ENVIRONMENTAL PRODUCT DECLARATION

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

FIN-Project Nova-line Aluminium-Wood single-sash, triple glazing 1230 mm x 1480 mm (U_W 0.82 W/m^{2}K)

Finstral AG

EPD HUB, HUB-0306
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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Finstral AG
Address	Gastererweg 1, 39054 Unterinn (Ritten)
Contact details	finstral@finstral.com
Website	https://www.finstral.com/

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 17213 Windows & Doors.
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, B2 and modules C1-C4, D
EPD author	Katrien Romagnoli and Andreas Franzelin
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	S.V 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	FIN-Project Nova-line Aluminium-Wood single-sash, triple glazing 1230 mm x 1480 mm (U_W 0.82 W/m^{2}K)
Additional labels	The products have a declaration of performance (DoP) according to the CPR /Construction Products Regulation/ (EU) No. 305/2011 compliant with the harmonized product standard /EN 14351-1/ and the CE marking. The IGU is compliant with the harmonized product standard /EN 1279-5/.
Place of production	Italy and Germany
Period for data	2021
Averaging in EPD	Multiple factories
Variation in GWP-fossil for A1-A3	19 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	The declared unit uses the dimensions of 1m by 1m of one triple-glazed window with a standard size of 1.23 m x 1.48 m (reference window in accordance with /EN 14351-1/). The frame portion FF (frame fraction) in relation of the overall area of 1,82 m² is 28 %.
Declared unit mass	39.05 kg
GWP-fossil, A1-A3 ($kgCO_{2e}$)	73.6
GWP-total, A1-A3 ($kgCO_{2e}$)	70.3
Secondary material, inputs (%)	30.9
Secondary material, outputs (%)	91.4
Total energy use, A1-A3 (kWh)	339.0
Total water use, A1-A3 (m^3e)	2.88

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Finstral is a family-owned Window- and Door manufacturer (PVC, PVC-Aluminium, Aluminium, PVC-Wood, PVC-Aluminium-Wood) with its origins in South Tyrol in Italy. Finstral is convinced that only those who think a product through from beginning to end, can continue to ensure its full development – this idea has underpinned the company's' thoughts and actions for the last 50 years. Finstral controls everything: from the development of profiles and in-house production right through to the finished installation. This allows Finstral to offer individual solutions and maximum design freedom for all windows, entry doors and conservatories.

PRODUCT DESCRIPTION

A single-sash tilt & turn window with aluminium profiles on the outside and wooden profiles on the inside, has the dimensions of 1.23 m x 1.48 m and insulated triple-glazing with TPE-gaskets.

The aluminum profile surface is powder-coated and contains 20% post-industrial aluminium recycled content. The wooden profile (62% oak and 38% spruce) surface is impregnated and lacquer-coated. The insulation of the profiles is fully made of recycled post-industrial PVC.

Thermal transmittance of the window U_W according to /EN ISO 10077 -1/ 0,82 W/(m²K) [*]
Triple glazing IGU pane composition: 4/14/4/14/4 mm
Thermal transmittance of glass U_g according to /EN 673/: 0,6 W/(m²K)
Total energy transmittance g according to /EN 410/: 0,60
Water tightness according to /EN 1027/, /EN 12208/: class 9A [*]
Air permeability according to /EN 1026/, /EN 12207/: class 4 [*]
Resistance, mechanical durability according to /EN 1191/, /EN 12400/: 10.000 cycles [*]
[*] average FIN-Project

The products have a declaration of performance (DoP) according to the CPR /Construction Products Regulation/ (EU) No. 305/2011 compliant with the harmonized product standard /EN 14351-1/ and the CE marking. The IGU is compliant with the harmonized product standard /EN 1279-5/.

Further information can be found at https://www.finstral.com/

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	7	Europe
Minerals	66	Europe
Fossil materials	6	Europe
Bio-based materials	5	Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	4.66
Biogenic carbon content in packaging, kg C	0.2563

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	The declared unit uses the dimensions of 1m by 1m of one triple-glazed window with a standard size of 1.23 m x 1.48 m (reference window in accordance with /EN 14351-1/). The frame portion FF (frame fraction) in relation of the overall area of 1,82 m² is 28 %.
Mass per declared unit	39.05 kg
Functional unit	One triple-glazed window of 1.23 m x 1.48 m (reference window in accordance with /EN 14351-1/), with a reference service life of 30 years. The frame portion FF (frame fraction) in relation of the overall area of 1,82 m² is 28 %.
Reference service life	30

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.

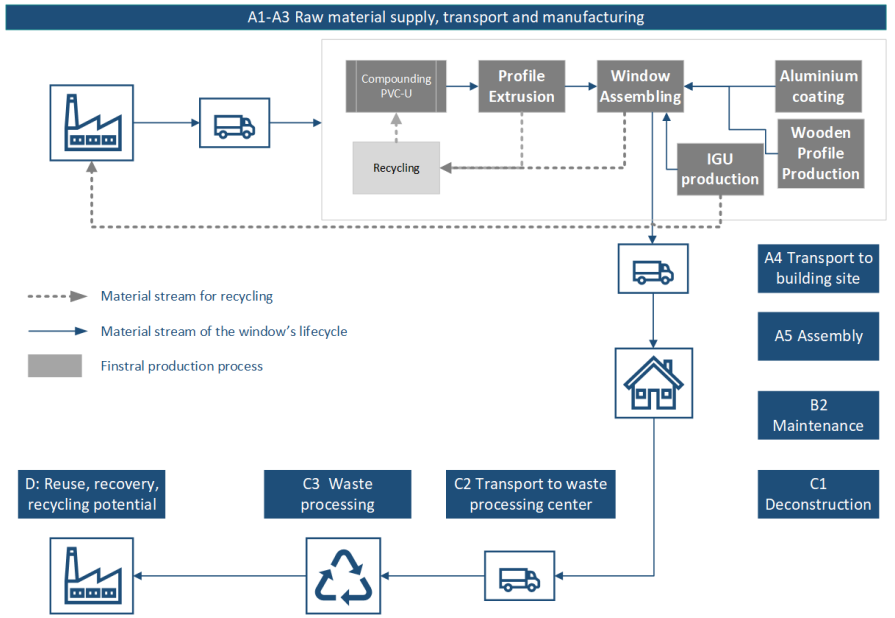
Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	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 production takes place at multiple sites in two different countries (Verona (IT), Greiz (DE), Scurelle (IT), Gochsheim (DE) Borgo (IT), Ritten (IT) and Kurtatsch (IT)). As described in the process flow chart below, there are 4 main production stages: PVC profile extrusion, aluminium and wood coating, Insulated Glass Unit (IGU) production and window assembling. Different production stages may occur at the same location. To account for this complexity, a production volume based weighted average is used for the inputs and outputs from the plants within the same production stage.



This figure shows the input of primary and secondary materials for the manufacturing of an Aluminium-Wooden window. The production process comprises the assembling of the semi-finished parts "PVC-profile", Aluminium profile, Wooden profile and "IGU" (Insulating Glass Unit), all produced in the corresponding facilities "Profile Extrusion", Aluminium coating, Wooden profile production and "IGU production". The materials are transported to the production facilities, where Finstral controls the following activities along the Declared Unit's value-chain. In the "Profile Extrusion" facilities the input materials recycled PVC (rPVC) and pigments are mixed (also referred to as "compounding PVC-U"). This recycled material is post-industrial waste coming from the internal production facilities and processed in a zero-waste closed loop process. In the next production process, the profiles are extruded in order to obtain the semi-

finished PVC-Profile. In the Aluminium coating facility, extruded aluminium profiles are powder-coated and protection film is applied. In the wooden profile production facility, the wooden profiles are shaped into the desired design and impregnated and coated with the desired finishing colour. In the “IGU production” facilities the input materials float glass, spacer, desiccant, argon, primary and secondary seal are assembled to an IGU. For the “Window Assembling” all semi-finished parts are assembled: aluminium and wooden profiles, hardware, glazing blocks and the IGU.
The manufacturing process requires electricity for the use of different equipment as well as fuel for heating purposes. Before the finished windows are transported to the construction site on a reusable cart (which returns back to the facility), protective packaging is applied. The handle is only assembled at the construction site. The packaging includes: foam pads, plastic bands and a minimal piece of wood to avoid transportation damages during the delivery to the building site or distributor for “Window Installation”.

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.

The transportation distance is defined by taking the average of all distances, based on primary data (50.000 data points for 1 year) between the production site, intermediate stops and the final destination, which is 724 km. A higher distance is considered than defined in the PCR. Empty returns are taken into account, leading to a total average distance of 1267 km. Transportation does not cause losses as product are packaged properly.
Installation includes the energy and material consumption as well as the packaging waste generated. There is no loss of material during construction activities. The window does not require further surface treatment at the building site. Therefore, there are only two items left in this module:
1) Energy use during installation. This varies depending on the floor, type of building and several other unknown parameters, and therefore ignored in the calculation.
2) Waste treatment of packaging waste as well as Biogenic CO2 released has also been included in module A5.

PRODUCT USE AND MAINTENANCE (B1-B7)

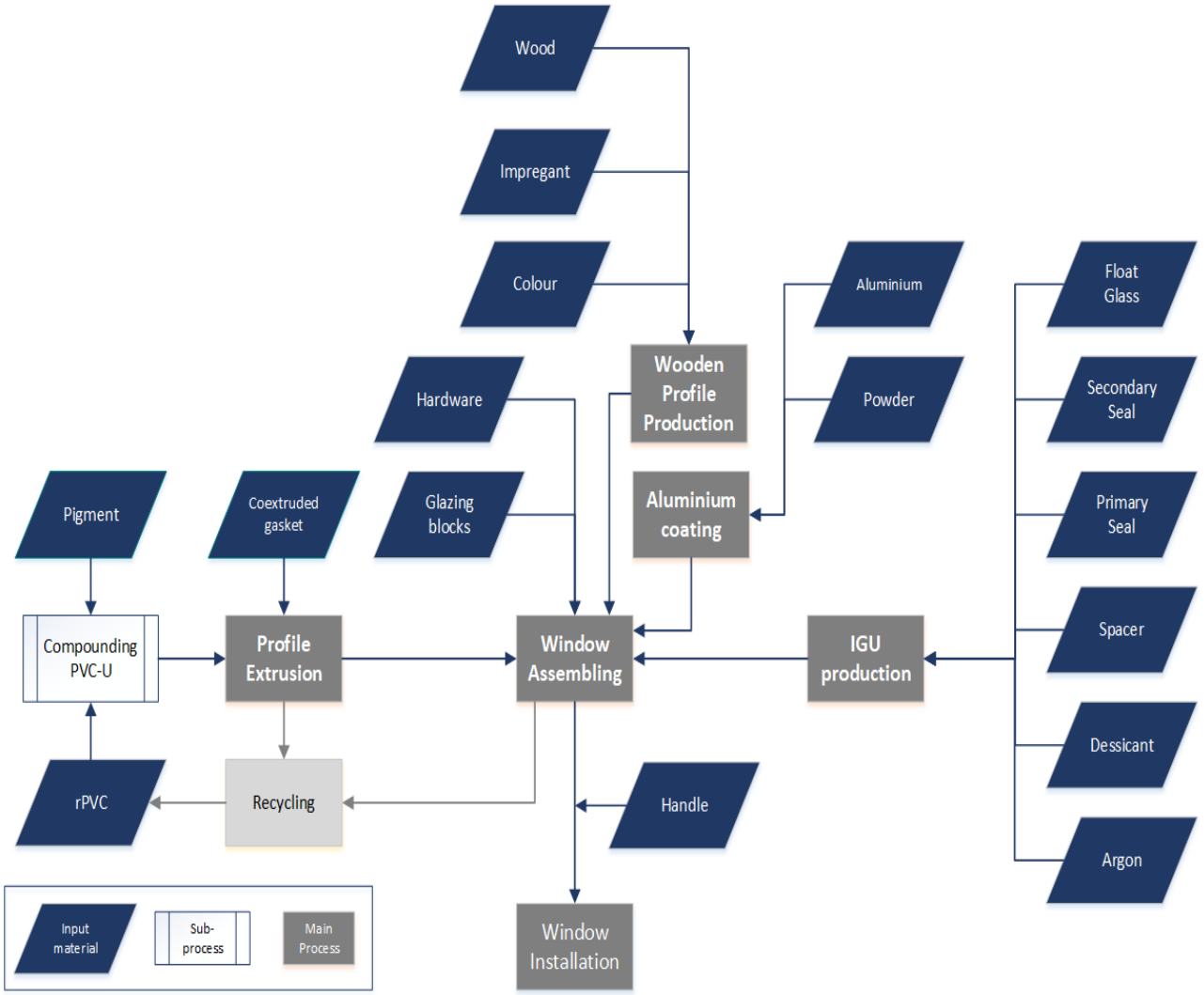
Maintenance includes the cleaning of the window on annual basis with water and detergent. No other surface treatment, nor paint, is needed as the wooden profile is not subjected to weathering on the inside of the building.
According to manufacturer data, the product has a Reference Service Life (RSL) of 30 years. No systematic replacement of IGU, hardware or gaskets are needed to keep the product functional over the entire lifetime. It is recommended to annually apply lubricant oil drops to the hardware and clean gaskets with a wiping cloth.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. The waste is collected as mixed construction waste and transported to the waste treatment center. Transportation distance to treatment is assumed to be 50 km, on average, by lorry (C2). The PVC, aluminium, wood, glass, metal and residual materials are sorted as accounted for in module C3. As well as the accounts for energy and resource inputs for treating these waste streams through recycling and incineration with energy recovery.

In North-Eastern Italy, where Finstral directly brings the EoL-windows to the waste processing company, 100% of PVC, aluminium, glass and metal waste is recycled, whereas 35% of residual materials and 100% of wood used for transport and residue materials are incinerated with energy recovery. No waste goes to landfill. The benefits and loads of incineration and recycling are included in Module D.

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, product specific data is used for product packaging, waste and raw materials, allocation could not be avoided for energy and water consumption and water emissions as the information was only available at production site level. Allocation was done by considering the production sites' annual production volume (mass) and done in accordance with the provisions of EN 15804.

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	Multiple factories
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	19 %

Primary data is used from the manufacturing sites for Assembling: Borgo (IT), Greiz (DE); PVC-profile Extrusion: Ritten (IT) and Kurtatsch (IT); Aluminium coating: Borgo (IT), Wooden profile production: Verona (IT) and IGU-production: Verona (IT), Gochsheim (DE), Scurelle (IT). The primary data was averaged for all sites of the same production process (extrusion, coating, wooden profile production, IGU or assembling) by calculating a weighted average of the sites' consumption of water and energy, and production of waste and emissions. This calculation was based on production volume in mass percent (%m).

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 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	5,61E1	2,9E0	1,13E1	7,03E1	4,55E0	1,06E0	MND	8,35E0	MND	MND	MND	MND	MND	0E0	3,19E-1	1,99E1	0E0	-3,19E1
GWP – fossil	kg CO_2e	6,34E1	2,9E0	7,3E0	7,36E1	4,59E0	1,24E-1	MND	8,13E0	MND	MND	MND	MND	MND	0E0	3,19E-1	4,74E0	0E0	-3,92E1
GWP – biogenic	kg CO_2e	-7,45E0	2,11E-3	3,98E0	-3,47E0	3,33E-3	9,38E-1	MND	2,13E-1	MND	MND	MND	MND	MND	0E0	1,71E-4	1,52E1	0E0	7,5E0
GWP – LULUC	kg CO_2e	1,15E-1	8,73E-4	1,49E-2	1,31E-1	1,38E-3	1,64E-5	MND	5,15E-3	MND	MND	MND	MND	MND	0E0	1,15E-4	2,57E-3	0E0	-2,81E-1
Ozone depletion pot.	kg $CFC_{-11}e$	5,74E-6	6,82E-7	7,05E-7	7,13E-6	1,08E-6	3,55E-9	MND	8,8E-7	MND	MND	MND	MND	MND	0E0	7,25E-8	3,46E-7	0E0	-4,77E-6
Acidification potential	mol H^+e	5,62E-1	1,22E-2	2,75E-2	6,02E-1	1,93E-2	1,36E-4	MND	6,2E-2	MND	MND	MND	MND	MND	0E0	9,16E-4	1,64E-2	0E0	-3,59E-1
EP-freshwater[2)]	kg Pe	2,52E-3	2,36E-5	2,26E-4	2,77E-3	3,73E-5	7,67E-7	MND	1,18E-3	MND	MND	MND	MND	MND	0E0	2,71E-6	1,02E-4	0E0	-1,24E-3
EP-marine	kg Ne	8,93E-2	3,67E-3	5,53E-3	9,85E-2	5,8E-3	4,36E-5	MND	2,79E-2	MND	MND	MND	MND	MND	0E0	1,82E-4	3,9E-3	0E0	-5,1E-2
EP-terrestrial	mol Ne	1,03E0	4,06E-2	5,29E-2	1,13E0	6,41E-2	4,68E-4	MND	1,06E-1	MND	MND	MND	MND	MND	0E0	2,03E-3	4,37E-2	0E0	-6,13E-1
POCP ("smog")[3)]	kg NMVOCe	2,68E-1	1,3E-2	1,72E-2	2,99E-1	2,06E-2	1,49E-4	MND	3,95E-2	MND	MND	MND	MND	MND	0E0	7,77E-4	1,32E-2	0E0	-1,68E-1
ADP-minerals & metals[4)]	kg Sbe	1,86E-2	1,98E-5	1,04E-4	1,88E-2	7,83E-5	5,91E-7	MND	2,56E-4	MND	MND	MND	MND	MND	0E0	8,8E-6	6,11E-5	0E0	-9,7E-4
ADP-fossil resources	MJ	7,97E2	1,8E1	1,07E2	9,23E2	7,13E1	3,28E-1	MND	2,52E2	MND	MND	MND	MND	MND	0E0	4,82E0	4,16E1	0E0	-4,93E2
Water use[5)]	m^3e depr.	2,2E1	1,68E-1	2,92E1	5,14E1	2,65E-1	2,86E-3	MND	-1,22E1	MND	MND	MND	MND	MND	0E0	1,58E-2	8,01E-1	0E0	-1,07E1

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	5,34E-6	2,62E-7	1,75E-7	5,78E-6	4,15E-7	2E-9	MND	6,41E-7	MND	MND	MND	MND	MND	0E0	2,03E-8	2,49E-7	0E0	-3,45E-6
Ionizing radiation[6)]	kBq U235e	2,23E0	1,97E-1	4,58E-1	2,89E0	3,12E-1	1,84E-3	MND	1,59E-1	MND	MND	MND	MND	MND	0E0	2,11E-2	1,55E-1	0E0	-2E0
Ecotoxicity (freshwater)	CTUe	2,15E3	3,45E1	1,34E2	2,32E3	5,45E1	4,13E-1	MND	5,57E2	MND	MND	MND	MND	MND	0E0	3,74E0	7,1E1	0E0	-6,56E2
Human toxicity, cancer	CTUh	7,19E-8	8,82E-10	3,89E-9	7,66E-8	1,39E-9	1,94E-11	MND	2,95E-8	MND	MND	MND	MND	MND	0E0	1,08E-10	3,67E-9	0E0	3,61E-9
Human tox. non-cancer	CTUh	1,78E-6	4,09E-8	7,7E-8	1,9E-6	6,46E-8	4,52E-10	MND	3,92E-7	MND	MND	MND	MND	MND	0E0	4,09E-9	8,2E-8	0E0	1,8E-7
SQP[7)]	-	1,59E2	6,81E1	1,7E1	2,44E2	1,08E2	1,16E-1	MND	1,63E1	MND	MND	MND	MND	MND	0E0	4,09E0	2,39E1	0E0	-7,01E1

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	9,27E1	2,27E-1	1,14E2	2,07E2	8,98E-1	2,28E-2	MND	5,83E0	MND	MND	MND	MND	MND	0E0	6,9E-2	2,95E0	0E0	-8,55E1
Renew. PER as material	MJ	9,39E1	0E0	-2,97E1	6,42E1	0E0	-9,88E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	-1,54E2	0E0	1,64E2
Total use of renew. PER	MJ	1,87E2	2,27E-1	8,48E1	2,72E2	8,98E-1	-9,86E0	MND	5,83E0	MND	MND	MND	MND	MND	0E0	6,9E-2	-1,51E2	0E0	7,84E1
Non-re. PER as energy	MJ	8,91E2	1,8E1	1,03E2	1,01E3	7,13E1	3,28E-1	MND	2,52E2	MND	MND	MND	MND	MND	0E0	4,82E0	4,16E1	0E0	-4,83E2
Non-re. PER as material	MJ	1,45E2	0E0	1,35E0	1,46E2	0E0	1,56E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	-1,38E2	0E0	-9,97E0
Total use of non-re. PER	MJ	1,04E3	1,8E1	1,04E2	1,16E3	7,13E1	1,89E0	MND	2,52E2	MND	MND	MND	MND	MND	0E0	4,82E0	-9,65E1	0E0	-4,93E2
Secondary materials	kg	1,2E1	0E0	2,15E-3	1,2E1	0E0	0E0	MND	5,38E-2	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	2,67E1
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	1,07E0	3,76E-3	1,81E0	2.88	1,49E-2	1,05E-4	MND	1,56E-1	MND	MND	MND	MND	MND	0E0	8,33E-4	1,64E-2	0E0	-2,54E-1

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	6,49E0	1,75E-2	2,21E-1	6,73E0	6,93E-2	1,72E-3	MND	6,53E-1	MND	MND	MND	MND	MND	0E0	4,96E-3	0E0	0E0	-3,44E0
Non-hazardous waste	kg	5,6E1	1,94E0	9,14E0	6,71E1	7,67E0	7,9E-2	MND	1,43E1	MND	MND	MND	MND	MND	0E0	3,42E-1	0E0	0E0	-4,28E1
Radioactive waste	kg	2,39E-3	1,24E-4	2,48E-4	2,76E-3	4,9E-4	2,09E-6	MND	1,6E-4	MND	MND	MND	MND	MND	0E0	3,3E-5	0E0	0E0	-2,06E-3

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	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	2,41E0	0E0	0E0	2,41E0	0E0	5,2E-1	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	3,74E1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	1,05E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	7,6E0	0E0	0E0
Exported energy	MJ	5,71E-2	0E0	1,15E2	1,15E2	0E0	1,14E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	3,24E0	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	6,48E1	1,15E0	7,08E0	7,31E1	4,55E0	1,25E-1	MND	7,69E0	MND	MND	MND	MND	MND	0E0	3,16E-1	4,67E0	0E0	-3,87E1
Ozone depletion Pot.	kg CFC_{-11}e	3,63E-6	2,17E-7	5,63E-7	4,41E-6	8,57E-7	3,02E-9	MND	1,11E-6	MND	MND	MND	MND	MND	0E0	5,77E-8	2,92E-7	0E0	-4,37E-6
Acidification	kg SO_2e	3,96E-1	2,36E-3	2,19E-2	4,2E-1	9,33E-3	9,96E-5	MND	5,12E-2	MND	MND	MND	MND	MND	0E0	6,44E-4	1,41E-2	0E0	-1,43E-1
Eutrophication	kg PO_4^3e	7,81E-2	4,77E-4	1,05E-2	8,91E-2	1,88E-3	5,91E-5	MND	2,38E-2	MND	MND	MND	MND	MND	0E0	1,33E-4	8,21E-3	0E0	-4,36E-2
POCP (“smog”)	kg C_2H_4e	2,12E-2	1,5E-4	1,38E-3	2,27E-2	5,91E-4	5,48E-6	MND	2,74E-3	MND	MND	MND	MND	MND	0E0	3,85E-5	7,68E-4	0E0	-1,09E-2
ADP-elements	kg Sbe	1,86E-2	1,98E-5	1,04E-4	1,88E-2	7,83E-5	5,91E-7	MND	2,56E-4	MND	MND	MND	MND	MND	0E0	8,8E-6	6,11E-5	0E0	-9,7E-4
ADP-fossil	MJ	7,97E2	1,8E1	1,07E2	9,23E2	7,13E1	3,28E-1	MND	2,52E2	MND	MND	MND	MND	MND	0E0	4,82E0	4,16E1	0E0	-4,93E2

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.

Silvia Vilčeková, as an authorized verifier acting for EPD Hub Limited
24.02.2023

VERIFIED ISO 14025