ENVIRONMENTAL PRODUCT DECLARATION

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

SINIAT pregyplac plus BA13

Etex Building Performance S.p.A.

EPD HUB, HUB-1421
Publishing date 22 May 2024, last updated on 22 May 2024, valid until 22 May 2029.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Etex Building Performance S.p.A.
Address	Via G. Leopardi 2, 20123 Milano - Italia
Contact details	etexbp.italia@etexgroup.com
Website	https://www.siniat.it

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 EN 17328 Complementary Product Category Rules for Gypsum-based Construction Products
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, Technical Manager Sustainability, Etex Building Performance International sas.
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	SINIAT pregyplac plus BA13
Additional labels	pregyplac BA13
Product reference	-
Place of production	Etex Building Perfomance S.p.A., Strada Santa Maria – località Impianata, 67030 Corfinio (AQ) - Italy
Period for data	from January 1st 2022 to Decembre 31st 2022.
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	n/a %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m² of board (12,5 mm)
Declared unit mass	8,4 kg
GWP-fossil, A1-A3 (kgCO2e)	1,91
GWP-total, A1-A3 (kgCO2e)	1,34
Secondary material, inputs (%)	26,2
Secondary material, outputs (%)	97,7
Total energy use, A1-A3 (kWh)	9,94
Total water use, A1-A3 (m3e)	0,01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Etex Building Performance S.p.A. is part of the global Etex Group of Companies, which operates across Europe, Africa, Near & Middle East and South America. Etex Building Performance S.p.A. is one of the main supplier of products for drywall systems, proposing to market valuable solutions for partitions, ceilings, wall linings and external sheathing under the Siniat brand. Siniat products find application in new or renovation works and provide systems with performances for all the construction sectors, residential and non-residential as commercial, hospitality, healthcare.

PRODUCT DESCRIPTION

Siniat pregyplac and pregyplac plus BA13 are standard plasterboards to be used as a general drywall in partitions, linings and ceilings. The product can be used in multiple layers or in combination with other Siniat plasterboards for additional performances. The product is coloured ivory on the front and grey on the back, it has tapered longitudinal edges and it is available in a variety of lengths. It is made from aerated Calcium Sulphate di-hydrate covered and bonded with paper liner.

Siniat standard plasterboards comply with UNI EN 520:2009 type A. Siniat pregyplac and pregyplac plus are Cradle to Cradle Certified® Bronze as per certificate n°5230 and certified Indoor Air Comfort Gold by Eurofins as per certificate IACG-456-01-02. Siniat plasterboards are not classified as hazardous under the EU CLP Regulation (European Regulation EC/1272/2008) and do not contain any substances of very high concern (SVHC) at a concentration of more than 0.1% by weight.

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	94,9%	Italy
Fossil materials	0,9%	Italy and EU
Bio-based materials	4,2%	Italy and EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0,177
Biogenic carbon content in packaging, kg C	0,0192

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m² of board (12,5 mm)
Mass per declared unit	8,4 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

Substances of very high concern	EC	CAS
none	n/a	n/a

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.

The gypsum used in the manufacturing process is a mix of several sources, collected applying the circularity commitment of Etex: natural (>75%) from local quarries within 30 km from the plant, post-consumer recycled gypsum (construction and demolition wastes from job-sites and third parties wastes) and pre-consumer recycled gypsum (synthetic gypsum from powerplants), moreover all plasterboard wastes from production are recycled into the process. Additionally, the paper liner used in the process is 100% recycled. The % of the recycled content pre and post-consumer used in the process is certified by ICMQ (product certificate n°P217).

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 consider the impact of the transport of diesel and propane which are delivered by road lorries to the plant.

Regarding the energy used: 1) diesel is also sourced from local dealers and is manufactured in local or regional refinery compounds, 2) natural gas comes within a mix of domestic production, pipeline import from north Africa and eastern countries and from liquefied natural gas (LNG) import, 3) 100% of the electricity used in the manufacturing plant is sourced from renewable sources (hydropower and solar panels)

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 the plant was considered in the LCA. Manufacturing wastes are of the following types: 1) Plasterboard wastes generated on the production lines and recycled internally, 2) Paper wastes coming from paper reels feeding the production line with front and back paper liner, sent outside the plant to specialize partners for treatment and recycling.

No significant amount of process liquid water is released to the environment (<0,75% of total water usage) whereas water vapor 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 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 site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Plasterboard products are delivered by road lorry from the manufacturing location to stockists and construction sites across Italy. The average delivery distance considered in this study is 450 km, deducted from supply chain data analysis.

The two most common drywall installations for the Siniat boards are metal framing partitions and ceilings. A variety of building systems and components are used to deliver the required performances but are outside the scope of this declaration. However, the use of screw fixings, jointing material and paper tape 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. We have considered that no significant amount of energy is consumed during installation. Whereas a negligeable amount of dust due to manual cutting can be released in situ (see the product technical safety datasheet for more information), we have considered that Installation does not produce any significant emissions. For both plasterboard and jointing materials, a site scrap rate of 5% is considered. 100 % of this waste is assumed to be recycled.

The plasterboards are delivered on 100% recyclable flex spacers made from natural plant-based fibres from linen.

PRODUCT USE AND MAINTENANCE (B1-B7)

The product has a reference service life as stated above, providing the product is installed as per Etex Building Performance S.p.A. 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)

At End of Life, the product is removed manually and transported by truck to a recycling facility (Scenario 1) or transported to landfill (Scenario 2). No energy has been considered for C1 as it has been assumed that demolition is carried out without power tools or is using negligible amounts of energy. Module C2 is calculated using a distance of 250km for scenario 1 (100% recycling) or 50 km for scenario 2 (100% landfilled).

In scenario 1 (100% recycling) the product demolition waste at its end of life is sent to a specialized recycling centre for plasterboard wastes, then creating a post-consumer recycled gypsum ready to be used as raw material in plasterboard plants.

The LCA results for scenario #1 and #2 are shown in the table further below.

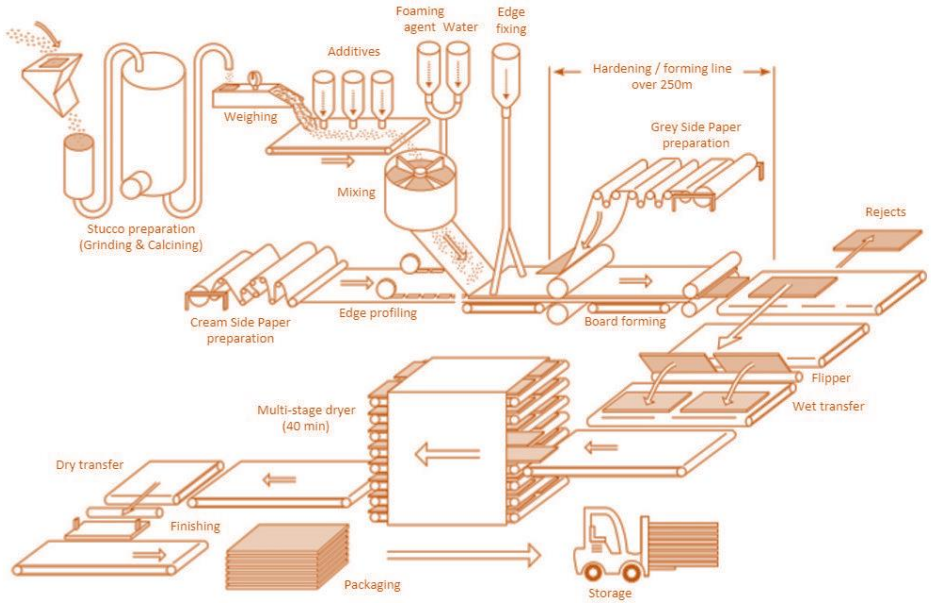
MANUFACTURING PROCESS

The gypsum mix is milled and calcined to plaster by heating to around 160 Celsius, then stored in silos. The plaster is then mixed with additives, wood fibres and water to form a slurry in which the rehydration back to gypsum begins. The slurry is injected 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. 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:



Plasterboards are manufactured using state-of-the-art production equipment and following rigorous quality assurance standards, complying with UNI EN ISO 9001:2015, as well environmental management standard complying with UNI EN ISO 14001:2015 (certified by ABICert s.a.s. with certificates reference QBC663 and ABC110 respectively). The industrial site applies also strict rules to assure health and safety for all employers and all activities in compliance with the Occupational health and safety management systems UNI ISO 45001:2015.

The product is manufactured on 1 production line in Corfinio.

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	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	n/a %

This EPD covers the 12,5 mm thick Siniat pregyplac plus BA13 and pregyplac BA13 plasterboards produced in Corfinio, Italy. Each product is manufactured with 1200 mm of panel width. The LCA calculation has been carried out for the product on its specific production line.

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

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	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
GWP – total[1)]	kg CO_2e	-2,22E-01	1,57E-01	1,41E+00	1,34E+00	3,42E-01	2,54E-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	3,72E-01	7,45E-02	6,62E-01	0,00E+00	0,00E+00	6,07E-01	-6,16E-01	-7,92E-02
GWP – fossil	kg CO_2e	3,38E-01	1,57E-01	1,42E+00	1,91E+00	3,41E-01	2,43E-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	3,72E-01	7,45E-02	1,01E-01	0,00E+00	0,00E+00	4,61E-02	2,47E-03	-7,93E-03
GWP – biogenic	kg CO_2e	-5,64E-01	1,81E-06	-8,24E-03	-5,73E-01	0,00E+00	1,12E-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	0,00E+00	0,00E+00	5,61E-01	0,00E+00	0,00E+00	5,61E-01	-6,18E-01	-7,13E-02
GWP – LULUC	kg CO_2e	4,30E-03	6,16E-05	1,08E-04	4,47E-03	1,33E-04	4,14E-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	1,56E-04	3,12E-05	2,36E-05	0,00E+00	0,00E+00	4,36E-05	-1,65E-05	-1,30E-05
Ozone depletion pot.	kg CFC_{11}e	3,29E-08	3,64E-08	2,13E-07	2,83E-07	8,03E-08	2,86E-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	8,04E-08	1,61E-08	3,11E-08	0,00E+00	0,00E+00	1,87E-08	1,38E-09	-1,48E-09
Acidification potential	mol H$^+$e	3,09E-03	5,03E-04	1,47E-03	5,06E-03	1,11E-03	1,23E-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	1,10E-03	2,19E-04	2,40E-01	0,00E+00	0,00E+00	4,34E-04	-2,17E-04	-5,71E-05
EP-freshwater[2)]	kg Pe	3,14E-05	1,33E-06	3,15E-06	3,59E-05	2,89E-06	4,05E-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	3,16E-06	6,32E-07	8,45E-07	0,00E+00	0,00E+00	4,83E-07	-3,22E-07	-2,57E-07
EP-marine	kg Ne	8,95E-04	1,09E-04	4,04E-04	1,41E-03	2,44E-04	2,19E-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	2,19E-04	4,38E-05	3,72E-04	0,00E+00	0,00E+00	1,50E-04	-4,21E-05	-1,35E-05
EP-terrestrial	mol Ne	8,32E-03	1,21E-03	4,42E-03	1,40E-02	2,71E-03	2,31E-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	2,43E-03	4,87E-04	4,10E-03	0,00E+00	0,00E+00	1,65E-03	-9,70E-04	-1,44E-04
POCP ("smog")[3)]	kg NMVOCe	2,66E-03	4,67E-04	1,50E-03	4,63E-03	1,05E-03	1,42E-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	9,13E-04	1,83E-04	1,59E-02	0,00E+00	0,00E+00	4,80E-04	-1,21E-04	-4,19E-05
ADP-minerals & metals[4)]	kg Sbe	2,48E-04	4,09E-07	1,25E-06	2,50E-04	8,32E-07	2,39E-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	1,32E-06	2,64E-07	3,93E-07	0,00E+00	0,00E+00	1,06E-07	-3,15E-04	-6,91E-08
ADP-fossil resources	MJ	5,54E+00	2,43E+00	2,41E+01	3,21E+01	5,35E+00	2,90E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,40E+00	1,08E+00	2,29E+00	0,00E+00	0,00E+00	1,26E+00	-1,34E-02	-1,49E-01
Water use[5)]	m^{3}e depr.	2,86E-01	1,08E-02	4,69E-02	3,44E-01	2,39E-02	3,36E-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	2,39E-02	4,77E-03	3,72E-02	0,00E+00	0,00E+00	4,01E-03	-1,16E-02	-6,95E-03

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	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
Particulate matter	Incidence	6,42E-08	1,70E-08	1,28E-08	9,40E-08	3,88E-08	2,54E-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	2,97E-08	5,93E-09	2,68E-07	0,00E+00	0,00E+00	8,74E-09	6,15E-08	-7,84E-10
Ionizing radiation[6)]	kBq U235e	5,14E-02	1,16E-02	1,81E-02	8,11E-02	2,56E-02	1,12E-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	2,53E-02	5,05E-03	2,08E-02	0,00E+00	0,00E+00	5,72E-03	-1,69E-03	-8,70E-04
Ecotoxicity (freshwater)	CTUe	5,85E+01	2,17E+00	2,35E+00	6,31E+01	4,76E+00	8,11E+00	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	9,90E-01	4,88E+01	0,00E+00	0,00E+00	8,25E-01	-1,94E+01	-1,59E-01
Human toxicity, cancer	CTUh	9,97E-10	5,42E-11	2,20E-10	1,27E-09	1,16E-10	1,15E-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	1,39E-10	2,79E-11	2,51E-10	0,00E+00	0,00E+00	2,06E-11	-6,75E-11	-6,68E-11
Human tox. non-cancer	CTUh	1,01E-08	2,07E-09	2,05E-09	1,42E-08	4,58E-09	2,27E-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	4,49E-09	8,98E-10	1,14E-08	0,00E+00	0,00E+00	5,40E-10	-1,69E-10	-1,05E-10
SQP[7)]	-	4,14E+01	2,63E+00	3,91E+00	4,80E+01	6,15E+00	5,90E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,78E+00	7,57E-01	4,59E+00	0,00E+00	0,00E+00	2,71E+00	-7,23E-01	-9,88E-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	A2	A3	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	2,77E+00	2,75E-02	2,12E+00	4,92E+00	6,02E-02	6,60E-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	6,41E-02	1,28E-02	2,21E-01	0,00E+00	0,00E+00	1,10E-02	-4,09E-02	-1,50E-02
Renew. PER as material	MJ	5,92E+00	0,00E+00	2,75E-02	5,94E+00	0,00E+00	-7,00E-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	0,00E+00	0,00E+00	-5,87E+00	0,00E+00	0,00E+00	-5,87E+00	9,46E-01	3,88E-01
Total use of renew. PER	MJ	8,68E+00	2,75E-02	2,15E+00	1,09E+01	6,02E-02	5,90E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,41E-02	1,28E-02	-5,65E+00	0,00E+00	0,00E+00	-5,86E+00	9,06E-01	3,73E-01
Non-re. PER as energy	MJ	4,38E+00	2,43E+00	2,41E+01	3,09E+01	5,35E+00	3,38E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,40E+00	1,08E+00	2,29E+00	0,00E+00	0,00E+00	1,26E+00	2,14E-02	-1,15E-01
Non-re. PER as material	MJ	1,16E+00	0,00E+00	-2,52E-03	1,16E+00	0,00E+00	-3,26E-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	0,00E+00	0,00E+00	-1,12E+00	0,00E+00	0,00E+00	-1,12E+00	1,12E+00	-4,79E-03
Total use of non-re. PER	MJ	5,54E+00	2,43E+00	2,41E+01	3,20E+01	5,35E+00	3,35E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,40E+00	1,08E+00	1,16E+00	0,00E+00	0,00E+00	1,41E-01	1,14E+00	-1,19E-01
Secondary materials	kg	2,20E+00	6,93E-04	1,68E-03	2,20E+00	1,48E-03	1,13E-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	1,80E-03	3,61E-04	1,31E-03	0,00E+00	0,00E+00	2,66E-04	-2,04E-04	-2,21E-04
Renew. secondary fuels	MJ	1,52E-03	7,33E-06	1,27E-05	1,54E-03	1,50E-05	4,05E-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	2,34E-05	4,67E-06	2,97E-05	0,00E+00	0,00E+00	6,94E-06	-5,00E-05	-4,56E-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	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,11E-02	3,10E-04	1,18E-03	1,25E-02	6,91E-04	1,41E-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	6,43E-04	1,29E-04	2,64E-03	0,00E+00	0,00E+00	1,38E-03	-2,68E-04	-1,61E-04

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	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
Hazardous waste	kg	1,22E-01	3,24E-03	6,74E-03	1,32E-01	7,05E-03	1,09E-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	7,81E-03	1,56E-03	1,27E-02	0,00E+00	0,00E+00	0,00E+00	-4,66E-04	-2,46E-04
Non-hazardous waste	kg	7,57E-01	5,30E-02	1,22E-01	9,32E-01	1,16E-01	4,86E-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	1,25E-01	2,49E-02	7,56E+00	0,00E+00	0,00E+00	8,76E+00	-9,92E-03	-7,13E-03
Radioactive waste	kg	1,87E-05	1,63E-05	1,75E-05	5,24E-05	3,60E-05	2,44E-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	3,59E-05	7,18E-06	1,60E-05	0,00E+00	0,00E+00	0,00E+00	3,79E-07	-5,55E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	4,14E-01	4,14E-01	0,00E+00	4,81E-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	8,76E+00	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	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	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – FRENCH NATIONAL COMPLEMENTS

Impact category	Unit	A1	A2	A3	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	7,83E-06	3,98E-07	1,24E-06	9,47E-06	8,08E-07	7,49E-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	1,29E-06	2,58E-07	3,81E-07	0,00E+00	0,00E+00	1,04E-07	-1,46E-07	-6,90E-08
Hazardous waste disposed	kg	1,22E-01	3,24E-03	6,74E-03	1,32E-01	7,05E-03	1,09E-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	7,81E-03	1,56E-03	1,27E-02	0,00E+00	0,00E+00	0,00E+00	-4,66E-04	-2,46E-04
Non-haz. waste disposed	kg	7,57E-01	5,30E-02	1,22E-01	9,32E-01	1,16E-01	4,85E-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	1,25E-01	2,49E-02	7,56E+00	0,00E+00	0,00E+00	8,76E+00	-9,92E-03	-7,13E-03
Air pollution	m^3	4,13E+02	2,73E+01	3,55E+01	4,76E+02	6,11E+01	1,06E+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	5,50E+01	1,10E+01	9,46E+02	0,00E+00	0,00E+00	1,01E+01	-3,38E+02	-1,32E+00
Water pollution	m^3	3,22E+00	1,73E-01	7,27E-01	4,12E+00	3,75E-01	2,79E+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	4,31E-01	8,62E-02	5,73E+02	0,00E+00	0,00E+00	6,71E-02	-5,45E-02	-3,25E-02

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	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	3,38E-01	1,57E-01	1,42E+00	1,91E+00	3,41E-01	2,43E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	3,73E-01	7,45E-02	1,01E-01	0,00E+00	0,00E+00	4,61E-02	2,47E-03	-7,93E-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 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 – BEPALINGSMETODE, NETHERLANDS

Impact category	Unit	A1	A2	A3	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	€	1,15E-01	2,00E-02	1,00E-01	2,36E-01	4,42E-02	3,84E-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	4,45E-02	8,90E-03	7,40E+00	0,00E+00	0,00E+00	7,60E-03	-1,41E-03	-1,41E-03
Terrestrial ecotoxicity	DCB eq	7,80E-02	4,68E-04	5,18E-04	7,90E-02	1,03E-03	4,60E-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	1,03E-03	2,06E-04	1,08E-03	0,00E+00	0,00E+00	1,26E-04	-6,42E-05	-6,17E-05
Seawater ecotoxicity	DCB eq	1,21E+02	2,49E+01	3,67E+01	1,82E+02	5,49E+01	2,96E+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	5,63E+01	1,13E+01	6,10E+04	0,00E+00	0,00E+00	7,95E+00	-3,08E+00	-1,84E+00
Freshwater ecotoxicity	DCB eq	1,88E-01	2,72E-03	2,72E-03	1,92E-01	6,06E-03	1,25E-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	5,62E-03	1,12E-03	1,59E-02	0,00E+00	0,00E+00	7,88E-04	-1,46E-04	-2,20E-04
Human ecotoxicity	DCB eq	5,52E-01	7,77E-02	1,99E-01	8,29E-01	1,74E-01	3,35E-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	1,59E-01	3,18E-02	4,38E+00	0,00E+00	0,00E+00	2,71E-02	-3,34E-03	-5,29E-03
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	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	0,00E+00	0,00E+00	0,00E+00
ADP Fossil Fuels	kg Sbe	2,66E-03	1,17E-03	1,16E-02	1,54E-02	2,57E-03	1,66E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	2,60E-03	5,20E-04	1,10E-03	0,00E+00	0,00E+00	6,08E-04	-6,41E-06	-7,18E-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

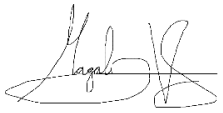
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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
22.05.2024



VERIFIED ISO 14025