ENVIRONMENTAL PRODUCT DECLARATION

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

12,5mm Siniat Standard board

Etex Building Performance Limited

EPD HUB, HUB-0691

Publishing date 13 September 2023, last updated on 13 September 2023, valid until 13 September 2028.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Etex Building Performance Limited
Address	Marsh Ln, Easton-in-Gordano, Bristol BS20 0NE, United Kingdom
Contact details	marketing@etexbp.co.uk
Website	https://www.siniat.co.uk/

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 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Julien Soulhat
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ 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	12,5mm Siniat Standard board
Additional labels	-
Product reference	-
Place of production	- Bristol plant: Redland Ave, Easton-in-Gordano, Bristol BS20 0FB, UK. - Ferrybridge plant: Willow Garth Park, Kirkhaw Lane, Knottingley WF11 8UL, UK.
Period for data	from 01/01/2022 to 31/12/2022
Averaging in EPD	Multiple products, multiple locations
Variation in GWP-fossil for A1-A3	0,7%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m² of board
Declared unit mass	7.9 kg
GWP-fossil, A1-A3 (kgCO2e)	1,93
GWP-total, A1-A3 (kgCO2e)	1,35
Secondary material, inputs (%)	40,4
Secondary material, outputs (%)	36,4
Total energy use, A1-A3 (kWh)	9,46
Total water use, A1-A3 (m3e)	1,21E-2

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

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

PRODUCT DESCRIPTION

Siniat Standard Board is a gypsum board to be used as a general drylining board for partitions, linings and ceilings. It is available with square or tapered edges in a variety of sizes and is suitable for tape & jointing or skimming. It can be used in multiple layers for additional performance. Siniat Standard Board is coloured ivory on the front and grey on the back and has tapers down the long edges. it is made from aerated Calcium sulphate di-hydrate enclosed inside liners made from recycled waste paper.

12,5mm Siniat Standard Boards are available in 1200mm and 900mm wide and comply with BS EN 520:2004+A1:2009 type A.

Further information can be found at https://www.siniat.co.uk/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0,0	-
Minerals	94,5	UK & EU
Fossil materials	0,4	UK & EU
Bio-based materials	5,1	UK & EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0,202
Biogenic carbon content in packaging, kg C	0,017

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m² of board
Mass per declared unit	7.9 kg
Functional unit	1m² of board installed vertically by mean of mechanical fixings, offering a seamless finished substrate ready to receive additional finishing solutions.
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	Deconstr./demol.	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 extraction or 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.

Transport assumption has also been made to take into account the impact of the transport of diesel and propane which are delivered by road lorries to the plants.

Regarding the energy used: 1) propane is sourced from local dealers from domestic production (e.g natural gas processing, oil refining operations), 2) diesel is also sourced from local dealers and is manufactured in UK refinery compounds from North sea crude oil, 3) natural gas comes within a mix of UK production from north sea extraction compounds, pipeline import from Northern EU countries or Liquefied Natural Gas (LNG) import, 4) 100% of the electricity used in the manufacturing plants is sourced from renewable sources (21% from solar, 79% from wind).

Plant 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 for each plant was considered in the LCA. Manufacturing wastes are of the following types: 1) Plasterboard wastes generated on the production lines and sent outside the plant to specialize partners for treatment and recycling, 2) Paper wastes coming from paper rolls feeding the production line with front and back paper liner, sent outside the plant to specialize partners for treatment and recycling. No process liquid water is released to the environment whereas water vapour is released in the atmosphere during calcination and drying.

The transport assumptions for Manufacturing wastes are based on the following principle: 1) transportation distances are calculated taking into account the address of the plant where the waste is generated and the address of the third party location where the waste is treated (Googlemap has been used for the determination the transportation distances), 2) the transport method reflects the actual type of transport used to convey the wastes to third party location (i.e. road transport).

TRANSPORT AND INSTALLATION (A4-A5)

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

Plasterboard products are delivered by road from the plants to construction sites and stockists across the UK. The average delivery distance in 2022 to the stockist is estimated to be 180 km and 106 km from Bristol and Ferrybridge plants respectively. We also considered an additional delivery journey to site which is estimated to be 30 km on average.

The two most common installation uses for the Siniat plasterboards are in metal framing 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. No significant fuels or energy are consumed during installation and the 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 this waste is assumed to be recycled as the life cycle model 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 Limited 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.

PRODUCT END OF LIFE (C1-C4, D)

In order to consistently and fairly reflect the % of post-consumer recycled gypsum currently used in the production plants, we have considered that 29% share of gypsum boards from post-consumer demolition wastes are going to recycling at end of life (a similar share of post-consumer recycling gypsum is used in module A1). The remaining 71% share is going to landfill.

The transport of the gypsum waste to the recycling centre is considered to be 215 km and 55 km from the Bristol and Ferrybridge plants respectively. The transport to landfill is 30km.

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.

MANUFACTURING PROCESS

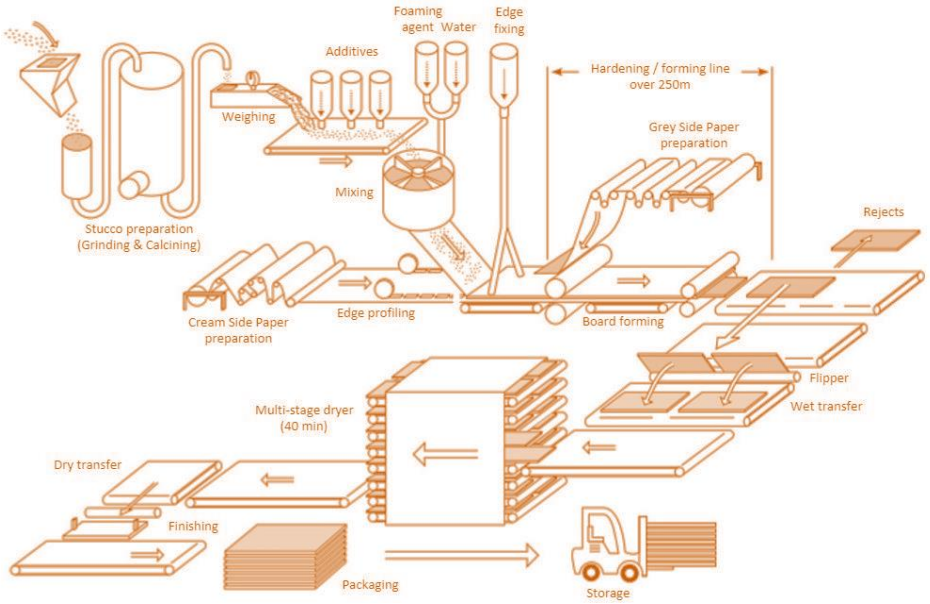
DESCRIPTION

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 fan-assisted 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.

See below the manufacturing process flow diagram:



Plasterboard is manufactured using state-of-the-art production equipment to rigorous quality assurance standards complying with the BS EN ISO 9001 standard. Environmental management of the manufacturing process is certified to BS EN ISO 14001. Responsible sourcing of all material supply chains and the production process is certified to the BES6001 Framework Standard (certificate held at "Very Good" level).
The product is manufactured on 3 production lines: two lines in the Bristol plant (line 1 and line 2) and one line in the Ferrybridge plant.

PROCESS FLOW DIAGRAM

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 materials	Allocated by mass.
Ancillary materials	Allocated by mass.
Manufacturing energy and waste	Allocated by mass.

AVERAGES AND VARIABILITY

Type of average	Multiple products and multiple factories
Averaging method	Averaged by shares of total volume
Variation in GWP-fossil for A1-A3	0.7%

This EPD covers the 12,5mm Siniat Standard board produced in 2 plants (Bristol and Ferrybridge).

Thought the production of the product in the 2 plants is based on the same product specification, there may be some slight variations in the process specification due to local adaptation, hence an averaging method is used, as for multiple products, multiple locations.

The product is manufactured in different panel width (900mm and 1200mm). LCA calculations have been carried out for the product on each production line for 1200 mm and 900mm panel width, leading to a total of 5 calculations. The results were then averaged based by shares of total volume, leading to a maximal variation of 0.7% for GWP-fossil for A1-A3, below the allowable limit.

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. Ecoinvent 3.8 and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	-2,65E-1	1,87E-1	1,43E0	1,35E0	2,48E-1	2,72E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,08E-1	2,01E-1	4,42E-1	-1,89E-1
GWP – fossil	kg CO_2e	3,16E-1	1,87E-1	1,43E0	1,93E0	2,51E-1	2,64E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,08E-1	3,33E-2	2,95E-2	2,87E-2
GWP – biogenic	kg CO_2e	-5,85E-1	0E0	3,26E-3	-5,81E-1	0E0	7,46E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	4,2E-5	1,68E-1	4,12E-1	-2,18E-1
GWP – LULUC	kg CO_2e	4,27E-3	2,1E-4	1,02E-4	4,59E-3	1,05E-4	4,85E-4	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	4,52E-5	8,25E-6	2,79E-5	7,43E-4
Ozone depletion pot.	kg $CFC_{-11}e$	3,32E-8	3,57E-8	2,12E-7	2,81E-7	5,42E-8	2,58E-8	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	2,33E-8	1,02E-8	1,19E-8	2,88E-9
Acidification potential	mol H^+e	2,58E-3	3,18E-3	1,44E-3	7,2E-3	7,39E-4	1,19E-2	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	3,18E-4	7,83E-2	2,78E-4	2,91E-4
EP-freshwater[2)]	kg Pe	2,44E-5	2,2E-6	3,16E-6	2,98E-5	2,13E-6	4,27E-6	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	9,16E-7	2,99E-7	3,1E-7	4,88E-6
EP-marine	kg Ne	1,2E-3	7,16E-4	3,86E-4	2,3E-3	1,48E-4	2,92E-4	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	6,34E-5	1,23E-4	9,62E-5	-9,6E-5
EP-terrestrial	mol Ne	8,34E-3	7,98E-3	4,22E-3	2,05E-2	1,64E-3	2,95E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	7,05E-4	1,35E-3	1,06E-3	-1,09E-4
POCP ("smog")[3)]	kg NMVOCe	1,5E-3	2,17E-3	1,47E-3	5,14E-3	6,15E-4	1,48E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	2,65E-4	5,21E-3	3,08E-4	4,88E-5
ADP-minerals & metals[4)]	kg Sbe	2,03E-4	5,02E-7	1,06E-6	2,05E-4	8,89E-7	2,77E-5	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	3,82E-7	1,86E-7	6,79E-8	-8,16E-5
ADP-fossil resources	MJ	4,49E0	2,55E0	2,43E1	3,14E1	3,64E0	2,83E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,57E0	7,51E-1	8,1E-1	9,36E-1
Water use[5)]	m^3e depr.	2,22E-1	1,86E-2	4,56E-2	2,86E-1	1,61E-2	3,29E-2	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	6,92E-3	1,23E-2	2,57E-3	1,3E-1

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	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	2,67E-8	1,12E-8	1,13E-8	4,92E-8	2E-8	2,23E-8	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	8,6E-9	8,75E-8	5,59E-9	1,75E-8
Ionizing radiation[6)]	kBq U235e	2,43E-2	1,46E-2	1,77E-2	5,66E-2	1,7E-2	9,97E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	7,32E-3	6,85E-3	3,66E-3	3,46E-2
Ecotoxicity (freshwater)	CTUe	4,43E1	2,17E0	2,35E0	4,88E1	3,34E0	8,06E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,43E0	1,59E1	5,28E-1	-2,72E0
Human toxicity, cancer	CTUh	5,68E-10	1,25E-10	2,28E-10	9,22E-10	9,4E-11	1,01E-10	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	4,04E-11	8,26E-11	1,32E-11	2,22E-10
Human tox. non-cancer	CTUh	7,38E-9	1,73E-9	1,99E-9	1,11E-8	3,03E-9	2,04E-9	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,3E-9	3,74E-9	3,45E-10	2,31E-9
SQP[7)]	-	4,58E0	1,47E0	2,61E0	8,67E0	2,55E0	4,21E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,1E0	1,51E0	1,73E0	6,01E0

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	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	1,29E0	6,75E-2	1,92E0	3,28E0	4,32E-2	6,7E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,86E-2	7,33E-2	7,03E-3	1,14E0
Renew. PER as material	MJ	6,11E0	0E0	-8,67E-2	6,02E0	0E0	-7,82E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	-8,85E0	-2,17E1	1,53E0
Total use of renew. PER	MJ	7,4E0	6,75E-2	1,84E0	9,3E0	4,32E-2	-1,11E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,86E-2	-8,77E0	-2,17E1	2,67E0
Non-re. PER as energy	MJ	4,01E0	2,55E0	2,42E1	3,07E1	3,64E0	3,52E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,57E0	7,51E-1	8,1E-1	8,99E-1
Non-re. PER as material	MJ	4,81E-1	0E0	9,77E-2	5,78E-1	0E0	-5,73E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	-6,93E-1	-1,7E0	2,86E-1
Total use of non-re. PER	MJ	4,49E0	2,55E0	2,43E1	3,13E1	3,64E0	2,95E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,57E0	5,85E-2	-8,87E-1	1,18E0
Secondary materials	kg	3,19E0	1,57E-3	1,89E-3	3,19E0	1,22E-3	1,63E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	5,23E-4	4,34E-4	1,7E-4	-2,35E-2
Renew. secondary fuels	MJ	3,09E-2	7,05E-6	7,15E-5	3,1E-2	1,57E-5	2,05E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	6,77E-6	1E-5	4,45E-6	-8,97E-3
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	1,05E-2	4,58E-4	1,14E-3	1,21E-2	4,34E-4	1,62E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,86E-4	8,66E-4	8,87E-4	2,67E-3

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	8,06E-2	5,67E-3	7,74E-3	9,4E-2	5,27E-3	9,65E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	2,26E-3	4,18E-3	0E0	1,91E-3
Non-hazardous waste	kg	5,27E-1	9,21E-2	1,22E-1	7,41E-1	8,4E-2	5,05E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	3,61E-2	2,47E0	5,61E0	2,3E-1
Radioactive waste	kg	9,06E-6	1,68E-5	1,68E-5	4,27E-5	2,42E-5	2,74E-5	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,04E-5	5,27E-6	0E0	1,01E-5

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	3,73E-1	3,73E-1	0E0	4,8E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	2,88E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	3,32E-1	1,85E-1	1,4E0	1,92E0	2,48E-1	1,95E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,07E-1	3,28E-2	2,89E-2	2,43E-2
Ozone depletion Pot.	kg CFC_{-11}e	2,97E-8	2,84E-8	1,86E-7	2,44E-7	4,29E-8	2,17E-8	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,85E-8	8,09E-9	9,46E-9	2,24E-9
Acidification	kg SO_2e	1,77E-3	2,57E-3	1,14E-3	5,49E-3	6,06E-4	1,06E-2	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	2,61E-4	7,16E-2	2,1E-4	2,95E-4
Eutrophication	kg PO_4^3e	1,41E-3	3,23E-4	2,41E-4	1,97E-3	1,34E-4	2,94E-4	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	5,75E-5	5,81E-5	4,53E-5	8,74E-5
POCP (“smog”)	kg C_2H_4e	1,08E-4	7,65E-5	9,55E-5	2,8E-4	3,01E-5	4,3E-4	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,29E-5	2,86E-3	8,8E-6	5,17E-6
ADP-elements	kg Sbe	5,46E-6	4,93E-7	1,05E-6	7E-6	8,68E-7	4,91E-6	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	3,74E-7	1,82E-7	6,69E-8	-3,16E-7
ADP-fossil	MJ	4,49E0	2,55E0	2,43E1	3,14E1	3,64E0	3,55E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,57E0	7,51E-1	8,1E-1	9,33E-1

ENVIRONMENTAL IMPACTS – FRENCH NATIONAL COMPLEMENTS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADP-elements	kg Sbe	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Hazardous waste disposed	kg	8,06E-2	5,67E-3	7,74E-3	9,4E-2	5,27E-3	9,65E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	2,26E-3	4,18E-3	0E0	1,91E-3
Non-haz. waste disposed	kg	5,27E-1	9,21E-2	1,22E-1	7,41E-1	8,4E-2	5,04E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	3,61E-2	2,47E0	5,61E0	2,3E-1
Air pollution	m^3	3,19E2	3,65E1	3,49E1	3,9E2	3,71E1	1,11E2	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,6E1	3,09E2	6,49E0	-7,78E1
Water pollution	m^3	2,93E0	2,53E-1	7,07E-1	3,89E0	2,91E-1	2,65E1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,25E-1	1,87E2	4,3E-2	1,16E0

ENVIRONMENTAL IMPACTS – BEPALINGSMETODE, NETHERLANDS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Shadow price	€	8,81E-2	-7,23E-5	-1,62E-3	8,64E-2	0E0	3,27E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,29E-2	2,26E0	-3,7E-1	5,85E-3
Terrestrial ecotoxicity	DCB eq	6,24E-2	-1,69E-6	-4,92E-3	5,75E-2	0E0	-2,98E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	2,99E-4	-1,04E-1	-2,57E-1	1,01E-3
Seawater ecotoxicity	DCB eq	7,93E1	-9,02E-2	8,59E-1	8,01E1	0E0	2,75E3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,63E1	1,98E4	-3,42E2	0E0
Freshwater ecotoxicity	DCB eq	1,58E-1	-9,71E-6	-9,71E-6	1,46E-1	0E0	-7,1E-3	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	1,63E-3	-2,61E-1	-6,51E-1	-1,12E-3
Human ecotoxicity	DCB eq	3,96E-1	-2,77E-4	-1,07E-2	3,85E-1	0E0	2,11E-1	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	4,61E-2	7,44E-1	-1,66E0	-8,14E-3
EEE	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
ETE	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

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

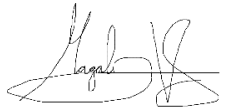
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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
13.09.2023



VERIFIED ISO 14025