



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Uponor Solid PP sewer pipe
Uponor Corporation



EPD HUB, HUB-5207

Published on 30.01.2026, last updated on 30.01.2026, valid until 29.01.2030

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	Uponor Corporation
Address	Ilmalantori 4, 00240 Helsinki, Finland
Contact details	info@uponor.com
Website	www.uponor.com

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 EN 16903 Product Category Rules (PCR) for buried plastics piping systems
Sector	Construction product
Category of EPD	Design phase EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Thomas Vogel, GF BFS
EPD verification	Independent verification of this EPD and data, according to ISO 14025:
EPD verifier	Vera Durão, as an authorised verifier acting for EPD Hub Limited

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	Uponor Solid PP sewer pipe
Additional labels	-
Product reference	Solid PP product portfolio Dim 110
Place(s) of raw material origin	EU
Place of production	Fristad, Sweden
Place(s) of installation and use	EU
Period for data	Full year 2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	2,5

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
Mass of packaging	0,08 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	2,42
GWP-total, A1-A3 (kgCO ₂ e)	2,18
Secondary material, inputs (%)	1,12
Secondary material, outputs (%)	3
Total energy use, A1-A3 (kWh)	13,5
Net freshwater use, A1-A3 (m ³)	0,01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

With a rich history in industrial innovation since 1802, GF is actively reshaping itself to become the global leader in Flow Solutions for Buildings, Industry and Infrastructure. GF delivers Excellence in Flow through essential products and solutions that enable safe and sustainable transport of water and other fluids worldwide. Following the Uponor acquisition and integration, GF has brought together its collective expertise and technologies into a unified portfolio of Flow Solutions for Buildings. This allows GF to offer reliable systems that perform throughout a building's entire lifecycle – from construction to daily operations – ensuring they are both future-proof and sustainable. Headquartered in Switzerland, GF is listed on the SIX Swiss Exchange.

PRODUCT DESCRIPTION

Uponor offers several pipe systems for different drainage needs. Uponor Solid PP is a smooth pipe system made of Polypropylene, for gravity sewer application; and fulfills standard EN 1852. As required by the standard, same solid PP material with red brown colour additives continues through the whole wall (monomaterial). Pipes are impact-resistant, even in cold weather, and can be installed also in wintertime. Solid PP sewer pipe is also suitable for installation below traffic area.

Further information can be found at www.uponor.com

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	
Minerals	-	
Fossil materials	100	
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	0,0687

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg
Functional unit	-
Reference service life	50

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	ND	ND	ND	ND	ND	ND	ND	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

Not declared = ND.

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.

All incoming raw-, ancillary- and packaging materials have been calculated with the individual transportation distance from suppliers and individual transport modes (trucks/lorries).

Certified electric energy (wind) was used for production, mobile Diesel HVO100 for internal transportation (forklifts).

The production method is a plastic pipe extrusion with in-line socketing for dimensions 110mm and 160mm. For dimensions 200mm - 400mm a double socket of the same material is added to a straight extruded pipe.

Sockets and pipe of same material, the different production steps are as follows:

- Material conveying
- Extrusion (melting and processing of material)
- Cooling
- Cutting
- Socketing
- Packaging

The finished product is packed on a wooden U-frame with a wooden lath on top of it. The amount of pipes on a frame differs depending on the pipe diameter. Differences in packaging can occur.

No electricity with contractual instruments, e.g. certificate of origin, has been virtually allocated to specific products.

A3 waste handling - hazardous waste is sent to incineration (80km/truck). Waste plastic goes to external recycling (80km) where it is separated. Other production waste are card boxes, wood and PE foil from incoming packaging; PE foil is collected and sent to PE plastic recycling (80km/truck). Cardboard is also collected and sent to paper recycling (80km/truck), whilst wood is small to be used again internally but considered in full for incineration (80km/truck).

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs), 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.

The transportation distance is defined according to the PCR. The average distance of transportation from the production plant to the installation site is based on the actual sales average figures of the company in the local markets. The installation scenarios in Uponor's infrastructure product EPDs are based on TEPPFA's (The European Plastic Pipe and Fittings Association) industry averaged EPDs. These documents and their background reports include industry consensus estimates of the resource use, emissions and affluents of typical European installations; these parameters have been used as input for the Uponor EPD modelling. Material loss during installation is calculated by 1% of product during installation (cut-off, coils remains; TEPPFA study, Ref: <https://www.teppfa.eu/sustainability/environmental-footprint/epd/>). Environmental impacts from installation include standardized energy and installation tools, waste packaging materials and release of biogenic carbon dioxide from wood pallets.

Installation materials used during installation is considered by metal and electricity to fix the pipes to the building.

Assumptions for EoL for A5 waste are modelled for wooden laths: Waste treatment of wooden materials is modelled according to the average EU scenario, which includes recycling and incineration rates based on EUROSTAT data. 32% of the wooden packaging is recycled, 30% is incinerated and 38% is landfilled, considering a transportation distance of 50km each.

The mode of all transport is by lorry.

PRODUCT USE AND MAINTENANCE (B1-B7)

Not declared.

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

PRODUCT END OF LIFE (C1-C4, D)

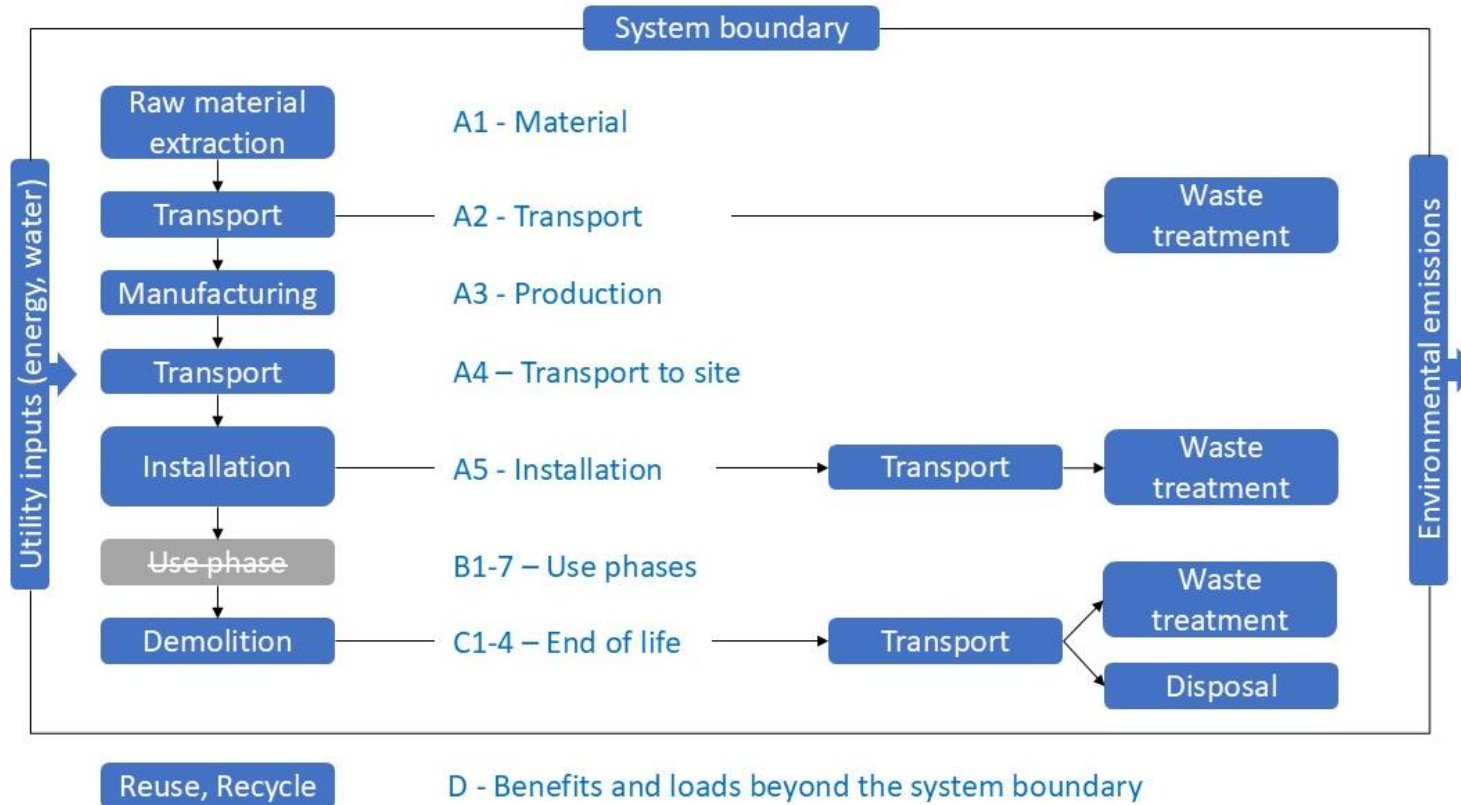
Consumption of energy for demolition is considered in use of electricity (saw, cutter tools) and excavation.(C1). After ca 100 years of service life 5% of the end-of-life product is assumed to be sent to the closest treatment facilities (C2). The collected 5% from the demolition site is sent to recycling (C3), whereas the remaining 95% is left inert under the ground (C4). Due to the recycling of PP, the end-of-life product is converted into recycled PE (D).

The EoL scenario included in the EPD are currently in use and are representative of one of the most likely scenarios, EoL happens mainly in the EU, Nordic countries.

Beyond the system boundaries (D), loads and benefits for the treatment of polypropylene (product) by recycling, polyethylene (packaging foil) by recycling, waste cardboard packaging recycling and waste wood packaging incineration into energy have been studied and considered.

Products meet the legal requirements at validation date on limited Substances of Very High Concern (SVHC).

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 that is 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.
No processes have been 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 made according to 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	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-	

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification 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 and 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'.

Products apply to EN 16903 Product Category Rules (PCR) for buried plastics piping systems.

Allocation used in Ecoinvent environmental data sources follow the methodology allocation, Cut-off, EN 15804+A2.

EU wooden packaging EoL scenario by EUROSTAT.

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 ₂ e	2,33E+00	4,90E-02	-1,94E-01	2,18E+00	4,54E-02	4,59E-01	ND	ND	ND	ND	ND	ND	ND	8,21E-02	2,75E-04	3,42E-02	3,21E-01	-4,10E-02
GWP – fossil	kg CO ₂ e	2,32E+00	4,90E-02	5,55E-02	2,42E+00	4,54E-02	2,08E-01	ND	ND	ND	ND	ND	ND	ND	8,21E-02	2,74E-04	3,18E-02	3,16E-01	-9,94E-03
GWP – biogenic	kg CO ₂ e	7,98E-03	1,10E-05	-2,50E-01	-2,42E-01	9,91E-06	2,52E-01	ND	ND	ND	ND	ND	ND	ND	2,80E-05	6,22E-08	2,36E-03	5,18E-03	-3,10E-02
GWP – LULUC	kg CO ₂ e	1,12E-03	2,09E-05	1,11E-04	1,25E-03	1,77E-05	5,83E-05	ND	ND	ND	ND	ND	ND	ND	9,34E-06	1,23E-07	3,38E-05	7,46E-05	-1,47E-05
Ozone depletion pot.	kg CFC-11e	1,16E-07	9,79E-10	1,70E-09	1,19E-07	9,47E-10	6,06E-09	ND	ND	ND	ND	ND	ND	ND	1,73E-09	4,05E-12	3,01E-10	1,78E-09	-1,23E-10
Acidification potential	mol H ⁺ e	6,47E-03	1,65E-04	1,83E-04	6,81E-03	1,07E-04	1,35E-03	ND	ND	ND	ND	ND	ND	ND	7,18E-04	9,36E-07	8,68E-05	7,91E-04	-6,25E-05
EP-freshwater ²⁾	kg Pe	3,68E-04	3,67E-06	1,51E-05	3,87E-04	3,17E-06	1,86E-05	ND	ND	ND	ND	ND	ND	ND	3,84E-06	2,14E-08	1,22E-05	1,08E-03	-6,21E-06
EP-marine	kg Ne	1,41E-03	5,24E-05	4,62E-05	1,51E-03	2,81E-05	5,92E-04	ND	ND	ND	ND	ND	ND	ND	3,31E-04	3,07E-07	2,32E-05	2,55E-04	-9,63E-06
EP-terrestrial	mol Ne	1,45E-02	5,69E-04	4,55E-04	1,55E-02	3,04E-04	6,26E-03	ND	ND	ND	ND	ND	ND	ND	3,63E-03	3,35E-06	1,54E-04	2,64E-03	-9,49E-05
POCP (“smog”) ³⁾	kg NMVOCe	1,26E-02	2,62E-04	1,59E-04	1,30E-02	1,86E-04	2,15E-03	ND	ND	ND	ND	ND	ND	ND	1,09E-03	1,38E-06	5,11E-05	7,90E-04	-3,01E-05
ADP-minerals & metals ⁴⁾	kg Sbe	1,26E-05	1,29E-07	6,06E-07	1,33E-05	1,30E-07	4,69E-07	ND	ND	ND	ND	ND	ND	ND	3,79E-08	7,66E-10	1,96E-07	9,41E-07	-1,27E-08
ADP-fossil resources	MJ	7,74E+01	8,48E-01	4,64E-01	7,87E+01	6,82E-01	4,11E+00	ND	ND	ND	ND	ND	ND	ND	1,06E+00	3,98E-03	2,99E-01	1,71E+00	-1,62E-01
Water use ⁵⁾	m ³ e depr.	5,13E-01	3,50E-03	1,15E-02	5,28E-01	3,49E-03	2,30E-02	ND	ND	ND	ND	ND	ND	ND	3,88E-03	1,97E-05	1,03E-02	4,77E-02	-3,19E-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	4,47E-08	4,61E-09	2,18E-09	5,15E-08	4,43E-09	3,41E-08	ND	ND	ND	ND	ND	ND	ND	2,03E-08	2,75E-11	4,80E-10	6,98E-09	-5,27E-10
Ionizing radiation ⁶⁾	kBq 11235e	1,61E-01	6,52E-04	3,59E-03	1,66E-01	8,22E-04	6,44E-03	ND	ND	ND	ND	ND	ND	ND	7,43E-04	3,47E-06	6,88E-03	1,01E-02	-3,12E-03
Ecotoxicity (freshwater)	CTUe	4,83E+01	9,85E-02	1,19E+00	4,96E+01	8,03E-02	1,60E+00	ND	ND	ND	ND	ND	ND	ND	5,80E-01	5,63E-04	6,10E-01	2,01E+01	-2,58E-01
Human toxicity, cancer	CTUh	4,25E-10	7,94E-12	4,53E-11	4,78E-10	7,56E-12	3,33E-11	ND	ND	ND	ND	ND	ND	ND	1,10E-11	4,53E-14	9,28E-12	1,00E-08	-1,76E-12
Human tox. non-cancer	CTUh	1,39E-08	4,42E-10	7,28E-10	1,51E-08	4,41E-10	8,21E-10	ND	ND	ND	ND	ND	ND	ND	1,57E-10	2,58E-12	2,81E-10	4,44E-07	-6,88E-11
SQP ⁷⁾	-	4,96E+00	6,65E-01	2,96E-01	5,93E+00	6,86E-01	3,57E-01	ND	ND	ND	ND	ND	ND	ND	6,89E-02	4,01E-03	9,01E-02	1,88E+00	-5,03E-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	1,58E+00	9,92E-03	3,11E+00	4,70E+00	1,11E-02	-9,70E-01	ND	ND	ND	ND	ND	ND	ND	1,03E-02	5,46E-05	6,76E-02	9,88E-02	2,18E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	2,31E+00	2,31E+00	0,00E+00	-2,31E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,10E-01
Total use of renew. PER	MJ	1,58E+00	9,92E-03	5,42E+00	7,01E+00	1,11E-02	-3,28E+00	ND	ND	ND	ND	ND	ND	ND	1,03E-02	5,46E-05	6,76E-02	9,88E-02	5,28E-01
Non-re. PER as energy	MJ	4,33E+01	6,96E-01	-1,93E-01	4,38E+01	6,82E-01	3,06E+00	ND	ND	ND	ND	ND	ND	ND	1,06E+00	3,98E-03	-1,87E+00	1,71E+00	-1,62E-01
Non-re. PER as material	MJ	3,41E+01	0,00E+00	-6,69E-01	3,35E+01	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,67E+00	-3,18E+01	2,10E-02
Total use of non-re. PER	MJ	7,74E+01	6,96E-01	-8,62E-01	7,73E+01	6,82E-01	3,06E+00	ND	ND	ND	ND	ND	ND	ND	1,06E+00	3,98E-03	-3,54E+00	-3,01E+01	-1,41E-01
Secondary materials	kg	1,12E-02	2,97E-04	9,55E-04	1,25E-02	2,95E-04	1,58E-03	ND	ND	ND	ND	ND	ND	ND	7,53E-04	1,70E-06	6,84E-05	4,68E-04	-2,05E-05
Renew. secondary fuels	MJ	5,96E-05	3,77E-06	3,61E-06	6,69E-05	3,72E-06	4,35E-06	ND	ND	ND	ND	ND	ND	ND	1,24E-06	2,15E-08	1,34E-06	6,48E-06	-1,45E-07
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,19E-02	1,09E-04	2,30E-04	1,23E-02	1,01E-04	4,04E-04	ND	ND	ND	ND	ND	ND	ND	7,27E-05	5,89E-07	2,25E-04	1,12E-03	-7,37E-05

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	6,82E-02	1,17E-03	7,06E-03	7,64E-02	9,86E-04	5,41E-03	ND	ND	ND	ND	ND	ND	ND	1,83E-03	6,75E-06	1,09E-03	2,92E+00	-6,59E-04
Non-hazardous waste	kg	1,99E+01	2,18E-02	8,93E-02	2,00E+01	1,97E-02	1,19E+00	ND	ND	ND	ND	ND	ND	ND	2,70E-02	1,25E-04	8,72E-02	1,87E-01	-3,16E-02
Radioactive waste	kg	4,09E-05	1,59E-07	1,45E-06	4,25E-05	2,03E-07	1,64E-06	ND	ND	ND	ND	ND	ND	ND	1,84E-07	8,49E-10	1,76E-06	2,57E-06	-8,01E-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	ND	ND	ND	ND	ND	ND	ND	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	1,28E-02	1,28E-02	0,00E+00	2,54E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	5,10E-02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	1,09E-02	1,09E-02	0,00E+00	3,27E-04	ND	ND	ND	ND	ND	ND	ND	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	1,22E-01	ND	ND	ND	ND	ND	ND	ND	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	5,10E-02	ND	ND	ND	ND	ND	ND	ND	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	7,10E-02	ND	ND	ND	ND	ND	ND	ND	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 ₂ e	2,29E+00	4,87E-02	5,67E-02	2,39E+00	4,51E-02	2,08E-01	ND	ND	ND	ND	ND	ND	ND	8,16E-02	2,73E-04	3,33E-02	3,15E-01	-9,92E-03
Ozone depletion Pot.	kg CFC ₁₁ e	9,37E-08	7,79E-10	1,40E-09	9,59E-08	7,53E-10	4,85E-09	ND	ND	ND	ND	ND	ND	ND	1,38E-09	3,23E-12	2,64E-10	1,43E-09	-1,02E-10
Acidification	kg SO ₂ e	5,29E-03	1,27E-04	1,42E-04	5,56E-03	8,50E-05	9,78E-04	ND	ND	ND	ND	ND	ND	ND	5,06E-04	7,15E-07	7,24E-05	6,07E-04	-5,30E-05
Eutrophication	kg PO ₄ ³ e	2,03E-03	3,00E-05	4,00E-05	2,10E-03	2,12E-05	2,58E-04	ND	ND	ND	ND	ND	ND	ND	1,18E-04	1,74E-07	4,30E-05	1,33E-04	-5,64E-06
POCP (“smog”)	kg C ₂ H ₄ e	6,61E-04	1,20E-05	1,16E-05	6,85E-04	8,66E-06	8,30E-05	ND	ND	ND	ND	ND	ND	ND	3,85E-05	6,37E-08	5,34E-06	4,32E-05	-2,97E-06
ADP-elements	kg Sbe	1,23E-05	1,26E-07	5,70E-07	1,30E-05	1,27E-07	4,57E-07	ND	ND	ND	ND	ND	ND	ND	3,69E-08	7,47E-10	1,90E-07	3,70E-07	-1,25E-08
ADP-fossil	MJ	7,46E+01	8,38E-01	4,14E-01	7,59E+01	6,68E-01	4,00E+00	ND	ND	ND	ND	ND	ND	ND	1,05E+00	3,93E-03	1,77E-01	1,54E+00	-1,07E-01

ENVIRONMENTAL IMPACTS – FRENCH NATIONAL COMPLEMENTS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADP-elements	kg Sbe	0,00E+00	1,26E-07	2,03E-07	3,28E-07	1,27E-07	7,77E-08	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,47E-10	0,00E+00	0,00E+00	0,00E+00
Hazardous waste disposed	kg	6,82E-02	1,17E-03	6,98E-03	7,63E-02	9,86E-04	5,41E-03	ND	ND	ND	ND	ND	ND	ND	1,83E-03	6,75E-06	1,09E-03	2,92E+00	-6,59E-04
Non-haz. waste disposed	kg	1,99E+01	2,18E-02	8,51E-02	2,00E+01	1,97E-02	1,19E+00	ND	ND	ND	ND	ND	ND	ND	2,70E-02	1,25E-04	8,72E-02	1,87E-01	-3,16E-02
Air pollution	m ³	3,30E+02	1,13E+01	8,88E+00	3,50E+02	1,04E+01	3,11E+01	ND	ND	ND	ND	ND	ND	ND	1,23E+01	6,62E-02	4,98E+00	2,87E+01	-3,48E+00
Water pollution	m ³	4,92E+01	4,23E-01	1,90E-01	4,98E+01	3,73E-01	2,45E+00	ND	ND	ND	ND	ND	ND	ND	7,00E-01	1,83E-03	2,35E-01	5,38E+00	-1,09E-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 ₂ e	2,32E+00	4,90E-02	5,56E-02	2,42E+00	4,54E-02	2,08E-01	ND	ND	ND	ND	ND	ND	ND	8,21E-02	2,75E-04	3,18E-02	3,16E-01	-9,96E-03

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.

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 ₂ e	2,24E+00	4,81E-02	5,63E-02	2,34E+00	4,46E-02	2,05E-01	ND	ND	ND	ND	ND	ND	ND	8,09E-02	2,71E-04	3,30E-02	3,14E-01	-9,85E-03
Ozone Depletion	kg CFC ₁₁ e	1,23E-07	1,03E-09	1,85E-09	1,26E-07	9,99E-10	6,40E-09	ND	ND	ND	ND	ND	ND	ND	1,82E-09	4,27E-12	3,23E-10	1,88E-09	-1,30E-10
Acidification	kg SO ₂ e	5,44E-03	1,46E-04	1,57E-04	5,74E-03	9,22E-05	1,23E-03	ND	ND	ND	ND	ND	ND	ND	6,64E-04	8,31E-07	7,32E-05	6,90E-04	-5,18E-05
Eutrophication	kg Ne	1,21E-03	1,57E-05	3,18E-05	1,26E-03	1,17E-05	1,28E-04	ND	ND	ND	ND	ND	ND	ND	4,71E-05	8,76E-08	2,43E-05	9,38E-05	-6,36E-06
POCP ("smog")	kg O ₃ e	1,14E-01	3,70E-03	2,63E-03	1,20E-01	2,11E-03	3,86E-02	ND	ND	ND	ND	ND	ND	ND	2,19E-02	2,12E-05	8,73E-04	1,50E-02	-5,38E-04
ADP-fossil	MJ	0,00E+00	6,97E-01	-2,66E-02	6,70E-01	6,82E-01	1,77E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,99E-03	0,00E+00	0,00E+00	0,00E+00

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	1. Electricity production, wind, 1-3MW turbine, onshore, Sweden, Ecoinvent, 0.0170 kgCO ₂ e/kWh 2. Electricity production, wind, 1-3MW turbine, onshore, Sweden, Ecoinvent, 0.0170 kgCO ₂ e/kWh
Electricity CO ₂ e / kWh	0,017

Transport scenario documentation - A4 (Transport resources)

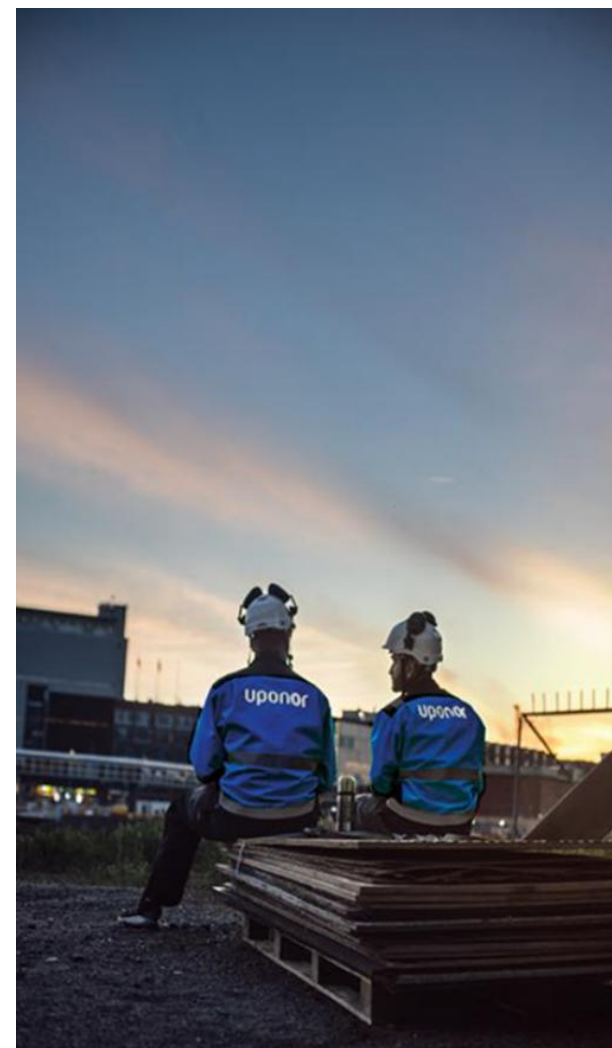
Scenario parameter	Value
Fuel and vehicle type.	1. Market for transport, freight, lorry >32 metric ton, EURO6
Average transport distance, km	Truck 400 km
Capacity utilization (including empty return) %	80
Bulk density of transported products	
Volume capacity utilization factor	1

Installation scenario documentation - A5 (Installation resources)

Scenario information	Value
Ancillary materials for installation	1. Market group for tap water, Ecoinvent, 0.371 kg 2. Diesel, burned in building machine, Ecoinvent, 0.108 MJ 3. Diesel, burned in building machine, Ecoinvent, 0.0225 MJ 4. Excavation, hydraulic digger, Ecoinvent, 0.14 m ³ 5. Excavation, hydraulic digger, Ecoinvent, 0.0582 m ³
Water use / m ³	0.000371
Other resource use / kg	-
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	-
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Wood: 0.0768kg
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	Wood: 32% recycling (0,025kg), 30% incineration (0,023kg), 38% landfill (0,029kg).
Direct emissions to ambient air, soil and water / kg	-

End-of-life scenario documentation - C1-C4 (Data source)

Scenario information	Value
Collection process – kg collected separately	-
Collection process – kg collected with mixed construction waste	-
Recovery process – kg for re-use	-
Recovery process – kg for recycling	Market for waste polyethylene, for recycling, unsorted, Ecoinvent, Materials for recycling, 0.051 kg
Recovery process – kg for energy recovery	-
Disposal (total) – kg for final deposition	Treatment of residues, MSWI, residues from sorting of waste plastic, residual material landfill, Ecoinvent, 0.97 kg
Scenario assumptions e.g. transportation	After EoI 5% of pipes are excavated and recycled, 95% is assumed to stay underground as landfill. 50 km transport by truck to local recycling station/landfill



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

Vera Durão, as an authorised verifier acting for EPD Hub Limited

30.01.2026

Vera Durão

