

# ENVIRONMENTAL PRODUCT DECLARATION

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

Weholite PLUS  
Uponor Corporation



**EPD HUB, EPDHUB-0114**

Publishing date 08 September 2022, last updated date 08 September 2022, valid until 08 September 2027

## 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    | Sister EPD (Parent EPD: EPDHUB-0103)  |
| Scope of the EPD   | Cradle to gate with options, A4-A5, and modules C1-C4, D  |
| EPD author         | Dr. Shima Holder, Uponor Corporation  |
| EPD verification   | Independent verification of this EPD and data, according to ISO 14025:<br><input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification |
| EPD verifier       | H.U as an authorized verifier acting for EPD Hub  |

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        | Weholite PLUS   |
| Additional labels   |   |
| Product reference   | 1119628 119633 1119635<br>1119638 1119644 1119649<br>1119650 1119656 1119658<br>1119667 1119673 1119683<br>1119688 1119695 1119702<br>1119706 1119714 1119719<br>1119727 1119730 119739<br>1119743 1119746 1119751<br>1119757 1119763 |
| Place of production | Uponor Infra Sp. z o.o.,<br>Przemysłowa 5, 97-410 Kleszczów,<br>Poland  |
| Period for data     | 2021  |
| Averaging in EPD    | No averaging  |

### ENVIRONMENTAL DATA SUMMARY

|   |         |
|---|---------|
| Declared unit                             | 1 kg    |
| Declared unit mass                        | 1 kg    |
| GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)   | 1,82    |
| GWP-total, A1-A3 (kgCO <sub>2</sub> e)    | 1,82    |
| Secondary material, inputs (%)            | 1,69E1  |
| Secondary material, outputs (%)           | 5,00    |
| Total energy use, A1-A3 (kWh)             | 6,26    |
| Total water use, A1-A3 (m <sup>3</sup> e) | 4,67E-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 a company that constantly develops and cares for the environment, we introduce a new generation of Weholite pipes under the name Weholite PLUS, which are adapted to the current EU directives related to the use of plastics in the circular economy. Thanks to the combination of a new type of PE raw material with advanced technology, we have obtained a product with very good mechanical and functional properties. Weholite PLUS is a modern system of large-diameter, structural polyethylene (PE) pipes and fittings, designed for the construction of complete external sewer pipelines. The system is a result of the long-lasting research and development works carried out by our corporation. The combination of an appropriate raw material and an advanced technology enabled us to create a product of a high load resistance. The Weholite PLUS pipes constitute an optimal, external solution for the majority of projects connected with gravity sewers. Due to their low weight, they are quick and easy to install. They may be supplied in longer sections than the pipes made of traditional materials. The unique construction and the reliable jointing methods guarantee 100% tightness of the whole system, even after years of operation. The Weholite PLUS pipes are flexible and easily adjust to dynamic surroundings. According to Technical Opinion of Central Mining Institute (GIG) they may be applied in mining damage areas (up to level 4). They are resistant to corrosion and to damage done by salt and other chemical compounds that may be found in soil, sea water or in any other transported substances. Weholite PLUS pipes and fittings have National

Technical Assessments (KOT) issued by the Institute of Building Technology (ITB), Research Institute of Roads and Bridges (IBDiM), and Railway Research Institute (IK). All these attributes make the Weholite PLUS pipes a truly universal product of numerous applications. Weholite PLUS are available in a broad range of diameters, from 300 to 900 mm, ensuring good adaptability for various projects. The standard pipe lengths are 12.5 m, 6.25 m, 3.125 m, however customized lengths are also available. Weholite PLUS pipes (socket or plain-ended) are manufactured with ring stiffness classes from SN2 to SN16 (kN/m<sup>2</sup>) for applications in various ground conditions. Manufacturing of special, non-standard pipes of any length and ring stiffness is possible. Uponor Infra offers a wide range of Weholite PLUS products, which can be used with any pipe system. Our comprehensive offer comprises segmented bends of any angle, tees, reducers, connectors, and non-standard elements used for a particular project. The Weholite PLUS system also encompasses access chambers and manholes (with prefabricated bottom or eccentric) and tanks.

Further information can be found at [www.uponor.com](http://www.uponor.com).

### PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass- % | Material origin |
|-----------------------|-----------------|-----------------|
| Fossil materials      | 100             | EU              |

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

|  |   |
|--|---|
| Biogenic carbon content in product, kg C | 0 |
|--|---|

### FUNCTIONAL UNIT

|                        |      |
|------------------------|------|
| Declared unit          | 1 kg |
| Mass per declared unit | 1 kg |

### SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

# PRODUCT LIFE-CYCLE

## SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

| Product stage |           |               | Assembly stage |          | Use stage |             |        |             |               |                        |                       | End of life stage |           |                  |          | Beyond the system boundaries |          |           |
|---------------|-----------|---------------|----------------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|-------------------|-----------|------------------|----------|------------------------------|----------|-----------|
| A1            | A2        | A3            | A4             | A5       | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                | C2        | C3               | C4       | D                            |          |           |
| x             | x         | x             | x              | x        | MND       | MND         | MND    | MND         | MND           | MND                    | MND                   | x                 | x         | x                | x        | x                            |          |           |
| Raw materials | Transport | Manufacturing | Transport      | Assembly | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstr./demol.  | Transport | Waste processing | Disposal | Reuse                        | Recovery | Recycling |

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

## MANUFACTURING AND PACKAGING (A1-A3)

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

The manufacturing stages are:

- Material conveying
- Extrusion (melting, material processing and coating)
- Pipe profile corrugation
- Cooling
- Winding and Welding
- Cutting
- Socketing (if the pipe is with socket)

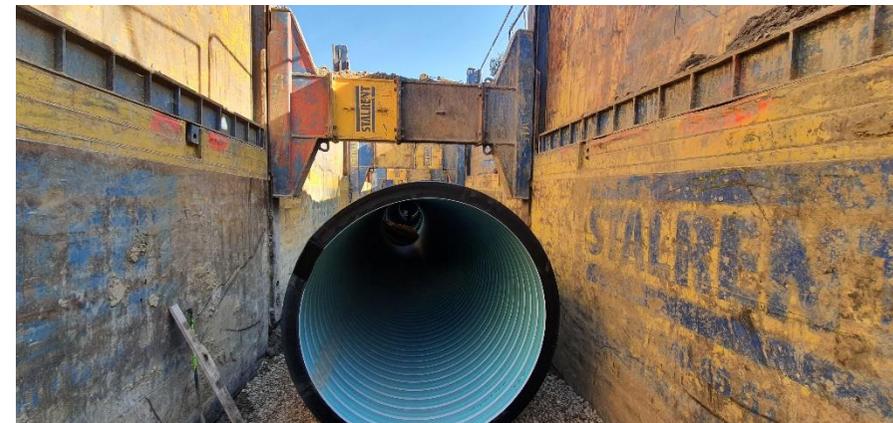
The finished product is then transported to the warehouse for further delivery to customers.

## MANUFACTURING FLOW CHART



## 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 scenarios in Uponor’s infrastructure product EPDs are based on TEPFPA’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 effluent of typical European installations, including the size of installation trenches, machinery used for digging/excavation, volume of backfilling sand required for the installation. These parameters have been used as input for the Uponor EPD modelling.



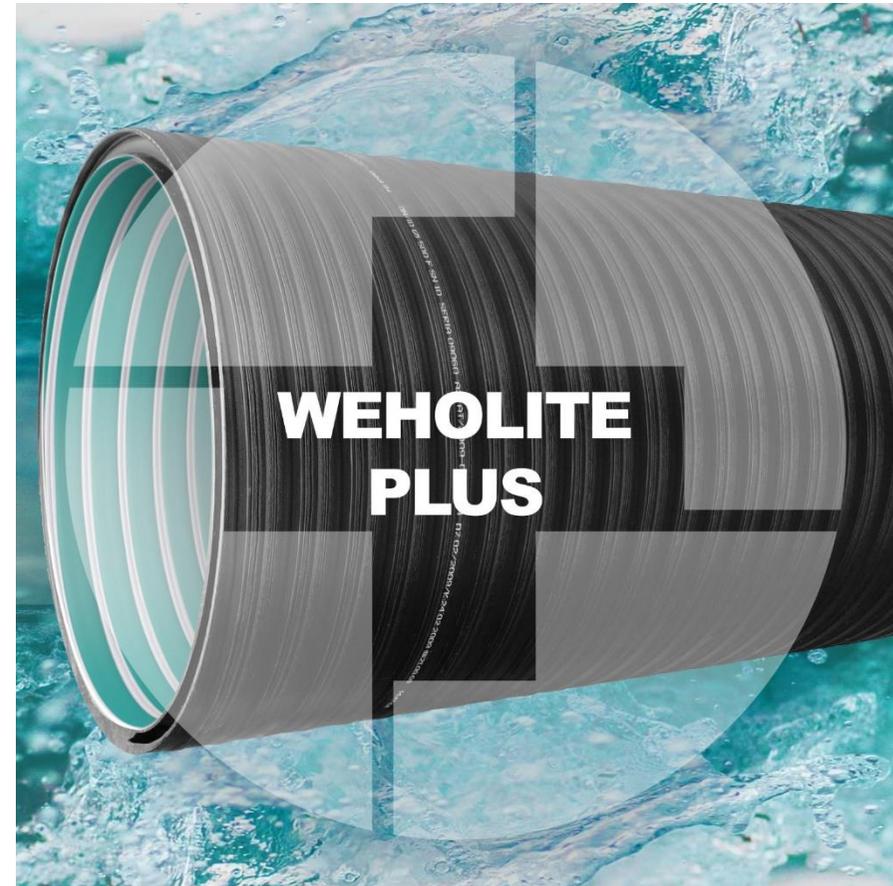
### PRODUCT USE AND MAINTENANCE (B1-B7)

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 EN 15804:2012+A2:2019. Excluded modules are use stage modules (B1-B7), which are not mandatory. 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 which data are available for are included in the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total neglected input and output flows do also not exceed 5% of energy usage or mass. The life cycle analysis includes all industrial processes from raw material acquisition to production, distribution and end-of-life stages. 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.

### 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 are 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. 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.

Allocation used in environmental data sources is aligned with the above.

### AVERAGES AND VARIABILITY

This EPD is product and factory specific and does not contain average calculations.

### 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. 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 <sup>1)</sup>           | kg CO <sub>2</sub> e   | 1,72E0  | 9,73E-2 | 1,13E-2  | 1,82E0  | 3,54E-2 | 9,52E-3 | MND | 1,55E-6  | 3,31E-4  | 1,84E-2  | 1,41E-1 | -7,79E-2 |
| GWP – fossil                        | kg CO <sub>2</sub> e   | 1,71E0  | 9,72E-2 | 1,13E-2  | 1,82E0  | 3,57E-2 | 8,92E-3 | MND | 1,54E-6  | 3,31E-4  | 1,85E-2  | 1,41E-1 | -8,16E-2 |
| GWP – biogenic                      | kg CO <sub>2</sub> e   | 8,37E-3 | 5,64E-5 | 3,27E-6  | 8,43E-3 | 2,19E-5 | 5,82E-4 | MND | 2,87E-9  | 1,5E-7   | -7,71E-5 | 1,09E-4 | 3,6E-3   |
| GWP – LULUC                         | kg CO <sub>2</sub> e   | 5,49E-4 | 3,37E-5 | 1,69E-6  | 5,84E-4 | 1,26E-5 | 9,48E-6 | MND | 1,24E-9  | 1,22E-7  | 1,07E-5  | 5,39E-6 | 1,76E-5  |
| Ozone depletion pot.                | kg CFC-11e             | 4,31E-8 | 2,21E-8 | 8,34E-10 | 6,6E-8  | 8,18E-9 | 7,8E-10 | MND | 8,89E-14 | 7,27E-11 | 1,34E-9  | 3,12E-9 | 7,74E-11 |
| Acidification potential             | mol H <sup>+</sup> e   | 6,19E-3 | 4,05E-4 | 3,8E-5   | 6,64E-3 | 1,47E-4 | 4,79E-5 | MND | 1,06E-8  | 1,38E-6  | 5,29E-5  | 8,78E-5 | -2,9E-4  |
| EP-freshwater <sup>2)</sup>         | kg Pe                  | 3,03E-5 | 8,77E-7 | 9,9E-8   | 3,13E-5 | 3,08E-7 | 5,15E-7 | MND | 7,6E-11  | 3,3E-9   | 3,07E-7  | 1,89E-7 | -1,33E-6 |
| EP-marine                           | kg Ne                  | 1,06E-3 | 1,2E-4  | 1,38E-5  | 1,2E-3  | 4,35E-5 | 8,62E-6 | MND | 1,9E-9   | 4,02E-7  | 1,47E-5  | 5,37E-5 | -3,96E-5 |
| EP-terrestrial                      | mol Ne                 | 1,18E-2 | 1,32E-3 | 1,49E-4  | 1,33E-2 | 4,81E-4 | 9,04E-5 | MND | 1,89E-8  | 4,44E-6  | 1,6E-4   | 3,23E-4 | -4,9E-4  |
| POCP (“smog”) <sup>3)</sup>         | kg NMVOCe              | 5,69E-3 | 4,16E-4 | 4,37E-5  | 6,15E-3 | 1,51E-4 | 2,67E-5 | MND | 6,57E-9  | 1,39E-6  | 5,18E-5  | 1,24E-4 | -2,69E-4 |
| ADP-minerals & metals <sup>4)</sup> | kg Sbe                 | 1,55E-5 | 2,22E-6 | 1,9E-7   | 1,79E-5 | 8,91E-7 | 2,99E-7 | MND | 2,97E-10 | 8,05E-9  | 2,26E-7  | 1,08E-7 | -6,62E-7 |
| ADP-fossil resources                | MJ                     | 5,96E1  | 1,48E0  | 8,2E-2   | 6,12E1  | 5,44E-1 | 1,25E-1 | MND | 1,76E-5  | 4,94E-3  | 1,81E-1  | 2,38E-1 | -3,2E0   |
| Water use <sup>5)</sup>             | m <sup>3</sup> e depr. | 1,16E0  | 5,63E-3 | 1,1E-3   | 1,17E0  | 1,93E-3 | 1,3E-2  | MND | 1,04E-6  | 2,04E-5  | 3,89E-3  | 1,06E-2 | -4,03E-2 |

## 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 | 5,13E-8  | 7,77E-9  | 9,12E-10 | 5,99E-8  | 2,75E-9  | 4,62E-10 | MND | 1,13E-13 | 2,52E-11 | 9,14E-10 | 1,66E-9  | -9,56E-10 |
| Ionizing radiation <sup>6)</sup> | kBq U235e | 3,91E-2  | 6,36E-3  | 1,98E-4  | 4,57E-2  | 2,38E-3  | 6,43E-4  | MND | 3,88E-8  | 2,06E-5  | 5,47E-4  | 9,33E-4  | -4,3E-4   |
| Ecotoxicity (freshwater)         | CTUe      | 1,02E1   | 1,19E0   | 1,15E-1  | 1,15E1   | 4,25E-1  | 2,44E-1  | MND | 6,44E-5  | 4,22E-3  | 1,91E-1  | 2,48E-1  | -5,92E-1  |
| Human toxicity, cancer           | CTUh      | 4,52E-10 | 3,19E-11 | 1,08E-11 | 4,95E-10 | 1,2E-11  | 6,69E-11 | MND | 8,34E-15 | 1,1E-13  | 1,95E-11 | 6,63E-12 | 6,6E-12   |
| Human tox. non-cancer            | CTUh      | 1,08E-8  | 1,33E-9  | 1,54E-10 | 1,23E-8  | 4,88E-10 | 2,49E-10 | MND | 1,03E-13 | 4,47E-12 | 2,72E-10 | 1,65E-10 | -2,61E-10 |
| SQP <sup>7)</sup>                | -         | 4,45E-1  | 1,78E0   | 2,87E-2  | 2,25E0   | 6,07E-1  | 2,38E-2  | MND | 5,39E-6  | 5,43E-3  | 1,1E-1   | 8,41E-1  | 8,3E-2    |

### 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 <sup>8)</sup> | MJ             | 9,98E-1 | 1,9E-2  | 3,95E-1 | 1,41E0  | 7,73E-3 | 2,22E-2 | MND | 3,89E-4 | 5,67E-5 | 8,94E-3 | 4,22E-3 | -8,5E-3  |
| Renew. PER as material             | MJ             | 0E0     | 0E0     | 0E0     | 0E0     | 0E0     | 0E0     | MND | 0E0     | 0E0     | 0E0     | 0E0     | 0E0      |
| Total use of renew. PER            | MJ             | 9,98E-1 | 1,9E-2  | 3,95E-1 | 1,41E0  | 7,73E-3 | 2,22E-2 | MND | 3,89E-4 | 5,67E-5 | 8,94E-3 | 4,22E-3 | -8,5E-3  |
| Non-re. PER as energy              | MJ             | 1,96E1  | 1,48E0  | 8,2E-2  | 2,11E1  | 5,44E-1 | 1,25E-1 | MND | 1,76E-5 | 4,94E-3 | 1,81E-1 | 2,38E-1 | -8,64E-1 |
| Non-re. PER as material            | MJ             | 4E1     | 0E0     | 0E0     | 4E1     | 0E0     | 0E0     | MND | 0E0     | 0E0     | 0E0     | 0E0     | -2,34E0  |
| Total use of non-re. PER           | MJ             | 5,96E1  | 1,48E0  | 8,2E-2  | 6,12E1  | 5,44E-1 | 1,25E-1 | MND | 1,76E-5 | 4,94E-3 | 1,81E-1 | 2,38E-1 | -3,2E0   |
| Secondary materials                | kg             | 1,69E-1 | 0E0     | 0E0     | 1,69E-1 | 0E0     | 1,69E-4 | MND | 0E0     | 0E0     | 0E0     | 0E0     | 4,98E-2  |
| Renew. secondary fuels             | MJ             | 0E0     | 0E0     | 0E0     | 0E0     | 0E0     | 0E0     | MND | 0E0     | 0E0     | 0E0     | 0E0     | 0E0      |
| Non-ren. secondary fuels           | MJ             | 0E0     | 0E0     | 0E0     | 0E0     | 0E0     | 0E0     | MND | 0E0     | 0E0     | 0E0     | 0E0     | 0E0      |
| Use of net fresh water             | m <sup>3</sup> | 4,36E-3 | 2,88E-4 | 2,87E-5 | 4,67E-3 | 1,03E-4 | 5,32E-4 | MND | 1,84E-8 | 9,43E-7 | 5,44E-5 | 2,67E-4 | -1,47E-4 |

<sup>8)</sup> 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   | 4,06E-2 | 1,66E-3 | 4,43E-4 | 4,27E-2 | 5,66E-4 | 4,23E-3 | MND | 4,12E-7  | 6,51E-6 | 0E0 | 4,35E-4 | -2,01E-3 |
| Non-hazardous waste | kg   | 1,34E0  | 1,37E-1 | 1,08E-2 | 1,49E0  | 4,71E-2 | 2,3E-2  | MND | 4,34E-6  | 4,41E-4 | 0E0 | 9,5E-1  | -4,07E-2 |
| Radioactive waste   | kg   | 3,24E-5 | 1E-5    | 2,88E-7 | 4,27E-5 | 3,72E-6 | 5,54E-7 | MND | 3,89E-11 | 3,27E-8 | 0E0 | 1,42E-6 | -7,63E-8 |

### END OF LIFE – OUTPUT FLOWS

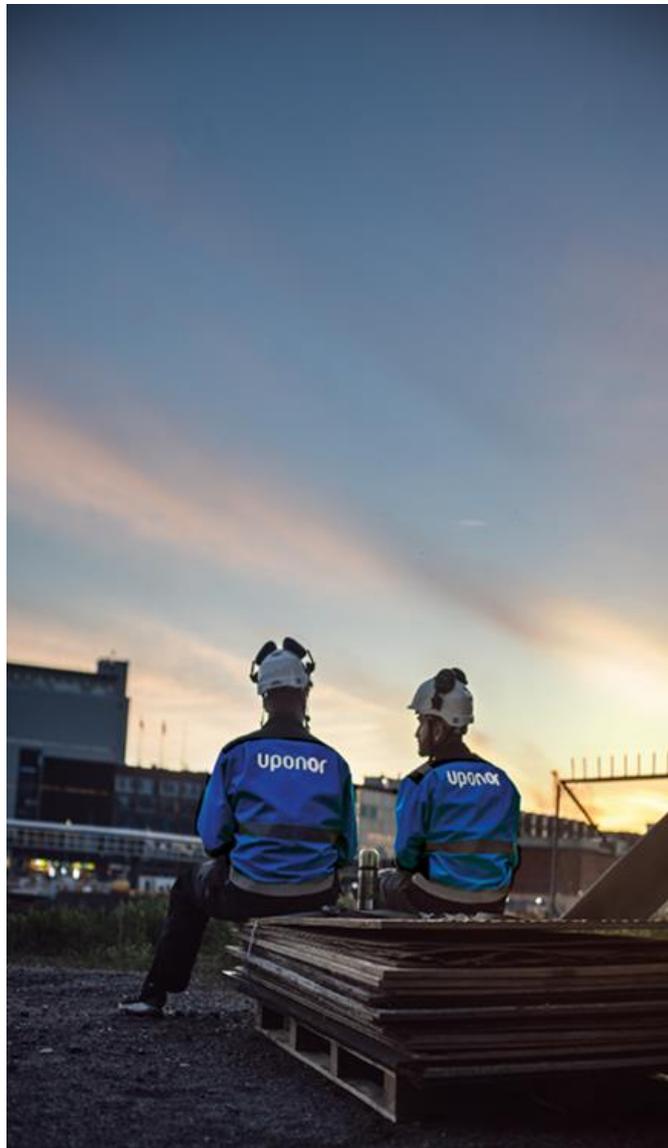
| Impact category          | Unit | A1  | A2  | A3      | A1-A3   | A4  | A5  | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1  | C2  | C3   | C4  | D   |
|--------------------------|------|-----|-----|---------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|
| Components for re-use    | kg   | 0E0 | 0E0 | 0E0     | 0E0     | 0E0 | 0E0 | MND | 0E0 | 0E0 | 0E0  | 0E0 | 0E0 |
| Materials for recycling  | kg   | 0E0 | 0E0 | 3,97E-3 | 3,97E-3 | 0E0 | 0E0 | MND | 0E0 | 0E0 | 5E-2 | 0E0 | 0E0 |
| Materials for energy rec | kg   | 0E0 | 0E0 | 0E0     | 0E0     | 0E0 | 0E0 | MND | 0E0 | 0E0 | 0E0  | 0E0 | 0E0 |
| Exported energy          | MJ   | 0E0 | 0E0 | 0E0     | 0E0     | 0E0 | 0E0 | 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 <sub>2</sub> e               | 1,58E0  | 9,64E-2 | 1,1E-2   | 1,68E0  | 3,54E-2 | 8,83E-3  | MND | 1,49E-6  | 3,28E-4  | 1,81E-2 | 9,94E-2 | -7,28E-2  |
| Ozone depletion Pot. | kg CFC <sub>11</sub> e             | 4,23E-8 | 1,76E-8 | 6,75E-10 | 6,05E-8 | 6,51E-9 | 7,28E-10 | MND | 7,99E-14 | 5,77E-11 | 1,12E-9 | 2,48E-9 | -1,54E-10 |
| Acidification        | kg SO <sub>2</sub> e               | 5,23E-3 | 2,35E-4 | 1,51E-5  | 5,48E-3 | 7,27E-5 | 3,95E-5  | MND | 8,73E-9  | 1,01E-6  | 3,33E-5 | 9,49E-5 | -2,56E-4  |
| Eutrophication       | kg PO <sub>4</sub> <sup>3</sup> e  | 1,27E-3 | 5,09E-5 | 2,13E-5  | 1,34E-3 | 1,51E-5 | 1,87E-5  | MND | 3,56E-9  | 2,31E-7  | 3,84E-5 | 4,96E-3 | 3,07E-5   |
| POCP (“smog”)        | kg C <sub>2</sub> H <sub>4</sub> e | 5,14E-4 | 1,27E-5 | 1,33E-6  | 5,28E-4 | 4,7E-6  | 2,29E-6  | MND | 5,79E-10 | 4,35E-8  | 3,15E-6 | 2,07E-5 | -2,49E-5  |
| ADP-elements         | kg Sbe                             | 1,55E-5 | 2,22E-6 | 1,9E-7   | 1,79E-5 | 8,91E-7 | 2,99E-7  | MND | 2,97E-10 | 8,05E-9  | 2,26E-7 | 1,08E-7 | -6,62E-7  |
| ADP-fossil           | MJ                                 | 5,96E1  | 1,48E0  | 8,2E-2   | 6,12E1  | 5,44E-1 | 1,25E-1  | MND | 1,76E-5  | 4,94E-3  | 1,81E-1 | 2,38E-1 | -3,2E0    |

### 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 <sub>2</sub> e   | 1,59E0  | 9,62E-2 | 1,1E-2  | 1,7E0   | 3,53E-2 | 8,84E-3  | MND | 1,48E-6  | 3,27E-4  | 1,81E-2 | 1,05E-1 | -7,35E-2 |
| Ozone Depletion     | kg CFC <sub>11</sub> e | 5,27E-8 | 2,34E-8 | 8,9E-10 | 7,7E-8  | 8,67E-9 | 9,38E-10 | MND | 1,02E-13 | 7,69E-11 | 1,47E-9 | 3,31E-9 | 4,47E-13 |
| Acidification       | kg SO <sub>2</sub> e   | 5,15E-3 | 3,53E-4 | 3,45E-5 | 5,53E-3 | 1,28E-4 | 4E-5     | MND | 8,73E-9  | 1,21E-6  | 4,68E-5 | 7,83E-5 | -2,48E-4 |
| Eutrophication      | kg Ne                  | 4,02E-4 | 4,94E-5 | 3,75E-6 | 4,56E-4 | 1,8E-5  | 6,5E-6   | MND | 1,16E-9  | 1,68E-7  | 6,39E-6 | 4,32E-5 | -1,09E-5 |
| POCP (“smog”)       | kg O <sub>3</sub> e    | 6,84E-2 | 7,57E-3 | 8,54E-4 | 7,69E-2 | 2,76E-3 | 4,65E-4  | MND | 1,01E-7  | 2,55E-5  | 9,05E-4 | 1,86E-3 | -2,9E-3  |
| ADP-fossil          | MJ                     | 8,51E0  | 2,1E-1  | 1,14E-2 | 8,73E0  | 7,77E-2 | 9,16E-3  | MND | 1,56E-6  | 6,94E-4  | 2,24E-2 | 3,27E-2 | -4,65E-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.

Hetal Parekh Udas as an authorized verifier acting for EPD Hub Limited  
08.09.2022



## ANNEX 1: CONVERSION TABLE FOR PRODUCT STAGE (A1-A3) GWP – EN 15804+A2, PEF

| Product Number | Product Description                                   | Unit Product Weight (kg/m of pipe) | GWP – total, Stages A1-A3 (kg CO2e/m of pipe) | Product Length (m) | GWP – total, Stages A1-A3 (kg CO2e) |
|----------------|---|------------------------------------|---|--------------------|-------------------------------------|
| 1119628        | WEHOLITE PLUS PIPE 1000 SN2 12,5M PE                  | 40,352                             | 7,34E1  | 12,5               | 9,18E2                              |
| 1119633        | WEHOLITE PLUS PIPE Z-JOINT 1000 SN4 12,5M PE          | 50,44                              | 9,18E1  | 12,5               | 1,15E3                              |
| 1119635        | WEHOLITE PLUS PIPE Z-JOINT 1000 SN8 SPECIAL LENGTH PE | 68,64                              | 1,25E2  | N/A <sup>1)</sup>  | N/A                                 |
| 1119638        | WEHOLITE PLUS PIPE 1200 SN2 SPECIAL LENGTH PE         | 60,32                              | 1,10E2  | N/A                | N/A                                 |
| 1119644        | WEHOLITE PLUS PIPE 1200 SN4 12,5M PE                  | 73,84                              | 1,34E2  | 12,5               | 1,68E3                              |
| 1119649        | WEHOLITE PLUS PIPE Z-JOINT 1200 SN8 12,5M PE          | 99,84                              | 1,82E2  | 12,5               | 2,27E3                              |
| 1119650        | WEHOLITE PLUS PIPE 1400 SN2 SPECIAL LENGTH PE         | 78                                 | 1,42E2  | N/A                | N/A                                 |
| 1119656        | WEHOLITE PLUS PIPE 1400 SN4 12,5M PE                  | 103,688                            | 1,89E2  | 12,5               | 2,36E3                              |
| 1119658        | WEHOLITE PLUS PIPE 1400 SN8 SPECIAL LENGTH PE         | 137,28                             | 2,50E2  | N/A                | N/A                                 |
| 1119667        | WEHOLITE PLUS PIPE Z-JOINT 1500 SN4 SPECIAL LENGTH PE | 112,32                             | 2,04E2  | N/A                | N/A                                 |
| 1119673        | WEHOLITE PLUS PIPE Z-JOINT 1500 SN8 12,5M PE          | 156                                | 2,84E2  | 12,5               | 3,55E3                              |
| 1119683        | WEHOLITE PLUS PIPE Z-JOINT 1600 SN8 SPECIAL LENGTH PE | 178,88                             | 3,26E2  | N/A                | N/A                                 |
| 1119688        | WEHOLITE PLUS PIPE 1800 SN2 12,5M PE                  | 128,96                             | 2,35E2  | 12,5               | 2,93E3                              |
| 1119695        | WEHOLITE PLUS PIPE Z-JOINT 1800 SN8 SPECIAL LENGTH PE | 239,2                              | 4,35E2  | N/A                | N/A                                 |
| 1119702        | WEHOLITE PLUS PIPE 2000 SN4 SPECIAL LENGTH PE         | 203,84                             | 3,71E2  | N/A                | N/A                                 |
| 1119706        | WEHOLITE PLUS PIPE 2000 SN8 SPECIAL LENGTH PE         | 270,4                              | 4,92E2  | N/A                | N/A                                 |
| 1119714        | WEHOLITE PLUS PIPE 2200 SN4 SPECIAL LENGTH PE         | 248,56                             | 4,52E2  | N/A                | N/A                                 |
| 1119719        | WEHOLITE PLUS PIPE Z-JOINT 2200 SN8 SPECIAL LENGTH PE | 341,12                             | 6,21E2  | N/A                | N/A                                 |
| 1119727        | WEHOLITE PLUS PIPE Z-JOINT 2400 SN4 SPECIAL LENGTH PE | 289,12                             | 5,26E2  | N/A                | N/A                                 |
| 1119730        | WEHOLITE PLUS PIPE 2400 SN8 SPECIAL LENGTH PE         | 421,2                              | 7,67E2  | N/A                | N/A                                 |
| 1119739        | WEHOLITE PLUS PIPE Z-JOINT 2500 SN4 SPECIAL LENGTH PE | 338                                | 6,15E2  | N/A                | N/A                                 |
| 1119743        | WEHOLITE PLUS PIPE Z-JOINT 2500 SN8 SPECIAL LENGTH PE | 473,2                              | 8,61E2  | N/A                | N/A                                 |
| 1119746        | WEHOLITE PLUS PIPE 2600 SN2 SPECIAL LENGTH PE         | 272,48                             | 4,96E2  | N/A                | N/A                                 |
| 1119751        | WEHOLITE PLUS PIPE Z-JOINT 2600 SN4 SPECIAL LENGTH PE | 345,28                             | 6,28E2  | N/A                | N/A                                 |
| 1119757        | WEHOLITE PLUS PIPE Z-JOINT 2600 SN8 12,5M PE          | 468                                | 8,52E2  | 12,5               | 1,06E4                              |
| 1119763        | WEHOLITE PLUS PIPE Z-JOINT 3000 SN4 SPECIAL LENGTH PE | 468                                | 8,52E2  | N/A                | N/A                                 |

<sup>1)</sup>N/A = Not Applicable

## ANNEX 2: CONVERSION TABLE FOR PRODUCT STAGE (A1-A3) GWP – EN 15804+A1, CML / ISO 21930

| Product Number | Product Description                                   | Unit Product Weight (kg/m of pipe) | GWP – total, Stages A1-A3 (kg CO2e/m of pipe) | Product Length (m) | GWP – total, Stages A1-A3 (kg CO2e) |
|----------------|---|------------------------------------|---|--------------------|-------------------------------------|
| 1119628        | WEHOLITE PLUS PIPE 1000 SN2 12,5M PE                  | 40,352                             | 6,78E1  | 12,5               | 8,47E2                              |
| 1119633        | WEHOLITE PLUS PIPE Z-JOINT 1000 SN4 12,5M PE          | 50,44                              | 8,47E1  | 12,5               | 1,06E3                              |
| 1119635        | WEHOLITE PLUS PIPE Z-JOINT 1000 SN8 SPECIAL LENGTH PE | 68,64                              | 1,15E2  | N/A                | N/A                                 |
| 1119638        | WEHOLITE PLUS PIPE 1200 SN2 SPECIAL LENGTH PE         | 60,32                              | 1,01E2  | N/A                | N/A                                 |
| 1119644        | WEHOLITE PLUS PIPE 1200 SN4 12,5M PE                  | 73,84                              | 1,24E2  | 12,5               | 1,55E3                              |
| 1119649        | WEHOLITE PLUS PIPE Z-JOINT 1200 SN8 12,5M PE          | 99,84                              | 1,68E2  | 12,5               | 2,10E3                              |
| 1119650        | WEHOLITE PLUS PIPE 1400 SN2 SPECIAL LENGTH PE         | 78                                 | 1,31E2  | N/A                | N/A                                 |
| 1119656        | WEHOLITE PLUS PIPE 1400 SN4 12,5M PE                  | 103,688                            | 1,74E2  | 12,5               | 2,18E3                              |
| 1119658        | WEHOLITE PLUS PIPE 1400 SN8 SPECIAL LENGTH PE         | 137,28                             | 2,31E2  | N/A                | N/A                                 |
| 1119667        | WEHOLITE PLUS PIPE Z-JOINT 1500 SN4 SPECIAL LENGTH PE | 112,32                             | 1,89E2  | N/A                | N/A                                 |
| 1119673        | WEHOLITE PLUS PIPE Z-JOINT 1500 SN8 12,5M PE          | 156                                | 2,62E2  | 12,5               | 3,28E+3                             |
| 1119683        | WEHOLITE PLUS PIPE Z-JOINT 1600 SN8 SPECIAL LENGTH PE | 178,88                             | 3,01E2  | N/A                | N/A                                 |
| 1119688        | WEHOLITE PLUS PIPE 1800 SN2 12,5M PE                  | 128,96                             | 2,17E2  | 12,5               | 2,71E3                              |
| 1119695        | WEHOLITE PLUS PIPE Z-JOINT 1800 SN8 SPECIAL LENGTH PE | 239,2                              | 4,02E2  | N/A                | N/A                                 |
| 1119702        | WEHOLITE PLUS PIPE 2000 SN4 SPECIAL LENGTH PE         | 203,84                             | 3,42E2  | N/A                | N/A                                 |
| 1119706        | WEHOLITE PLUS PIPE 2000 SN8 SPECIAL LENGTH PE         | 270,4                              | 4,54E2  | N/A                | N/A                                 |
| 1119714        | WEHOLITE PLUS PIPE 2200 SN4 SPECIAL LENGTH PE         | 248,56                             | 4,18E2  | N/A                | N/A                                 |
| 1119719        | WEHOLITE PLUS PIPE Z-JOINT 2200 SN8 SPECIAL LENGTH PE | 341,12                             | 5,73E2  | N/A                | N/A                                 |
| 1119727        | WEHOLITE PLUS PIPE Z-JOINT 2400 SN4 SPECIAL LENGTH PE | 289,12                             | 4,86E2  | N/A                | N/A                                 |
| 1119730        | WEHOLITE PLUS PIPE 2400 SN8 SPECIAL LENGTH PE         | 421,2                              | 7,08E2  | N/A                | N/A                                 |
| 1119739        | WEHOLITE PLUS PIPE Z-JOINT 2500 SN4 SPECIAL LENGTH PE | 338                                | 5,68E2  | N/A                | N/A                                 |
| 1119743        | WEHOLITE PLUS PIPE Z-JOINT 2500 SN8 SPECIAL LENGTH PE | 473,2                              | 7,95E2  | N/A                | N/A                                 |
| 1119746        | WEHOLITE PLUS PIPE 2600 SN2 SPECIAL LENGTH PE         | 272,48                             | 4,58E2  | N/A                | N/A                                 |
| 1119751        | WEHOLITE PLUS PIPE Z-JOINT 2600 SN4 SPECIAL LENGTH PE | 345,28                             | 5,80E2  | N/A                | N/A                                 |
| 1119757        | WEHOLITE PLUS PIPE Z-JOINT 2600 SN8 12,5M PE          | 468                                | 7,86E2  | 12,5               | 9,83E3                              |
| 1119763        | WEHOLITE PLUS PIPE Z-JOINT 3000 SN4 SPECIAL LENGTH PE | 468                                | 7,86E2  | N/A                | N/A                                 |