ENVIRONMENTAL PRODUCT DECLARATION

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

DELTABEAM® Green Composite Beam, Painted
Peikko Group Corporation

EPD HUB, HUB-0069
Publishing date 28 June 2022, last updated date 28 June 2022, valid until 28 June 2027

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Peikko Group Corporation
Address	R. Kalantos str. 49, Kaunas, 52303 Lithuania
Contact details	jaakko.yrjola@peikko.com
Website	www.peikko.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
Sector	Construction product
Category of EPD	Sister EPD (HUB-0011)
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Patience Wanjala, Peikko Group Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	E.A 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	DELTABEAM® Green Composite Beam, Painted
Place of production	Lithuania
Period for data	2021
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	0%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Kg of DELTABEAM® Green, painted
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	1,15
GWP-total, A1-A3 (kgCO2e)	1,15
Secondary material, inputs (%)	97,0
Secondary material, outputs (%)	95,0
Total energy use, A1-A3 (kWh)	5,56
Total water use, A1-A3 (m3e)	9,64E-3

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Peikko Group Corporation is a leading global supplier of slim floor structures, wind energy applications, and connection technology for precast and cast-in-situ construction. Peikko's innovative solutions offer a faster, safer, and more sustainable way to design and build. Peikko has sales offices in over 30 countries in Asia-Pacific, Europe, Africa, the Middle East, and North America, with manufacturing operations in 12 countries

PRODUCT DESCRIPTION

This EPD represents DELTABEAM® Green produced at Peikko facility in Kaunas, Lithuania.
DELTABEAM® Green is a structural element which gives added environmental benefit. It can be connected to concrete, steel, timber or composite columns using Peikko's innovative solutions, such as Hidden Corbels, Anchor Bolts, Welding Plates, etc., to give slim floor structure. The product consists of steel materials of high recycling content of over 90%. It is designed to be used as a structural element combined with all general slab types. It enables the usage of shallow element structures and strengthens the frame structure inside the slab. Detailed information can be found from manufacturers webpages at https://www.peikko.com/products/product/deltabeam-product-information/
And
Deltabeam Green video

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	100	EU
Minerals	-	-
Fossil materials	-	-
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.0
Biogenic carbon content in packaging, kg C	0.0111

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Kg of DELTABEAM® Green, painted
Mass per declared unit	1 kg

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.

A1

The environmental impacts of raw material supply (A1) include emissions generated when raw materials are taken from nature, transported to industrial units for processing and processed, along with waste handling from the various production processes. The primary raw materials are steel. They include steel plate, rebars and welding filler metal. Steel plates have over 95% recycled content, rebars have 97% recycled content while welding filler is 100% virgin. All major upstream processes are taken into consideration, including infrastructure. Loss of raw material and energy transmission losses are also taken into account. This stage includes all the aforementioned for the raw materials which end up in the final product (i.e. steel, welding filler and packaging) as well as the electricity and heat production which are consumed during the manufacturing at the plant.

A2

The considered transportation impacts (A2) include exhaust emissions resulting from the transport of all raw materials from suppliers to Peikko Lithuania production plant as well as the environmental impacts of production of the used fuel. The manufacturing, maintenance, and disposal of the vehicles as well as tire and road wear during transportation have also been included. The transportation distances and methods were provided by Peikko Lithuania.

A3

The environmental impacts considered for the production stage (A3) cover the manufacturing of the production materials (welding gases, lubricating oils and blasting steel shots) and fuels used by machines. Also handling of waste formed in the production processes at the production plant is covered. The environmental impacts of this stage have been calculated using the most recent data in regard to what applied in the factory. The study considers the losses of main raw materials occurring during the manufacturing process.

TRANSPORT AND INSTALLATION (A4-A5)

A4

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. Transportation is taking place mainly from Kaunas to Vilnius which is 104 km away. However, some products are transported further out of the capital region, hence an average distance of 400 km is assumed. It was considered that the transportation company will acquire other shipments to other directions in order to maximize their efficiency. The transportation method is assumed to be lorry, which is the most common mode of transport in the region and the fill rate was assumed to be 100%. Transportation does not cause losses as product are packaged properly.

A5

A5 takes into consideration only the wood packaging. Generation of waste at the construction site occur from the packaging wood pallets. A5 cover the treatment of the packaging wood pallets which is assumed are incinerated after 10 uses, and the generated energy can replace the need for heat energy in district heating. The transportation distance to the nearest incineration plant is assumed as 50km and the transportation method assumed to be lorry. This is an average distance which considers the fact that according to the scenario A4 products are situated in capital regions of Lithuania and distance to recycling and landfill facilities is not very long in the capital regions.

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)

End of life stage includes deconstruction/demolition (C1), transport to waste processing (C2), waste processing for reuse, recovery and/or recycling (C3) and disposal (C4).

C1

Demolition is assumed to take 0.01 kWh/kg of element. It is assumed that 100% of waste is collected. Energy consumption of demolition process is on the average 10 kWh/m2 (Bozdag, Ö. & Secer, M. 2007). Based on Level(s) project, an average mass of concrete building is about 1000 kg/m2. Thus, energy consumption of demolition is 10 kWh / 1000 kg = 0.01 kWh/kg.

C2

Distance for transportation to treatment is assumed as 50 km and the transportation method is assumed to be lorry. This is an average distance which considers the fact that according to the scenario A4 products are situated in within the capital areas and distance to recycling and landfill facilities is not very long.

C3

95% of steel is assumed to be recycled based on World Steel Association, 2020.

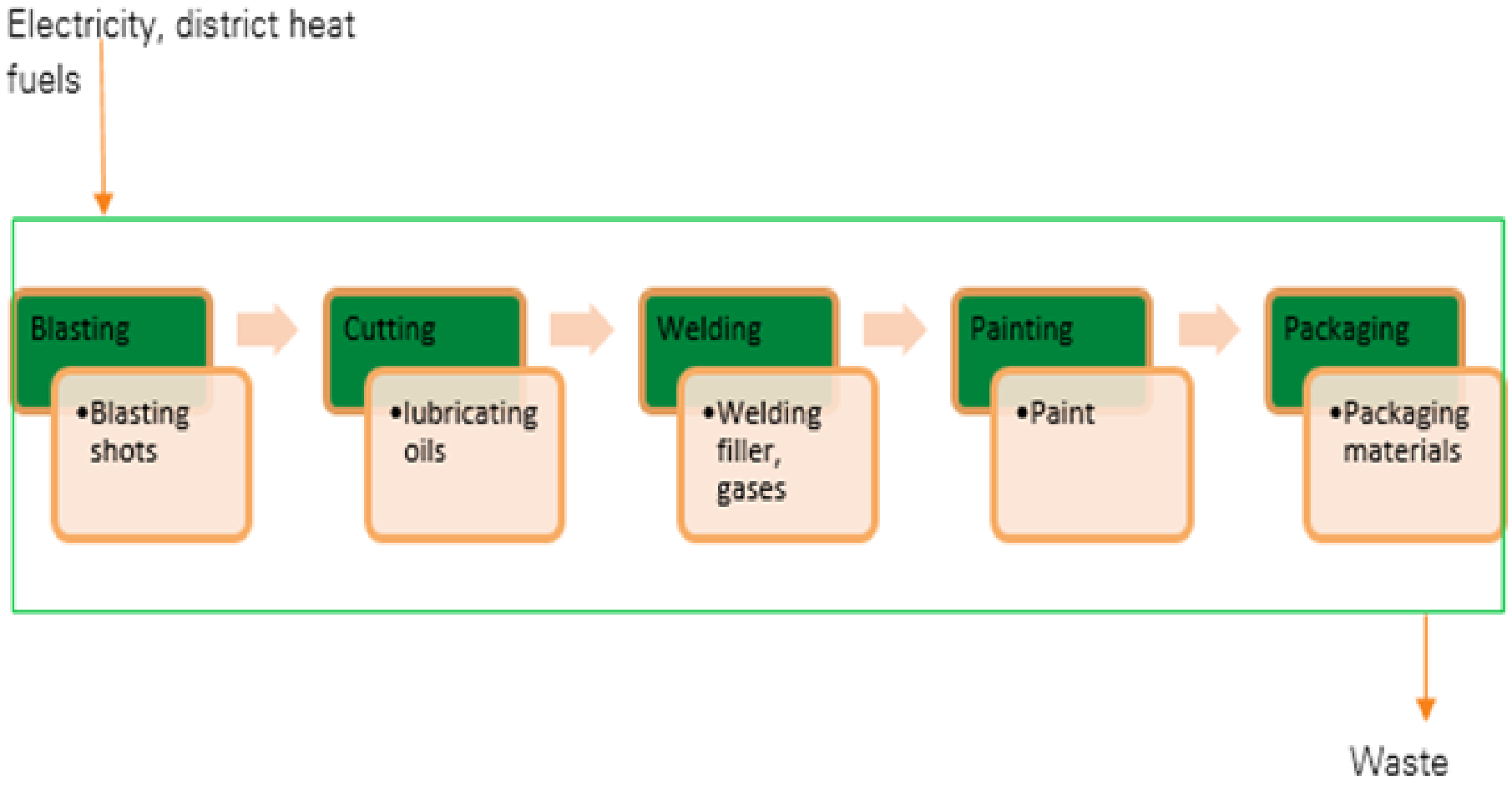
C4

It is assumed that 5% of steel is taken to landfill for final disposal.

D

Due to the recycling process the end-of-life product is converted into a recycled steel (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. Modules B1 – B7 have not been calculated nor included in the LCA calculations.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes for which data is available are included in the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total excluded input and output flows do not exceed 5% of energy usage or mass. The life cycle analysis includes all industrial processes from raw material acquisition to production, distribution, and end-of-life stages. Excluded chemicals, such as paints and thinners, do not contain any hazardous substances and can be thus left out from LCA analysis.

The production of capital 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 also 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.

Since the plant produces only DELTABEAM® Green, allocation was not necessary. However, because of existing Co-product, allocation was done as follows:

Total Product; = 100%, Declared Product = 82.20%, Co-product = 17.80%. Allocation was based on economic values because the unit difference of revenue between Main product and Co-product was more than 25%.
According to the EN 15804+A2: “Flows leaving the system at the end-of-waste boundary of the product stage (A1-A3) shall be allocated as co-products.” “Co-product: any of two or more marketable materials, products or fuels from the same unit process, but which is not the object of the assessment.”.

Here, the co-product comes from parts that are cut off to make room for webholes, air holes, casting holes and other openings useful for installation processes in the final product. Also, rebars cut off to fit the required sizes. These cut-off parts reduce the final product mass and are normally used in other related products or sold as scrap.

The values for 1 kg of the product, which is used within the study, is calculated by considering the total production output (kg) for the product per annual production output (kg) of the plant. The annual production output of the declared product, the annual total energy consumption, packaging materials and the generated waste data is given from the production plant. Subsequently, the product output fixed to 1 kg and the corresponding amounts of consumption, packaging, and generated waste of 1 kg equivalent of the product is used in calculations.

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

AVERAGES AND VARIABILITY

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 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	9,52E-1	1,81E-1	1,8E-2	1,15E0	3,54E-2	4,15E-3	MND	MND	MND	MND	MND	MND	MND	3,3E-3	4,36E-3	5,45E-2	2,64E-4	-3,14E-2
GWP – fossil	kg CO_2e	9,46E-1	1,81E-1	2,27E-2	1,15E0	3,57E-2	4,77E-5	MND	MND	MND	MND	MND	MND	MND	3,3E-3	4,35E-3	5,45E-2	2,63E-4	-3,17E-2
GWP – biogenic	kg CO_2e	5,41E-3	1,37E-4	-4,79E-3	7,54E-4	2,71E-5	4,1E-3	MND	MND	MND	MND	MND	MND	MND	9,17E-7	3,3E-6	1,51E-5	5,22E-7	2,26E-4
GWP – LULUC	kg CO_2e	9,03E-4	5,67E-5	1,23E-5	9,72E-4	1,12E-5	6,17E-8	MND	MND	MND	MND	MND	MND	MND	2,79E-7	1,37E-6	4,6E-6	7,82E-8	8,16E-7
Ozone depletion pot.	kg $CFC_{-11}e$	8,96E-8	4,44E-8	2,68E-9	1,37E-7	8,76E-9	7,6E-12	MND	MND	MND	MND	MND	MND	MND	7,12E-10	1,07E-9	1,18E-8	1,08E-10	-9,86E-10
Acidification potential	mol H^+e	4,64E-3	5,81E-4	5,24E-5	5,27E-3	1,15E-4	1,99E-7	MND	MND	MND	MND	MND	MND	MND	3,45E-5	1,4E-5	5,7E-4	2,5E-6	-1,19E-4
EP-freshwater[3)]	kg Pe	5,43E-5	1,53E-6	5,2E-7	5,63E-5	3,03E-7	2,56E-9	MND	MND	MND	MND	MND	MND	MND	1,33E-8	3,7E-8	2,2E-7	3,18E-9	-1,23E-6
EP-marine	kg Ne	9,16E-4	1,28E-4	1,18E-5	1,06E-3	2,52E-5	3,12E-8	MND	MND	MND	MND	MND	MND	MND	1,52E-5	3,08E-6	2,52E-4	8,61E-7	-2,35E-5
EP-terrestrial	mol Ne	1,04E-2	1,42E-3	1,26E-4	1,2E-2	2,81E-4	3,65E-7	MND	MND	MND	MND	MND	MND	MND	1,67E-4	3,43E-5	2,76E-3	9,48E-6	-2,49E-4
POCP (“smog”)	kg NMVOCe	4,17E-3	5,58E-4	3,96E-5	4,76E-3	1,1E-4	1,16E-7	MND	MND	MND	MND	MND	MND	MND	4,59E-5	1,34E-5	7,59E-4	2,75E-6	-1,61E-4
ADP-minerals & metals	kg Sbe	1,03E-5	3,22E-6	1,56E-7	1,36E-5	6,36E-7	1,11E-9	MND	MND	MND	MND	MND	MND	MND	5,03E-9	7,75E-8	8,32E-8	2,41E-9	-3,06E-8
ADP-fossil resources	MJ	1,44E1	2,93E0	3,46E-1	1,77E1	5,8E-1	8,36E-4	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-2,45E-1
Water use[2)]	m^3e depr.	6,39E-1	1,09E-2	8E-3	6,57E-1	2,16E-3	7,1E-6	MND	MND	MND	MND	MND	MND	MND	8,46E-5	2,63E-4	1,4E-3	3,4E-4	-4,51E-3

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	9,45E-8	1,59E-8	3,4E-10	1,11E-7	3,13E-9	1,91E-12	MND	MND	MND	MND	MND	MND	MND	9,14E-10	3,82E-10	1,51E-8	4,86E-11	-2,16E-9
Ionizing radiation[5)]	kBq U235e	6,61E-2	1,28E-2	8,39E-4	7,98E-2	2,53E-3	5,53E-6	MND	MND	MND	MND	MND	MND	MND	1,94E-4	3,09E-4	3,21E-3	3,02E-5	3,37E-4
Ecotoxicity (freshwater)	CTUe	2,08E1	2,24E0	1,45E-1	2,32E1	4,43E-1	5,98E-4	MND	MND	MND	MND	MND	MND	MND	2,66E-2	5,4E-2	4,4E-1	4,65E-3	-9,98E-1
Human toxicity, cancer	CTUh	1,19E-8	5,65E-11	9E-12	1,2E-8	1,12E-11	2,12E-14	MND	MND	MND	MND	MND	MND	MND	9,53E-13	1,36E-12	1,58E-11	1,1E-13	-6,7E-12
Human tox. non-cancer	CTUh	3,36E-7	2,56E-9	3,05E-10	3,39E-7	5,06E-10	6,01E-13	MND	MND	MND	MND	MND	MND	MND	2,35E-11	6,17E-11	3,88E-10	3,39E-12	5,17E-9
SQP	-	2,06E0	4,43E0	1,08E-2	6,49E0	8,75E-1	3,52E-4	MND	MND	MND	MND	MND	MND	MND	1,16E-3	1,07E-1	1,92E-2	1,25E-2	-5,44E-2

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	1,3E0	3,69E-2	9,81E-1	2,32E0	7,29E-3	8,17E-5	MND	MND	MND	MND	MND	MND	MND	2,45E-4	8,9E-4	4,05E-3	5,95E-5	2,96E-3
Renew. PER as material	MJ	0E0	0E0	4,7E-2	4,7E-2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	1,3E0	3,69E-2	1,03E0	2,37E0	7,29E-3	8,17E-5	MND	MND	MND	MND	MND	MND	MND	2,45E-4	8,9E-4	4,05E-3	5,95E-5	2,96E-3
Non-re. PER as energy	MJ	1,44E1	2,93E0	3,42E-1	1,77E1	5,8E-1	8,36E-4	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-2,45E-1
Non-re. PER as material	MJ	0E0	0E0	4,33E-3	4,33E-3	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	1,44E1	2,93E0	3,46E-1	1,77E1	5,8E-1	8,36E-4	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-2,45E-1
Secondary materials	kg	9,7E-1	0E0	4,34E-5	9,7E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,42E-2
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	8,88E-3	6,11E-4	1,51E-4	9,64E-3	1,21E-4	2,14E-7	MND	MND	MND	MND	MND	MND	MND	4,01E-6	1,47E-5	6,62E-5	8,05E-6	-2,06E-4

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	2,48E-1	2,85E-3	6,02E-4	2,51E-1	5,63E-4	2,13E-6	MND	MND	MND	MND	MND	MND	MND	4,88E-5	6,87E-5	0E0	6,87E-6	-3,67E-3
Non-hazardous waste	kg	2,41E0	3,15E-1	2,5E-2	2,75E0	6,23E-2	1,33E-4	MND	MND	MND	MND	MND	MND	MND	5,22E-4	7,6E-3	0E0	5E-2	-4,13E-2
Radioactive waste	kg	5,73E-5	2,01E-5	7,56E-7	7,82E-5	3,98E-6	5,5E-9	MND	MND	MND	MND	MND	MND	MND	3,18E-7	4,86E-7	0E0	4,87E-8	1,53E-7

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	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	9,5E-1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	3,6E-3	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	9,19E-1	1,79E-1	2,13E-2	1,12E0	3,54E-2	4,71E-5	MND	MND	MND	MND	MND	MND	MND	3,27E-3	4,32E-3	5,41E-2	2,58E-4	-3,02E-2
Ozone depletion Pot.	kg CFC_{-11}e	8,16E-8	3,53E-8	2,16E-9	1,19E-7	6,97E-9	6,76E-12	MND	MND	MND	MND	MND	MND	MND	5,63E-10	8,5E-10	9,31E-9	8,59E-11	-8,48E-10
Acidification	kg SO_2e	3,43E-3	3,84E-4	4,21E-5	3,85E-3	7,58E-5	1,59E-7	MND	MND	MND	MND	MND	MND	MND	4,87E-6	9,25E-6	8,04E-5	1,04E-6	-9,31E-5
Eutrophication	kg PO_4^3e	2,1E-3	7,75E-5	1,9E-5	2,2E-3	1,53E-5	8,47E-8	MND	MND	MND	MND	MND	MND	MND	8,57E-7	1,87E-6	1,42E-5	2,02E-7	-5,12E-5
POCP (“smog”)	kg C_2H_4e	4,04E-4	2,21E-5	3,15E-6	4,29E-4	4,36E-6	7,57E-9	MND	MND	MND	MND	MND	MND	MND	5,01E-7	5,32E-7	8,28E-6	7,64E-8	-2,4E-5
ADP-elements	kg Sbe	1,03E-5	3,22E-6	1,56E-7	1,36E-5	6,36E-7	1,11E-9	MND	MND	MND	MND	MND	MND	MND	5,03E-9	7,75E-8	8,32E-8	2,41E-9	-3,06E-8
ADP-fossil	MJ	1,44E1	2,93E0	3,46E-1	1,77E1	5,8E-1	8,36E-4	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-2,45E-1

ENVIRONMENTAL IMPACTS – TRACI 2.1. / 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	9,08E-1	1,79E-1	2,15E-2	1,11E0	3,53E-2	4,71E-5	MND	MND	MND	MND	MND	MND	MND	3,26E-3	4,31E-3	5,38E-2	2,57E-4	-2,93E-2
Ozone Depletion	kg CFC_{-11}e	1,08E-7	4,7E-8	2,93E-9	1,58E-7	9,28E-9	8,82E-12	MND	MND	MND	MND	MND	MND	MND	7,51E-10	1,13E-9	1,24E-8	1,15E-10	-1,22E-9
Acidification	kg SO_2e	3,9E-3	4,91E-4	4,45E-5	4,43E-3	9,69E-5	1,64E-7	MND	MND	MND	MND	MND	MND	MND	3,16E-5	1,18E-5	5,22E-4	2,22E-6	-9,92E-5
Eutrophication	kg Ne	5,97E-4	8,44E-5	6,73E-6	6,88E-4	1,67E-5	3,06E-8	MND	MND	MND	MND	MND	MND	MND	2,79E-6	2,03E-6	4,6E-5	2,65E-7	-1,47E-5
POCP (“smog”)	kg O_3e	5,6E-2	8,06E-3	1,29E-3	6,53E-2	1,59E-3	1,94E-6	MND	MND	MND	MND	MND	MND	MND	9,69E-4	1,94E-4	1,6E-2	5,47E-5	-1,35E-3
ADP-fossil	MJ	1,07E0	4,2E-1	4,58E-2	1,53E0	8,31E-2	7,23E-5	MND	MND	MND	MND	MND	MND	MND	6,71E-3	1,01E-2	1,11E-1	1,07E-3	-6,85E-3

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.

Elma Avdyli as an authorized verifier acting for EPD Hub Limited
28.06.2022

VERIFIED ISO 14025