ENVIRONMENTAL PRODUCT DECLARATION

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

CORIO®

METTEN Stein+Design

EPD HUB, HUB-0365

Publishing date 29 March 2023, last updated date 29 March 2023, valid until date until 29 March 2028

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	METTEN Stein+Design
Address	Industriegebiet, Hammermühle, 51491 Overath, Germany
Contact details	info@metten.de
Website	www.metten.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	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A5, B1 and modules C1-C4 and D
EPD author	Shirin Fataei - Master Builders Solutions Deutschland GmbH
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	I.G, 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	Corio® (80 mm)
Place of production	Overath, Germany
Period for data	2021
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m²
Declared unit mass	181 kg
GWP-fossil, A1-A3 (kgCO2e)	27.2
GWP-total, A1-A3 (kgCO2e)	27.1
Secondary material, inputs (%)	2.05
Secondary material, outputs (%)	93.8
Total energy use, A1-A3 (kWh)	62.0
Total water use, A1-A3 (m3e)	1.26

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

For more than 75 years METTEN has specialized in supporting customers in implementing their very own ideas with high-quality design elements made of stone.

METTEN products are "Made in Germany", borne by a team of employees from thirteen nations. Our collective action is in accordance with our four core values: openness, honesty, reliability, and fairness. Our family business agitates for respect for the uniqueness and the personality of each individual for over 70 years.

We are convinced that special effort occurs in an atmosphere of creativity and hospitality. And with that, products which make our world more beautiful and more liveable.

PRODUCT DESCRIPTION

Corio® precast concrete paving blocks come in different sizes and thicknesses and are used for the design of traffic areas and free spaces. The paving stone models distinguish in their dimensions, shapes, surfaces, and colors. This EPD declares the environmental impact assigned to one square meter of Corio® elements with a height of 80 mm. The production steps and material composition for all Corio® products are similar, hence the results may be interpolated for various dimensions. Concrete paving blocks are made of natural and recycled aggregates, hydraulic binders (cement) with addition of water and special concrete admixtures.

For placing the product on the market in EU/EFTA (with exception of Switzerland) regulation no. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration DIN EN 1338:2003 for concrete paving blocks, DIN EN 1339:2003 for concrete paving flags (tiles, slabs), and the CE marking. For the application and use the respective national provisions apply.

Further information can be found at www.metten.de.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	98.0	EU
Fossil materials	0.3	EU
Bio-based materials	-	-
Water	1.7	EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	1.5604

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m² (thickness 80 mm)
Mass per declared unit	181 kg
Reference service life	50 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	MND	x	x	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 ancillary materials cover the sandblasting surface treatment of the pavement block/flag production.

Corio® precast pavement blocks and flags are produced in two layers – a concrete core and a facing concrete on top. During production these two concrete mixes are produced in two sperate industrial mixers following a strict mix-design. Once the mixing process is done the “earth-moist” concrete is transported to the actual pavement block/flag manufacturing unit. This machine compacts and molds the concrete under pressure. The core and face concrete are joint to an inseparable layered material and are directly transferred to the heat and moisture regulated curing chamber. The paving blocks receive their final surface treatment at typically 50 % of their target strength. Waste powder, concrete residue and deficient blocks/flags are processed and reused in production.

Corio® precast paving blocks and flags are stacked, wrapped, banded, and placed on return pallets for transportation.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to the construction site (A4). Resources and material losses during installation (A5) are considered below 0.1%, and thus, they are cut-off. No machinery is used for installation of the modelled paving blocks. The treatment of packaging waste is covered in the A5 module.

PRODUCT USE AND MAINTENANCE (B1-B7)

Corio® paving blocks are produced for both the domestic and commercial markets. The products are used in a variety of paving applications including Sustainable Urban Drainage Systems (SUDS) and include block, slabs, and kerbs.

This EPD does not cover the use phase except from the carbonation process of the stones modelled in B1.

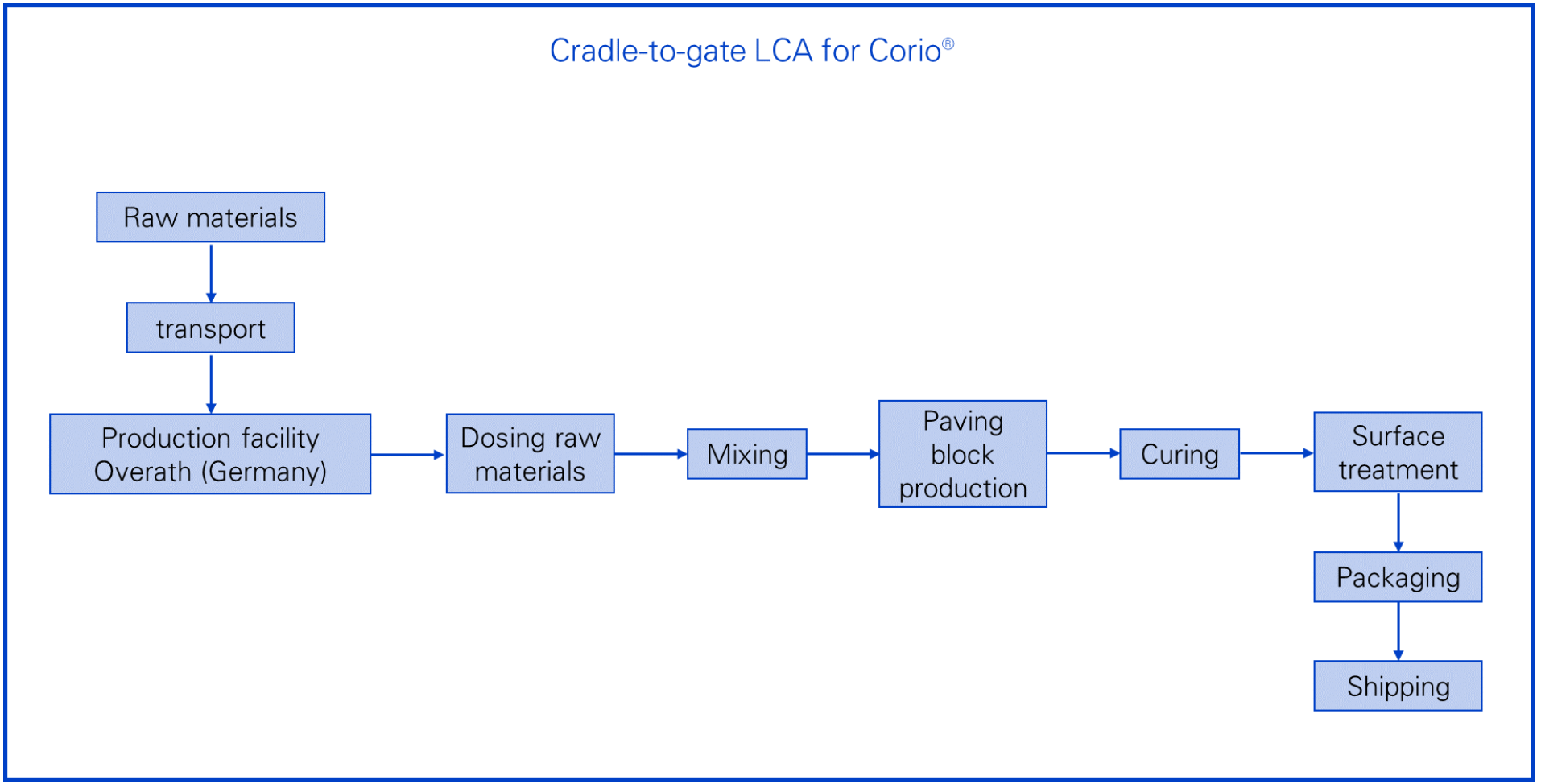
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The deconstruction takes place in C1 module which considers energy for dismantling, particulate matter emissions from dismantling and handling. After the demolition, the stones are transported to the end-of-life processing (C2) where all the impacts related to the transport processes are considered. 93.8% of the waste concrete is treated to be reused as recycled aggregates (C3) and the rest (6.2%) is treated as inert material for landfill (C4).

The benefits and loads of recycled and incinerated packaging (from A5) and recycled aggregates (from C3) are modelled and included beyond the system boundary (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.

Maintenance and transport impacts during the re-using period of wooden pallets are cut-off. Manufacture of machinery, buildings, and other infrastructure was not included in the LCA. Resources and material losses during installation (A5) are below 0.1%. Thus, they are cut-off.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	Allocated by mass or volume

The following assumptions were made:

- Waste processing ratios for plastic packaging: 46.6% recycling and reuse as plastic, 53.4% incineration with 73% efficiency, 0.6% sanitary landfill (A5) [Sources: Ref. 1 and Ref. 2]
- Waste processing ratios for wooden pallet: 100% incineration with 73% efficiency after 10 times reuse (A5) [Source: Ref. 1]
- Transport distance for waste (A5) and for the end-of-life (C2) is considered 20 km as the worst-case scenario [Source: Ref. 3]
- Consumed energy for demolition (C1) [Source: Ref. 4]
- End-of-life waste processing ratio (i.e., 93.8% as recycling aggregates and 6.2% as landfill) (C3 and C4) [Source: Ref. 5]

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	-

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 3.6 and One Click LCA databases were used as sources of environmental data. Further EPDs to Ecoinvent databases are:

- EFCA Generic EPD for “Concrete admixture - plasticisers and superplasticizers” (EPD number: EPD-EFC-20210198-IBG1-EN).
- EFCA Generic EPD for “Concrete admixture – water resisting admixtures” (EPD number: EPD-EFC-20210197-IBG1-EN).
- Product-specific EPD for “Iron oxides, lime and silica aggregate from steel mills for bound applications, Ferrosita” (EPD number: S-P-05073).

Additional references are:

- Ref. 1: Eriksson O., Finnveden G. (2017) Energy Recovery from Waste Incineration—The Importance of Technology Data and System Boundaries on CO2 Emissions
- Ref. 2: Kurzfassung der Conversio Studie - Stoffstrombild Kunststoffe in Deutschland 2021
- Ref. 3: Der kommunale Wertstoffhof - Verband kommunaler Unternehmen e.V.
- Ref. 4: EUR 29123 EN Model for Life Cycle Assessment (LCA) of buildings
- Ref. 5: Germany Mineralische Bauabfälle Monitoring 2016

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	2,16E1	1,07E0	4,42E0	2,71E1	MND	1,03E0	-1E-1	MND	MND	MND	MND	MND	MND	4,09E-2	3,29E-1	6,8E-1	5,92E-2	-1,67E0
GWP – fossil	kg CO_2e	2,13E1	1,07E0	4,76E0	2,72E1	MND	2,42E-1	-1E-1	MND	MND	MND	MND	MND	MND	4,08E-2	3,29E-1	6,79E-1	5,91E-2	-1,65E0
GWP – biogenic	kg CO_2e	2,26E-1	7,75E-4	-3,41E-1	-1,14E-1	MND	7,84E-1	0E0	MND	MND	MND	MND	MND	MND	1,04E-4	2,39E-4	1,89E-4	1,17E-4	-1,34E-2
GWP – LULUC	kg CO_2e	7,95E-3	3,21E-4	3,6E-3	1,19E-2	MND	1,48E-5	0E0	MND	MND	MND	MND	MND	MND	1,3E-5	9,9E-5	5,74E-5	1,75E-5	-1,78E-3
Ozone depletion pot.	kg CFC_{-11}e	7E-7	2,51E-7	7,27E-7	1,68E-6	MND	2,33E-9	0E0	MND	MND	MND	MND	MND	MND	6,86E-8	7,73E-8	1,47E-7	2,43E-8	-1,61E-7
Acidification potential	mol H^+e	6,17E-2	4,48E-3	1,89E-2	8,51E-2	MND	1,39E-4	0E0	MND	MND	MND	MND	MND	MND	4,97E-4	1,38E-3	7,11E-3	5,61E-4	-9,51E-3
EP-freshwater[2)]	kg Pe	3,03E-4	8,68E-6	2,98E-4	6,1E-4	MND	4,6E-7	0E0	MND	MND	MND	MND	MND	MND	5,44E-7	2,68E-6	2,75E-6	7,14E-7	-8,87E-5
EP-marine	kg Ne	1,73E-2	1,35E-3	3,42E-3	2,21E-2	MND	5,2E-5	0E0	MND	MND	MND	MND	MND	MND	6,15E-5	4,16E-4	3,14E-3	1,93E-4	-2E-3
EP-terrestrial	mol Ne	1,94E-1	1,49E-2	3E-2	2,39E-1	MND	5,61E-4	0E0	MND	MND	MND	MND	MND	MND	6,79E-4	4,6E-3	3,44E-2	2,13E-3	-2,61E-2
POCP ("smog")[3)]	kg NMVOCe	5,05E-2	4,8E-3	9,21E-3	6,45E-2	MND	1,54E-4	0E0	MND	MND	MND	MND	MND	MND	2,81E-4	1,48E-3	9,46E-3	6,18E-4	-6,85E-3
ADP-minerals & metals[4)]	kg Sbe	1,97E-3	1,82E-5	1,41E-5	2,01E-3	MND	3,76E-7	0E0	MND	MND	MND	MND	MND	MND	2,27E-7	5,61E-6	1,04E-6	5,4E-7	-1,52E-4
ADP-fossil resources	MJ	1,01E2	1,66E1	8,26E1	2E2	MND	2,9E-1	0E0	MND	MND	MND	MND	MND	MND	4,23E0	5,12E0	9,35E0	1,65E0	-2,68E1
Water use[5)]	m^3e depr.	1,05E1	6,17E-2	8,74E-1	1,14E1	MND	2,48E-3	0E0	MND	MND	MND	MND	MND	MND	8,62E-4	1,9E-2	1,74E-2	7,64E-2	-2,54E0

[1)] GWP = Global Warming Potential; [2)] EP = Eutrophication potential; [3)] POCP = Photochemical ozone formation; [4)] ADP = Abiotic depletion potential
For EP-freshwater, the required characterization method and data are in kg P-eq. Multiply by 3,07 to get PO4e
[4,5)] EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health: The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	5,16E-7	9,65E-8	8,77E-8	7E-7	MND	1,76E-9	0E0	MND	MND	MND	MND	MND	MND	2,53E-9	2,98E-8	8,62E-7	1,09E-8	-1,07E-7
Ionizing radiation[6)]	kBq U235e	3,19E-1	7,25E-2	4,42E-1	8,34E-1	MND	8,14E-4	0E0	MND	MND	MND	MND	MND	MND	1,86E-2	2,24E-2	4,01E-2	6,78E-3	-1,25E-1
Ecotoxicity (freshwater)	CTUe	2,41E2	1,27E1	6,04E1	3,14E2	MND	3,53E-1	0E0	MND	MND	MND	MND	MND	MND	2,15E0	3,91E0	5,49E0	1,04E0	-2,42E1
Human toxicity, cancer	CTUh	4,21E-9	3,24E-10	1,16E-9	5,7E-9	MND	4,2E-11	0E0	MND	MND	MND	MND	MND	MND	1,71E-11	1E-10	1,97E-10	2,47E-11	-1,24E-9
Human tox. non-cancer	CTUh	1,54E-7	1,5E-8	3,56E-8	2,05E-7	MND	1,2E-9	0E0	MND	MND	MND	MND	MND	MND	5,39E-10	4,63E-9	4,84E-9	7,62E-10	-2,94E-8
SQP[7)]	-	6,23E1	2,5E1	6,1E0	9,35E1	MND	1,69E-1	0E0	MND	MND	MND	MND	MND	MND	8,37E-2	7,73E0	2,4E-1	2,81E0	-1,35E1

[6)] EN 15804+A2 disclaimer for Ionizing radiation, human health: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator
[7)] SQP = Land use related impacts/soil quality

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	8,86E0	2,09E-1	6,72E0	1,58E1	MND	1,25E-2	0E0	MND	MND	MND	MND	MND	MND	1,11E-2	6,44E-2	5,06E-2	1,34E-2	-1,7E0
Renew. PER as material	MJ	9,38E-2	0E0	4E0	4,09E0	MND	-4E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	-9,92E-2	-6,56E-3	9,72E-2
Total use of renew. PER	MJ	8,96E0	2,09E-1	1,07E1	1,99E1	MND	-3,98E0	0E0	MND	MND	MND	MND	MND	MND	1,11E-2	6,44E-2	-4,87E-2	6,8E-3	-1,6E0
Non-re. PER as energy	MJ	1,15E2	1,66E1	7,61E1	2,07E2	MND	2,9E-1	0E0	MND	MND	MND	MND	MND	MND	4,23E0	5,12E0	9,35E0	1,65E0	-2,38E1
Non-re. PER as material	MJ	5,08E0	0E0	6,43E0	1,15E1	MND	-6,43E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	-5,37E0	-3,55E-1	5,26E0
Total use of non-re. PER	MJ	1,2E2	1,66E1	8,26E1	2,19E2	MND	-6,14E0	0E0	MND	MND	MND	MND	MND	MND	4,23E0	5,12E0	3,98E0	1,3E0	-1,86E1
Secondary materials	kg	3,71E0	0E0	1,67E-3	3,71E0	MND	0E0	0E0	MND	MND	MND	MND	MND	MND	2,35E-4	0E0	0E0	0E0	6,24E-2
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	0E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	0E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	3,04E-1	3,45E-3	9,56E-1	1.26	MND	1,86E-4	0E0	MND	MND	MND	MND	MND	MND	2,73E-4	1,07E-3	8,26E-4	1,81E-3	-1,97E-1

[8)] PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	3,77E-1	1,61E-2	1,47E-1	5,4E-1	MND	4,06E-3	0E0	MND	MND	MND	MND	MND	MND	9,96E-4	4,97E-3	0E0	1,54E-3	-1,04E-1
Non-hazardous waste	kg	1,26E1	1,78E0	1,25E1	2,69E1	MND	3,53E-1	0E0	MND	MND	MND	MND	MND	MND	1,82E-2	5,5E-1	0E0	1,12E1	-4,21E0
Radioactive waste	kg	8,03E-4	1,14E-4	4,8E-4	1,4E-3	MND	1,04E-6	0E0	MND	MND	MND	MND	MND	MND	3,07E-5	3,51E-5	0E0	1,09E-5	-9,07E-5

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	MND	0E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	MND	1,25E-1	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	1,7E2	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	MND	0E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	MND	5,39E0	0E0	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	2,02E1	1,06E0	4,69E0	2,59E1	MND	2,41E-1	-1E-1	MND	MND	MND	MND	MND	MND	3,92E-2	3,26E-1	6,74E-1	5,8E-2	-1,61E0
Ozone depletion Pot.	kg CFC_{-11}e	5,65E-7	1,99E-7	6,39E-7	1,4E-6	MND	1,95E-9	0E0	MND	MND	MND	MND	MND	MND	5,42E-8	6,15E-8	1,16E-7	1,93E-8	-1,41E-7
Acidification	kg SO_2e	4,44E-2	2,17E-3	1,61E-2	6,27E-2	MND	9,13E-5	0E0	MND	MND	MND	MND	MND	MND	4,24E-4	6,69E-4	1E-3	2,34E-4	-5,98E-3
Eutrophication	kg PO_4^3e	1,33E-2	4,38E-4	9,03E-3	2,27E-2	MND	1,01E-4	0E0	MND	MND	MND	MND	MND	MND	5,24E-5	1,35E-4	1,77E-4	4,52E-5	-2,98E-3
POCP (“smog”)	kg C_2H_4e	1,84E-3	1,38E-4	7,73E-4	2,75E-3	MND	4,95E-6	0E0	MND	MND	MND	MND	MND	MND	1,75E-5	4,24E-5	1,03E-4	1,71E-5	-4,97E-4
ADP-elements	kg Sbe	1,97E-3	1,82E-5	1,41E-5	2,01E-3	MND	3,76E-7	0E0	MND	MND	MND	MND	MND	MND	2,27E-7	5,61E-6	1,04E-6	5,4E-7	-1,52E-4
ADP-fossil	MJ	1,01E2	1,66E1	8,26E1	2E2	MND	2,9E-1	0E0	MND	MND	MND	MND	MND	MND	4,23E0	5,12E0	9,35E0	1,65E0	-2,68E1

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	2,02E1	1,06E0	4,7E0	2,59E1	MND	2,41E-1	-1E-1	MND	MND	MND	MND	MND	MND	3,94E-2	3,26E-1	6,71E-1	5,76E-2	-1,6E0
Ozone depletion Pot.	kg CFC_{-11}e	7,52E-7	2,66E-7	8,14E-7	1,83E-6	MND	2,53E-9	0E0	MND	MND	MND	MND	MND	MND	7,23E-8	8,19E-8	1,55E-7	2,57E-8	-1,88E-7
Acidification	kg SO_2e	5,24E-2	3,9E-3	1,54E-2	7,17E-2	MND	1,25E-4	0E0	MND	MND	MND	MND	MND	MND	4,02E-4	1,2E-3	6,52E-3	4,98E-4	-8,04E-3
Eutrophication	kg Ne	5,25E-3	5,49E-4	4,36E-3	1,02E-2	MND	3,25E-5	0E0	MND	MND	MND	MND	MND	MND	1,01E-4	1,69E-4	5,74E-4	5,96E-5	-1,03E-3
POCP (“smog”)	kg O_3e	1,03E0	8,56E-2	1,57E-1	1,27E0	MND	3,21E-3	0E0	MND	MND	MND	MND	MND	MND	3,88E-3	2,64E-2	2E-1	1,23E-2	-1,24E-1
ADP-fossil	MJ	9,78E0	2,38E0	7,85E0	2E1	MND	3,66E-2	0E0	MND	MND	MND	MND	MND	MND	6,39E-1	7,33E-1	1,38E0	2,39E-1	-2,62E0

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.

Ipek Goktas as an authorized verifier acting for EPD Hub Limited
29.03.2023