ENVIRONMENTAL PRODUCT DECLARATION

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

PETRA Green
Peikko Finland Oy

EPD HUB, HUB-0033
Publishing date 11 May 2022, last updated date 11 May 2022, valid until 11 Nov. 2023

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Peikko Group
Address	Voimakatu 3, 15170 Lahti
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	Design Phase EPD
Scope of the EPD	Cradle to gate with options A4, modules C1-C4 and D
EPD author	Jaakko Yrjola, Peikko Group
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Elma Avdyli, EPD Hub

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 name	PETRA Green
Place of production	Finland
Period for data	Calendar year 2019
Averaging in EPD	No Averaging

PRODUCT

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	1,03
GWP-total, A1-A3 (kgCO2e)	1,04
Secondary material, inputs (%)	100
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	5,51
Total water use, A1-A3 (m3e)	5,26E-3

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Further information can be found at www.peikko.com.

PRODUCT DESCRIPTION

This EPD represents painted PETRA Green produced at Peikko facility in Lahti, Finland. PETRA Green is a structural steel element combined together with precasted hollow core slabs. These EPD calculations do not cover concrete used at the construction site. The main market area is Nordic countries.

PETRA Green Slab Hanger is used to support hollow-core slabs and make openings and configurations into hollow-core slab floors. PETRA Green is a unique technical solution that has all the benefits of a standardized product, while being used for applications that usually require careful static analyses and tailor-made structural solutions.

PETRA Green consists of a L-shaped steel front plate welded together with side plates. PETRA Green is usually hanged on two parallel slabs and one or more slabs are supported by the front plate. PETRA Green is designed to support slabs during assembly, in normal use and also in fire situations without the need for temporary supports or propping. PETRA Green is available in several standard models that are pre-dimensioned so that their shape and resistances fit with the properties of most of the hollow-core slabs available on the European market. PETRA Green is CE marked through harmonized standard EN 1090-1.

Detailed technical information can be found from manufacturers webpages at https://www.peikko.com/products/product/petra-slab-hanger/.

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	N/A
Biogenic carbon content in packaging, kg C	N/A

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
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	MND	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 environmental impacts of raw material supply (A1) include emissions generated when raw materials are taken from nature, transported to industrial unit for processing and processed, along with waste handling from the production processes. All major upstream processes are taken into account, including infrastructure. Loss of raw material and energy transmission losses are also considered. This stage includes all the aforementioned for the raw materials which end up in the final product (i.e. steel, welding filler, packaging) as well as the electricity and heat production which are consumed during the manufacturing at the factory. The only relevant secondary material used in the production supply is steel scrap (?).

The considered transportation impacts (A2) include exhaust emissions resulting from the transport of all raw materials from suppliers to Peikko Finland production plant as well as the environmental impacts of production of the used diesel. 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 Finland Oy.

The environmental impacts considered for the production stage (A3) cover the manufacturing of the production materials (welding gases and blasting steel shots) and fuels used by machines, as well as handling of waste formed in the production processes at the factory. The environmental impacts of this stage were calculated on the basis of factory data provided by Peikko. The study considers the losses of main raw materials occurring during the manufacturing process.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. Therefore, the transportation distance from the factory (Lahti) to construction site (Helsinki) is assumed as 110 km and the transportation method is assumed to be lorry. Transportation is not expected to cause losses as products are packaged properly.

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).

Demolition is assumed to take 0.01 kWh/kg of element. It is assumed that 100% of waste is collected.

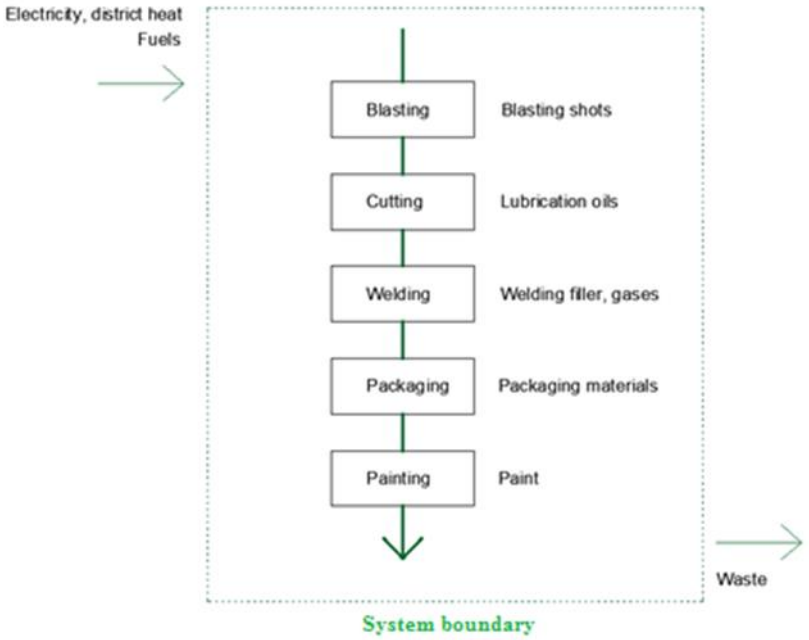
Distance for transportation to treatment is assumed as 50 km and the transportation method is assumed to be lorry. This is an average distance which considers the fact that according to the scenario A4 products are situated in Finland and distance to recycling and landfill is not very long.

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

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

Due to the recycling process the end-of-life product is converted into a recycled steel.

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.

The study does not exclude any modules or processes which are stated mandatory in the EN 15804+A2:2019 and 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 which data are available for are included in calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total neglected input and output flows do also 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. Processes excluded from the assessment and the related cut-off criteria are provided in table below.

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 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 more than one product and raw material and energy consumption data is not collected separately for each product, data is allocated. Allocation is based on annual production rate and made with high accuracy and precision.

The values for 1 kg of the product, which is used within the study, are calculated by considering the total production output (kg) for the product per annual production output (kg) of the plant. In the factory, more than one kind of product are produced; since the production processes of these products are similar, the annual production output percentages are taken into consideration for allocation. According to the ratio of the annual production output of the declared product to the total annual production output at the factory, the annual total energy consumption, packaging materials and the generated waste per the declared product are allocated. Subsequently, the product output fixed to 1 kg and the corresponding amount of product is used in calculations.

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

All estimations and assumptions are given below:

- Module A2, A4 & C2: Vehicle capacity utilization factor is assumed to be 1, which means fully loaded lorries. In reality, it may vary, but since the impact of the transportation emissions to the total results is small, variety in load is assumed to be negligible. Returns without delivered load are not taken into account as it is assumed that return trip is used by transportation company to serve needs of other client.

- Module A4: The transportation distance is defined according to PCR. It was assumed that typical construction site is situated in the district of the production plant. The transportation distance from manufacturing plant to construction site in Helsinki is assumed as 110 km and the transportation method is assumed to be lorry. According to producer, transportation doesnt cause losses as products are packaged properly. Also, volume capacity utilization factor is assumed to be 1 for the packaged products.

- Module C1: 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.

- Module C2: It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight with the declared product. All of the end-of-life product is assumed to be sent to the closest facilities such as recycling and landfill. Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry, which is the most common.

- Module C3: 95% of steel (World Steel Association. 2020) is recycled.

- Module C4: The remaining 5% of steel is assumed to be send to the landfill.

- Module D: Benefits of recyclable waste generated in the Module C3 are taken into account in the Module D.
The recycled steel has been modelled to avoid use of virgin steel in steel profiles production. The scrap content in the studied products has been acknowledged and only the mass of virgin steel in the product provides the benefit in order to avoid double counting.
The scrap content of the raw materials is the following: Steel plate 98.3%, rebar 97%

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	6,27E-1	2,93E-1	1,23E-1	1,04E0	9,5E-3	MND	MND	MND	MND	MND	MND	MND	MND	3,3E-3	4,36E-3	5,45E-2	2,64E-4	-2,87E-2
GWP – fossil	kg CO_2e	6,21E-1	2,93E-1	1,2E-1	1,03E0	9,58E-3	MND	MND	MND	MND	MND	MND	MND	MND	3,3E-3	4,35E-3	5,45E-2	2,63E-4	-2,89E-2
GWP – biogenic	kg CO_2e	4,55E-3	2,22E-4	1,7E-3	6,47E-3	7,27E-6	MND	MND	MND	MND	MND	MND	MND	MND	9,17E-7	3,3E-6	1,51E-5	5,22E-7	2,14E-4
GWP – LULUC	kg CO_2e	7,39E-4	9,21E-5	7,93E-4	1,62E-3	3,01E-6	MND	MND	MND	MND	MND	MND	MND	MND	2,79E-7	1,37E-6	4,6E-6	7,82E-8	7,99E-7
Ozone depletion pot.	kg CFC_{-11}e	6,36E-8	7,2E-8	1,74E-8	1,53E-7	2,35E-9	MND	MND	MND	MND	MND	MND	MND	MND	7,12E-10	1,07E-9	1,18E-8	1,08E-10	-7,68E-10
Acidification potential	mol H^+e	3,47E-3	9,43E-4	5,27E-4	4,94E-3	3,08E-5	MND	MND	MND	MND	MND	MND	MND	MND	3,45E-5	1,4E-5	5,7E-4	2,5E-6	-1,11E-4
EP-freshwater[3]	kg Pe	4,03E-5	2,49E-6	5,11E-6	4,79E-5	8,14E-8	MND	MND	MND	MND	MND	MND	MND	MND	1,33E-8	3,7E-8	2,2E-7	3,18E-9	-1,16E-6
EP-marine	kg Ne	6,95E-4	2,07E-4	1,31E-4	1,03E-3	6,77E-6	MND	MND	MND	MND	MND	MND	MND	MND	1,52E-5	3,08E-6	2,52E-4	8,61E-7	-2,19E-5
EP-terrestrial	mol Ne	8,02E-3	2,31E-3	1,55E-3	1,19E-2	7,54E-5	MND	MND	MND	MND	MND	MND	MND	MND	1,67E-4	3,43E-5	2,76E-3	9,48E-6	-2,32E-4
POCP (“smog”)	kg NMVOCe	2,61E-3	9,05E-4	4,08E-4	3,93E-3	2,96E-5	MND	MND	MND	MND	MND	MND	MND	MND	4,59E-5	1,34E-5	7,59E-4	2,75E-6	-1,52E-4
ADP-minerals & metals	kg Sbe	8,82E-6	5,22E-6	3,19E-7	1,44E-5	1,71E-7	MND	MND	MND	MND	MND	MND	MND	MND	5,03E-9	7,75E-8	8,32E-8	2,41E-9	-2,87E-8
ADP-fossil resources	MJ	1,02E1	4,76E0	2,97E0	1,8E1	1,56E-1	MND	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-2,13E-1
Water use[2]	m^3e depr.	3,12E-1	1,77E-2	4,5E-2	3,75E-1	5,79E-4	MND	MND	MND	MND	MND	MND	MND	MND	8,46E-5	2,63E-4	1,4E-3	3,4E-4	-4,11E-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	7,73E-8	2,57E-8	5,47E-9	1,08E-7	8,41E-10	MND	MND	MND	MND	MND	MND	MND	MND	9,14E-10	3,82E-10	1,51E-8	4,86E-11	-2,05E-9
Ionizing radiation[5]	kBq U235e	5,51E-2	2,08E-2	5,82E-2	1,34E-1	6,8E-4	MND	MND	MND	MND	MND	MND	MND	MND	1,94E-4	3,09E-4	3,21E-3	3,02E-5	3,27E-4
Ecotoxicity (freshwater)	CTUe	1,37E1	3,64E0	1,68E0	1,9E1	1,19E-1	MND	MND	MND	MND	MND	MND	MND	MND	2,66E-2	5,4E-2	4,4E-1	4,65E-3	-9,45E-1
Human toxicity, cancer	CTUh	1,16E-8	9,16E-11	3,15E-11	1,17E-8	3E-12	MND	MND	MND	MND	MND	MND	MND	MND	9,53E-13	1,36E-12	1,58E-11	1,1E-13	-6,3E-12
Human tox. non-cancer	CTUh	3,69E-7	4,15E-9	9,17E-10	3,74E-7	1,36E-10	MND	MND	MND	MND	MND	MND	MND	MND	2,35E-11	6,17E-11	3,88E-10	3,39E-12	4,9E-9
SQP	-	1,58E0	7,18E0	1,07E-1	8,87E0	2,35E-1	MND	MND	MND	MND	MND	MND	MND	MND	1,16E-3	1,07E-1	1,92E-2	1,25E-2	-5,15E-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	1,08E0	5,99E-2	7,28E-1	1,87E0	1,96E-3	MND	MND	MND	MND	MND	MND	MND	MND	2,45E-4	8,9E-4	4,05E-3	5,95E-5	2,83E-3
Renew. PER as material	MJ	0E0	0E0	2,04E-3	2,04E-3	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	1,08E0	5,99E-2	7,3E-1	1,87E0	1,96E-3	MND	MND	MND	MND	MND	MND	MND	MND	2,45E-4	8,9E-4	4,05E-3	5,95E-5	2,83E-3
Non-re. PER as energy	MJ	1,02E1	4,76E0	2,97E0	1,8E1	1,56E-1	MND	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-2,13E-1
Non-re. PER as material	MJ	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	1,02E1	4,76E0	2,97E0	1,8E1	1,56E-1	MND	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-2,13E-1
Secondary materials	kg	1,07E0	0E0	1,39E-4	1,07E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,35E-2
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	3,49E-3	9,91E-4	7,8E-4	5,26E-3	3,24E-5	MND	MND	MND	MND	MND	MND	MND	MND	4,01E-6	1,47E-5	6,62E-5	8,05E-6	-1,92E-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	1,83E-1	4,63E-3	6,87E-3	1,94E-1	1,51E-4	MND	MND	MND	MND	MND	MND	MND	MND	4,88E-5	6,87E-5	0E0	6,87E-6	-3,47E-3
Non-hazardous waste	kg	1,84E0	5,12E-1	1,9E-1	2,55E0	1,67E-2	MND	MND	MND	MND	MND	MND	MND	MND	5,22E-4	7,6E-3	0E0	5E-2	-3,91E-2
Radioactive waste	kg	4,73E-5	3,27E-5	2,7E-5	1,07E-4	1,07E-6	MND	MND	MND	MND	MND	MND	MND	MND	3,18E-7	4,86E-7	0E0	4,87E-8	1,56E-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	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	MND	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	6,06E-1	2,9E-1	1,18E-1	1,01E0	9,5E-3	MND	MND	MND	MND	MND	MND	MND	MND	3,27E-3	4,32E-3	5,41E-2	2,58E-4	-2,75E-2
Ozone depletion Pot.	kg CFC_{-11}e	5,9E-8	5,72E-8	1,99E-8	1,36E-7	1,87E-9	MND	MND	MND	MND	MND	MND	MND	MND	5,63E-10	8,5E-10	9,31E-9	8,59E-11	-6,8E-10
Acidification	kg SO_2e	2,48E-3	6,23E-4	3,33E-4	3,44E-3	2,04E-5	MND	MND	MND	MND	MND	MND	MND	MND	4,87E-6	9,25E-6	8,04E-5	1,04E-6	-8,75E-5
Eutrophication	kg PO_4^3e	1,55E-3	1,26E-4	1,52E-4	1,83E-3	4,11E-6	MND	MND	MND	MND	MND	MND	MND	MND	8,57E-7	1,87E-6	1,42E-5	2,02E-7	-4,84E-5
POCP (“smog”)	kg C_2H_4e	2,59E-4	3,58E-5	1,56E-5	3,11E-4	1,17E-6	MND	MND	MND	MND	MND	MND	MND	MND	5,01E-7	5,32E-7	8,28E-6	7,64E-8	-2,26E-5
ADP-elements	kg Sbe	8,82E-6	5,22E-6	3,19E-7	1,44E-5	1,71E-7	MND	MND	MND	MND	MND	MND	MND	MND	5,03E-9	7,75E-8	8,32E-8	2,41E-9	-2,87E-8
ADP-fossil	MJ	1,02E1	4,76E0	2,97E0	1,8E1	1,56E-1	MND	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-2,13E-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	5,99E-1	2,9E-1	1,18E-1	1,01E0	9,49E-3	MND	MND	MND	MND	MND	MND	MND	MND	3,26E-3	4,31E-3	5,38E-2	2,57E-4	-2,66E-2
Ozone Depletion	kg CFC_{-11}e	7,74E-8	7,62E-8	2,48E-8	1,78E-7	2,49E-9	MND	MND	MND	MND	MND	MND	MND	MND	7,51E-10	1,13E-9	1,24E-8	1,15E-10	-9,85E-10
Acidification	kg SO_2e	2,92E-3	7,96E-4	4,5E-4	4,17E-3	2,6E-5	MND	MND	MND	MND	MND	MND	MND	MND	3,16E-5	1,18E-5	5,22E-4	2,22E-6	-9,31E-5
Eutrophication	kg Ne	4,39E-4	1,37E-4	5,68E-5	6,32E-4	4,48E-6	MND	MND	MND	MND	MND	MND	MND	MND	2,79E-6	2,03E-6	4,6E-5	2,65E-7	-1,39E-5
POCP (“smog”)	kg O_3e	4,3E-2	1,31E-2	8,25E-3	6,43E-2	4,28E-4	MND	MND	MND	MND	MND	MND	MND	MND	9,69E-4	1,94E-4	1,6E-2	5,47E-5	-1,26E-3
ADP-fossil	MJ	7,31E-1	6,82E-1	1,3E-1	1,54E0	2,23E-2	MND	MND	MND	MND	MND	MND	MND	MND	6,71E-3	1,01E-2	1,11E-1	1,07E-3	-3,37E-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 ED 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, approved verifier by EPD Hub, 11.05.2022

VERIFIED ISO 14025