ENVIRONMENTAL PRODUCT DECLARATION

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

FIN-Window Classic-line Aluminium-PVC single-sash, triple glazing 1230 mm x 1480 mm (U_W = 0.82 W/m²K)

Finstral AG

EPD HUB, HUB-0053
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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

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

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
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 and A5, B2, C1–C4 and 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-Window Classic-line Aluminium-PVC single-sash, triple glazing 1230 mm x 1480 mm (U_W = 0.82 W/m²K)
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	11 %

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 29 %.
Declared unit mass	39.47 kg
GWP-fossil, A1-A3 (kgCO2e)	9.26E1
GWP-total, A1-A3 (kgCO2e)	9.38E1
Secondary material, inputs (%)	2.26E1
Secondary material, outputs (%)	1.01E2
Total energy use, A1-A3 (kWh)	4.03E2
Total water use, A1-A3 (m3e)	5.26E2

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Window and door manufacturer (PVC, PVC-Aluminium, Aluminium, PVC-Wood, PVC-Aluminium-Wood). Finstral is a family-owned Window- and Door manufacturer (PVC, PVC-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 the dimensions of 1.23 m x 1.48 m and with insulated triple-glazing, aluminium cover on the outside of white and coloured PVC-U window frame profiles with textured or smooth surfaces, co-extruded PVC-P gaskets, EPDM-gaskets, steel-reinforcement and steel hardware.

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-Window

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	14	Aluminium, screws, handle and hardware
Minerals	72	White sand for glass, NaCl salt for Chlorine
Fossil materials	8	Crude oil for PVC
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in packaging, kg C	0.1337

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 29 %.
Mass per declared unit	39.47 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 29 %.
Reference service life	30 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.

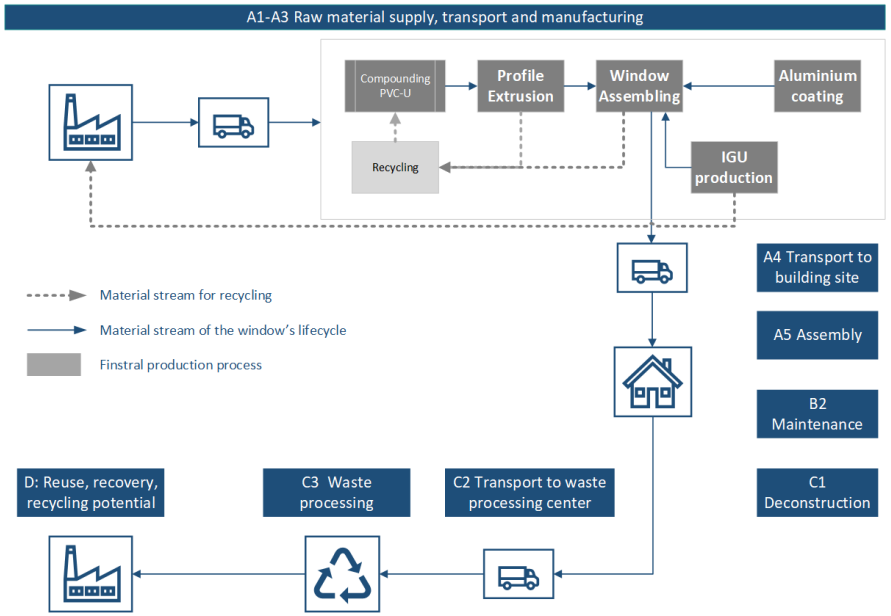
Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MND	x	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	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 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 (Brixen (IT), Verona (IT), Gochsheim (DE), Bad-Lauterberg (DE), Scurelle (IT), Borgo (IT), Ritten (IT) and Kurtatsch (IT)). As described in the process flow chart below, there are four main production stages: PVC profile extrusion, Aluminium 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-PVC window. The production process comprises the assembling of the semi-finished parts "PVC-profile", "Aluminium profile" and "IGU" (Insulated Glass Unit), all produced in the corresponding facilities "Profile Extrusion", "Aluminium coating" 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 PVC, chalk, stabilizers, TiO_2 and modifier are mixed (also referred to as "compounding PVC-U") with recycled PVC (rPVC). This recycled material is post-industrial waste coming from the internal production facilities and is processed in a zero-waste closed loop. In the next production process step, the decorative foils and gaskets are co-extruded and protection film is applied in order to obtain the semi-finished PVC-Profile. In the "Aluminium

coating" facility, extruded aluminium profiles are powder-coated. The aluminium contains 20% post-industrial recycled content. 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", secondary materials such as hardware and gasket are added to the profile as well as glazing blocks for the installation of the IGU in the window.

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 in 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 CO_2 released from the protective wood support has also been included in module A5.

PRODUCT USE AND MAINTENANCE (B1-B7)

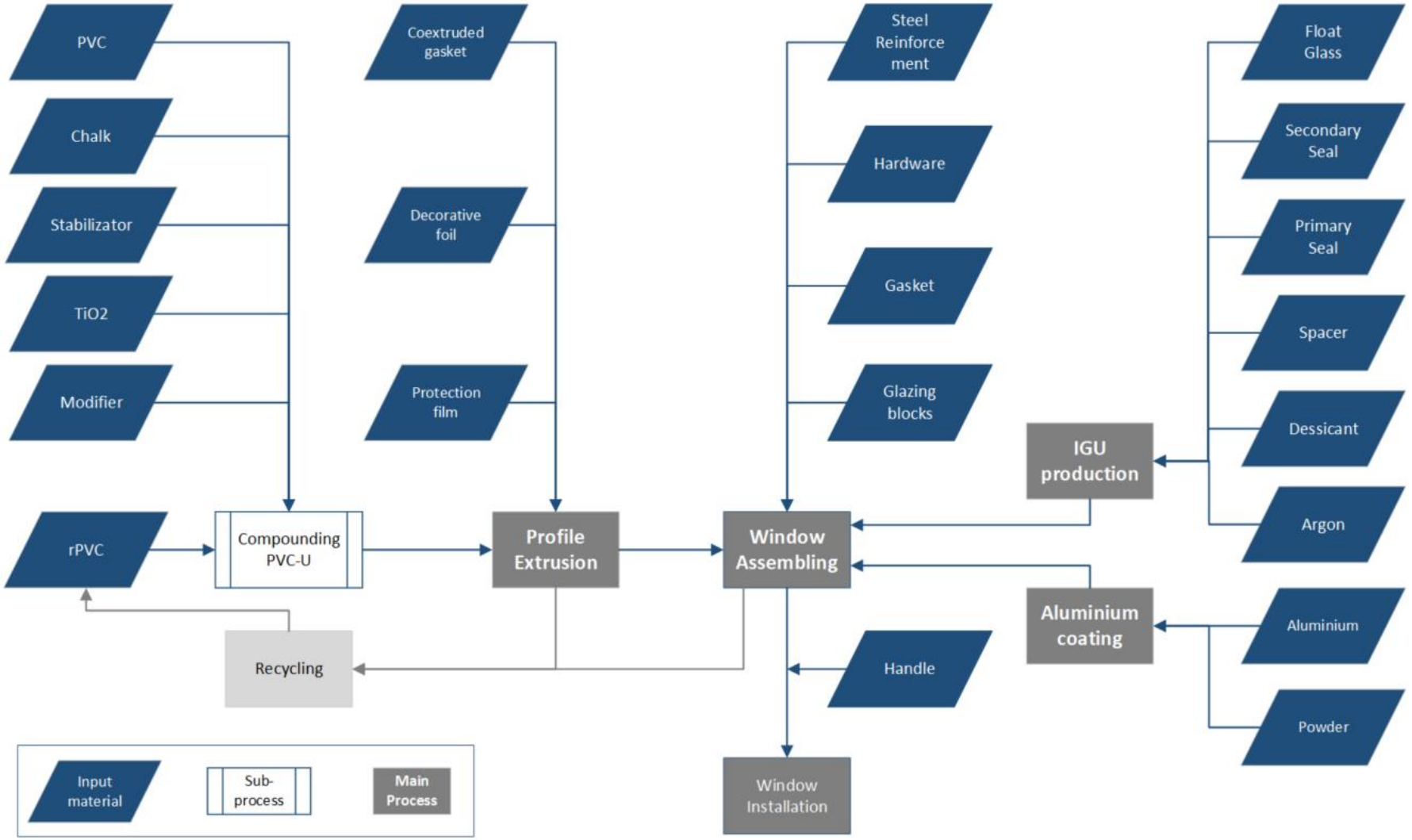
Maintenance includes the cleaning of the window on annual basis with water and detergent. No other surface treatment, nor paint, is needed.

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 centre. Transportation distance to treatment is assumed to be 50 km on average by lorry (C2). The PVC, aluminium, 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.

Because of lack of accuracy in available modelling resources, a few constituents under 0.1% of product mass are excluded. These include some ancillary materials which are only present in the product in very small amounts and have no serious impact on the emissions of the product.
The production of equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per the reference standard, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

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.
This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs.

- Module A2 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as the role of transportation emission in total results is small, the variety in load is assumed to be negligible. Empty returns are not considered.
- Module A4: Transportation does not cause losses as products are packaged properly. Additionally, transportation distance is 1267 km based on the average distance to customers premises in the chosen reference year and including empty returns. A lorry is the assumed vehicle type used.
- Module B2: The product is assumed to be maintained well, in order to reach a RSL of 30 years without the need for systematic replacements. The necessary detergent and water for the annual cleaning of windows is included.
- Module C2: Transportation distance to the designated material/energy recovery business is estimated as 50 km and the transportation method is assumed as lorry.
- Module C3, D: The product undergoes dismantling, and the parts are sorted into metals, plastics, PVC, wood, glass and other residues. Module C3 accounts for energy and resource inputs for sorting and treating these waste streams for recycling and incineration with energy recovery. Ash from recycling processes is negligible. The recycled end-of-life materials are assumed to serve as secondary raw materials in other manufacturing processes.

Allocation used in environmental data sources is aligned with the above.

AVERAGES AND VARIABILITY

Primary data is used from the manufacturing sites for Assembling: Brixen (IT), Verona (IT), Gochsheim (DE),Scurelle (IT), Bad-Lauterberg (DE); PVC-profile extrusion: Ritten (IT) and Kurtatsch (IT); Aluminium coating: Borgo (IT) and IGU-production: Verona (IT), Gochsheim (DE), Scurelle (IT). The primary data was averaged for all sites of the same production process (PVC extrusion, Aluminium coating, 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	kg CO_2e	8,66E1	2,53E0	4,71E0	9,38E1	4,54E0	5,99E-1	MND	8,35E0	MND	MND	MND	MND	MND	0E0	3,23E-1	7,04E0	0E0	-6,38E1
GWP – fossil	kg CO_2e	8,49E1	2,53E0	5,21E0	9,26E1	4,58E0	1,09E-1	MND	8,13E0	MND	MND	MND	MND	MND	0E0	3,22E-1	7,05E0	0E0	-6,39E1
GWP – biogenic	kg CO_2e	1,54E0	1,83E-3	-5E-1	1,04E0	3,33E-3	4,9E-1	MND	2,13E-1	MND	MND	MND	MND	MND	0E0	1,73E-4	-1,04E-2	0E0	7,22E-1
GWP – LULUC	kg CO_2e	1,52E-1	7,6E-4	1,96E-3	1,54E-1	1,38E-3	1,27E-5	MND	5,15E-3	MND	MND	MND	MND	MND	0E0	1,16E-4	2,79E-3	0E0	-6,27E-1
Ozone depletion pot.	kg CFC_{-11}e	2,1E-5	5,94E-7	4,71E-7	2,21E-5	1,08E-6	1,44E-9	MND	8,8E-7	MND	MND	MND	MND	MND	0E0	7,33E-8	4,23E-7	0E0	-1,51E-5
Acidification potential	mol H^+e	6,3E-1	1,06E-2	2,13E-2	6,62E-1	1,92E-2	6,42E-5	MND	6,2E-2	MND	MND	MND	MND	MND	0E0	9,25E-4	1,8E-2	0E0	-4,85E-1
EP-freshwater[3)]	kg Pe	3,42E-3	2,06E-5	1,39E-4	3,58E-3	3,73E-5	4,62E-7	MND	1,18E-3	MND	MND	MND	MND	MND	0E0	2,74E-6	9,7E-5	0E0	-2,53E-3
EP-marine	kg Ne	1,03E-1	3,2E-3	4,08E-3	1,11E-1	5,8E-3	1,84E-5	MND	2,79E-2	MND	MND	MND	MND	MND	0E0	1,84E-4	5,05E-3	0E0	-6,74E-2
EP-terrestrial	mol Ne	1,18E0	3,53E-2	4,1E-2	1,26E0	6,41E-2	2,03E-4	MND	1,06E-1	MND	MND	MND	MND	MND	0E0	2,05E-3	5,58E-2	0E0	-7,88E-1
POCP (“smog”)	kg NMVOCe	3,27E-1	1,14E-2	1,35E-2	3,52E-1	2,06E-2	5,91E-5	MND	3,95E-2	MND	MND	MND	MND	MND	0E0	7,85E-4	1,72E-2	0E0	-2,43E-1
ADP-minerals & metals	kg Sbe	1,87E-2	2,64E-5	4,5E-5	1,88E-2	7,82E-5	1,88E-7	MND	2,56E-4	MND	MND	MND	MND	MND	0E0	8,89E-6	6,22E-5	0E0	-1,33E-3
ADP-fossil resources	MJ	1,23E3	2,4E1	7,71E1	1,33E3	7,13E1	1,91E-1	MND	2,52E2	MND	MND	MND	MND	MND	0E0	4,87E0	4,97E1	0E0	-1,03E3
Water use[2)]	m^3e depr.	7,51E1	1,46E-1	1,74E1	9,26E1	2,65E-1	3,27E-3	MND	-1,22E1	MND	MND	MND	MND	MND	0E0	1,59E-2	1,02E0	0E0	-3,24E1

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	6,34E-6	2,29E-7	1,29E-7	6,7E-6	4,15E-7	7,85E-10	MND	6,41E-7	MND	MND	MND	MND	MND	0E0	2,05E-8	3,09E-7	0E0	-4,48E-6
Ionizing radiation[5)]	kBq U235e	3,33E0	1,72E-1	4,04E-1	3,91E0	3,12E-1	8,65E-4	MND	1,59E-1	MND	MND	MND	MND	MND	0E0	2,13E-2	1,65E-1	0E0	-3,82E0
Ecotoxicity (freshwater)	CTUe	2,56E3	3E1	6,42E1	2,66E3	5,45E1	1,85E-1	MND	5,57E2	MND	MND	MND	MND	MND	0E0	3,78E0	6,86E1	0E0	-1,13E3
Human toxicity, cancer	CTUh	1,16E-7	7,68E-10	4,44E-9	1,21E-7	1,39E-9	1,68E-11	MND	2,95E-8	MND	MND	MND	MND	MND	0E0	1,09E-10	4,79E-9	0E0	-5,89E-8
Human tox. non-cancer	CTUh	2,44E-6	3,56E-8	4,94E-8	2,53E-6	6,46E-8	3,44E-10	MND	3,92E-7	MND	MND	MND	MND	MND	0E0	4,14E-9	8,44E-8	0E0	3,38E-7
SQP	-	1,79E2	5,93E1	1,5E1	2,54E2	1,08E2	1,06E-1	MND	1,63E1	MND	MND	MND	MND	MND	0E0	4,13E0	2,94E1	0E0	-7,12E1

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	MJ	1,17E2	3,02E-1	5,8E1	1,75E2	8,97E-1	1,42E-2	MND	5,83E0	MND	MND	MND	MND	MND	0E0	6,98E-2	2,66E0	0E0	-1,88E2
Renew. PER as material	MJ	4,62E0	0E0	3,35E0	7,98E0	0E0	-4,02E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	-3,95E0	0E0	0E0
Total use of renew. PER	MJ	1,21E2	3,02E-1	6,14E1	1,83E2	8,97E-1	-4,01E0	MND	5,83E0	MND	MND	MND	MND	MND	0E0	6,98E-2	-1,29E0	0E0	-1,88E2
Non-re. PER as energy	MJ	1,18E3	2,4E1	7,15E1	1,27E3	7,13E1	1,91E-1	MND	2,52E2	MND	MND	MND	MND	MND	0E0	4,87E0	4,97E1	0E0	-8,63E2
Non-re. PER as material	MJ	1,53E2	0E0	-1,79E1	1,35E2	0E0	-4,18E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	-1,31E2	0E0	-1,7E2
Total use of non-re. PER	MJ	1,33E3	2,4E1	5,36E1	1,41E3	7,13E1	-3,99E0	MND	2,52E2	MND	MND	MND	MND	MND	0E0	4,87E0	-8,12E1	0E0	-1,03E3
Secondary materials	kg	8,93E0	0E0	1,85E-3	8,93E0	0E0	0E0	MND	5,38E-2	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	3,59E1
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	5,25E2	5E-3	1,42E0	5,26E2	1,48E-2	7,57E-5	MND	1,56E-1	MND	MND	MND	MND	MND	0E0	8,42E-4	1,91E-2	0E0	-4,3E-1

6) 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	8,98E0	2,34E-2	1,74E-1	9,18E0	6,93E-2	1,44E-3	MND	6,53E-1	MND	MND	MND	MND	MND	0E0	5,02E-3	0E0	0E0	-7,99E0
Non-hazardous waste	kg	8,03E1	2,58E0	1,14E1	9,43E1	7,66E0	5,95E-2	MND	1,43E1	MND	MND	MND	MND	MND	0E0	3,45E-1	0E0	0E0	-1,05E2
Radioactive waste	kg	2,64E-3	1,65E-4	2,11E-4	3,01E-3	4,89E-4	9,02E-7	MND	1,6E-4	MND	MND	MND	MND	MND	0E0	3,34E-5	0E0	0E0	-3,53E-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	2,33E0	0E0	6,96E0	9,29E0	0E0	0E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	3,9E1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	1,28E-1	1,28E-1	0E0	4,78E-1	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	8,58E-1	0E0	0E0
Exported energy	MJ	5,71E-2	0E0	0E0	5,71E-2	0E0	8,33E0	MND	0E0	MND	MND	MND	MND	MND	0E0	0E0	5,01E0	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	8,6E1	1,53E0	5,05E0	9,25E1	4,54E0	1,09E-1	MND	7,69E0	MND	MND	MND	MND	MND	0E0	3,2E-1	6,95E0	0E0	-6,27E1
Ozone depletion Pot.	kg CFC_{-11}e	1,04E-5	2,89E-7	3,83E-7	1,11E-5	8,56E-7	1,26E-9	MND	1,11E-6	MND	MND	MND	MND	MND	0E0	5,84E-8	3,64E-7	0E0	-2,01E-5
Acidification	kg SO_2e	4,58E-1	3,14E-3	1,7E-2	4,78E-1	9,32E-3	4,34E-5	MND	5,12E-2	MND	MND	MND	MND	MND	0E0	6,51E-4	1,34E-2	0E0	-2,65E-1
Eutrophication	kg PO_4^3e	1,06E-1	6,35E-4	5,76E-3	1,12E-1	1,88E-3	3,96E-5	MND	2,38E-2	MND	MND	MND	MND	MND	0E0	1,34E-4	9,79E-3	0E0	-8,89E-2
POCP (“smog”)	kg C_2H_4e	2,93E-2	1,99E-4	1,25E-3	3,07E-2	5,91E-4	2,73E-6	MND	2,74E-3	MND	MND	MND	MND	MND	0E0	3,89E-5	9,58E-4	0E0	-2,32E-2
ADP-elements	kg Sbe	1,87E-2	2,64E-5	4,5E-5	1,88E-2	7,82E-5	1,88E-7	MND	2,56E-4	MND	MND	MND	MND	MND	0E0	8,89E-6	6,22E-5	0E0	-1,33E-3
ADP-fossil	MJ	1,23E3	2,4E1	7,71E1	1,33E3	7,13E1	1,91E-1	MND	2,52E2	MND	MND	MND	MND	MND	0E0	4,87E0	4,97E1	0E0	-1,03E3

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
08.06.2022