

ENVIRONMENTAL PRODUCT DECLARATION

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

Polypropylene sewer pipes for building and underground use

Meltex Oy Plastics



EPD HUB, HUB-1458

Published on 23.05.2024, last updated on 23.05.2024, valid until 23.05.2029

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Meltex Oy Plastics
Address	Puuppolantie 111, 40270 Jyväskylä, Finland
Contact details	meltex@meltex.fi
Website	www.meltex.fi

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 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Johannes Hakala, Meltex Oy Plastics
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Imane Uald lamkaddam, 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	Polypropylene sewer pipes for building and underground use
Additional labels	-
Product reference	PP sewer pipes for buildings (HT), 75–110 mm external diameter, and in accordance with the EN 1451-1 and NGP/PS102 standards. PP sewer pipes for underground use (NAL), 160–200 mm external diameter, and in accordance with the EN 1852-1 and EN 14758 standards.
Place of production	Kuhmoinen, Finland
Period for data	2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	<10 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of pipe
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	1,66E+00
GWP-total, A1-A3 (kgCO ₂ e)	1,55E+00
Secondary material, inputs (%)	0.22
Secondary material, outputs (%)	22.7
Total energy use, A1-A3 (kWh)	9.66

Net fresh water use, A1-A3 (m3)	0.02
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PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Established in 1993, Meltex is a Finnish manufacturer, importer, and retailer of plastic products for the construction industry. Meltex offers a wide range of products and special expertise in the building materials sector, and fast deliveries throughout Finland. We are a specialist in civil engineering and HVAC supplies, especially pipes, drains, chambers and geotextiles.

PRODUCT DESCRIPTION

This EPD represents many durable polypropylene (PP) sewer pipe products for building and underground applications. The pipes are manufactured in Finland from high quality materials. HT pipes for buildings have an external diameter of 75–110 mm and the material stiffness is either SN4 or SN8. NAL pipes for underground use have an external diameter of 160–200 mm and the material stiffness is SN8. All but one of the products have a socket with a synthetic rubber seal. Product numbers covered by this EPD:

HT pipes without a socket/seal: 106365.

HT pipes: 106345, 106350, 106355, 106380, 106390, 106395, 106400 and 106410.

NAL pipes: 105600, 105610, 105625, 105635 and 105640.

Further information can be found at www.meltex.fi.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	23	EU
Fossil materials	77	EU
Bio-based materials	-	-

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	0.025

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of pipe
Mass per declared unit	1 kg
Functional unit	-
Reference service life	100

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.

The manufacturing process begins with the melting of the raw materials: polypropylene granules, additives, and pigments. These are extruded into a single wall pipe with a smooth surface. The pipe is cooled by water in a closed loop system. Product and batch specific information is typically printed on the pipe. The pipe is cut to the required length, and for most products, a socket is formed at the end and a synthetic rubber seal is applied. The finished pipes are loaded onto a wooden frame and bundled

with steel strapping. By-products from the manufacturing process are processed back into raw materials. All electricity used in pipe production is generated by renewable hydroelectric power.

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: The average transportation distance from the manufacturing site to the construction site is 207 km by lorry, based on sales data. Vehicle capacity is assumed to be fully utilized as full loads are preferred and return loads are typically utilized. There is assumed to be no loss during transport.

A5: The product is typically installed in an excavated trench or in a building, and the environmental impact of fuel used by machinery during installation is included. There is assumed to be no loss when installing the product. Waste packaging material handling, transport, recycling, and incineration are included. Release of biogenic carbon dioxide from the wood used for packaging is also considered.

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)

C1: The product is typically excavated from the ground or removed from the building, and the environmental impact of fuel used by machinery during demolition is included. The end-of-life scenario is based on Plastics Europe (2021) data on construction polypropylene waste.

C2: The end-of-life product is assumed to be transported by lorry to the nearest facility, which is assumed to be 50 km away.

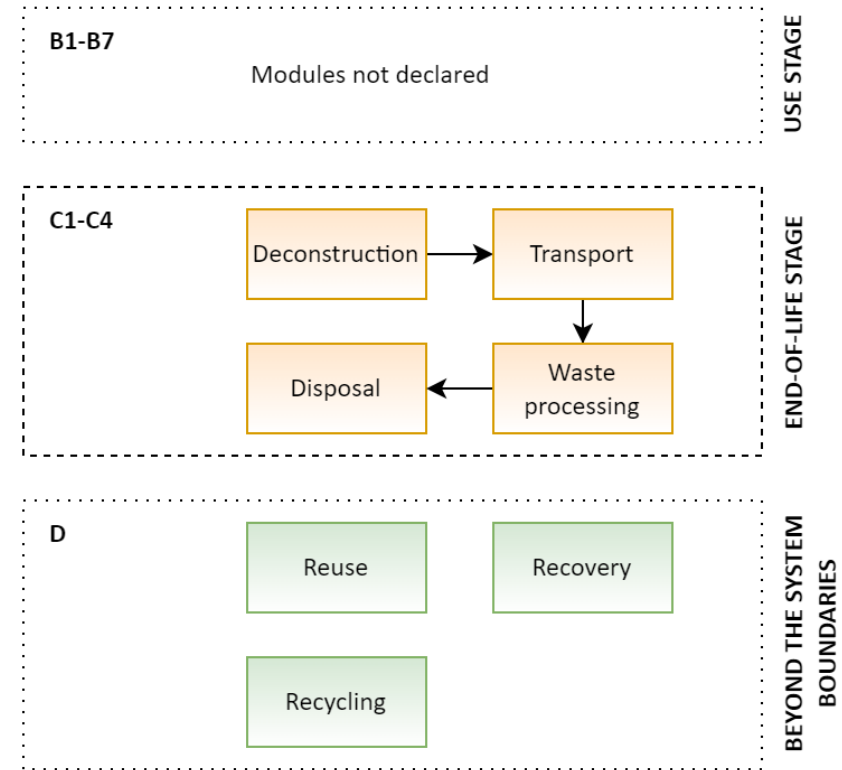
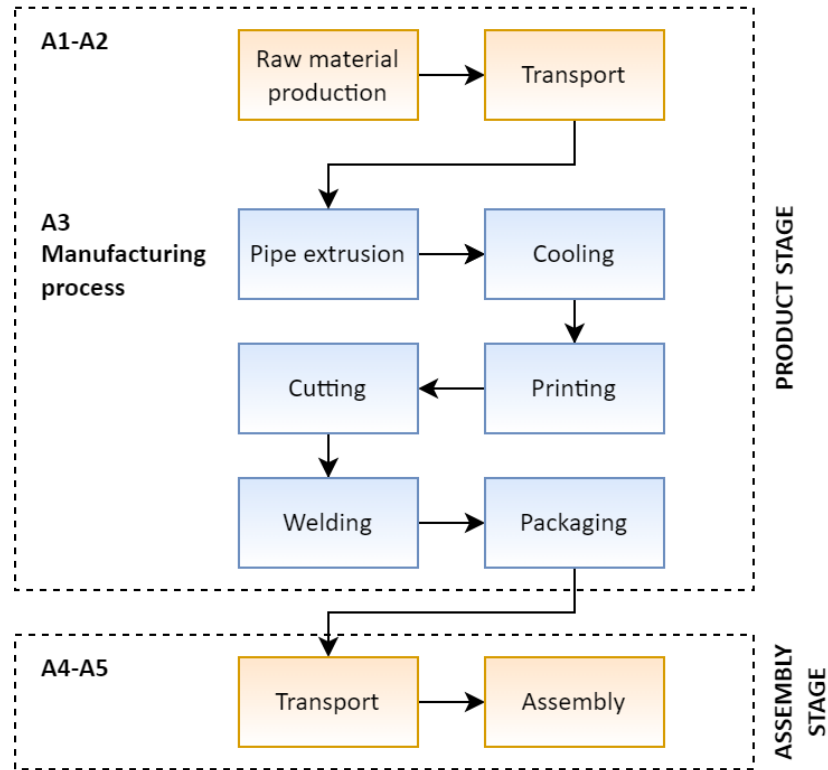
C3–C4: Based on Plastics Europe data, 50 % of the product is assumed to

be incinerated, producing energy. 23 % of the product is assumed to be recycled, and 27 % is landfilled.

D: The benefits and loads of the end-of-life product and its packaging are considered, including conversion to recycled plastic and the heat and energy produced by the incineration of waste.



MANUFACTURING PROCESS AND SYSTEM BOUNDARIES



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	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3	<10 %

The primary data represents 14 plastic sewer pipe products manufactured in Kuhmoinen, Finland. Similar raw materials and processes are used in manufacturing the products. Although there are some differences in the features and the packaging of the products, the variability in the environmental impact per kilogram of product is small. This EPD represents an average of the products by production mass.

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 ₂ e	1,59E+00	5,64E-02	-9,26E-02	1,55E+00	2,00E-02	1,14E-01	MND	MND	MND	MND	MND	MND	MND	3,31E-03	8,32E-03	1,32E+00	3,41E-02	-1,25E+00
GWP – fossil	kg CO ₂ e	1,59E+00	5,64E-02	1,72E-02	1,66E+00	2,00E-02	4,53E-03	MND	MND	MND	MND	MND	MND	MND	3,31E-03	8,32E-03	1,32E+00	3,41E-02	-1,22E+00
GWP – biogenic	kg CO ₂ e	0,00E+00	0,00E+00	-1,10E-01	-1,10E-01	0,00E+00	1,10E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,22E-02
GWP – LULUC	kg CO ₂ e	4,08E-04	3,22E-05	1,25E-04	5,65E-04	7,18E-06	1,53E-06	MND	MND	MND	MND	MND	MND	MND	3,30E-07	3,26E-06	2,78E-05	3,00E-06	-1,31E-03
Ozone depletion pot.	kg CFC ₁₁ e	2,36E-08	1,20E-08	1,93E-09	3,75E-08	4,77E-09	9,46E-10	MND	MND	MND	MND	MND	MND	MND	7,07E-10	1,92E-09	1,86E-09	8,67E-10	-4,52E-08
Acidification potential	mol H ⁺ e	5,51E-03	1,13E-03	8,35E-05	6,72E-03	8,34E-05	4,16E-05	MND	MND	MND	MND	MND	MND	MND	3,44E-05	3,38E-05	2,32E-04	2,46E-05	-7,64E-03
EP-freshwater ²⁾	kg Pe	2,12E-05	3,16E-07	1,42E-06	2,29E-05	1,37E-07	5,23E-08	MND	MND	MND	MND	MND	MND	MND	1,10E-08	5,84E-08	6,52E-07	4,70E-08	-3,35E-05
EP-marine	kg Ne	9,26E-04	2,83E-04	2,25E-05	1,23E-03	2,52E-05	1,80E-05	MND	MND	MND	MND	MND	MND	MND	1,52E-05	1,01E-05	9,76E-05	1,41E-05	-9,39E-04
EP-terrestrial	mol Ne	1,01E-02	3,15E-03	2,39E-04	1,35E-02	2,78E-04	1,91E-04	MND	MND	MND	MND	MND	MND	MND	1,67E-04	1,11E-04	1,05E-03	9,11E-05	-1,10E-02
POCP (“smog”) ³⁾	kg NMVOCe	4,86E-03	8,36E-04	1,05E-04	5,80E-03	8,95E-05	5,33E-05	MND	MND	MND	MND	MND	MND	MND	4,59E-05	3,40E-05	2,66E-04	3,36E-05	-3,63E-03
ADP-minerals & metals ⁴⁾	kg Sbe	1,06E-05	1,02E-07	1,36E-07	1,09E-05	4,69E-08	5,34E-09	MND	MND	MND	MND	MND	MND	MND	1,68E-09	2,95E-08	2,69E-07	9,81E-09	-3,12E-06
ADP-fossil resources	MJ	5,67E+01	7,69E-01	2,25E-01	5,77E+01	3,06E-01	6,63E-02	MND	MND	MND	MND	MND	MND	MND	4,45E-02	1,23E-01	2,37E-01	6,64E-02	-2,56E+01
Water use ⁵⁾	m ³ e depr.	6,57E-01	2,84E-03	6,44E-03	6,66E-01	1,41E-03	3,71E-04	MND	MND	MND	MND	MND	MND	MND	1,20E-04	5,71E-04	4,85E-02	3,97E-04	-2,85E-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	6,40E-08	3,84E-09	1,33E-09	6,92E-08	2,35E-09	1,05E-09	MND	MND	MND	MND	MND	MND	MND	9,22E-10	7,18E-10	2,58E-09	4,91E-10	-7,35E-08
Ionizing radiation ⁶⁾	kBq U235e	8,80E-02	3,60E-03	2,13E-03	9,37E-02	1,57E-03	4,55E-04	MND	MND	MND	MND	MND	MND	MND	2,05E-04	6,46E-04	1,48E-03	3,20E-04	-2,04E-01
Ecotoxicity (freshwater)	CTUe	8,09E+00	5,86E-01	3,86E-01	9,06E+00	2,54E-01	4,41E-02	MND	MND	MND	MND	MND	MND	MND	2,68E-02	1,02E-01	6,65E-01	6,84E-02	-1,98E+01
Human toxicity, cancer	CTUh	3,97E-10	2,72E-11	5,50E-11	4,79E-10	6,70E-12	1,64E-12	MND	MND	MND	MND	MND	MND	MND	1,03E-12	3,17E-12	9,88E-11	2,17E-12	-3,00E-10
Human tox. non-cancer	CTUh	9,75E-09	4,92E-10	3,65E-10	1,06E-08	2,69E-10	3,65E-11	MND	MND	MND	MND	MND	MND	MND	1,94E-11	1,04E-10	2,16E-09	4,06E-11	-9,70E-09
SQP ⁷⁾	-	1,33E+00	4,84E-01	1,15E+01	1,33E+01	3,56E-01	2,63E-02	MND	MND	MND	MND	MND	MND	MND	5,79E-03	8,64E-02	2,59E-01	1,60E-01	-7,04E+00

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	8,47E-01	6,92E-03	2,30E+00	3,16E+00	3,96E-03	1,62E-03	MND	MND	MND	MND	MND	MND	MND	2,54E-04	1,77E-03	1,65E-02	1,22E-03	-2,28E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	8,79E-01	8,79E-01	0,00E+00	-8,79E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,73E-01
Total use of renew. PER	MJ	8,47E-01	6,92E-03	3,18E+00	4,04E+00	3,96E-03	-8,77E-01	MND	MND	MND	MND	MND	MND	MND	2,54E-04	1,77E-03	1,65E-02	1,22E-03	-2,01E+00
Non-re. PER as energy	MJ	3,06E+01	7,69E-01	2,25E-01	3,16E+01	3,06E-01	6,63E-02	MND	MND	MND	MND	MND	MND	MND	4,45E-02	1,23E-01	2,37E-01	6,64E-02	-1,80E+01
Non-re. PER as material	MJ	2,70E+01	0,00E+00	0,00E+00	2,70E+01	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,97E+01	-7,28E+00	7,52E+00
Total use of non-re. PER	MJ	5,76E+01	7,69E-01	2,25E-01	5,86E+01	3,06E-01	6,63E-02	MND	MND	MND	MND	MND	MND	MND	4,45E-02	1,23E-01	-1,95E+01	-7,22E+00	-1,05E+01
Secondary materials	kg	2,23E-03	2,85E-04	8,40E-04	3,35E-03	8,62E-05	2,52E-05	MND	MND	MND	MND	MND	MND	MND	1,74E-05	4,14E-05	9,68E-04	2,37E-05	2,44E-01
Renew. secondary fuels	MJ	6,19E-05	1,53E-06	4,95E-06	6,84E-05	7,60E-07	1,70E-07	MND	MND	MND	MND	MND	MND	MND	5,70E-08	4,56E-07	7,12E-06	9,13E-07	-4,25E-06
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	1,70E-02	7,35E-05	1,28E-04	1,72E-02	4,06E-05	1,54E-05	MND	MND	MND	MND	MND	MND	MND	2,70E-06	1,55E-05	2,14E-04	7,11E-05	-1,22E-02

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	3,74E-02	1,03E-03	3,43E-03	4,19E-02	3,28E-04	9,78E-05	MND	MND	MND	MND	MND	MND	MND	5,96E-05	1,39E-04	2,47E-03	0,00E+00	-7,21E-02
Non-hazardous waste	kg	9,02E-01	1,25E-02	2,74E-02	9,42E-01	5,70E-03	2,54E-02	MND	MND	MND	MND	MND	MND	MND	4,19E-04	2,46E-03	5,37E-01	2,70E-01	-2,64E+00
Radioactive waste	kg	2,66E-05	5,30E-06	1,13E-06	3,30E-05	2,11E-06	4,26E-07	MND	MND	MND	MND	MND	MND	MND	3,13E-07	8,50E-07	5,21E-07	0,00E+00	-5,75E-05

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	0,00E+00	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
Materials for recycling	kg	0,00E+00	0,00E+00	4,39E-02	4,39E-02	0,00E+00	2,11E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,29E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,90E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,20E+01	0,00E+00	0,00E+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 ₂ e	1,50E+00	5,59E-02	1,69E-02	1,57E+00	1,98E-02	5,96E-03	MND	MND	MND	MND	MND	MND	MND	3,27E-03	8,24E-03	1,32E+00	2,78E-02	-1,17E+00
Ozone depletion Pot.	kg CFC ₋₁₁ e	2,04E-08	9,48E-09	1,62E-09	3,15E-08	3,78E-09	7,50E-10	MND	MND	MND	MND	MND	MND	MND	5,60E-10	1,53E-09	1,61E-09	6,88E-10	-3,71E-08
Acidification	kg SO ₂ e	4,61E-03	9,02E-04	6,60E-05	5,58E-03	6,46E-05	3,01E-05	MND	MND	MND	MND	MND	MND	MND	2,45E-05	2,62E-05	1,67E-04	1,87E-05	-6,51E-03
Eutrophication	kg PO ₄ ³ e	1,05E-03	1,10E-04	3,38E-05	1,20E-03	1,44E-05	7,36E-05	MND	MND	MND	MND	MND	MND	MND	5,69E-06	5,95E-06	2,32E-04	1,27E-03	-1,24E-03
POCP ("smog")	kg C ₂ H ₄ e	3,01E-04	2,43E-05	9,70E-06	3,35E-04	2,54E-06	1,07E-06	MND	MND	MND	MND	MND	MND	MND	5,36E-07	1,07E-06	6,04E-06	5,07E-06	-3,12E-04
ADP-elements	kg Sbe	1,06E-05	9,92E-08	1,33E-07	1,08E-05	4,56E-08	5,24E-09	MND	MND	MND	MND	MND	MND	MND	1,65E-09	2,88E-08	2,61E-07	9,46E-09	-3,11E-06
ADP-fossil	MJ	5,67E+01	7,69E-01	2,25E-01	5,77E+01	3,06E-01	6,63E-02	MND	MND	MND	MND	MND	MND	MND	4,45E-02	1,23E-01	2,37E-01	6,64E-02	-2,53E+01

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.

Imane Uald lamkaddam, as an authorized verifier acting for EPD Hub Limited

23.05.2024

