ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Uponor Chambers Polypropylene
Uponor Corporation

EPD HUB, HUB-4108
Published on 12.10.2025, last updated on 12.10.2030

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
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	Thomas Vogel
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly Gonzalez Vazquez 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	Uponor Chambers Polypropylene
Additional labels	-
Product reference	Uponor Chambers PP portfolio
Place(s) of raw material origin	Germany
Place of production	Fristad/Sweden, Hastola/Finland, Marl/Germany
Place(s) of installation and use	Sweden, Finland
Period for data	Calendar year 2023
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 (%)	2,73

ENVIRONMENTAL DATA SUMMARY

Declared unit	1kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2,92E+00
GWP-total, A1-A3 ($kgCO_2e$)	1,63E+00
Secondary material, inputs (%)	1,5
Secondary material, outputs (%)	8,09
Total energy use, A1-A3 (kWh)	19,6
Net freshwater use, A1-A3 (m^3)	0,02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Uponor is rethinking water for future generations. Our offering, including safe drinking water delivery, energy-efficient radiant heating and cooling and reliable infrastructure, enables a more sustainable living environment. We help our customers with residential and commercial construction, municipalities and utilities, as well as different industries to work faster and smarter. We employ about 3,800 professionals in 26 countries in Europe and North America. Over 100 years of expertise and trust form the basis of any successful partnership. This is the basis on which they can build, in a literal and metaphorical sense. We create trust together with our partners: Customers, prospective customers and suppliers. We establish this with shared knowledge, quality and sustainable results.

PRODUCT DESCRIPTION

Uponor provides a full range of high-quality injection-molded polypropylene chambers, rodding tees, and inspection pipes for stormwater and wastewater dispatch in public infrastructure and private networks outside buildings. They are used to connect multiple pipelines, allow changes in flow direction and to support maintenance on straight pipeline sections. Typical installation spacing is around 50 meters. Choosing the correct type and size is critical to ensure reliable functionality and efficiency. EN15398-2 describes the application.

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	Germany, 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	0,1196

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1kg
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.
The primary production methods used are injection molding, rotation molding, and extrusion. The raw material in this EPD is polypropylene (PP).
Chambers are assembled using plastic welding, typically done with hand extrusion or heat plates.
To ensure proper welding, the components being joined must be made from the same type of plastic material (PP).
Production Process for rotation and injection molding material includes conveying, molding (melting and shaping of material), cooling, cutting (removal of sprues) and lastly assembly and packaging.
For riser and telescopic pipes (extrusion process): Material conveying, extrusion (melting and forming of material), cooling, cutting, socketing and assembly and packaging
Some parts of the chambers are buy-in components and are assembled with the in-house manufactured parts.
Finished products are packed on EUR or 1-way wooden pallets and wrapped with PE stretch film for storage and transportation.
Transportation of PP raw materials is processed by large trucks (silo) and distances (depending on the various factories) are between 391 km and 990km; whilst components as sealings and screws need truck transportation distances of 300 / 500km.
Production losses are plastic monomaterial PP during tool change and start-up of the extruders/molds and all clean PP material is recycled (shredded and remelted) directly but not lost. Materials which happen to be contaminated are calculated within the waste. Waste PP goes to external recycling (50km) 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 (50km/truck). Cardboard is also collected and sent to paper recycling (50km/truck), whilst wood is small to be used again internally but considered in full for incineration (50km/truck).

All A3 waste quantities are calculated by allocation of waste mass as percentage of the produced yearly total factories masses (per each factory). The energy for production in Finland and Sweden is 100% nuclear medium voltage electricity, for internal transportation Diesel (FIN) and HVO Diesel (SE) is used. The supplier's factory in Germany uses certified wind electricity of medium voltage and natural gas as well as Diesel for internal transportation (forklifts).
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.

The installation process is a standard civil engineering process in which rainwater and wastewater pipes are often installed together with water and heat-carrying pipes and cables in a single step.
Transportation to sites in Europe but mainly in Nordics (FIN, SE) is typically done with large lorries and 1659km distance (based on an annual analysis of identical and similar products). No materials are lost in transportation, the installation on site is outside buildings in dedicated trenches for storm water networks, for which energy for excavation, stomping and filling the trench has been considered. Also, water for first flushing, testing and cleaning is calculated, but no other materials.
Wastes of installation are the packing materials on site, which are wooden pallets, cardboard and PE foil. PE foil is collected and sent to PE plastic recycling (50km/truck). Cardboard is also collected and sent to paper recycling (50km/truck), whilst wood is sent for incineration (50km/truck).

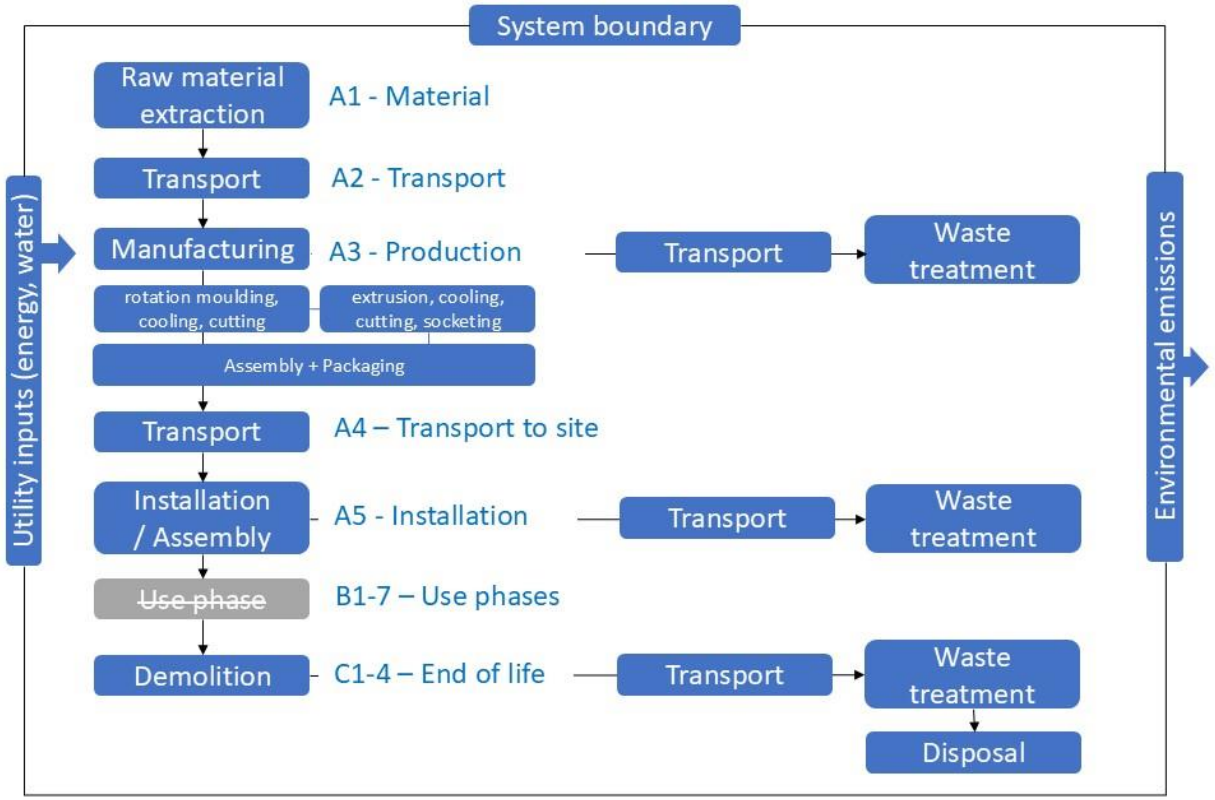
PRODUCT USE AND MAINTENANCE (B1-B7)

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

PRODUCT END OF LIFE (C1-C4, D)

At EoL 95% of the pipe is assumed to be left inert underground after >100 years of use, a proxy of demolition electricity has been considered for the excavation of the remaining 5%, which goes to plastic recycling by lorry (50km).
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 Nordic countries Finland and Sweden.
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 AND SYSTEM BOUNDARY



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances.
The study includes all major raw material and energy consumption.
All inputs and outputs of the unit processes, for which data is available for, are included in the calculation.
There is no neglected unit process 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.

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 pages 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-	-

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 v3.10.1 and One Click LCA databases as sources of environmental data.
Allocation used in Ecoinvent 3.10.1 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	2,48E+00	6,46E-02	-9,11E-01	1,63E+00	2,13E-01	1,43E+00	MND	MND	MND	MND	MND	MND	MND	4,70E-07	4,35E-04	2,24E-01	1,50E-02	-4,94E-01
GWP – fossil	kg CO_2e	2,47E+00	6,46E-02	3,88E-01	2,92E+00	2,13E-01	1,34E-01	MND	MND	MND	MND	MND	MND	MND	4,69E-07	4,35E-04	2,24E-01	1,50E-02	-8,80E-01
GWP – biogenic	kg CO_2e	1,49E-03	1,27E-05	-1,30E+00	-1,30E+00	4,82E-05	1,30E+00	MND	MND	MND	MND	MND	MND	MND	3,18E-10	9,86E-08	-5,36E-06	-2,29E-05	3,87E-01
GWP – LULUC	kg CO_2e	1,36E-03	2,89E-05	4,08E-03	5,48E-03	9,52E-05	7,66E-05	MND	MND	MND	MND	MND	MND	MND	3,06E-10	1,95E-07	1,13E-06	4,46E-05	-7,01E-04
Ozone depletion pot.	kg CFC_{-11}e	1,12E-07	9,53E-10	9,65E-09	1,22E-07	3,14E-09	2,37E-09	MND	MND	MND	MND	MND	MND	MND	3,27E-15	6,42E-12	4,32E-11	2,78E-10	-2,90E-09
Acidification potential	mol H^+e	7,63E-03	2,20E-04	1,73E-03	9,58E-03	7,25E-04	6,32E-04	MND	MND	MND	MND	MND	MND	MND	2,13E-09	1,48E-06	3,05E-05	9,02E-05	-7,46E-03
EP-freshwater[2)]	kg Pe	4,54E-04	5,03E-06	1,35E-04	5,94E-04	1,66E-05	1,14E-05	MND	MND	MND	MND	MND	MND	MND	9,97E-11	3,39E-08	4,62E-07	6,40E-06	-3,19E-04
EP-marine	kg Ne	1,50E-03	7,23E-05	5,96E-04	2,17E-03	2,38E-04	2,91E-04	MND	MND	MND	MND	MND	MND	MND	6,61E-10	4,88E-07	1,35E-05	2,94E-05	-1,01E-03
EP-terrestrial	mol Ne	1,55E-02	7,87E-04	5,29E-03	2,16E-02	2,59E-03	2,84E-03	MND	MND	MND	MND	MND	MND	MND	7,18E-09	5,31E-06	1,44E-04	3,16E-04	-1,06E-02
POCP ("smog")[3)]	kg NMVOCe	1,34E-02	3,25E-04	2,30E-03	1,61E-02	1,07E-03	9,64E-04	MND	MND	MND	MND	MND	MND	MND	2,23E-09	2,19E-06	3,63E-05	1,10E-04	-3,14E-03
ADP-minerals & metals[4)]	kg Sbe	2,33E-05	1,80E-07	2,15E-06	2,56E-05	5,93E-07	3,45E-07	MND	MND	MND	MND	MND	MND	MND	2,37E-12	1,21E-09	9,77E-09	4,51E-08	-3,91E-07
ADP-fossil resources	MJ	7,86E+01	9,37E-01	1,18E+02	1,98E+02	3,09E+00	2,84E+00	MND	MND	MND	MND	MND	MND	MND	4,32E-06	6,32E-03	2,57E-02	2,41E-01	-9,35E+00
Water use[5)]	m^3e depr.	5,92E-01	4,63E-03	3,41E-01	9,38E-01	1,53E-02	1,66E-02	MND	MND	MND	MND	MND	MND	MND	8,68E-08	3,12E-05	8,07E-03	1,22E-03	-8,37E-02

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	6,35E-08	6,46E-09	2,72E-08	9,72E-08	2,13E-08	1,68E-08	MND	MND	MND	MND	MND	MND	MND	5,45E-14	4,36E-11	1,67E-10	1,70E-09	-1,28E-07
Ionizing radiation[6)]	kBq U235e	1,83E-01	8,16E-04	6,75E-01	8,58E-01	2,69E-03	9,60E-03	MND	MND	MND	MND	MND	MND	MND	1,20E-08	5,50E-06	4,17E-05	2,10E-04	-3,70E-02
Ecotoxicity (freshwater)	CTUe	6,41E+00	1,33E-01	2,35E+00	8,89E+00	4,37E-01	2,52E-01	MND	MND	MND	MND	MND	MND	MND	1,15E-06	8,93E-04	1,71E-01	1,39E-01	-1,91E+00
Human toxicity, cancer	CTUh	5,47E-10	1,07E-11	1,21E-09	1,77E-09	3,51E-11	4,22E-11	MND	MND	MND	MND	MND	MND	MND	2,44E-16	7,18E-14	5,08E-12	4,66E-12	-1,84E-10
Human tox. non-cancer	CTUh	2,11E-08	6,07E-10	5,83E-09	2,75E-08	2,00E-09	8,50E-10	MND	MND	MND	MND	MND	MND	MND	4,39E-15	4,09E-12	2,20E-10	2,18E-10	-6,26E-09
SQP[7)]	-	7,17E+00	9,44E-01	9,46E+01	1,03E+02	3,11E+00	1,25E+00	MND	MND	MND	MND	MND	MND	MND	3,32E-07	6,36E-03	8,87E-03	3,10E-01	-5,73E+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	2,05E+00	1,28E-02	5,90E+00	7,96E+00	4,23E-02	-4,13E+00	MND	MND	MND	MND	MND	MND	MND	3,79E-04	8,65E-05	9,50E-04	3,58E-03	-5,75E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,16E+01	1,16E+01	0,00E+00	-1,16E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,05E+00	1,28E-02	1,75E+01	1,96E+01	4,23E-02	-1,58E+01	MND	MND	MND	MND	MND	MND	MND	3,79E-04	8,65E-05	9,50E-04	3,58E-03	-5,75E+00
Non-re. PER as energy	MJ	4,48E+01	9,37E-01	1,65E+01	6,22E+01	3,09E+00	-4,19E-01	MND	MND	MND	MND	MND	MND	MND	4,32E-06	6,32E-03	-2,74E+00	2,41E-01	-1,04E+01
Non-re. PER as material	MJ	3,38E+01	0,00E+00	2,09E+00	3,59E+01	0,00E+00	-2,09E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,69E+00	-3,21E+01	0,00E+00
Total use of non-re. PER	MJ	7,86E+01	9,37E-01	1,86E+01	9,81E+01	3,09E+00	-2,51E+00	MND	MND	MND	MND	MND	MND	MND	4,32E-06	6,32E-03	-4,43E+00	-3,18E+01	-1,04E+01
Secondary materials	kg	1,50E-02	3,99E-04	1,32E-01	1,48E-01	1,31E-03	2,15E-03	MND	MND	MND	MND	MND	MND	MND	2,27E-08	2,69E-06	3,60E-05	1,02E-04	-7,48E-04
Renew. secondary fuels	MJ	6,28E-04	5,07E-06	3,56E-01	3,56E-01	1,67E-05	3,57E-03	MND	MND	MND	MND	MND	MND	MND	2,56E-11	3,41E-08	5,22E-07	1,46E-06	-5,65E-04
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	1,56E-02	1,39E-04	8,10E-03	2,38E-02	4,56E-04	8,58E-05	MND	MND	MND	MND	MND	MND	MND	3,88E-09	9,34E-07	1,09E-04	-1,13E-03	-2,50E-03

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	9,26E-02	1,59E-03	4,21E-02	1,36E-01	5,23E-03	4,08E-03	MND	MND	MND	MND	MND	MND	MND	7,02E-08	1,07E-05	3,00E-03	4,51E-04	-7,50E-02
Non-hazardous waste	kg	1,97E+01	2,94E-02	1,24E+00	2,09E+01	9,68E-02	8,21E-01	MND	MND	MND	MND	MND	MND	MND	9,24E-07	1,98E-04	8,56E-02	1,56E+00	-1,24E+00
Radioactive waste	kg	4,81E-05	2,00E-07	1,61E-04	2,09E-04	6,58E-07	2,34E-06	MND	MND	MND	MND	MND	MND	MND	2,95E-12	1,35E-09	1,06E-08	5,14E-08	-9,01E-06

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	7,41E-02	7,41E-02	0,00E+00	1,83E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,12E-03	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	8,30E-03	8,30E-03	0,00E+00	7,19E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	7,97E-02	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,10E-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	1,30E-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 – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,80E-01	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	2,44E+00	6,42E-02	3,91E-01	2,89E+00	2,12E-01	1,33E-01	MND	MND	MND	MND	MND	MND	MND	4,67E-07	4,33E-04	2,24E-01	1,50E-02	-8,76E-01
Ozone depletion Pot.	kg CFC_{-11}e	8,98E-08	7,61E-10	7,90E-09	9,84E-08	2,51E-09	1,84E-09	MND	MND	MND	MND	MND	MND	MND	2,69E-15	5,13E-12	3,83E-11	2,22E-10	-2,42E-09
Acidification	kg SO_2e	6,27E-03	1,68E-04	1,33E-03	7,77E-03	5,54E-04	4,36E-04	MND	MND	MND	MND	MND	MND	MND	1,63E-09	1,13E-06	2,17E-05	6,92E-05	-6,38E-03
Eutrophication	kg PO_4^3e	2,83E-03	4,10E-05	1,02E-02	1,31E-02	1,35E-04	2,19E-04	MND	MND	MND	MND	MND	MND	MND	3,20E-10	2,76E-07	6,57E-06	2,00E-05	-7,64E-04
POCP (“smog”)	kg C_2H_4e	7,28E-04	1,50E-05	2,17E-04	9,60E-04	4,94E-05	3,97E-05	MND	MND	MND	MND	MND	MND	MND	1,39E-10	1,01E-07	1,41E-06	5,28E-06	-3,68E-04
ADP-elements	kg Sbe	2,28E-05	1,76E-07	2,15E-06	2,51E-05	5,79E-07	3,27E-07	MND	MND	MND	MND	MND	MND	MND	2,04E-12	1,18E-09	6,91E-09	4,39E-08	-3,90E-07
ADP-fossil	MJ	7,53E+01	9,24E-01	1,06E+02	1,82E+02	3,05E+00	2,61E+00	MND	MND	MND	MND	MND	MND	MND	4,13E-06	6,23E-03	2,51E-02	2,38E-01	-8,76E+00

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	2,28E-05	1,76E-07	2,15E-06	2,51E-05	5,79E-07	3,38E-07	MND	MND	MND	MND	MND	MND	MND	2,04E-12	1,18E-09	6,91E-09	4,39E-08	-3,90E-07
Hazardous waste disposed	kg	9,26E-02	1,59E-03	4,21E-02	1,36E-01	5,23E-03	4,08E-03	MND	MND	MND	MND	MND	MND	MND	7,02E-08	1,07E-05	3,00E-03	4,51E-04	-7,50E-02
Non-haz. waste disposed	kg	1,97E+01	2,94E-02	1,24E+00	2,09E+01	9,68E-02	8,21E-01	MND	MND	MND	MND	MND	MND	MND	9,24E-07	1,98E-04	8,56E-02	1,56E+00	-1,24E+00
Air pollution	m^3	4,29E+02	1,56E+01	2,01E+02	6,45E+02	5,13E+01	1,89E+01	MND	MND	MND	MND	MND	MND	MND	2,30E-04	1,05E-01	1,06E+00	3,45E+00	-5,90E+02
Water pollution	m^3	4,43E+01	4,31E-01	5,67E+00	5,04E+01	1,42E+00	9,63E-01	MND	MND	MND	MND	MND	MND	MND	1,45E-06	2,90E-03	1,47E-02	1,25E-01	-1,47E+00

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	2,47E+00	6,46E-02	3,92E-01	2,93E+00	2,13E-01	1,34E-01	MND	MND	MND	MND	MND	MND	MND	4,69E-07	4,35E-04	2,24E-01	1,50E-02	-8,81E-01

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.

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	2,38E+00	6,37E-02	3,86E-01	2,83E+00	2,10E-01	1,32E-01	MND	MND	MND	MND	MND	MND	MND	4,64E-07	4,29E-04	2,24E-01	1,48E-02	-8,67E-01
Ozone Depletion	kg $CFC_{-11}e$	1,18E-07	1,01E-09	1,02E-08	1,29E-07	3,31E-09	2,42E-09	MND	MND	MND	MND	MND	MND	MND	3,49E-15	6,78E-12	4,52E-11	2,93E-10	-3,10E-09
Acidification	kg SO_2e	6,37E-03	1,96E-04	1,51E-03	8,07E-03	6,45E-04	5,49E-04	MND	MND	MND	MND	MND	MND	MND	1,88E-09	1,32E-06	2,81E-05	7,96E-05	-6,30E-03
Eutrophication	kg Ne	1,53E-03	2,06E-05	4,03E-03	5,58E-03	6,79E-05	9,35E-05	MND	MND	MND	MND	MND	MND	MND	2,22E-10	1,39E-07	9,17E-06	1,03E-05	-4,99E-04
POCP (“smog”)	kg O_3e	1,20E-01	4,98E-03	3,13E-02	1,56E-01	1,64E-02	1,66E-02	MND	MND	MND	MND	MND	MND	MND	4,22E-08	3,36E-05	8,36E-04	1,93E-03	-6,12E-02
ADP-fossil	MJ	4,48E+01	9,38E-01	1,65E+01	6,22E+01	3,09E+00	-4,86E-01	MND	MND	MND	MND	MND	MND	MND	4,35E-06	6,32E-03	-2,74E+00	2,42E-01	-1,05E+01

ENVIRONMENTAL IMPACTS – BEPALINGSMETHODE, NETHERLANDS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Shadow price	€	3,60E-01	8,14E-03	1,69E-01	5,38E-01	2,68E-02	2,98E-02	MND	MND	MND	MND	MND	MND	MND	9,56E-08	5,49E-05	1,60E-02	2,36E-03	-1,80E-01
Terrestrial ecotoxicity	DCB eq	2,19E-02	2,31E-04	4,33E-03	2,64E-02	7,62E-04	1,83E-03	MND	MND	MND	MND	MND	MND	MND	1,19E-08	1,56E-06	1,43E-03	1,31E-04	-3,43E-03
Seawater ecotoxicity	DCB eq	4,67E+02	9,98E+00	1,31E+02	6,08E+02	3,29E+01	2,07E+01	MND	MND	MND	MND	MND	MND	MND	1,28E-04	6,73E-02	2,87E+01	2,85E+00	-5,76E+02
Freshwater ecotoxicity	DCB eq	3,15E-02	9,01E-04	3,04E-02	6,28E-02	2,97E-03	2,79E-03	MND	MND	MND	MND	MND	MND	MND	7,05E-09	6,07E-06	5,24E-03	6,98E-04	-6,95E-03
Human ecotoxicity	DCB eq	1,46E+00	3,06E-02	3,29E-01	1,82E+00	1,01E-01	1,80E-01	MND	MND	MND	MND	MND	MND	MND	5,39E-07	2,06E-04	1,78E-02	8,98E-03	-4,97E-01
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,30E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,80E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP Fossil Fuels	kg Sbe	3,62E-02	4,45E-04	5,10E-02	8,77E-02	1,46E-03	1,28E-03	MND	MND	MND	MND	MND	MND	MND	1,99E-09	3,00E-06	1,21E-05	1,14E-04	-4,21E-03

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Certified electricity from nuclear and wind, FIN, SE, D
Electricity CO2e / kWh	0,0071
District heating data source and quality	N/A
District heating CO2e / kWh	-

Transport scenario documentation A4

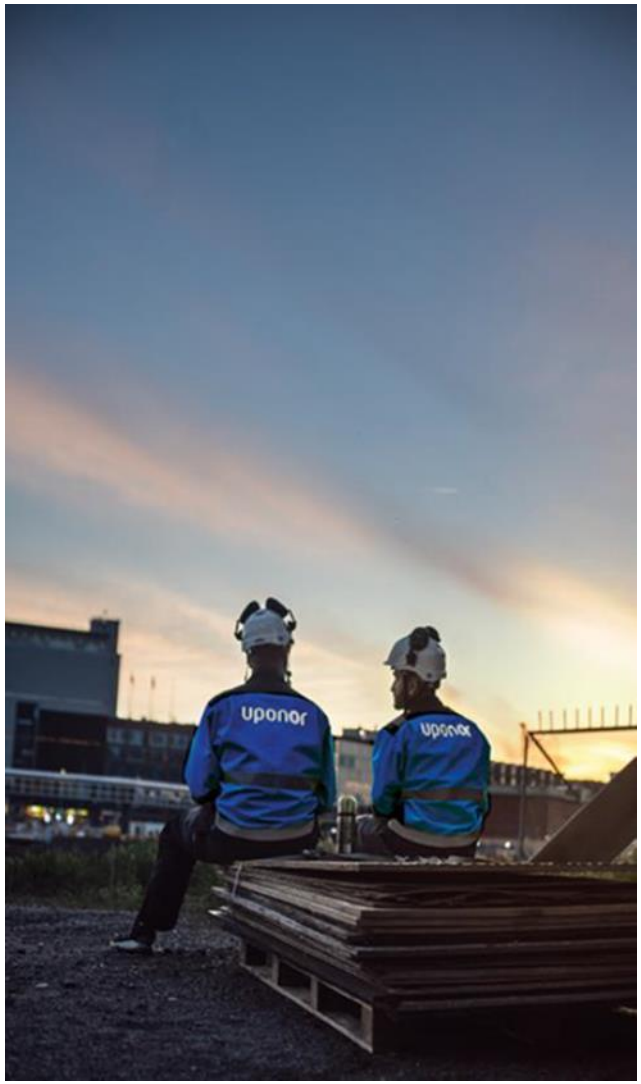
Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	Transport, freight, lorry 16-32 metric tons, EURO5, Europe
Average transport distance, km	1659
Capacity utilization (including empty return) %	50
Bulk density of transported products	24 (average)
Volume capacity utilization factor	1

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	0,108
Water use / m^3	0,00014
Other resource use / kg	-
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	349
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	0,01
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	kg recycled as material; recycled as energy (incineration); disposed (landfilled): Cardboard: 0,08707; 0; 0 Stretch film: 0,033315; 0; 0 Pallets: 0.062 ; 0.058; 0.073
Direct emissions to ambient air, soil and water / kg	--

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	-
Collection process – kg collected with mixed construction waste	1,03
Recovery process – kg for re-use	-
Recovery process – kg for recycling	0,95
Recovery process – kg for energy recovery	-
Disposal (total) – kg for final deposition	0,175
Scenario assumptions e.g. transportation	Transports by lorry 50km to recycling and 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 cannot identify any unjustified deviations from the PCR and EN 15802+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

Magaly Gonzalez Vazquez as an authorized verifier for EPD Hub Limited
12.10.2025

VERIFIED ISO 14025