ENVIRONMENTAL PRODUCT DECLARATION

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

Reinforced concrete well with elements
Gelgaudiškio gelžbetonis UAB

EPD HUB, HUB-1965
Published on 23.08.2024, last updated on 26.08.2024, valid until 23.08.2029.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Gelgaudiškio gelžbetonis UAB
Address	Vakarų 33D, Gelgaudiškis, Šakiai distr., Lithuania
Contact details	betonas@glg.lt
Website	www.glg.lt

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 und ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Saulius Puzas, Inžinerinių paslaugų spektras UAB
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Haiha Nguyen, 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	Reinforced concrete well with elements
Additional labels	Levelling rings; Well rings with bottoms; Well covers; Well bottoms
Product reference	KS 7-2,5F; KS 7-0,5F; KS 10-9FD; ŠD7F; PN 15F
Place of production	Vakarų 33D, Gelgaudiškis, Šakiai distr., Lithuania
Period for data	01.2023-12.2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	- %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 ton of concrete well elements
Declared unit mass	1000 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2,41E+02
GWP-total, A1-A3 ($kgCO_2e$)	2,41E+02
Secondary material, inputs (%)	0.47
Secondary material, outputs (%)	93.1
Total energy use, A1-A3 (kWh)	533
Net freshwater use, A1-A3 (m^3)	66.1

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Manufacturer of reinforced concrete structures was founded in 1976, in Gelgaudiškis, as Šakiai branch of Vilnius Reinforced Concrete Plant. Since 1990, it is Šakiai state reinforced concrete plant. Gelgaudiškio gelžbetonis UAB is a member of the Lithuanian Association of Land Reclamation Companies. Products are certified and meet the EU requirements. The management system developed, implemented and maintained in Gelgaudiškio gelžbetonis UAB and meets the requirements of the standards: LST EN ISO 9001:2015 (ISO 9001:2015); LST EN ISO 14001:2015 (ISO 14001:2015). Scope of certification: Production of concrete and reinforced concrete products.

PRODUCT DESCRIPTION

Product consists of well ring, leveling ring, well cover and well bottom. All elements are made of same components: concrete and reinforcement. Concrete is mixed on manufacturing site using delivered from suppliers cement, gravel, sand, plasticiser and water. Well rings are provided with a possibility to maintain and ventilate waste water, rain and surface water drainage systems operating by drain, or sometimes at low pressure, usually fitted in the zones of transport and/or pedestrian zones. Elements can also be used in drinking water wells. Rings come with convenient plastic-coated ladders. Diameter of the product is from 850 mm to 3240 mm, height 300, 600, 900, 1200 mm.Levelling rings are intended for lifting covers of wells, when asphalt surfacing the streets, and carrying out other works to level the well covers with the ground surface. Levelling rings come in different diameters: 650 mm to 850 mm and heights: from 50 to 200 mm, every 25 mm.Well with the bottom is intended for surface water collection and drain into the drainage systems (mounted under the rainwater pipes, at the car parking grounds, yards at the lowest point). Product can be completed with cast iron grate (grate load 30 t). Well bottoms come in different diameters: from 500 mm to 2180 mm and heights: from 585 to 1045 mm.Well covers intended to cover the wells and can bear up to 30 t load. Can be fitted in the driving lane. Well covers hicknesses is from 90 mm to 220 mm. Covers are intended for mounting drainage traps with Ø 0,5 m opening. Suitable for the driving lane.Bottoms are the bearing element of the well base. Bottoms come in different diameters: from 1000 mm to 3000 mm and heights: from 120 to 190 mm. Comes with seams, thus ensuring reliable fastening of the bottom ring.

Further information can be found at www.glg.lt.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	1.67	Europe
Minerals	93.98	Europe
Fossil materials	0,16	Europe
Water	4.19	Europe

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	0

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 ton of concrete well elements
Mass per declared unit	1000 kg
Functional unit	-
Reference service life	

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	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	Deconstruction/ demolition	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. Fuels used by machines and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. Concrete well elements detailed process consists of concrete mixture transportation to place, form cleaning, lubrication, collection of forms, reinforcement placement, pouring the concrete mixture into the form, compaction of the concrete mixture, installation of steel ladders, adhesives (where necessary), levelling of the surface, transportation to the place of curing, disbandment, curing of products, storage of products. Any water lost during manufacture is recycled - collected and reintroduced to the mix. Components waste during manufacture do not exceed 1%.

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. This EPD does not cover the transport (A4) and installation (A5) phase.

PRODUCT USE AND MAINTENANCE (B1-B7)

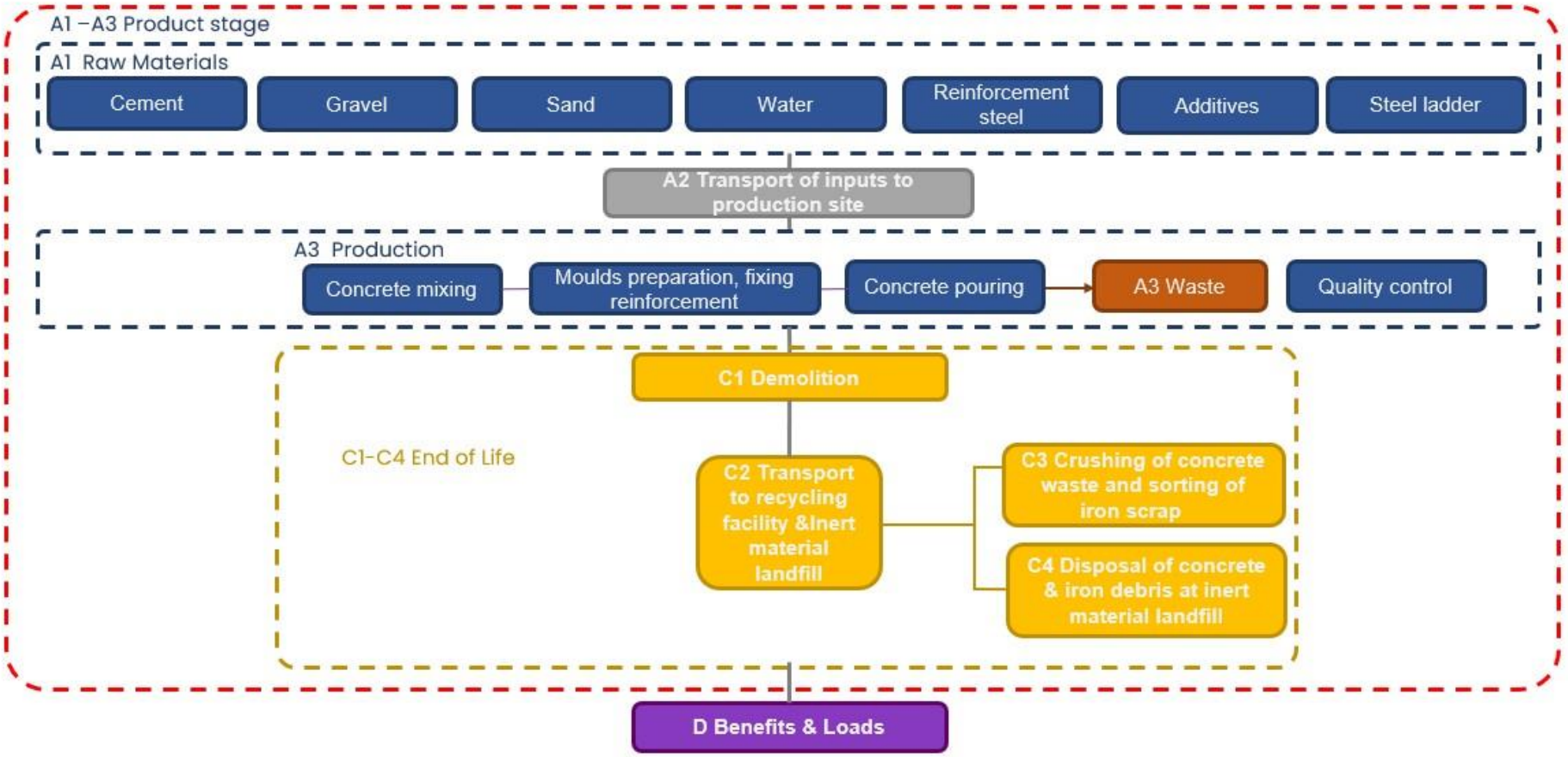
In a regular use scenario, it is assumed that no maintenance, repair, replacement or refurbishment is needed, and no energy or water consumption is considered. Since no specific scenario is defined as representative for the impact analysis, this module is not declared in the LCA study. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase 100% of the waste is assumed to be collected as separate construction waste. The demolition process consumes energy in the form of diesel fuel used by building machines (C1). The dismantled concrete elements are delivered to the nearest construction waste treatment plant, with the assumption of a 50 km transport distance using a lorry as the transport method (C2). At the waste treatment plant waste that can be reused, recycled or recovered for energy is separated and diverted for further use (C3). Unusable materials are disposed of in a landfill (C4). Due to the recycling potential of reinforcement steel and concrete, they can be used as secondary raw material. 85 % of the steel (ref. World Steel Association report 2020 on Steel recycling in construction sector) and 93,6 % of the concrete (ref. European Commission, Model for Life Cycle Assessment (LCA) of buildings; Gervasio, H. & Dimova, S., 2018) are recycled, this avoids the use of virgin raw materials. Unusable materials are disposed in a landfill (C4). It is assumed that 6,4 % of concrete and 15 % of steel is disposed in a landfill. Due to the recycling potential of reinforcement steel and concrete, they can be used as secondary raw materials. This avoids the use of the virgin raw materials (D).

MANUFACTURING PROCESS

UAB Gelgaudiškio gelžbetonis concrete well elemets manufacturing process and system boundary



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.

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	Allocated by mass or volume
Packaging material	Not applicable
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

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

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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. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases 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[1)]	kg CO_2e	2,15E+02	2,54E+01	6,22E-01	2,41E+02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	3,31E+00	8,67E+00	5,44E+00	4,48E+00	-2,70E+01
GWP – fossil	kg CO_2e	2,15E+02	2,53E+01	6,19E-01	2,41E+02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	3,31E+00	8,67E+00	5,44E+00	4,48E+00	-2,70E+01
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	3,32E-01	1,03E-02	3,34E-03	3,46E-01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	3,30E-04	3,53E-03	8,65E-04	3,53E-04	-1,33E-02
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	9,60E-06	5,59E-06	1,39E-07	1,53E-05	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	7,07E-07	1,91E-06	1,14E-06	1,49E-07	-1,36E-06
Acidification potential	mol H^+e	7,00E-01	1,05E-01	1,41E-02	8,18E-01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	3,44E-02	3,59E-02	5,71E-02	3,99E-03	-1,28E-01
EP-freshwater[2)]	kg Pe	4,46E-03	2,14E-04	4,39E-05	4,72E-03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	1,10E-05	7,31E-05	3,15E-05	4,31E-06	-1,23E-03
EP-marine	kg Ne	1,65E-01	3,06E-02	6,23E-03	2,02E-01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	1,52E-02	1,05E-02	2,45E-02	1,48E-03	-2,68E-02
EP-terrestrial	mol Ne	1,87E+00	3,38E-01	6,99E-02	2,28E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	1,67E-01	1,16E-01	2,69E-01	1,60E-02	-3,27E-01
POCP ("smog")[3)]	kg NMVOCe	5,74E-01	1,03E-01	1,80E-02	6,95E-01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	4,59E-02	3,52E-02	7,40E-02	4,67E-03	-1,33E-01
ADP-minerals & metals4)	kg Sbe	6,47E-04	8,82E-05	1,20E-05	7,47E-04	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	1,68E-06	3,02E-05	3,86E-05	1,02E-06	-4,47E-04
ADP-fossil resources	MJ	8,82E+02	3,67E+02	7,88E+00	1,26E+03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	4,45E+01	1,25E+02	7,32E+01	1,03E+01	-2,77E+02
Water use[5)]	m^3e depr.	4,86E+01	1,61E+00	4,07E-01	5,06E+01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	1,20E-01	5,49E-01	2,57E-01	1,44E-01	-1,77E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 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 experience with the indicator.

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	7,94E-06	2,16E-06	6,84E-07	1,08E-05	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	9,22E-07	7,38E-07	8,32E-06	8,04E-08	-1,92E-06
Ionizing radiation[6)]	kBq U235e	8,77E+00	1,70E+00	5,62E-02	1,05E+01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	2,05E-01	5,83E-01	3,60E-01	4,58E-02	-8,80E-01
Ecotoxicity (freshwater)	CTUe	2,73E+03	3,38E+02	1,24E+02	3,19E+03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	2,68E+01	1,16E+02	5,82E+01	9,99E+00	-8,36E+02
Human toxicity, cancer	CTUh	2,48E-07	9,49E-09	1,99E-09	2,59E-07	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	1,03E-09	3,25E-09	2,11E-09	7,90E-10	1,59E-07
Human tox. non-cancer	CTUh	3,22E-06	3,15E-07	6,62E-08	3,60E-06	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	1,94E-08	1,08E-07	5,27E-08	1,19E-08	-6,08E-07
SQP[7)]	-	1,24E+03	2,54E+02	2,44E+02	1,74E+03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	5,79E+00	8,69E+01	1,63E+01	2,10E+01	-1,64E+02

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	8,95E+01	4,30E+00	9,17E+01	1,86E+02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	2,54E-01	1,47E+00	1,04E+00	9,77E-02	-2,39E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	8,95E+01	4,30E+00	9,17E+01	1,86E+02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	2,54E-01	1,47E+00	1,04E+00	9,77E-02	-2,39E+01
Non-re. PER as energy	MJ	1,36E+03	3,67E+02	7,43E+00	1,73E+03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	4,45E+01	1,25E+02	7,32E+01	1,03E+01	-2,77E+02
Non-re. PER as material	MJ	1,21E+02	0,00E+00	-9,45E-02	1,21E+02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-8,85E+00	-1,12E+02	0,00E+00
Total use of non-re. PER	MJ	1,48E+03	3,67E+02	7,33E+00	1,85E+03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	4,45E+01	1,25E+02	6,44E+01	-1,02E+02	-2,77E+02
Secondary materials	kg	4,71E+00	1,21E-01	1,36E-02	4,84E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	1,74E-02	4,13E-02	3,13E-02	2,71E-03	1,12E+01
Renew. secondary fuels	MJ	9,69E-03	1,57E-03	9,55E-05	1,14E-02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	5,70E-05	5,35E-04	2,99E-04	5,76E-05	-2,65E-03
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	6,61E+01	4,33E-02	4,60E-03	6,61E+01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	2,70E-03	1,48E-02	6,35E-03	1,08E-02	-3,81E-01

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	1,07E+01	5,28E-01	5,98E-02	1,13E+01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	5,96E-02	1,81E-01	1,18E-01	2,83E-02	-7,19E+00
Non-hazardous waste	kg	1,67E+02	8,44E+00	1,27E+00	1,77E+02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	4,19E-01	2,89E+00	1,44E+00	6,70E+01	-5,05E+01
Radioactive waste	kg	5,04E-03	2,42E-03	4,43E-05	7,51E-03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	3,13E-04	8,29E-04	5,11E-04	4,03E-06	-4,76E-04

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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-7,19E+00
Materials for recycling	kg	1,85E-04	0,00E+00	8,93E+00	8,93E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,31E+02	0,00E+00	-5,05E+01
Materials for energy rec	kg	1,36E-12	0,00E+00	0,00E+00	1,36E-12	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-4,76E-04
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-7,19E+00

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	2,14E+02	2,51E+01	6,08E-01	2,39E+02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	3,27E+00	8,58E+00	5,38E+00	4,43E+00	-2,58E+01
Ozone depletion Pot.	kg $CFC_{-11}e$	7,17E-06	4,43E-06	1,32E-07	1,17E-05	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	5,60E-07	1,51E-06	9,02E-07	1,18E-07	-1,35E-06
Acidification	kg SO_2e	5,61E-01	8,17E-02	9,86E-03	6,53E-01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	2,45E-02	2,80E-02	4,10E-02	2,98E-03	-1,02E-01
Eutrophication	kg PO_4^3e	1,93E-01	1,88E-02	3,49E-03	2,15E-01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	5,69E-03	6,42E-03	9,79E-03	1,26E-02	-5,07E-02
POCP (“smog”)	kg C_2H_4e	3,89E-02	3,32E-03	8,08E-04	4,30E-02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	5,36E-04	1,14E-03	9,42E-04	2,20E-04	-1,37E-02
ADP-elements	kg Sbe	6,51E-04	8,61E-05	1,19E-05	7,49E-04	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	1,65E-06	2,94E-05	3,85E-05	9,85E-07	-4,45E-04
ADP-fossil	MJ	1,47E+03	3,67E+02	7,88E+00	1,85E+03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	4,45E+01	1,25E+02	7,32E+01	1,03E+01	-2,77E+02

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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
23.08.2024