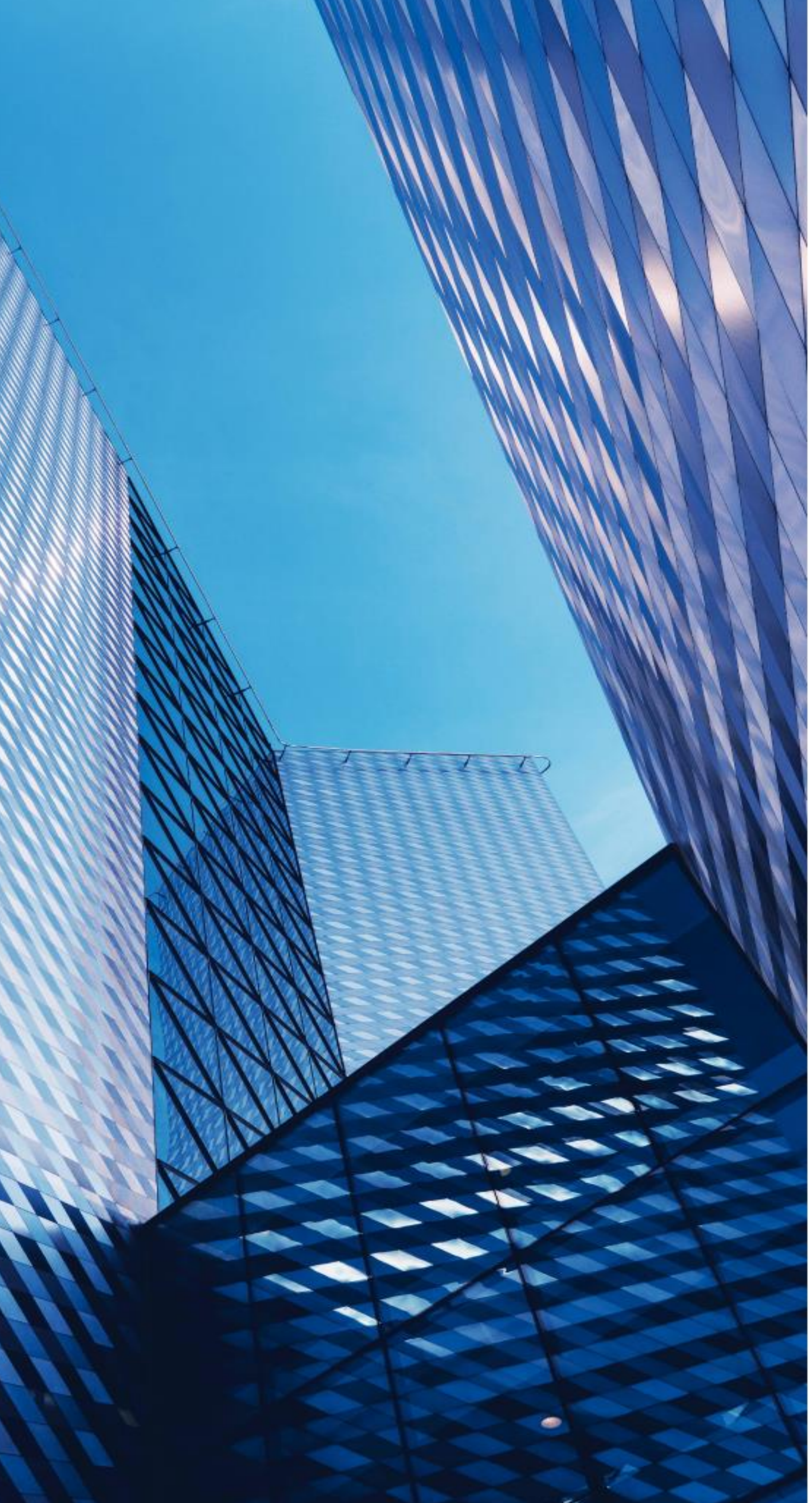


ENVIRONMENTAL PRODUCT DECLARATION

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

Connecting Parts
Peikko Finland Oy

EPD HUB, HUB-0027
Publishing date 25 Apr. 2022, last updated date 25 Apr. 2022, valid until 25 Apr. 2027

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Peikko Finland Oy
Address	Voimakatu 3, P.O.Box 104, 15101 LAHTI, FINLAND
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
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4 and 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	Neena Chandramathy

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	Connecting Parts
Place of production	Finland
Period for data	2021
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	2.79 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of Connecting parts
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	2,62
GWP-total, A1-A3 (kgCO2e)	2,60
Secondary material, inputs (%)	50,6
Secondary material, outputs (%)	95,0
Total energy use, A1-A3 (kWh)	9,08
Total water use, A1-A3 (m3e)	0,0205

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.

PRODUCT DESCRIPTION

This EPD represents connecting parts produced at Peikko facility in Lahti, Finland. Connecting parts are precast and cast-in-situ concrete connections, which include a wide range of components. In Finland factory they include Threaded bars, WELDA, Copra, HPM, HPMK, PPM, PEC, BOLDA, SUMO, PETRA, PK, PCs, PD, PDM, PDQ, PPA, PPI, MODIX, ARBOX, PSA, SRA, PLA, WILJA, KAPU, SLADEX, TERAJOINT, P4X, among others. Generally, they are used to connect different building components such as foundations, columns, beams, slabs, walls, floors, balcony and a wide range of connections. They are also used for reinforcement, lifting and transportation.

More product information including technical specifications are found from Peikkos webpages https://www.peikko.com/products/precast-products/ and https://www.peikko.com/products/reinforcement-systems/

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	0.0413

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of Connecting parts
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 in the product are steel and include steel plate, rebars, wire and welding filler metal. Steel plates have 25% recycled content, rebars and wire 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 Lahti, Peikko production plant in Finland 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 mainly by Peikko Finland.

A3

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. 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)

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.

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. Connecting parts transportation is taking place from Lahti factory to capital areas (Helsinki). An average distance of 100 km is assumed, and the transportation method is assumed to be a lorry with fill rate assumed as 100%. Transportation does not cause losses as products are packaged properly.

A5

Wood pallets used for transportation of products to client is accounted for in A5. It is assumed that the pallets are incinerated at the nearest municipal incineration plant for energy recovery after ten uses. The distance is assumed as 50km, and the transportation method assumed to be lorry. This is an average distance which considers the fact that the distance from the customer to recycling and landfill facilities is not very long, as customers are assumed to be located in capital regions of their respective countries.

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.

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 the distance from the customer (construction site) to recycling and landfill facilities is not very long, as customers are assumed to be located in capital regions.

C3

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

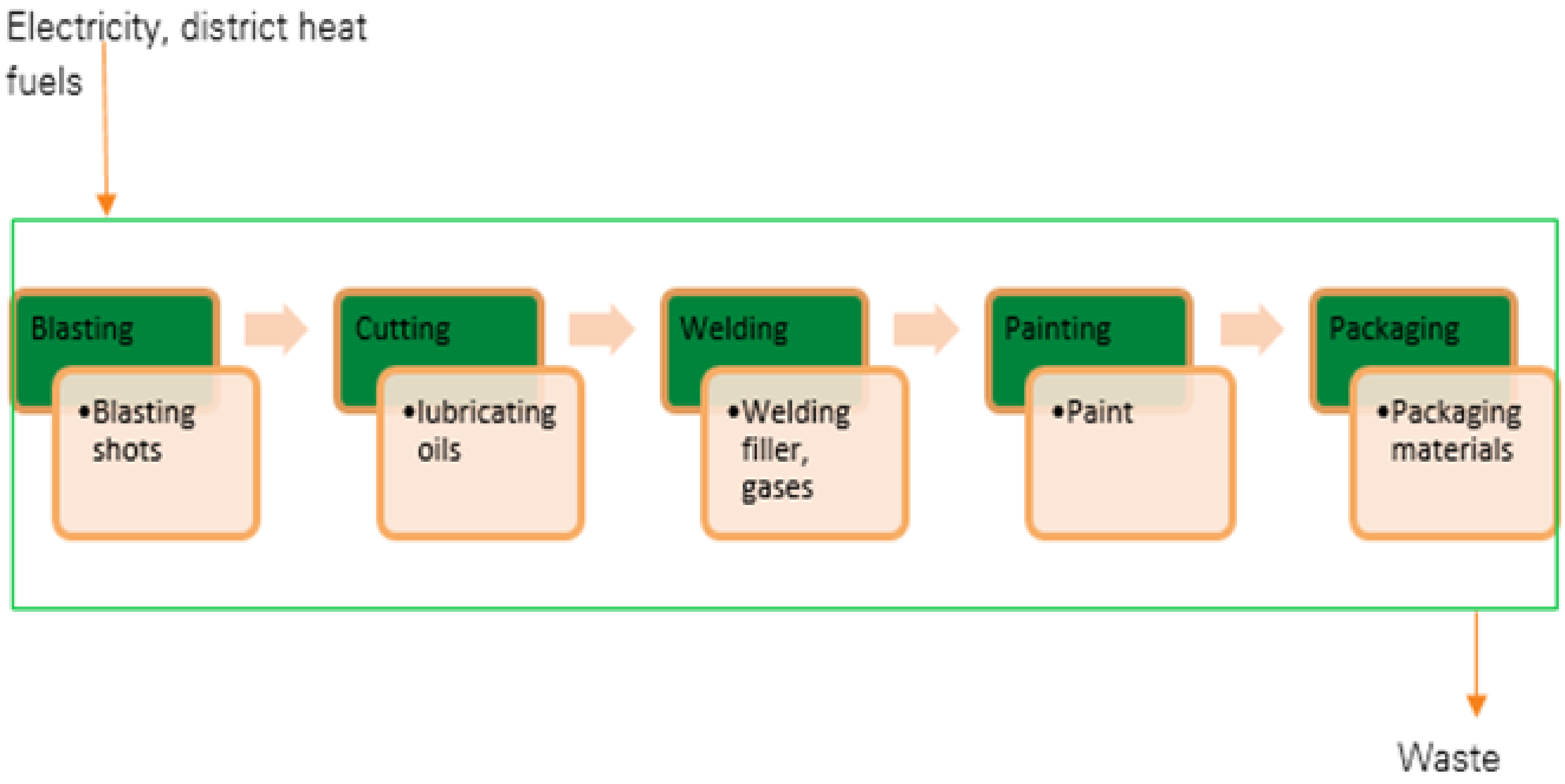
C4

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.

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 more than one product type, it is impractical to collect raw material and energy consumption data separately for each product produced, data is therefore allocated. Allocation is based on annual production rate and is 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. Since the production processes of the products produced in the plant 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.

In addition, allocation is done for Co-product as follows:

Total Product; = 100%, Declared Product = 71.85%, Co-product = 28.15%. 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.

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

AVERAGES AND VARIABILITY

Connecting parts are a range of standard and custom-made products. Their orders contain different steel grades and in different quantities, i.e., some products may contain more steel plates and less rebar or vice versa, and or more or less wire. Therefore, typical order cannot be defined and for this reason this assessment studies the average material composition for this product group. The effect of different material variances on the results of the connecting parts were studied. Impacts which do not vary more than ±50% of the calculated GWP-fossil values in A1-A3 have been considered to be of reasonable accuracy. The variances were tested incrementally to see which compositions fall inside the provided range. The materials with the largest impacts have been taken into consideration as the remaining materials have only a negligible effect on the impact categories. However, to incorporate the variance of these minor materials a conservative approach has been taken and the variance has been kept smaller, up to 10 %.

The main materials in the average composition are steel plate 70%, rebar, 19% and wire 10% which contribute a total of 99% of the final product. The production of these materials contributes approximately 90% of the GWP impacts of the connecting parts. Due to impacts of the rebar and wire being higher than of steel plate, the impacts of the product increases as the share of the rebar and or wire in the product increases. The steel plate can vary between 65 – 75 weight %, rebar 14 - 24 weight % and wire 5 – 15 weight % so that the total weight % of these three materials is always 99 %. The remaining share consists of welding fillers and paint for which the w% can vary inside the 1 w% and therefore considered negligible.

The results are only valid for this average composition.

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	2,42E0	1,11E-1	7,68E-2	2,6E0	9,43E-3	1,59E-2	MND	MND	MND	MND	MND	MND	MND	3,3E-3	4,36E-3	5,45E-2	2,64E-4	-7,52E-1
GWP – fossil	kg CO_2e	2,42E0	1,11E-1	8,96E-2	2,62E0	9,52E-3	7,58E-4	MND	MND	MND	MND	MND	MND	MND	3,3E-3	4,35E-3	5,45E-2	2,63E-4	-7,71E-1
GWP – biogenic	kg CO_2e	-3,31E-3	8,39E-5	-1,34E-2	-1,67E-2	7,22E-6	1,51E-2	MND	MND	MND	MND	MND	MND	MND	9,17E-7	3,3E-6	1,51E-5	5,22E-7	1,88E-2
GWP – LULUC	kg CO_2e	1,07E-3	3,48E-5	6,44E-4	1,75E-3	2,99E-6	4,42E-7	MND	MND	MND	MND	MND	MND	MND	2,79E-7	1,37E-6	4,6E-6	7,82E-8	3,15E-5
Ozone depletion pot.	kg $CFC_{11}e$	1,4E-7	2,72E-8	1,32E-8	1,8E-7	2,34E-9	1,37E-10	MND	MND	MND	MND	MND	MND	MND	7,12E-10	1,07E-9	1,18E-8	1,08E-10	-2,04E-8
Acidification potential	mol H^+e	1,06E-2	3,72E-4	3,17E-4	1,13E-2	3,06E-5	2,64E-6	MND	MND	MND	MND	MND	MND	MND	3,45E-5	1,4E-5	5,7E-4	2,5E-6	-2,97E-3
EP-freshwater[3)]	kg Pe	1,18E-4	9,4E-7	3,83E-6	1,22E-4	8,08E-8	1,6E-8	MND	MND	MND	MND	MND	MND	MND	1,33E-8	3,7E-8	2,2E-7	3,18E-9	-3,09E-5
EP-marine	kg Ne	2,11E-3	8,69E-5	5,78E-5	2,26E-3	6,73E-6	6,03E-7	MND	MND	MND	MND	MND	MND	MND	1,52E-5	3,08E-6	2,52E-4	8,61E-7	-5,85E-4
EP-terrestrial	mol Ne	2,32E-2	9,65E-4	7,14E-4	2,49E-2	7,49E-5	6,7E-6	MND	MND	MND	MND	MND	MND	MND	1,67E-4	3,43E-5	2,76E-3	9,48E-6	-6,19E-3
POCP (“smog”)	kg NMVOCe	1,18E-2	3,64E-4	2,06E-4	1,23E-2	2,94E-5	2,38E-6	MND	MND	MND	MND	MND	MND	MND	4,59E-5	1,34E-5	7,59E-4	2,75E-6	-4,05E-3
ADP-minerals & metals	kg Sbe	1,5E-5	1,97E-6	2,7E-7	1,73E-5	1,7E-7	1,19E-8	MND	MND	MND	MND	MND	MND	MND	5,03E-9	7,75E-8	8,32E-8	2,41E-9	-7,26E-7
ADP-fossil resources	MJ	2,65E1	1,8E0	2,36E0	3,07E1	1,55E-1	1,12E-2	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-5,68E0
Water use[2)]	m^3e depr.	9,55E-1	6,68E-3	3,18E-2	9,93E-1	5,75E-4	8,99E-5	MND	MND	MND	MND	MND	MND	MND	8,46E-5	2,63E-4	1,4E-3	3,4E-4	-1,09E-1

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	2,04E-7	9,81E-9	1,54E-9	2,15E-7	8,35E-10	5,41E-11	MND	MND	MND	MND	MND	MND	MND	9,14E-10	3,82E-10	1,51E-8	4,86E-11	-5,46E-8
Ionizing radiation[5)]	kBq U235e	6,12E-2	7,86E-3	4,61E-2	1,15E-1	6,76E-4	5,35E-5	MND	MND	MND	MND	MND	MND	MND	1,94E-4	3,09E-4	3,21E-3	3,02E-5	8,85E-3
Ecotoxicity (freshwater)	CTUe	6,99E1	1,37E0	1,41E0	7,26E1	1,18E-1	9,25E-3	MND	MND	MND	MND	MND	MND	MND	2,66E-2	5,4E-2	4,4E-1	4,65E-3	-2,52E1
Human toxicity, cancer	CTUh	1,44E-8	3,47E-11	2,83E-11	1,45E-8	2,98E-12	4,08E-13	MND	MND	MND	MND	MND	MND	MND	9,53E-13	1,36E-12	1,58E-11	1,1E-13	-1,67E-10
Human tox. non-cancer	CTUh	1,66E-7	1,58E-9	7E-10	1,68E-7	1,35E-10	1,06E-11	MND	MND	MND	MND	MND	MND	MND	2,35E-11	6,17E-11	3,88E-10	3,39E-12	1,31E-7
SQP	-	4,91E0	2,71E0	7,39E-2	7,7E0	2,33E-1	1,23E-2	MND	MND	MND	MND	MND	MND	MND	1,16E-3	1,07E-1	1,92E-2	1,25E-2	-1,37E0

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	1,44E0	2,26E-2	6,17E-1	2,08E0	1,95E-3	4,72E-4	MND	MND	MND	MND	MND	MND	MND	2,45E-4	8,9E-4	4,05E-3	5,95E-5	7,9E-2
Renew. PER as material	MJ	0E0	0E0	1,41E-1	1,41E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	6,63E-3
Total use of renew. PER	MJ	1,44E0	2,26E-2	7,58E-1	2,22E0	1,95E-3	4,72E-4	MND	MND	MND	MND	MND	MND	MND	2,45E-4	8,9E-4	4,05E-3	5,95E-5	8,56E-2
Non-re. PER as energy	MJ	2,65E1	1,8E0	2,34E0	3,06E1	1,55E-1	1,12E-2	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-5,68E0
Non-re. PER as material	MJ	1,67E-2	0E0	2,39E-2	4,06E-2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	2,65E1	1,8E0	2,36E0	3,07E1	1,55E-1	1,12E-2	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-5,68E0
Secondary materials	kg	5,05E-1	0E0	9,62E-5	5,06E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	3,62E-1
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	1,95E-2	3,74E-4	6,44E-4	2,05E-2	3,22E-5	2,68E-6	MND	MND	MND	MND	MND	MND	MND	4,01E-6	1,47E-5	6,62E-5	8,05E-6	-5,1E-3

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	4,69E-1	1,75E-3	5,36E-3	4,76E-1	1,5E-4	2,48E-5	MND	MND	MND	MND	MND	MND	MND	4,88E-5	6,87E-5	0E0	6,87E-6	-9,25E-2
Non-hazardous waste	kg	4,73E0	1,93E-1	1,36E-1	5,06E0	1,66E-2	1,46E-3	MND	MND	MND	MND	MND	MND	MND	5,22E-4	7,6E-3	0E0	5E-2	-1,03E0
Radioactive waste	kg	5,89E-5	1,23E-5	2,06E-5	9,19E-5	1,06E-6	7,04E-8	MND	MND	MND	MND	MND	MND	MND	3,18E-7	4,86E-7	0E0	4,87E-8	4,27E-6

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	2,4E-3	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	9,5E-1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	1,34E-2	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	2,32E0	1,1E-1	8,75E-2	2,52E0	9,43E-3	7,53E-4	MND	MND	MND	MND	MND	MND	MND	3,27E-3	4,32E-3	5,41E-2	2,58E-4	-7,34E-1
Ozone depletion Pot.	kg CFC_{11}e	1,26E-7	2,16E-8	1,52E-8	1,63E-7	1,86E-9	1,12E-10	MND	MND	MND	MND	MND	MND	MND	5,63E-10	8,5E-10	9,31E-9	8,59E-11	-1,81E-8
Acidification	kg SO_2e	8,11E-3	2,35E-4	2,59E-4	8,6E-3	2,02E-5	1,84E-6	MND	MND	MND	MND	MND	MND	MND	4,87E-6	9,25E-6	8,04E-5	1,04E-6	-2,33E-3
Eutrophication	kg PO_4^3e	4,75E-3	4,75E-5	1,13E-4	4,91E-3	4,08E-6	9,35E-7	MND	MND	MND	MND	MND	MND	MND	8,57E-7	1,87E-6	1,42E-5	2,02E-7	-1,29E-3
POCP (“smog”)	kg C_2H_4e	1,48E-3	1,37E-5	1,26E-5	1,51E-3	1,16E-6	1,13E-7	MND	MND	MND	MND	MND	MND	MND	5,01E-7	5,32E-7	8,28E-6	7,64E-8	-6,05E-4
ADP-elements	kg Sbe	1,5E-5	1,97E-6	2,7E-7	1,73E-5	1,7E-7	1,19E-8	MND	MND	MND	MND	MND	MND	MND	5,03E-9	7,75E-8	8,32E-8	2,41E-9	-7,26E-7
ADP-fossil	MJ	2,65E1	1,8E0	2,36E0	3,07E1	1,55E-1	1,12E-2	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	7,49E-1	7,36E-3	-5,68E0

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	2,27E0	1,1E-1	8,79E-2	2,47E0	9,42E-3	7,53E-4	MND	MND	MND	MND	MND	MND	MND	3,26E-3	4,31E-3	5,38E-2	2,57E-4	-7,11E-1
Ozone Depletion	kg CFC_{11}e	1,71E-7	2,88E-8	1,9E-8	2,19E-7	2,48E-9	1,48E-10	MND	MND	MND	MND	MND	MND	MND	7,51E-10	1,13E-9	1,24E-8	1,15E-10	-2,62E-8
Acidification	kg SO_2e	8,91E-3	3,16E-4	2,63E-4	9,49E-3	2,59E-5	2,25E-6	MND	MND	MND	MND	MND	MND	MND	3,16E-5	1,18E-5	5,22E-4	2,22E-6	-2,48E-3
Eutrophication	kg Ne	1,36E-3	5,27E-5	3,73E-5	1,45E-3	4,45E-6	3,74E-7	MND	MND	MND	MND	MND	MND	MND	2,79E-6	2,03E-6	4,6E-5	2,65E-7	-3,7E-4
POCP (“smog”)	kg O_3e	1,25E-1	5,49E-3	3,61E-3	1,34E-1	4,25E-4	3,74E-5	MND	MND	MND	MND	MND	MND	MND	9,69E-4	1,94E-4	1,6E-2	5,47E-5	-3,35E-2
ADP-fossil	MJ	1,42E0	2,58E-1	1,08E-1	1,79E0	2,22E-2	1,39E-3	MND	MND	MND	MND	MND	MND	MND	6,71E-3	1,01E-2	1,11E-1	1,07E-3	-8,88E-2

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.

Neena Chandramathy, approved verifier by EPD Hub, 25.04.2022

VERIFIED ISO 14025