ENVIRONMENTAL PRODUCT DECLARATION

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

RIGID MONO pipes

Evopipes SIA

EPD HUB, EPDHUB-0117

Publishing date 12 September 2022, last updated date 12 September 2022, valid until 12 September 2027

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Evopipes SIA
Address	Langervaldes street 2a, Jelgava, Latvia
Contact details	info@evopipes.lv
Website	www.evopipes.lv

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, A4-A5, and modules C1-C4 and D
EPD author	Inese Meldere, Alise Dude; Evopipes SIA
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

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	RIGID MONO pipes
Additional labels	RIGID MONO
Product reference	All products from groups No.308 (product number starts with 308).
Place of production	Latvia
Period for data	2021
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of pipe
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	2,23E0
GWP-total, A1-A3 (kgCO2e)	2,15E0
Secondary material, inputs (%)	5,14E-1
Secondary material, outputs (%)	0E0
Total energy use, A1-A3 (kWh)	8,79E0
Total water use, A1-A3 (m3e)	5,08E-3

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Evopipes is manufacturer of plastic pipe systems for electricity, telecom, water, wastewater and gas. Our production is based in Latvia, and we supply client's requests around the world.
Our main strategy is to design advanced pipeline products that increase work efficiency in the field of installing and exploiting pipe systems.
We are certified according to EN ISO 9001 Quality Management system, EN ISO 14001 Environmental Management system and EN ISO 50001 Energy Management system.

PRODUCT DESCRIPTION

RIGID MONO PP smooth-wall pipes for gravity sewer network systems with friction welded socket and locking sealing ring. Designed from homogeneous flexural modulus polypropylene (PP) material with solid-wall pipe structure.

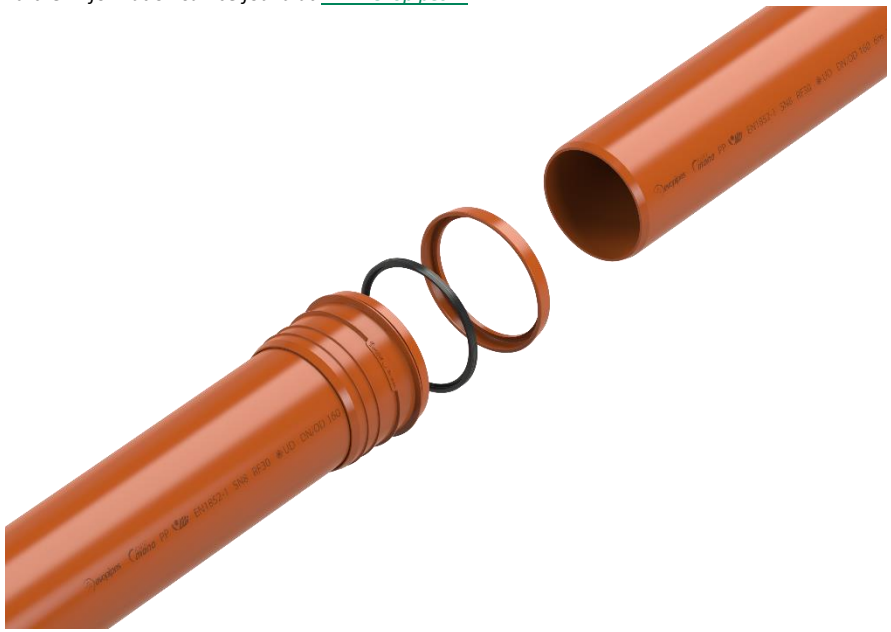
Pipe is equipped with SEAL LOCK coupling system that includes a socket and an integrated sealing ring that grants a hermetic seal with a pressure rating of ≥0,5 bar (for coupling area).

This pipe is used for the construction of utility wastewater, stormwater, or any other type of gravity sewer infrastructure. Suitable for street construction, building construction areas, industrial territories, extension of existing sewerage system networks, etc.

EN 1852-1 Plastics piping systems for non-pressure underground drainage and sewerage – Polypropylene (PP) - Part 1: Specifications for pipes, fittings, and the system.

PRODUCT	RIGID MONO PP
DN/OD, mm	110, 160, 200, 250, 315, 400
Ring stiffness (SN class), kN/m^2	8
Impact resistance	Determined at -10°C (ice crystal)
Ring flexibility	RF30
Length, m	3 or 6
Colour	reddish brown

Further information can be found at www.evopipes.lv.



PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	0,149	Spain
Fossil materials	99,851	Netherlands
Bio-based materials	0	-

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	0.0262

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of pipe
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.

Manufacturing materials (A1)

The first module includes extraction and production of raw materials used in manufacturing process, mainly polypropylene granulate, as well as additives used in small amounts. Environmental impact for production of packaging materials and auxiliary materials are also included in this module.

Transport for manufacturing materials (A2)

Transport distances of materials to manufacturing site was modelled taking account location of suppliers and transportation routes. Raw materials are transported by lorry, by boat and by ferry. Packaging materials and auxiliary tools are transported by lorry on the road.

Manufacturing process (A3)

1. Raw Materials conveying / dosing / mixing

Polypropylenes as finished compounds are supplied (in either plastic bags or bulk form) and filled into silos and storage bins. From silos raw materials are carried to each pipe extruder through vacuum pressure transfer system, then dosed by gravimetric weighing system.

2. Extrusion

The raw materials are melted at high temperature in the extruders and pushed through a die-head to form a mono-layer sleeve.

3. Forming with vacuum, calibration

During the extrusion process the resultant polypropylene mono-layer sleeve is moved into the calibrator mounted in a vacuum tank. Smooth-wall pipe is formed by the vacuum acting through the slits of the calibrator, with initial cooling provided by the means of water applied evenly through the spraying nozzles. Process of forming smooth-wall pipe having wall thickness within required limits is continuous / non-stop.

4. Cooling

Cooling of the pipe and stabilization of its dimensions continues in the tanks positioned after the vacuum tank, via water spraying nozzles.

5. Printing

Thermal ink-jet printer marks the pipes at regular intervals with identification according to product name, size, material, nominal stiffness class, impact resistance rating, application area coding, standard number and production date.

6. Hauling-off

To ensure continuity and evenness of the pipe production process the pipes are moved down the line by a unit hauling them off with tracks positioned at equal intervals around the pipes.

7. Cutting

The pipes are being cut in required length (most commonly 2m, 3m, 6m) and moved to either ejection stage or to the socket welding station.

8. Application of the socket / Ejection from the line

Pipes in bars produced without welded sockets or with manually applicable sockets pass to the ejection stage where tipping table moves them into the accumulation trolley. Pipes produced with sockets are moved to the welding station, where sockets made from polypropylene are fixated on the pipes by friction welding and leak-tested, upon which the pipes are moved with help of vacuum grippers into the accumulation trolley.

9. Packaging

Packaging of the pipes in bars is made of wooden frames fixated with PET or metal straps. The finished pipes are stored in holding area for inspection and quality acceptance.

10. Dispatch

After inspection and acceptance, the pipes are stored to await dispatch.

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.

Transportation from factory to construction site (A4)

Transportation from EVOPIPES factory to construction site creates impact to the environment and is calculated in product LCA. Product is delivered by lorry and ferry with average distance 560 km, therefore emissions are caused by fuel. During transportation there is not product or packaging loss.

Construction process (A5)

Pipes are installed underground using excavator (diesel energy) and sand-gravel mix to strengthen the pipe in trench. Approximately 9% of product goes to landfilled waste after installation. Other waste occurs from packaging that goes to recycling/incineration. This scenario is based on TEPPFAs calculations.

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)

Deconstruction (C1)

End of Life stage for product occurs when pipe needs to be replaced. Since the consumption of energy and resources is negligible for disassembling of the end-of-life product, the impacts of demolition are assumed to be zero (this scenario is based on TEPPFAs calculations).

Transportation (C2)

5% of the end-of-life product assumed to be collected form demolition site and sent to landfill thus transportation emissions occur while product is transported to landfill place.

Recycling (C3)

Pipes are not recycled during end-of-life stage.

Disposal (C4)

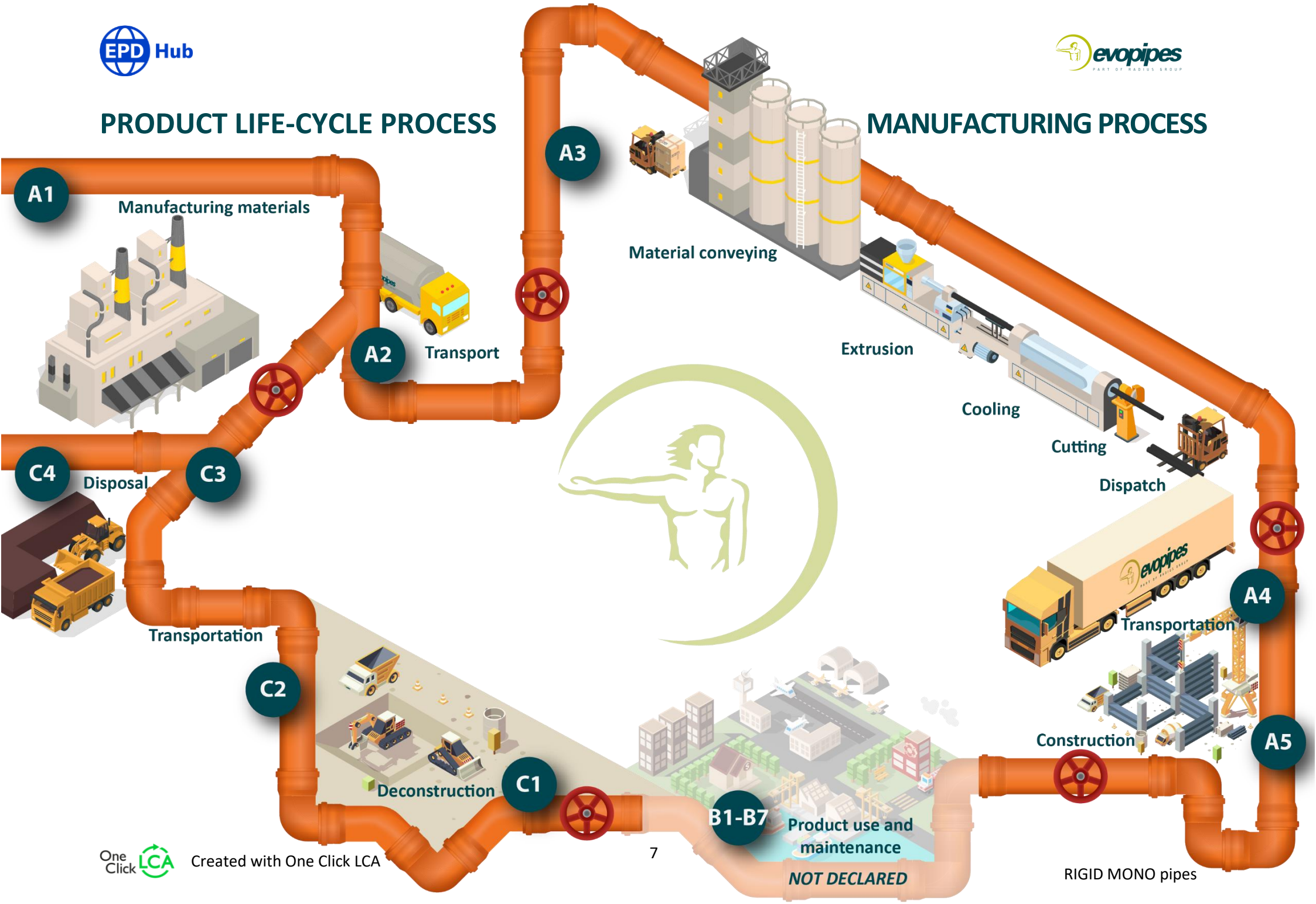
For end-of-life calculation method is used landfilled scenario because it is the most representative. Based on TEPPFAs calculations assumed that in 95% of cases pipes are left in ground and in other 5% of time pipes are dig out and transported to nearest landfilling place.

Benefits and loads beyond system boundary (D)

To look at benefits outside system boundaries, recycled packaging material can be processed into granules, used as a secondary raw material, and incinerated products (wood frames) are being converted to energy.

PRODUCT LIFE-CYCLE PROCESS

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.

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 materials	Allocated by mass or volume
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

In this EPD no averaging is used. EPD represents only one product- RIGID MONO.

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	2,04E0	1,82E-1	-7,12E-2	2,15E0	5,41E-2	9,36E0	MND	MND	MND	MND	MND	MND	MND	0E0	2,27E-4	0E0	1,27E-1	-7,05E-2
GWP – fossil	kg CO_2e	2,03E0	1,82E-1	1,89E-2	2,23E0	5,45E-2	9,24E0	MND	MND	MND	MND	MND	MND	MND	0E0	2,27E-4	0E0	1,27E-1	-7,12E-2
GWP – biogenic	kg CO_2e	6,5E-3	1,26E-5	-9,02E-2	-8,37E-2	2,06E-5	1,11E-1	MND	MND	MND	MND	MND	MND	MND	0E0	1,65E-7	0E0	1,14E-4	7,44E-4
GWP – LULUC	kg CO_2e	5,62E-4	9,05E-5	6,61E-5	7,18E-4	2,27E-5	3,83E-3	MND	MND	MND	MND	MND	MND	MND	0E0	6,84E-8	0E0	5,58E-6	-9,83E-6
Ozone depletion pot.	kg CFC_{-11}e	3,84E-8	3,85E-8	2,23E-9	7,92E-8	1,21E-8	1,69E-6	MND	MND	MND	MND	MND	MND	MND	0E0	5,34E-11	0E0	3,28E-9	-7,62E-9
Acidification potential	mol H^+e	7,09E-3	4,28E-3	1,01E-4	1,15E-2	8E-4	7,01E-2	MND	MND	MND	MND	MND	MND	MND	0E0	9,54E-7	0E0	9,2E-5	-6,13E-4
EP-freshwater[3)]	kg Pe	3,17E-5	9,64E-7	1,26E-6	3,39E-5	3,65E-7	1,27E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,85E-9	0E0	1,96E-7	-2,14E-6
EP-marine	kg Ne	1,18E-3	1,1E-3	2,38E-5	2,3E-3	2,07E-4	2,67E-2	MND	MND	MND	MND	MND	MND	MND	0E0	2,88E-7	0E0	5,24E-5	-7,98E-5
EP-terrestrial	mol Ne	1,31E-2	1,22E-2	2,54E-4	2,55E-2	2,3E-3	2,96E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,18E-6	0E0	3,4E-4	-8,79E-4
POCP (“smog”)	kg NMVOCe	6,19E-3	3,2E-3	9,79E-5	9,49E-3	6,23E-4	8,33E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,02E-6	0E0	1,25E-4	-2,6E-4
ADP-minerals & metals	kg Sbe	1,75E-5	1,69E-6	4,69E-7	1,96E-5	7,24E-7	1,65E-4	MND	MND	MND	MND	MND	MND	MND	0E0	3,88E-9	0E0	1,14E-7	-1,63E-7
ADP-fossil resources	MJ	7,27E1	2,48E0	2,51E-1	7,55E1	7,93E-1	1,3E2	MND	MND	MND	MND	MND	MND	MND	0E0	3,53E-3	0E0	2,5E-1	-7,41E-1
Water use[2)]	m^3e depr.	1,24E0	6,15E-3	8,79E-3	1,25E0	2,49E-3	3,44E1	MND	MND	MND	MND	MND	MND	MND	0E0	1,31E-5	0E0	1,11E-2	-6,22E-3

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	1,15E0	2,04E-2	2,65E0	3,82E0	8,38E-3	3,13E0	MND	MND	MND	MND	MND	MND	MND	0E0	4,45E-5	0E0	4,38E-3	-1,2E-1
Renew. PER as material	MJ	0E0	0E0	7,9E-1	7,9E-1	0E0	-7,9E-1	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	1,15E0	2,04E-2	3,44E0	4,61E0	8,38E-3	2,34E0	MND	MND	MND	MND	MND	MND	MND	0E0	4,45E-5	0E0	4,38E-3	-1,2E-1
Non-re. PER as energy	MJ	2,51E1	2,48E0	2,51E-1	2,78E1	7,93E-1	1,26E2	MND	MND	MND	MND	MND	MND	MND	0E0	3,53E-3	0E0	2,5E-1	-7,41E-1
Non-re. PER as material	MJ	4,76E1	0E0	0E0	4,76E1	0E0	-3,4E-3	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	7,27E1	2,48E0	2,51E-1	7,55E1	7,93E-1	1,26E2	MND	MND	MND	MND	MND	MND	MND	0E0	3,53E-3	0E0	2,5E-1	-7,41E-1
Secondary materials	kg	4,14E-3	0E0	1,01E-3	5,14E-3	0E0	4,63E-4	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	2,32E-3
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	4,57E-3	3,17E-4	1,91E-4	5,08E-3	1,35E-4	7,93E-1	MND	MND	MND	MND	MND	MND	MND	0E0	7,36E-7	0E0	2,81E-4	-1,36E-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	4,45E-2	2,59E-3	4,9E-3	5,2E-2	7,99E-4	2,67E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,43E-6	0E0	4,54E-4	-5,44E-3
Non-hazardous waste	kg	1,4E0	1,08E-1	5,04E-2	1,56E0	6,13E-2	9,03E0	MND	MND	MND	MND	MND	MND	MND	0E0	3,8E-4	0E0	1E0	-8,12E-2
Radioactive waste	kg	3,31E-5	1,73E-5	1,05E-6	5,14E-5	5,49E-6	7,81E-4	MND	MND	MND	MND	MND	MND	MND	0E0	2,43E-8	0E0	1,49E-6	-3,36E-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	8,5E-4	8,5E-4	0E0	7,85E-3	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	6,54E-4	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	1,86E0	1,81E-1	1,85E-2	2,06E0	5,41E-2	9,12E0	MND	MND	MND	MND	MND	MND	MND	0E0	2,25E-4	0E0	8,98E-2	-6,97E-2
Ozone depletion Pot.	kg CFC_{-11}e	3,92E-8	3,05E-8	1,89E-9	7,16E-8	9,64E-9	1,35E-6	MND	MND	MND	MND	MND	MND	MND	0E0	4,25E-11	0E0	2,61E-9	-6,08E-9
Acidification	kg SO_2e	5,98E-3	3,28E-3	7,62E-5	9,34E-3	5,93E-4	2E-2	MND	MND	MND	MND	MND	MND	MND	0E0	4,62E-7	0E0	9,03E-5	-5,31E-4
Eutrophication	kg PO_4^3e	1,36E-3	3,79E-4	4,24E-5	1,79E-3	7,3E-5	5,37E-3	MND	MND	MND	MND	MND	MND	MND	0E0	9,34E-8	0E0	4,42E-3	-8,52E-5
POCP (“smog”)	kg C_2H_4e	3,9E-4	8,93E-5	8,79E-6	4,88E-4	1,79E-5	1,76E-3	MND	MND	MND	MND	MND	MND	MND	0E0	2,93E-8	0E0	1,88E-5	-2,39E-5
ADP-elements	kg Sbe	1,75E-5	1,69E-6	4,69E-7	1,96E-5	7,24E-7	1,65E-4	MND	MND	MND	MND	MND	MND	MND	0E0	3,88E-9	0E0	1,14E-7	-1,63E-7
ADP-fossil	MJ	7,27E1	2,48E0	2,51E-1	7,55E1	7,93E-1	1,3E2	MND	MND	MND	MND	MND	MND	MND	0E0	3,53E-3	0E0	2,5E-1	-7,41E-1

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
12.09.2022

VERIFIED ISO 14025