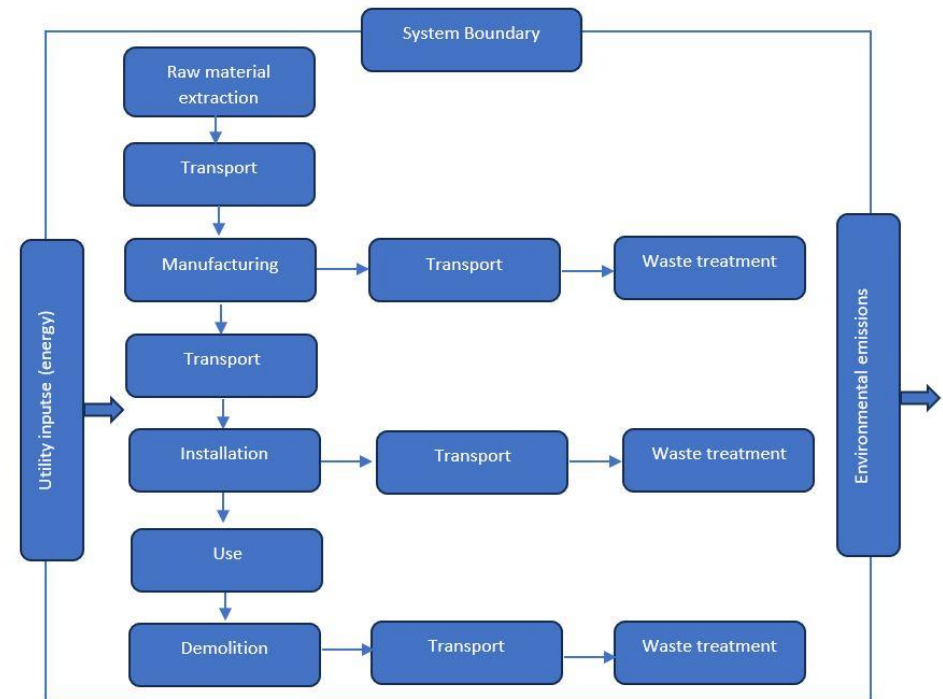
Outside the system boundaries, module D shows benefits and loads from the recycling processes. In landfilling scenario, these are related to the recycling of the packaging materials and the screws. In recycling scenario these are related to the recycling of the plasterboard, the packaging materials and the screws.

MANUFACTURING PROCESS DESCRIPTION

Gypsum is stored in silos than first milled and calcined to plaster by heating to around 160 Celsius. The plaster is then mixed with additives and water to form a slurry in which the rehydration back to gypsum begins. The slurry is introduced between the face and back paper liners in a forming process which defines board thickness and width. During plaster setting over several minutes a high strength mechanical bond forms at the gypsum/ paper interface. Excess water is removed from boards by passing them through a fanassisted oven for around 40 minutes. During drying starch migrates to the surface of the gypsum core, adding further strength by means of a chemical bond. Dried boards are cut to size and then packed for storage and distribution.

Plasterboard is manufactured using state-of-the-art production equipment to rigorous quality assurance standards complying with the ISO 9001 standard. Environmental management of the manufacturing process is certified to ISO 14001. The product is manufactured at the Peitz plant.

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	Allocated by mass or volume
Ancillary materials	Not applicable
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

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

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 C3, C4 and D) and “100% recycling” (referred in the tables as modules C3/1; C4/1 and D/1).

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C3/1	C4	C4/1	D	D/1
GWP – total ¹⁾	kg CO ₂ e	2,16E+00	1,90E-01	6,51E-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	9,21E-02	4,10E-04	4,02E-01	3,32E-01	0,00E+00	-4,08E-01	-6,71E-01
GWP – fossil	kg CO ₂ e	2,80E+00	1,90E-01	2,87E-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	9,21E-02	4,09E-04	1,30E-01	5,94E-02	0,00E+00	-2,07E-02	-8,78E-03
GWP – biogenic	kg CO ₂ e	-6,36E-01	0,00E+00	3,64E-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	2,72E-01	2,72E-01	0,00E+00	-3,87E-01	-6,62E-01
GWP – LULUC	kg CO ₂ e	3,43E-03	7,95E-05	3,59E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,68E-05	5,37E-07	3,09E-05	5,61E-05	0,00E+00	2,58E-06	1,03E-04
Ozone depletion pot.	kg CFC-11e	7,56E-07	4,10E-08	5,00E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,13E-08	5,06E-11	4,01E-08	2,40E-08	0,00E+00	-6,70E-10	2,94E-09
Acidification potential	mol H ⁺ e	7,75E-03	5,59E-04	2,38E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,62E-04	5,20E-06	3,09E-01	5,59E-04	0,00E+00	-8,86E-05	-2,90E-04
EP-freshwater ²⁾	kg Pe	4,42E-05	1,61E-06	4,79E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,57E-07	2,20E-08	1,11E-06	6,23E-07	0,00E+00	-4,67E-07	-6,82E-07
EP-marine	kg Ne	1,75E-03	1,12E-04	2,55E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,22E-05	1,10E-06	4,81E-04	1,94E-04	0,00E+00	-9,11E-06	-5,57E-05
EP-terrestrial	mol Ne	1,86E-02	1,24E-03	2,76E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,80E-04	1,27E-05	5,30E-03	2,13E-03	0,00E+00	-2,33E-04	-1,34E-03
POCP (“smog”) ³⁾	kg NMVOCe	5,82E-03	4,65E-04	2,23E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,23E-04	3,49E-06	2,06E-02	6,19E-04	0,00E+00	-1,00E-04	-2,25E-04
ADP-minerals & metals ⁴⁾	kg Sbe	5,42E-05	6,72E-07	1,86E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,33E-07	5,52E-08	5,62E-07	1,37E-07	0,00E+00	-4,16E-07	-3,79E-04
ADP-fossil resources	MJ	4,83E+01	2,75E+00	4,26E+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	1,37E+00	5,55E-03	2,95E+00	1,63E+00	0,00E+00	-1,83E-01	4,93E-02
Water use ⁵⁾	m ³ e depr.	1,51E+00	1,22E-02	1,00E-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	6,42E-03	1,08E-04	4,81E-02	5,17E-03	0,00E+00	6,51E-03	1,50E-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	C3	C3/1	C4	C4/1	D	D/1
Particulate matter	Incidence	7,32E-08	1,51E-08	3,49E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,42E-09	6,80E-11	3,45E-07	1,13E-08	0,00E+00	-8,04E-10	7,36E-08
Ionizing radiation ⁶⁾	kBq	1,35E-01	1,29E-02	1,67E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,19E-03	6,19E-05	2,68E-02	7,37E-03	0,00E+00	5,52E-04	3,62E-03
Ecotoxicity (freshwater)	CTUe	2,57E+01	2,52E+00	7,95E+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	1,14E+00	2,51E-02	6,29E+01	1,06E+00	0,00E+00	-4,38E-01	-2,33E+01
Human toxicity, cancer	CTUh	1,33E-09	7,11E-11	1,22E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,52E-11	7,70E-13	3,24E-10	2,66E-11	0,00E+00	1,32E-10	1,32E-10
Human tox. non-cancer	CTUh	3,09E-08	2,29E-09	3,40E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,12E-09	3,44E-11	1,47E-08	6,95E-10	0,00E+00	7,39E-10	7,18E-10
SQP ⁷⁾	-	1,14E+01	1,93E+00	4,29E+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	9,73E-01	1,12E-02	5,93E+00	3,49E+00	0,00E+00	-3,53E+00	-4,82E+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	C3	C3/1	C4	C4/1	D	D/1
Renew. PER as energy ⁸⁾	MJ	4,36E+00	3,27E-02	7,71E-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	1,99E-02	9,84E-04	2,86E-01	1,42E-02	0,00E+00	-6,28E-01	-7,29E-01
Renew. PER as material	MJ	3,96E+00	0,00E+00	-3,20E+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	-7,62E-01	-7,62E-01	0,00E+00	1,44E+00	2,18E+00
Total use of renew. PER	MJ	8,31E+00	3,27E-02	-2,42E+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	1,99E-02	9,84E-04	-4,76E-01	-7,48E-01	0,00E+00	8,15E-01	1,45E+00
Non-re. PER as energy	MJ	4,45E+01	2,75E+00	4,08E+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	1,37E+00	5,55E-03	2,95E+00	1,63E+00	0,00E+00	-1,83E-01	4,57E-02
Non-re. PER as material	MJ	3,78E+00	0,00E+00	-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	0,00E+00	0,00E+00	-3,56E+00	-3,56E+00	0,00E+00	2,23E-01	2,27E-01
Total use of non-re. PER	MJ	4,83E+01	2,75E+00	3,86E+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	1,37E+00	5,55E-03	-6,08E-01	-1,93E+00	0,00E+00	4,02E-02	2,73E-01
Secondary materials	kg	1,73E+01	9,19E-04	8,70E-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	4,67E-04	6,18E-06	1,69E-03	3,43E-04	0,00E+00	9,47E-03	1,78E-02
Renew. secondary fuels	MJ	1,44E-02	1,19E-05	1,25E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,13E-06	3,21E-07	3,86E-05	8,95E-06	0,00E+00	-2,93E-06	-1,76E-05
Non-ren. secondary fuels	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
Use of net fresh water	m ³	3,63E-02	3,28E-04	2,91E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,75E-04	3,26E-06	3,41E-03	1,78E-03	0,00E+00	-3,39E-04	-1,21E-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	C3	C3/1	C4	C4/1	D	D/1
Hazardous waste	kg	7,06E-02	3,98E-03	7,89E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,56E-03	3,77E-05	1,64E-02	0,00E+00	0,00E+00	-8,73E-03	-8,50E-03
Non-hazardous waste	kg	1,70E+00	6,36E-02	9,14E-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	2,77E-02	1,20E-03	9,74E+00	1,13E+01	0,00E+00	-3,91E-02	-3,67E-02
Radioactive waste	kg	7,76E-05	1,83E-05	2,76E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,43E-06	3,25E-08	2,07E-05	0,00E+00	0,00E+00	1,71E-08	2,11E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C3/1	C4	C4/1	D	D/1
Components for re-use	kg	7,62E-01	0,00E+00	3,31E-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
Materials for recycling	kg	0,00E+00	0,00E+00	8,80E-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	1,87E-02	1,13E+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
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

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

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C3/1	C4	C4/1	D	D/1
Global Warming Pot.	kg CO ₂ e	2,74E+00	1,88E-01	2,84E-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	9,13E-02	4,03E-04	1,28E-01	5,82E-02	0,00E+00	-1,95E-02	-7,51E-03
Ozone depletion Pot.	kg CFC ₁₁ e	6,35E-07	3,25E-08	4,16E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,69E-08	4,09E-11	3,18E-08	1,90E-08	0,00E+00	-7,76E-10	2,13E-09
Acidification	kg SO ₂ e	6,17E-03	4,58E-04	2,17E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,15E-04	4,20E-06	2,83E-01	4,22E-04	0,00E+00	-7,08E-05	-1,77E-04
Eutrophication	kg PO ₄ ³ e	2,87E-03	1,01E-04	3,08E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,63E-05	1,39E-06	2,25E-04	9,11E-05	0,00E+00	-3,32E-05	-9,43E-05
POCP (“smog”)	kg C ₂ H ₄ e	4,86E-04	2,28E-05	8,96E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,08E-05	1,59E-07	1,13E-02	1,77E-05	0,00E+00	-1,09E-05	-1,07E-05
ADP-elements	kg Sbe	1,39E-05	6,57E-07	5,02E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,25E-07	5,51E-08	5,46E-07	1,35E-07	0,00E+00	-4,16E-07	-4,97E-07
ADP-fossil	MJ	4,83E+01	2,75E+00	4,23E+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	1,37E+00	5,55E-03	2,95E+00	1,63E+00	0,00E+00	-1,83E-01	4,91E-02

ENVIRONMENTAL IMPACTS – FRENCH NATIONAL COMPLEMENTS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C3/1	C4	C4/1	D	D/1
ADP-elements	kg Sbe	1,39E-05	6,57E-07	9,53E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,25E-07	5,51E-08	5,46E-07	1,35E-07	0,00E+00	-4,16E-07	-4,97E-07
Hazardous waste disposed	kg	7,06E-02	3,98E-03	7,89E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,56E-03	3,77E-05	1,64E-02	0,00E+00	0,00E+00	-8,73E-03	-8,50E-03
Non-haz. waste disposed	kg	1,70E+00	6,36E-02	9,11E-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	2,77E-02	1,20E-03	9,74E+00	1,13E+01	0,00E+00	-3,91E-02	-3,67E-02
Air pollution	m ³	3,22E+02	2,81E+01	1,41E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,18E+01	1,74E-01	1,22E+03	1,31E+01	0,00E+00	-1,14E+01	-4,18E+02
Water pollution	m ³	8,69E+00	2,20E-01	5,56E+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	1,26E-01	8,55E-03	7,39E+02	8,65E-02	0,00E+00	3,13E-02	1,18E-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	C3	C3/1	C4	C4/1	D	D/1
GWP-GHG ⁹⁾	kg CO ₂ e	2,80E+00	1,90E-01	2,87E-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	9,21E-02	4,09E-04	1,30E-01	5,94E-02	0,00E+00	-2,07E-02	-8,78E-03

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 – BEPALINGSMETODE, NETHERLANDS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C3/1	C4	C4/1	D	D/1
Shadow price	€	4,25E-01	2,27E-02	7,40E-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	1,08E-02	2,10E-04	9,53E+00	9,79E-03	0,00E+00	-3,91E-03	-5,55E-03
Terrestrial ecotoxicity	DCB eq	4,65E-02	5,25E-04	3,00E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,63E-04	5,43E-06	1,40E-03	1,62E-04	0,00E+00	2,32E-04	2,76E-06
Seawater ecotoxicity	DCB eq	6,16E+02	2,87E+01	5,88E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,22E+01	2,65E-01	7,86E+04	1,02E+01	0,00E+00	-7,38E+00	-1,57E+01
Freshwater ecotoxicity	DCB eq	1,14E-01	2,87E-03	9,05E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,44E-03	1,07E-05	2,05E-02	1,01E-03	0,00E+00	-2,17E-04	-9,91E-04
Human ecotoxicity	DCB eq	1,84E+00	8,11E-02	5,43E-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	3,94E-02	1,48E-03	5,64E+00	3,49E-02	0,00E+00	-1,77E-02	-2,23E-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
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
ADP Fossil Fuels	kg Sbe	2,32E-02	1,32E-03	2,05E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,59E-04	2,67E-06	1,42E-03	7,84E-04	0,00E+00	-8,80E-05	2,36E-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

22.12.2024

