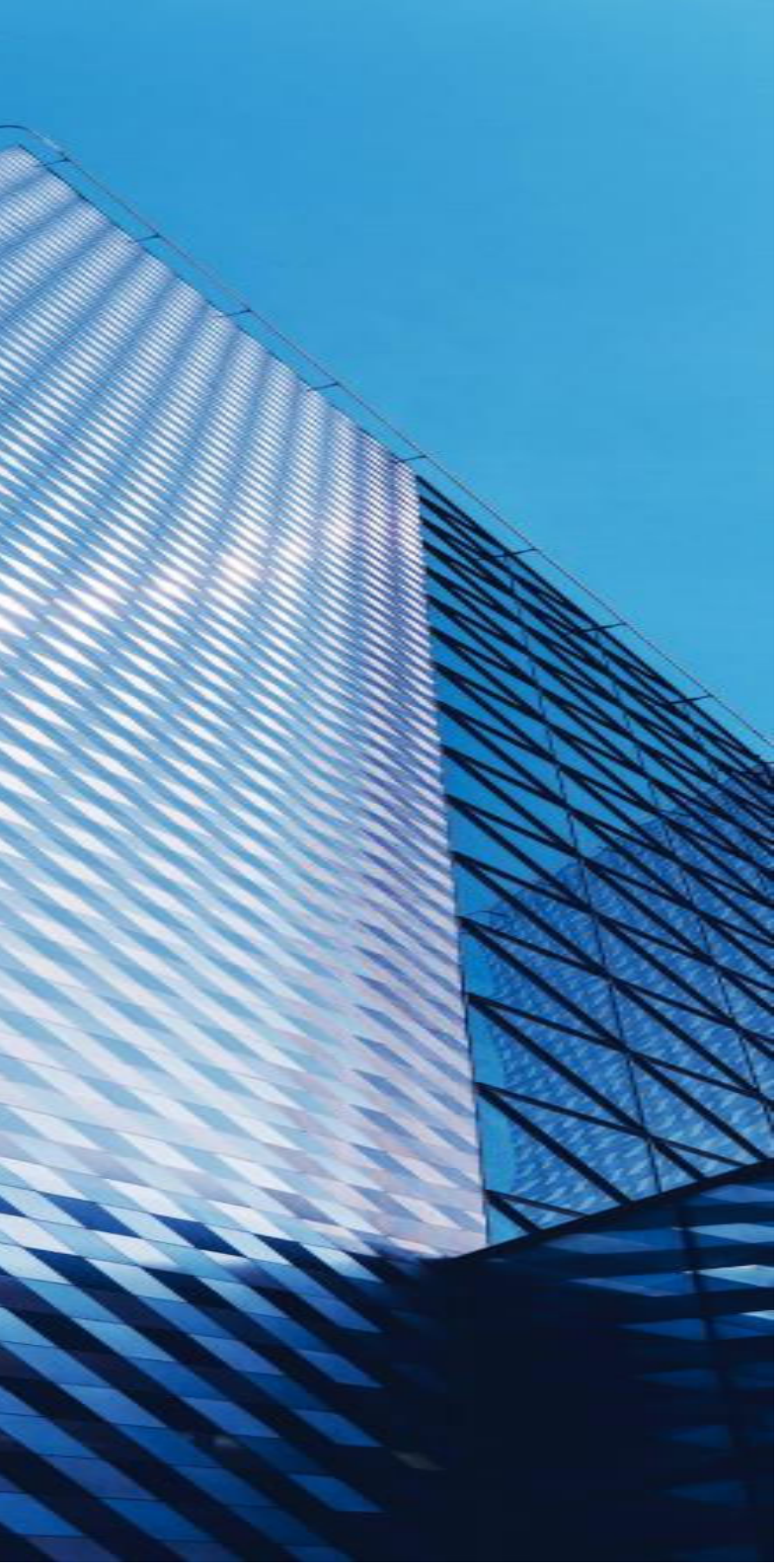


ENVIRONMENTAL PRODUCT DECLARATION

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

Updated kitchen
Elega Oy

EPD HUB, HUB-1411
Publishing date 22 May 2024, last updated on 22 May 2024, valid until 22 May 2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Elega Oy
Address	Viikatetie 16, Haapajärvi, Finland
Contact details	keskus@elega.fi
Website	https://elega.fi/

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	Sister EPD to HUB-1410
Scope of the EPD	Cradle-to-gate with modules C1–C4 and module D
EPD author	Hanna Kämäräinen, Roosa Jokisuu-Pärnänen
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	Updated kitchen for two-bedroom apartment
Additional labels	-
Product reference	-
Place of production	Haapajärvi, Finland
Period for data	1.1.2022-31.12.2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of kitchen for two-bedroom apartment
Declared unit mass	171.2816 kg
GWP-fossil, A1-A3 (kgCO2e)	1,50E+02
GWP-total, A1-A3 (kgCO2e)	-1,35E+02
Secondary material, inputs (%)	0.67
Secondary material, outputs (%)	87
Total energy use, A1-A3 (kWh)	1730
Total water use, A1-A3 (m3e)	2

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Elega is a Finnish kitchen manufacturer founded in 1991. The company's main product is kitchen renovations. Elega's kitchen renovation is an environmentally friendly solution, where only necessary parts are replaced, and the furniture is custom-made in their own factory. The modern factory is located in Haapajärvi and employs about 20 people. Sales and installation services cover the whole of Finland. Elega has about 150 interior design and kitchen industry experts working for them.

PRODUCT DESCRIPTION

An updated kitchen for two-bedroom apartment has been used as an example product. The kitchen is an example of a typical kitchen in a two-bedroom apartment. The kitchen update renovation product includes doors, front panels, handles, countertops, backsplash, drawer mechanisms, sink, and waste bin. In kitchen update cabinet frames, plinths, other filler panels, and leak protection that are already in place in the kitchen are utilised.

Further information can be found at https://elega.fi/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	1	Europe
Minerals	-	-
Fossil materials	5	Europe
Bio-based materials	94	Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	265.51
Biogenic carbon content in packaging, kg C	0.0404

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit of kitchen for two-bedroom apartment without cabinet frames
Mass per declared unit	171.2816 kg
Functional unit	-
Reference service life	-

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	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. In the manufacturing process a mix of renewable, fossil and nuclear electricity sources are used in the energy mix.

Raw materials for manufacturing come from Finland and Europe. The transportation distance of manufacturing waste to the nearest recycling facility is estimated to be 80 km.

Production losses are considered in the manufacturing process. The production loss of wood-based materials is estimated to be 8 % and for PVC film production loss is estimated to be 39 %. Wood-based materials are recycled as wood waste and treated as materials for energy recovery. The PVC film is recycled and treated as material for energy recovery.

The kitchen order is received and processed at Elega's factory, after which subcontracting orders are made and the product's manufacturing schedule is planned for production. Then, work queues are created. In production, the pieces are cut, machined, and finally coated and finished with edging. Next, a quality check is performed, and the pieces are packaged for transportation.

The doors, panels, cabinet frames, plinths, and countertops are packed in protective plastic, while other parts are packed in cardboard boxes.

Finally, the pieces are collected and sent to the desired location or warehouse.

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.

This EPD does not cover the assembly stage. Air, soil, and water impacts during the transport and installation have not been studied.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

De-construction, demolition (C1):

The dismantling of the kitchen has been assumed to be done with manual tools and without power tools that consume a lot of energy. However, it is likely that an electric screwdriver is used in the process, but the electricity usage of it cannot be reliably estimated.

Transport to waste processing (C2):

The transportation distance of the recycled materials to the nearest recycling facility is estimated to be 80 km. Materials are estimated to be transported by EURO 5 truck as a representative scenario.

In the end of life of the kitchen, all of the materials are recycled. Wood-based materials are recycled as wood waste and treated as materials for energy recovery. PVC film is recycled with the wood-based materials. All of the steel parts are recycled as metal waste and treated as materials for energy recovery.

Waste processing for reuse, recycling, and energy recovery (C3):

In the end of life of the kitchen, all of the materials are recycled. Wood-based materials are recycled as wood waste and treated as materials for energy recovery (100 %). PVC film is recycled with the wood-based materials (100 %). Steel parts are recycled as metal waste and treated as materials for energy recovery (100 %). Incineration does not require any additional process. This module includes environmental loads due to waste incineration.

The resulting effects and potential credits are declared in module D.

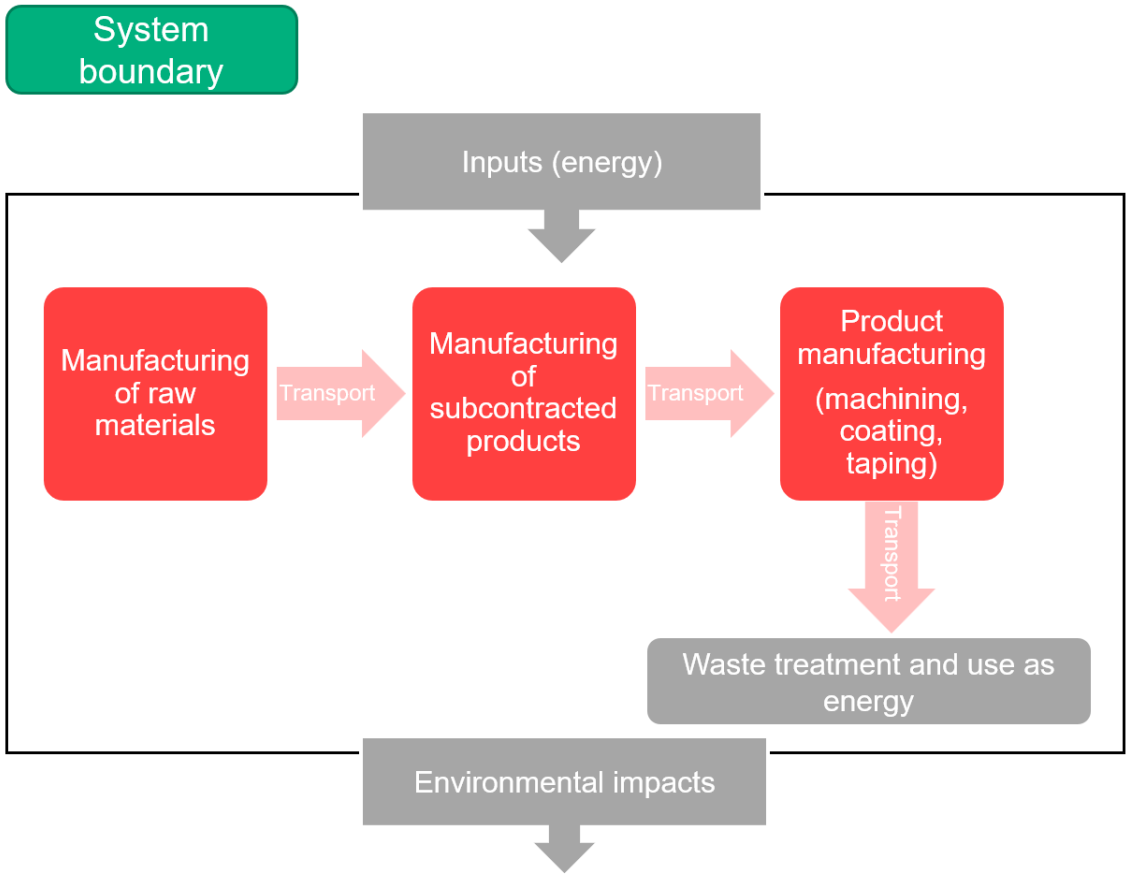
Disposal and the associated processes (C4):

The scenario at end of life assumes the product is considered to be incineration with energy recovery (100%).

Environmental benefits and loads (D):

Energy from utilization of the kitchen in an incineration plant is assigned to module D. It is assumed that the energy ratio converted to heat is 62 % and converted to electricity is 11 %.

MANUFACTURING PROCESS



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:

Allocation was done by annual kitchen delivery amounts from year 2022.

Data type	Allocation
Raw materials	Allocation by mass
Packaging materials	Allocation by mass
Ancillary materials	Allocation by mass
Manufacturing energy and waste	Allocation by mass

AVERAGES AND VARIABILITY

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

This EPD is product and factory specific and does not contain average calculations.

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 v3.8 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	-1,80E+02	1,89E+01	2,56E+01	-1,35E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,12E+00	2,88E+02	0,00E+00	-7,93E+00
GWP – fossil	kg CO_2e	1,06E+02	1,89E+01	2,56E+01	1,50E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,12E+00	2,28E+00	0,00E+00	-7,83E+00
GWP – biogenic	kg CO_2e	-2,86E+02	0,00E+00	-1,48E-01	-2,86E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	2,86E+02	0,00E+00	-3,53E-02
GWP – LULUC	kg CO_2e	2,21E-01	7,95E-03	1,79E-01	4,08E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	4,13E-04	7,49E-04	0,00E+00	-7,08E-02
Ozone depletion pot.	kg CFC_{-11}e	1,65E-04	4,33E-06	1,31E-06	1,71E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	2,57E-07	1,60E-07	0,00E+00	-4,41E-07
Acidification potential	mol H^+e	6,86E-01	9,25E-02	9,57E-02	8,74E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	4,73E-03	2,43E-02	0,00E+00	-3,18E-02
EP-freshwater[2)]	kg Pe	9,69E-04	1,34E-04	8,09E-04	1,91E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	9,16E-06	3,10E-05	0,00E+00	-2,95E-04
EP-marine	kg Ne	1,83E-01	2,23E-02	1,80E-02	2,23E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,41E-03	1,15E-02	0,00E+00	-5,35E-03
EP-terrestrial	mol Ne	2,07E+00	2,47E-01	2,04E-01	2,52E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,55E-02	1,22E-01	0,00E+00	-6,40E-02
POCP ("smog")[3)]	kg NMVOCe	5,78E-01	7,75E-02	5,64E-02	7,12E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	4,97E-03	3,01E-02	0,00E+00	-1,70E-02
ADP-minerals & metals[4)]	kg Sbe	9,84E-04	6,59E-05	2,27E-04	1,28E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	2,62E-06	6,25E-06	0,00E+00	-3,14E-05
ADP-fossil resources	MJ	1,72E+03	2,79E+02	8,86E+02	2,88E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,68E+01	1,96E+01	0,00E+00	-2,36E+02
Water use[5)]	m^3e depr.	9,78E+01	1,27E+00	1,66E+01	1,16E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	7,52E-02	9,91E+00	0,00E+00	-5,06E+00

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.

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	3,25E+03	3,88E+00	2,30E+02	3,48E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,89E-01	4,77E-01	0,00E+00	-5,78E+01
Renew. PER as material	MJ	6,26E+02	0,00E+00	1,28E+00	6,28E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	-6,26E+02	0,00E+00	0,00E+00
Total use of renew. PER	MJ	3,88E+03	3,88E+00	2,31E+02	4,11E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,89E-01	-6,26E+02	0,00E+00	-5,78E+01
Non-re. PER as energy	MJ	1,60E+03	2,79E+02	8,81E+02	2,76E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,68E+01	1,96E+01	0,00E+00	-2,36E+02
Non-re. PER as material	MJ	8,61E+01	0,00E+00	1,04E-02	8,61E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	-8,61E+01	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	1,69E+03	2,79E+02	8,81E+02	2,85E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,68E+01	-6,65E+01	0,00E+00	-2,36E+02
Secondary materials	kg	1,15E+00	9,62E-02	1,91E-01	1,44E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	4,66E-03	4,68E-02	0,00E+00	-1,61E-02
Renew. secondary fuels	MJ	6,10E-03	1,02E-03	1,10E-02	1,82E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	4,71E-05	1,16E-04	0,00E+00	-6,92E-05
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,36E+00	3,44E-02	6,00E-01	2,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	2,18E-03	-3,16E-02	0,00E+00	-2,09E-01

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	5,64E+00	3,28E-01	1,60E+00	7,57E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	2,23E-02	0,00E+00	0,00E+00	-5,08E-01
Non-hazardous waste	kg	9,71E+01	5,58E+00	5,38E+01	1,57E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	3,66E-01	1,49E+02	0,00E+00	-6,26E+02
Radioactive waste	kg	3,66E-03	1,92E-03	1,10E-02	1,66E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,12E-04	0,00E+00	0,00E+00	-2,49E-03

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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	2,34E+01	2,34E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	1,49E+02	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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	1,60E+02	1,96E+00	2,61E+01	1,89E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,11E+00	2,17E+00	0,00E+00	-7,75E+00
Ozone depletion Pot.	kg CFC_{-11}e	3,52E-05	3,42E-07	1,13E-06	3,67E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	2,04E-07	1,38E-07	0,00E+00	-3,85E-07
Acidification	kg SO_2e	9,22E-01	5,00E-03	7,81E-02	1,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	3,68E-03	1,71E-02	0,00E+00	-2,61E-02
Eutrophication	kg PO_4^3e	3,10E-01	1,10E-03	9,90E-02	4,10E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	8,38E-04	1,96E-02	0,00E+00	-1,14E-02
POCP (“smog”)	kg C_2H_4e	7,75E-02	2,43E-04	4,59E-03	8,24E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,44E-04	5,65E-04	0,00E+00	-1,18E-03
ADP-elements	kg Sbe	2,07E-01	6,97E-06	2,27E-04	2,07E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	2,54E-06	5,51E-06	0,00E+00	-3,17E-05
ADP-fossil	MJ	2,61E+03	2,88E+01	8,55E+02	3,49E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MNR	1,68E+01	1,96E+01	0,00E+00	-2,24E+02

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