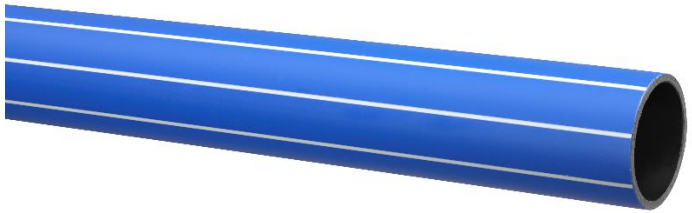
ENVIRONMENTAL PRODUCT DECLARATION

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

Profuse RC
Uponor Corporation



EPD HUB, HUB-0963
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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Uponor Corporation
Address	Äyritie 20, 01510 Vantaa, 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+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Dr. Qian Wang, Uponor Corporation
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Magaly González Vázquez, 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	Profuse RC
Additional labels	Profuse RC
Product reference	-
Place of production	Uponor Infra Oy, Kouvolantie 365, 15550 Nastola, Finland Uponor Infra Ab, Industrivägen 11, 513 32 Fristad, Sweden
Period for data	2022
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of pipe
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	1,2E0
GWP-total, A1-A3 (kgCO2e)	-8,33E-1
Secondary material, inputs (%)	96.6
Secondary material, outputs (%)	5.0
Total energy use, A1-A3 (kWh)	7.48
Total water use, A1-A3 (m3e)	5,4E-3

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 in 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

As one of the leading suppliers of plastic pipe systems, Uponor attaches great importance to product development. Uponor ProFuse RC is pressure pipe with protective layer. Media pipe is made of polyethylene and protective layer is made of polypropylene. Protective layer prevents oxidation of pressure pipe and protects the surface of the pipe against of damages during transportation and installation. ProFuse RC pipes are used for transfer of pressurized potable water, sewer and gas. Colour of the pipe indicates the purpose of use. Blue with stripes is for drinking water, brown with stripes is for sewer and yellow with stripes is for gas. Pipes are available from outer diameter 63mm up to outer diameter 630mm. Biggest dimensions are available only in poles, but smaller dimensions are available also in coils. The product consists of the following materials 99% PP+PE, and 1% additives.

Further information can be found at www.uponor.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
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	0
Biogenic carbon content in packaging, kg C	0.00474

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	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

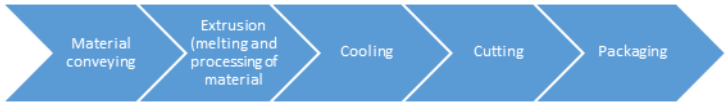
The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Manufacturing and Packaging

The production method is a pipe extrusion. Media pipe and protection layer are moulded in same tool. The different stages are:

– Material conveying
– Extrusion (melting and processing of material)
– Cooling
– Cutting
– Packing

Smallest dimensions poles are packed on a wooden U-frame with a wooden lath on top of it. The wooden frame has a nail plate on the edge to strengthen the structure as well as a plastic (NA) or steel band (FR) around to tighten the package. Bigger dimensions are packed with wooden lath tighten with a plastic or steel band. The amount of pipes on a frame differs depending on the pipe diameter. Small dimensions are packed also to coils. Coils are tighten with plastic or steel bands. Differences in packaging can occur. The amount of pipes on a frame differs depending on the pipe diameter



TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Transportation 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 scenarios in Uponor's infrastructure product EPDs are based on TEPPFA's (The European Plastic Pipe and Fittings Association) industry average EPDs. These documents and their background reports include industry consensus estimates of the resource use, emissions and affluents of typical European installations, including the size of installation trenches, machinery used for digging/excavation, volume of backfilling sand required for the installation, etc. These parameters have been used as input for the Uponor EPD modelling. Ref: https://www.teppfa.eu/sustainability/environmental-footprint/epd/

Transportation impacts from final products delivery to construction site

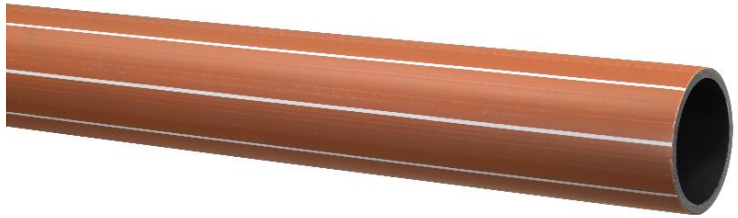
cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions

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)

Since the consumption of energy and natural resources is negligible for disassembling of the end-of-life product, the impacts of demolition are assumed zero (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 PE, the end-of-life product is converted into recycled- PE(D).



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. In this study, as per the reference standard, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

As it is impossible to collect all energy consumption data separately for each product produced in the plant, data is allocated. Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 kg of the product, which is used within this study is calculated by considering the total product weight per annual production. In the factory, several kinds of pipes are produced; since the production processes of these products are similar, the annual production percentage is taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total fuel consumption, consumed water and the generated waste per the declared product are allocated. Subsequently, the product output fixed to 1 kg and the corresponding amount of product is used in the calculations. Besides, since the formulation of the product is certain, raw materials in the product do not need to be allocated considering the total annual production. The amounts of raw materials and packaging materials are given as per the formulations in Uponor's internal Bills of Material and the purchased amounts from the respective suppliers.
This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below:

- Module A4: The transportation distance is defined according to the standards. As installation places are located at different places around Sweden and Finland, an average transportation distance from the production plants is assumed to be 400 km. Transportation method is lorry. According to Uponor transportation doesn't cause losses as products are packaged properly. Also, volume capacity utilisation factor is assumed to be 1 for the nested packaged products.
- Module A5: Environmental impacts from installation include standardized energy and materials need, waste packaging materials (A5) and release of biogenic carbon dioxide from wood pallets. The impacts of material production, its processing and its disposal as installation waste are also included. The modelling of A5 is based on the references of well-established industry standards (TEPPFA industry average EPD) [TEPPFA, 2020], which is installation-wise closest to this product group.
- Module C1: The impacts of demolition stage are assumed zero, since the consumption of energy and natural resources for disassembling of the end-of-life product is negligible.
- Module C2: It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed to have the same weight as the declared product. 5% waste is assumed to be collected from the demolition site. Since there is no follow up procedure, transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed to be lorry, which is the most

common.
• Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emission in total results is small and so the variety in load assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by transportation companies to serve needs of other clients.
• Module C3: It is assumed that 5% of the waste is recycled and 95% is left inert under the ground. While making this assumption, TEPFFA's Third Party Report from year 2013 is taken into account.
• Module C4: 95% of the product is left inert under the ground. While making this assumption, TEPFFA's Third Party Report from year 2013 is taken into account
• Module D: Due to the recycling process part of the end-of-life product is converted into a recycled PP raw material.

BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	2,04E0	1,48E-1	1,66E-2	2,2E0	1,05E-1	1,35E-1	MND	MND	MND	MND	MND	MND	MND	2,58E-6	3,19E-4	1,54E-2	6,21E-3	-5,35E-2
GWP – fossil	kg CO_2e	2,02E0	1,48E-1	3E-2	2,2E0	1,05E-1	1,18E-1	MND	MND	MND	MND	MND	MND	MND	2,58E-6	3,19E-4	1,17E-2	6,17E-3	-6,98E-2
GWP – biogenic	kg CO_2e	1,05E-2	1,06E-4	-1,34E-2	-2,84E-3	6,45E-5	1,74E-2	MND	MND	MND	MND	MND	MND	MND	-1,81E-9	1,95E-7	3,67E-3	3,68E-5	1,63E-2
GWP – LULUC	kg CO_2e	6,19E-4	4,49E-5	2,29E-5	6,87E-4	3,72E-5	1,32E-5	MND	MND	MND	MND	MND	MND	MND	7,42E-9	1,12E-7	1,3E-5	3,26E-6	3,31E-5
Ozone depletion pot.	kg $CFC_{-11}e$	5,07E-8	3,47E-8	1,62E-9	8,7E-8	2,42E-8	2,48E-8	MND	MND	MND	MND	MND	MND	MND	1,85E-13	7,3E-11	1,49E-9	1,6E-9	3,38E-10
Acidification potential	mol H^+e	7,26E-3	6,19E-4	1,27E-4	8E-3	4,34E-4	1,21E-3	MND	MND	MND	MND	MND	MND	MND	3,29E-8	1,31E-6	5,97E-5	4,62E-5	-2,2E-4
EP-freshwater[2)]	kg Pe	3,46E-5	1,21E-6	1,01E-6	3,68E-5	9,1E-7	6,94E-7	MND	MND	MND	MND	MND	MND	MND	2,81E-10	2,75E-9	3,39E-7	9,8E-8	-6,48E-7
EP-marine	kg Ne	1,24E-3	1,86E-4	2,76E-5	1,46E-3	1,28E-4	5,27E-4	MND	MND	MND	MND	MND	MND	MND	3,72E-9	3,89E-7	2E-5	1,61E-5	-2,02E-5
EP-terrestrial	mol Ne	1,38E-2	2,06E-3	3E-4	1,62E-2	1,42E-3	5,78E-3	MND	MND	MND	MND	MND	MND	MND	4,34E-8	4,29E-6	1,77E-4	1,77E-4	-2,77E-4
POCP ("smog")[3)]	kg NMVOCe	6,73E-3	6,61E-4	9,93E-5	7,49E-3	4,46E-4	1,59E-3	MND	MND	MND	MND	MND	MND	MND	1,42E-8	1,35E-6	5,8E-5	5,06E-5	-1,98E-4
ADP-minerals & metals[4)]	kg Sbe	1,81E-5	2,59E-6	1,8E-6	2,25E-5	2,63E-6	2,04E-7	MND	MND	MND	MND	MND	MND	MND	2,66E-10	7,95E-9	2,41E-7	1,01E-7	-4,56E-7
ADP-fossil resources	MJ	7,16E1	2,29E0	2,46E-1	7,41E1	1,61E0	1,62E0	MND	MND	MND	MND	MND	MND	MND	2,92E-5	4,86E-3	1,94E-1	1,19E-1	-3,24E0
Water use[5)]	m^3e depr.	1,41E0	8,51E-3	8,82E-3	1,43E0	5,71E-3	1,16E-2	MND	MND	MND	MND	MND	MND	MND	1,32E-6	1,73E-5	3,94E-3	3,57E-3	-5,19E-2

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	6,03E-8	1,32E-8	1,91E-9	7,54E-8	8,13E-9	3,17E-8	MND	MND	MND	MND	MND	MND	MND	2,44E-13	2,46E-11	8,91E-10	7,89E-10	-5,26E-10
Ionizing radiation[6)]	kBq U235e	4,72E-2	1E-2	6,77E-4	5,79E-2	7,03E-3	6,87E-3	MND	MND	MND	MND	MND	MND	MND	7,87E-8	2,12E-5	5,01E-4	4,76E-4	-1,42E-3
Ecotoxicity (freshwater)	CTUe	1,1E1	1,76E0	8,41E-1	1,36E1	1,26E0	1,03E0	MND	MND	MND	MND	MND	MND	MND	2,7E-4	3,8E-3	2,69E-1	9,97E-2	1,75E-1
Human toxicity, cancer	CTUh	5,26E-10	4,52E-11	8,46E-11	6,55E-10	3,56E-11	5,35E-11	MND	MND	MND	MND	MND	MND	MND	1,09E-14	1,08E-13	1,7E-11	3,54E-12	1,73E-11
Human tox. non-cancer	CTUh	1,24E-8	2,08E-9	1,14E-9	1,56E-8	1,44E-9	1,03E-9	MND	MND	MND	MND	MND	MND	MND	3,4E-13	4,35E-12	2,62E-10	8,61E-11	-5,81E-11
SQP[7)]	-	4,73E-1	3,41E0	2,6E-1	4,14E0	1,79E0	4,88E-2	MND	MND	MND	MND	MND	MND	MND	2,19E-5	5,42E-3	1,29E-1	3,12E-1	1,23E-1

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	1,19E0	2,91E-2	3,44E0	4,66E0	2,28E-2	1,3E-2	MND	MND	MND	MND	MND	MND	MND	3,89E-4	6,9E-5	8,29E-3	2,05E-3	-4,04E-2
Renew. PER as material	MJ	0E0	0E0	1,69E-1	1,69E-1	0E0	-1,69E-1	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	1,19E0	2,91E-2	3,6E0	4,83E0	2,28E-2	-1,56E-1	MND	MND	MND	MND	MND	MND	MND	3,89E-4	6,9E-5	8,29E-3	2,05E-3	-4,04E-2
Non-re. PER as energy	MJ	2,33E1	2,29E0	2,46E-1	2,58E1	1,61E0	1,62E0	MND	MND	MND	MND	MND	MND	MND	2,92E-5	4,86E-3	1,94E-1	1,19E-1	-8,53E-1
Non-re. PER as material	MJ	4,83E1	0E0	0E0	4,83E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-2,42E0	-4,59E1	-2,39E0
Total use of non-re. PER	MJ	7,16E1	2,29E0	2,46E-1	7,41E1	1,61E0	1,62E0	MND	MND	MND	MND	MND	MND	MND	2,92E-5	4,86E-3	-2,22E0	-4,58E1	-3,24E0
Secondary materials	kg	4,4E-3	0E0	0E0	4,4E-3	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	4,98E-2
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	5,12E-3	4,75E-4	1,95E-4	5,79E-3	3,05E-4	6,05E-4	MND	MND	MND	MND	MND	MND	MND	3,61E-8	9,21E-7	4,67E-5	9,37E-5	-8,25E-5

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	4,47E-2	2,24E-3	3,64E-3	5,06E-2	1,67E-3	2,54E-3	MND	MND	MND	MND	MND	MND	MND	3,76E-7	5,06E-6	0E0	2,16E-4	3,75E-4
Non-hazardous waste	kg	1,54E0	2,44E-1	7,73E-2	1,86E0	1,39E-1	2,84E-2	MND	MND	MND	MND	MND	MND	MND	1,91E-5	4,2E-4	0E0	3,08E-1	-7,46E-3
Radioactive waste	kg	3,91E-5	1,57E-5	7,29E-7	5,56E-5	1,1E-5	1,11E-5	MND	MND	MND	MND	MND	MND	MND	8,02E-11	3,32E-8	0E0	7,27E-7	-8,88E-7

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	1,69E-2	1,69E-2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	5E-2	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	6,49E-3	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	1,87E0	1,46E-1	3,02E-2	2,04E0	1,04E-1	1,17E-1	MND	MND	MND	MND	MND	MND	MND	2,5E-6	3,16E-4	1,31E-2	6,09E-3	-6,1E-2
Ozone depletion Pot.	kg CFC_{-11}e	5,01E-8	2,75E-8	1,43E-9	7,9E-8	1,92E-8	1,96E-8	MND	MND	MND	MND	MND	MND	MND	1,7E-13	5,81E-11	1,21E-9	1,27E-9	-1,07E-10
Acidification	kg SO_2e	6,11E-3	3E-4	1,03E-4	6,51E-3	2,15E-4	1,85E-4	MND	MND	MND	MND	MND	MND	MND	2,85E-8	6,49E-7	4,44E-5	2,29E-4	-1,88E-4
Eutrophication	kg PO_4^3e	1,47E-3	6,08E-5	8,74E-5	1,62E-3	4,47E-5	3,85E-5	MND	MND	MND	MND	MND	MND	MND	1,24E-8	1,35E-7	4,51E-5	7,98E-6	5,57E-5
POCP (“smog”)	kg C_2H_4e	6,03E-4	1,91E-5	7,91E-6	6,3E-4	1,39E-5	1,93E-5	MND	MND	MND	MND	MND	MND	MND	1,53E-9	4,2E-8	3,77E-6	1,29E-6	-1,22E-5
ADP-elements	kg Sbe	1,81E-5	2,59E-6	1,8E-6	2,25E-5	2,63E-6	2,04E-7	MND	MND	MND	MND	MND	MND	MND	2,66E-10	7,95E-9	2,41E-7	1,01E-7	-4,56E-7
ADP-fossil	MJ	7,16E1	2,29E0	2,46E-1	7,41E1	1,61E0	1,62E0	MND	MND	MND	MND	MND	MND	MND	2,92E-5	4,86E-3	1,94E-1	1,19E-1	-3,24E0

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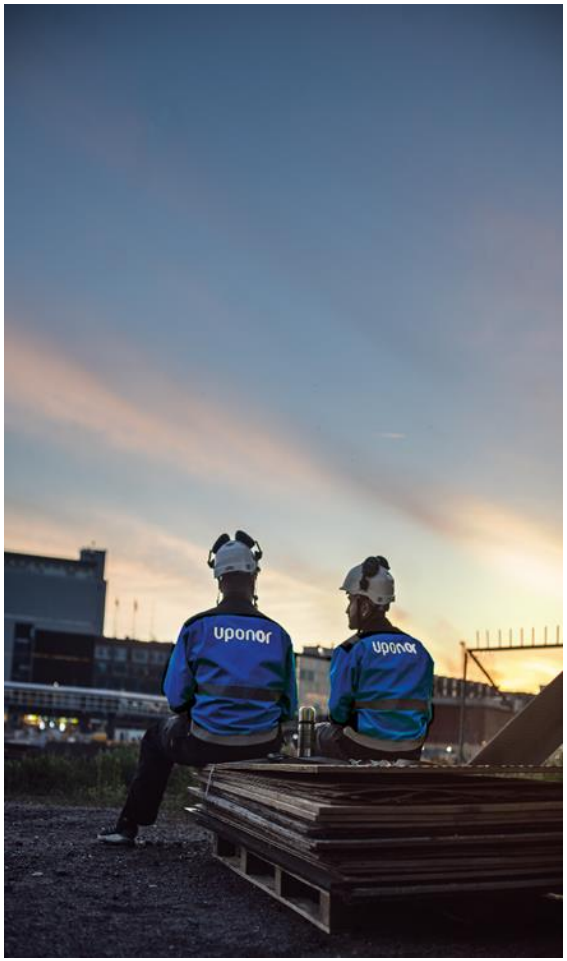
Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	1,89E0	1,46E-1	3,03E-2	2,06E0	1,04E-1	1,16E-1	MND	MND	MND	MND	MND	MND	MND	2,49E-6	3,15E-4	1,33E-2	6,07E-3	-6,17E-2
Ozone Depletion	kg CFC_{-11}e	6,23E-8	3,67E-8	1,82E-9	1,01E-7	2,56E-8	2,62E-8	MND	MND	MND	MND	MND	MND	MND	2,11E-13	7,74E-11	1,61E-9	1,7E-9	1,28E-10
Acidification	kg SO_2e	6,01E-3	5,4E-4	1,11E-4	6,66E-3	3,77E-4	1,1E-3	MND	MND	MND	MND	MND	MND	MND	2,65E-8	1,14E-6	5,22E-5	4,12E-5	-1,7E-4
Eutrophication	kg Ne	4,65E-4	7,59E-5	1,79E-5	5,59E-4	5,33E-5	9,79E-5	MND	MND	MND	MND	MND	MND	MND	3,01E-9	1,61E-7	1,09E-5	4,69E-6	-1,73E-6
POCP (“smog”)	kg O_3e	8E-2	1,18E-2	1,48E-3	9,33E-2	8,14E-3	3,35E-2	MND	MND	MND	MND	MND	MND	MND	2,16E-7	2,46E-5	1,01E-3	1,02E-3	-1,56E-3
ADP-fossil	MJ	1,03E1	3,28E-1	2,31E-2	1,06E1	2,29E-1	2,34E-1	MND	MND	MND	MND	MND	MND	MND	2,45E-6	6,93E-4	2,42E-2	1,62E-2	-4,85E-1



VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
01.12.2023