ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

PP stormwater pipes Raineo and Pragma
Pipelife Finland Oy

EPD HUB, HUB-4644
Published on 10.12.2025, last updated on 10.12.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Pipelife Finland Oy
Address	Kiviharjunlenkki 1 E, 90220 Oulu, Finland
Contact details	asiakaspalvelu@pipelife.fi
Website	https://www.pipelife.fi/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
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	Riikka Vaara
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 for EPD Hub

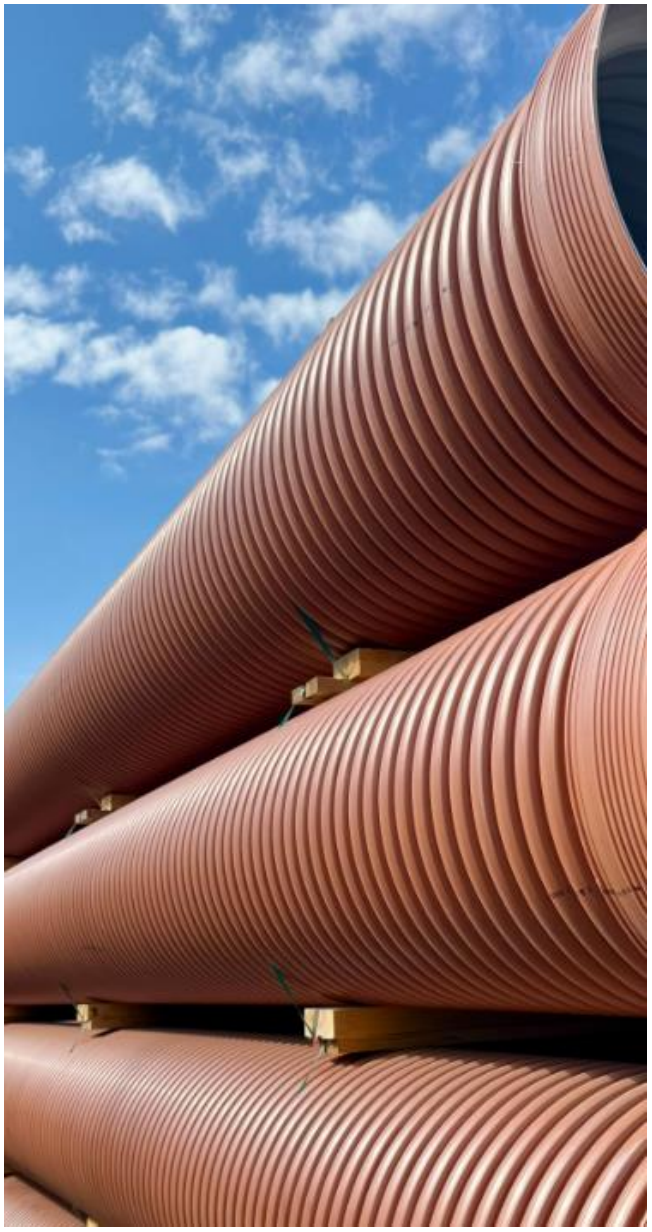
This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	PP stormwater pipes Raineo and Pragma
Place of production	Pipelife Hafab AB (Haaparanta)
Period for data	Calender year 2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	0
A1-A3 Specific data (%)	5,31

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of pipe
Declared unit mass	1 kg
Mass of packaging	0.07 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	1,73
GWP-total, A1-A3 ($kgCO_2e$)	1,62
Secondary material, inputs (%)	0
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	8,51
Net freshwater use, A1-A3 (m^3)	27,6



PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Pipelife Finland Oy is one of the leading providers of Plastic construction solutions in Finland. The product range consists of plastic pipe, tank and chamber solutions, rainwater management, oil and sand separation solutions, wastewater treatment solutions, and solutions for energy and data network construction, as well as electric installations. Pipelife Finland solutions are used in construction in infrastructure, housing and industrial applications. Pipelife Finland Oy are certified according to EN ISO 9001 Quality and EN ISO 14001 Environmental Management systems. Pipelife Finland Oy employs about 250 employees in Finland. The company is part of leading global construction solution provider Wienerberger AG and its piping solution division WPS. It operates globally in 25 countries and provides piping solutions based on plastic and ceramic materials.

PRODUCT DESCRIPTION

PP Stormwater Pipes black with blue stripes, Raineo. Brown without stripes, Pragma.

PP Stormwater Pipes is a structured-wall stormwater and culvert pipe designed for the demanding conditions of northern climates, manufactured in accordance with the EN13476-3 standard.

Raineo and Pragma pipes are delivered in 6-meter lengths, complete with a socket and seal.

Pipes are made of polypropylene (PP) plastic, which is resistant to chemicals and high temperatures. The pipe has a ring stiffness rating of SN8.

Pipes are lightweight, easy to handle, and offer excellent flow characteristics. The high quality of the Raineo and Pragma pipes is certified by the Nordic Poly Mark quality label.

More information:
https://www.youtube.com/watch?v=FVum2xu0ugo
https://catalog.pipelife.com/fi/article/190120/70000492-fi-pp-raineo-pipe-450-400-sn8-6m-bk?categoryurl=raineo-tuplavahva-sadevesiputket-181163®ionalid=188091
https://catalog.pipelife.com/fi/article/190122/70000495-fi-pp-raineo-pipe-560-500-sn8-6m-bk?categoryurl=raineo-tuplavahva-sadevesiputket-181163®ionalid=188091

Further information can be found at:
https://www.pipelife.fi/

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	-
Minerals	-	-
Fossil materials	100	EU
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	
Biogenic carbon content in packaging, kg C	0,029

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of pipe
Mass per declared unit	1 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	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	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 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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

MANUFACTURING MATERIALS (A1) The first module includes extraction and production of raw materials used in manufacturing process, mainly polypropylene granulates, 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 and by boat. Packaging materials and auxiliary tools are transported by lorry on the road. The production method is a pipe extrusion. The different stages are:

- Material conveying: The raw material is delivered by container and unloaded into silos at the product manufacturing site.
- Extrusion (melting and processing of material): The extruder converts plastic raw material into a continuous tubular form by squeezing it through an annular nozzle.
- Cooling: The melted pipe passes through sizing or calibration benches (which adjust the dimensions of the pipe) into a vacuum cooling tank, which cools the pipe to its shape. There are usually two other cooling tanks to cool the pipe.
- Printing: The laser stamping machine marks pipes according to the used material, pipe size, diameter, length and produced batch number
- Cutting: The pipes are cut to the required length or coiled. The length of the pipes is usually 6 metres.
- Packaging: The pipes are packed in a wooden frame, which is tied down with plastic straps. (PET).

- Dispatch: After the final quality check, the products are sent to the ordered destination. The plastic waste generated in production is recycled, and the wastewater is sent to the wastewater treatment plant. (A3)

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

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: Based on sales figures, the average transport distance from the production plant to the building site is estimated to be 470 km, and the transport method is assumed to be a lorry. No losses occur during transport, as the products are properly packaged.

A5: The installation accounts for the treatment of packaging waste. The environmental impact of the installation on the building will be negligible.
Waste treatment assumptions:
• Wooden pallets: recycled 32%, incinerated 30%, landfilled 38%
• Plastic: recycled 40%, incinerated 37%, landfilled 23%
Transportation distances for waste treatment (EU average estimates):
• 50 km to landfill
• 150km to incineration
• 250km to recycling
The distance of waste transport is estimated to be typical in the EU.
Waste management of packaging materials is based on EU statistical data (https://ec.europa.eu).
Wood waste management of packaging materials is based on EU statistical data (https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519174/default/table?lang=en)
Plastic waste management of packaging materials is based on EU statistical data (https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519242/default/table?lang=en)

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)

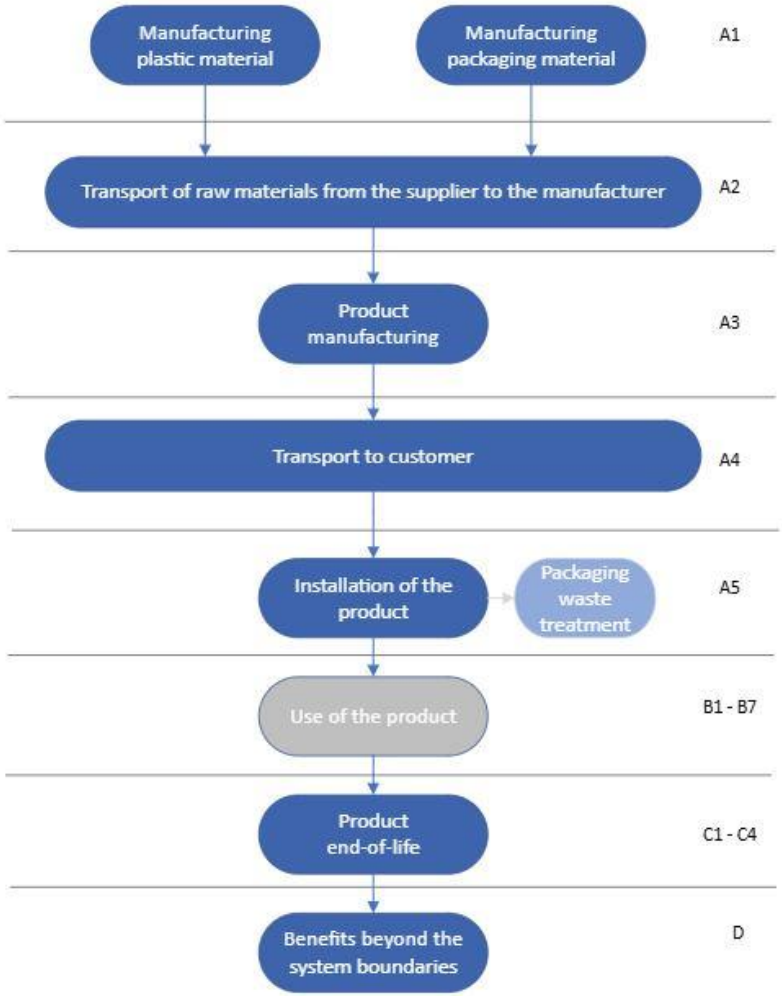
C1: Since the energy and resource consumption for dismantling a discarded product is negligible, the impact of dismantling is assumed to be zero. According to TEPPHA, 95% of the product remains underground, while 5% is excavated and sent for incineration. The diesel energy used in the process is included in the calculation.

C2: The end-of-life product is assumed to be transported by truck to the nearest facility, over a distance of 150 km.

C4: Product incineration is assumed to occur without energy recovery.

D: No benefits are attributed to the product itself; however, the recycling of wood and plastic packaging materials is accounted for. Benefits arise from replacing virgin materials with recycled packaging materials.

MANUFACTURING AND BOUNDARY 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.

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 excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

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

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	0

EPD calculation is based on average. Calculation is per kg of pipe including in-house recycling. Packaging materials, consumed electricity, waste materials, water and transportation are calculated based on average value. The production process is the same, the consumption of raw materials and electricity (energy) remains the same per kilogram of pipe -> variation 0. The result per kilo is the same regardless of the pipe size.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD System Verification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	1,63E+00	7,76E-02	-8,30E-02	1,62E+00	7,42E-02	1,11E-01	MND	MND	MND	MND	MND	MND	MND	2,16E-03	8,08E-04	0,00E+00	2,19E-01	-4,04E-02
GWP – fossil	kg CO_2e	1,63E+00	7,76E-02	2,39E-02	1,73E+00	7,42E-02	3,86E-03	MND	MND	MND	MND	MND	MND	MND	2,16E-03	8,07E-04	0,00E+00	2,19E-01	-1,03E-02
GWP – biogenic	kg CO_2e	0,00E+00	1,76E-05	-1,07E-01	-1,07E-01	1,53E-05	1,07E-01	MND	MND	MND	MND	MND	MND	MND	2,21E-07	1,83E-07	0,00E+00	-6,10E-05	-3,00E-02
GWP – LULUC	kg CO_2e	0,00E+00	3,47E-05	7,15E-05	1,06E-04	2,72E-05	3,45E-06	MND	MND	MND	MND	MND	MND	MND	2,22E-07	3,61E-07	0,00E+00	7,69E-06	-1,47E-05
Ozone depletion pot.	kg CFC_{-11}e	0,00E+00	1,14E-09	2,44E-10	1,39E-09	1,48E-09	3,70E-11	MND	MND	MND	MND	MND	MND	MND	3,31E-11	1,19E-11	0,00E+00	2,95E-10	-1,69E-10
Acidification potential	mol H^+e	5,66E-03	2,64E-04	1,43E-04	6,07E-03	2,34E-04	1,26E-05	MND	MND	MND	MND	MND	MND	MND	1,95E-05	2,75E-06	0,00E+00	9,72E-05	-6,11E-05
EP-freshwater[2)]	kg Pe	3,50E-07	6,04E-06	9,46E-06	1,58E-05	5,04E-06	5,93E-07	MND	MND	MND	MND	MND	MND	MND	6,24E-08	6,28E-08	0,00E+00	1,37E-06	-5,84E-06
EP-marine	kg Ne	0,00E+00	8,69E-05	3,68E-05	1,24E-04	7,86E-05	1,31E-05	MND	MND	MND	MND	MND	MND	MND	9,06E-06	9,04E-07	0,00E+00	2,01E-03	-9,42E-06
EP-terrestrial	mol Ne	0,00E+00	9,46E-04	3,81E-04	1,33E-03	8,55E-04	5,11E-05	MND	MND	MND	MND	MND	MND	MND	9,92E-05	9,84E-06	0,00E+00	4,08E-04	-9,36E-05
POCP ("smog")[3)]	kg NMVOCe	9,76E-04	3,90E-04	1,32E-04	1,50E-03	3,72E-04	1,67E-05	MND	MND	MND	MND	MND	MND	MND	2,96E-05	4,06E-06	0,00E+00	1,50E-04	-3,47E-05
ADP-minerals & metals[4)]	kg Sbe	0,00E+00	2,16E-07	4,23E-07	6,39E-07	2,33E-07	6,34E-09	MND	MND	MND	MND	MND	MND	MND	7,76E-10	2,25E-09	0,00E+00	2,78E-08	-2,16E-08
ADP-fossil resources	MJ	4,74E+01	1,13E+00	3,05E-01	4,88E+01	1,06E+00	3,20E-02	MND	MND	MND	MND	MND	MND	MND	2,83E-02	1,17E-02	0,00E+00	2,52E-01	-1,89E-01
Water use[5)]	m^3e depr.	0,00E+00	5,56E-03	9,74E-03	1,53E-02	5,36E-03	8,80E-04	MND	MND	MND	MND	MND	MND	MND	7,07E-05	5,79E-05	0,00E+00	4,57E-03	-3,20E-03

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, EF 3.1

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	2,52E-07	7,77E-09	4,84E-09	2,65E-07	6,37E-09	2,21E-10	MND	MND	MND	MND	MND	MND	MND	5,55E-10	8,08E-11	0,00E+00	1,82E-09	-5,15E-10
Ionizing radiation[6]	kBq U235e	0,00E+00	9,81E-04	1,60E-03	2,58E-03	1,38E-03	8,50E-05	MND	MND	MND	MND	MND	MND	MND	1,25E-05	1,02E-05	0,00E+00	2,70E-04	-2,95E-03
Ecotoxicity (freshwater)	CTUe	0,00E+00	1,59E-01	1,27E-01	2,86E-01	1,37E-01	1,11E-02	MND	MND	MND	MND	MND	MND	MND	1,56E-03	1,66E-03	0,00E+00	3,32E+00	-2,06E-02
Human toxicity, cancer	CTUh	2,43E-13	1,28E-11	1,81E-11	3,12E-11	1,25E-11	1,15E-12	MND	MND	MND	MND	MND	MND	MND	2,22E-13	1,33E-13	0,00E+00	1,44E-11	-2,13E-12
Human tox. non-cancer	CTUh	2,43E-13	7,29E-10	5,24E-10	1,25E-09	6,70E-10	6,14E-11	MND	MND	MND	MND	MND	MND	MND	3,52E-12	7,59E-12	0,00E+00	2,32E-09	-8,64E-11
SQP[7]	-	0,00E+00	1,13E+00	1,30E+01	1,42E+01	8,14E-01	2,99E-02	MND	MND	MND	MND	MND	MND	MND	1,98E-03	1,18E-02	0,00E+00	5,55E-01	-5,72E-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	7,50E-01	1,54E-02	4,50E+00	5,27E+00	1,85E-02	-9,37E-01	MND	MND	MND	MND	MND	MND	MND	1,79E-04	1,61E-04	0,00E+00	4,28E-03	1,78E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	7,98E-01	7,98E-01	0,00E+00	-7,98E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,60E-01
Total use of renew. PER	MJ	7,50E-01	1,54E-02	5,30E+00	6,06E+00	1,85E-02	-1,74E+00	MND	MND	MND	MND	MND	MND	MND	1,79E-04	1,61E-04	0,00E+00	4,28E-03	4,38E-01
Non-re. PER as energy	MJ	2,40E+01	1,13E+00	2,75E-01	2,54E+01	1,06E+00	-2,18E-02	MND	MND	MND	MND	MND	MND	MND	2,83E-02	1,17E-02	0,00E+00	-3,62E+01	-1,89E-01
Non-re. PER as material	MJ	4,74E+01	0,00E+00	3,05E-02	4,74E+01	0,00E+00	-3,05E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-4,74E+01	4,00E-02
Total use of non-re. PER	MJ	7,14E+01	1,13E+00	3,05E-01	7,28E+01	1,06E+00	-5,23E-02	MND	MND	MND	MND	MND	MND	MND	2,83E-02	1,17E-02	0,00E+00	-8,36E+01	-1,49E-01
Secondary materials	kg	0,00E+00	4,79E-04	2,88E-03	3,36E-03	4,78E-04	2,29E-05	MND	MND	MND	MND	MND	MND	MND	1,18E-05	4,99E-06	0,00E+00	1,08E-04	5,35E-04
Renew. secondary fuels	MJ	0,00E+00	6,08E-06	5,16E-05	5,77E-05	5,88E-06	2,28E-07	MND	MND	MND	MND	MND	MND	MND	3,07E-08	6,33E-08	0,00E+00	1,70E-06	-1,73E-07
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	2,76E+01	1,66E-04	1,94E-04	2,76E+01	1,51E-04	-8,06E-05	MND	MND	MND	MND	MND	MND	MND	1,87E-06	1,73E-06	0,00E+00	-3,49E-03	-1,21E-04

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	2,28E-03	1,91E-03	4,05E-03	8,24E-03	1,52E-03	2,15E-04	MND	MND	MND	MND	MND	MND	MND	3,15E-05	1,98E-05	0,00E+00	1,50E-03	-6,96E-04
Non-hazardous waste	kg	1,84E-03	3,53E-02	5,80E-02	9,51E-02	3,20E-02	1,43E-01	MND	MND	MND	MND	MND	MND	MND	4,29E-04	3,67E-04	0,00E+00	4,78E+00	-3,96E-02
Radioactive waste	kg	0,00E+00	2,40E-07	3,99E-07	6,39E-07	3,42E-07	2,12E-08	MND	MND	MND	MND	MND	MND	MND	3,07E-09	2,50E-09	0,00E+00	6,62E-08	-7,58E-07

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	0,00E+00	0,00E+00	0,00E+00	2,15E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	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	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
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,63E-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 – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,36E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

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	1,63E+00	7,71E-02	2,39E-02	1,73E+00	7,37E-02	5,23E-03	MND	MND	MND	MND	MND	MND	MND	2,15E-03	8,03E-04	0,00E+00	2,16E-01	-1,03E-02
Ozone depletion Pot.	kg CFC_{-11}e	0,00E+00	9,14E-10	2,07E-10	1,12E-09	1,18E-09	2,98E-11	MND	MND	MND	MND	MND	MND	MND	2,62E-11	9,51E-12	0,00E+00	2,36E-10	-1,39E-10
Acidification	kg SO_2e	5,18E-03	2,02E-04	1,14E-04	5,50E-03	1,78E-04	9,34E-06	MND	MND	MND	MND	MND	MND	MND	1,37E-05	2,10E-06	0,00E+00	7,13E-05	-5,18E-05
Eutrophication	kg PO_4^3e	1,18E-03	4,92E-05	3,20E-05	1,26E-03	4,50E-05	3,34E-06	MND	MND	MND	MND	MND	MND	MND	3,21E-06	5,12E-07	0,00E+00	1,05E-04	-6,97E-06
POCP (“smog”)	kg C_2H_4e	5,77E-04	1,80E-05	1,08E-05	6,06E-04	1,68E-05	1,05E-06	MND	MND	MND	MND	MND	MND	MND	1,03E-06	1,87E-07	0,00E+00	1,78E-05	-3,22E-06
ADP-elements	kg Sbe	0,00E+00	2,11E-07	4,16E-07	6,27E-07	2,27E-07	6,09E-09	MND	MND	MND	MND	MND	MND	MND	7,54E-10	2,20E-09	0,00E+00	2,63E-08	-2,13E-08
ADP-fossil	MJ	7,71E+01	1,11E+00	2,77E-01	7,85E+01	1,03E+00	3,06E-02	MND	MND	MND	MND	MND	MND	MND	2,81E-02	1,16E-02	0,00E+00	2,47E-01	-1,37E-01

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	1,63E+00	7,76E-02	2,40E-02	1,73E+00	7,42E-02	3,86E-03	MND	MND	MND	MND	MND	MND	MND	2,16E-03	8,08E-04	0,00E+00	2,19E-01	-1,04E-02

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Electricity production, wind, 1-3MW turbine, onshore, Sweden, Ecoinvent, 0.0175 kgCO2e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Transport, freight, lorry, all sizes, EURO5 to generic market for transport, freight, lorry, unspecified, 470 km

Transport scenario documentation A4

Scenario parameter	Value
Capacity utilization (including empty return) %	100
Bulk density of transported products	NA
Volume capacity utilization factor	<1

Installation scenario documentation - A5 (Installation waste)

1. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Kierrätykseen tarkoitetut materiaalit, 5.3E-4 kg
2. Treatment of waste polyethylene, municipal incineration, Ecoinvent, 4.9E-4 kg
3. Exported Energy: Electricity, Ecoinvent, 0.0033 MJ
4. Exported Energy: Electricity, Ecoinvent, 0.043 MJ
5. Exported Energy: Thermal, Ecoinvent, 0.0046 MJ
6. Exported Energy: Thermal, Ecoinvent, 0.059 MJ
7. Treatment of waste polyethylene, sanitary landfill, Ecoinvent, 3.1E-4 kg
8. Treatment of waste wood, post-consumer, sorting and shredding, Ecoinvent, Kierrätykseen tarkoitetut materiaalit, 0.021 kg
9. Treatment of waste wood, untreated, municipal incineration, Ecoinvent, 0.019 kg
10. Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, 0.024 kg

Use stages scenario documentation - C1-C4 (Data source)

1. Treatment of waste polyethylene/polypropylene product, collection for final disposal, Ecoinvent, Kierrätykseen tarkoitetut materiaalit, 0.0 kg
2. Treatment of waste polypropylene, municipal incineration, Ecoinvent, 0.05 kg
3. Diesel, burned in building machine, Ecoinvent, 0.006 kWh
4. Treatment of waste plastic, mixture, sanitary landfill, Ecoinvent, 0.95 kg

Scenario information	Value
Scenario assumptions e.g. transportation	95% left underground, 5% incineratied, transportation 150km

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
10.12.2025