

# ENVIRONMENTAL PRODUCT DECLARATION

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

Uponor Q&E (Brass)  
Uponor Corporation



### EPD HUB, HUB-1141

Published on 21.02.2024, last updated on 09.01.2025, valid until 21.02.2029.

## 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+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. Shima Holder Hjort, 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       | 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                      | Uponor Q&E (Brass)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Additional labels                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Product reference                 | 1023045 1023003 1023034 1033437 1059822<br>1047862 1023009 1023035 1023010 1063860<br>1063928 1063928 1046279 1047863 1033438<br>1047191 1023014 1023012 1023022 1023011<br>1063735 1023017 1063732 1023020 1063871<br>1047941 1047866 1023019 1023013 1023021<br>1023015 1023016 1023023 1023005 1063738<br>1008730 1025829 1047864 1047864 1025881<br>1063750 1063743 1025967 1025882 1023024<br>1047198 1063740 1047937 1047936 1023007<br>1062846 1008867 1008867 1063806 1025837<br>1047942 1063755 1023006 1063752 1025840<br>1023025 1008732 1008732 1063745 1023026<br>1025765 1063753 1047932 1025936 1047213<br>1118974 1047880 1063734 1047917 1047885<br>1063754 1033435 1063744 1063938 1047886<br>1047879 1047881 1047193 1047888 1047882<br>1008734 1063932 1023040 1047217 1047212<br>1062861 1047215 1063939 1047197 1063739<br>1047195 1063736 1047199 1062845 1023042<br>1023018 1047194 1047940 1025770 1025832<br>1025830 |
| Place of production               | Industriestraße 56, 97437 Haßfurt, Germany                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Period for data                   | 2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Averaging in EPD                  | No averaging                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Variation in GWP-fossil for A1-A3 | %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## ENVIRONMENTAL DATA SUMMARY

|                                           |                 |
|-------------------------------------------|-----------------|
| Declared unit                             | 1 kg of product |
| Declared unit mass                        | 1 kg            |
| GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)   | 3,60E+00        |
| GWP-total, A1-A3 (kgCO <sub>2</sub> e)    | 3,56E+00        |
| Secondary material, inputs (%)            | 84,9            |
| Secondary material, outputs (%)           | 99,5            |
| Total energy use, A1-A3 (kWh)             | 18,3            |
| Total water use, A1-A3 (m <sup>3</sup> e) | 0,09            |

## 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

Uponor Q&E is a unique and innovative fittings system that uses the shrink-back effect of cross-linked polyethylene PE-Xa pipes for quick and easy installation. A wide range of fittings and accessories makes Q&E a complete and secure system for cost-effective installation. Corrosion resistance makes it safe, secure, and watertight. This EPD covers Q&E fittings made from brass (70% recycled). Male and female threads are manufactured according to EN 10226-1

Application areas:

- Tap water: The permanent operating temperature ranges from 0°C to 70°C at a maximum permanent operating pressure of 10 bar. The short-term malfunction temperature is 95°C for a period of 100 hours in the operating lifetime.
- Heating: The permanent operating temperature ranges up to 80°C at a maximum permanent operating pressure of 10 bar. The short-term malfunction temperature is 100°C for a period of 100 hours in the operating lifetime.

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 |
|-----------------------|-----------------|-----------------|
| Metals                | 100             | EU              |
| Minerals              |                 |                 |
| Fossil materials      |                 |                 |
| Bio-based materials   |                 |                 |

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

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

### FUNCTIONAL UNIT AND SERVICE LIFE

|                        |                 |
|------------------------|-----------------|
| Declared unit          | 1 kg of product |
| Mass per declared unit | 1 kg            |
| Functional unit        |                 |
| Reference service life |                 |

### SUBSTANCES, REACH VERY HIGH CONCERN

| Substances of very high concern  | EC        | CAS       |
|----------------------------------|-----------|-----------|
| Lead (up to 2.2% in brass alloy) | 231-100-4 | 7439-92-1 |

## 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                        | 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.

Uponor Q&E is manufactured with brass (70% recycled). The fittings are supplied to the construction site packed in cardboard boxes. Installation instructions come with each pack.

### MANUFACTURING PROCESS



### TRANSPORT AND INSTALLATION (A4-A5)

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

The transportation distance is defined according to the standard. Average distance of transportation from production plant to building site is based on the actual sales average figures of the company in of the local markets and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 100 which means full load. In reality, it may vary but as the role of transportation emissions in the total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that a return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as the products are packaged properly. Volume capacity utilisation factor is assumed to be <1 for the nested packaged products.

Environmental impacts from installation into the building include waste packaging materials (A5).

### 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). The end-of-life product is assumed to be sent to the

closest facility by lorry and is assumed to be 50 km away (C2). 100% of the end-of-life product is collected separately from the demolition site and recycled. Due to the recycling potential of brass, the end-of-life product is converted into recycled material (D). The benefits and loads of waste packaging materials in A5 are also considered in module 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. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

| Data type                      | Allocation                  |
|--------------------------------|-----------------------------|
| Raw materials                  | No allocation               |
| Packaging materials            | No allocation               |
| Ancillary materials            | No allocation               |
| Manufacturing energy and waste | Allocated by mass or volume |

### AVERAGES AND VARIABILITY

|                                   |                |
|-----------------------------------|----------------|
| Type of average                   | No averaging   |
| Averaging method                  | Not applicable |
| Variation in GWP-fossil for A1-A3 | %              |

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 v3.8 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   | 2,71E+00 | 1,15E-01 | 7,42E-01  | 3,56E+00  | 8,31E-02 | 5,41E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,69E-03 | 2,02E-02 | 0,00E+00 | -1,50E+00 |
| GWP – fossil                        | kg CO <sub>2</sub> e   | 2,70E+00 | 1,15E-01 | 7,84E-01  | 3,60E+00  | 8,31E-02 | 1,15E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,69E-03 | 2,02E-02 | 0,00E+00 | -1,50E+00 |
| GWP – biogenic                      | kg CO <sub>2</sub> e   | 0,00E+00 | 0,00E+00 | -4,26E-02 | -4,26E-02 | 0,00E+00 | 4,26E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| GWP – LULUC                         | kg CO <sub>2</sub> e   | 5,93E-03 | 4,26E-05 | 1,37E-04  | 6,11E-03  | 3,06E-05 | 1,04E-05 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,73E-06 | 2,23E-05 | 0,00E+00 | -3,42E-03 |
| Ozone depletion pot.                | kg CFC-11e             | 1,52E-07 | 2,65E-08 | 1,29E-07  | 3,07E-07  | 1,91E-08 | 7,39E-10 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,08E-09 | 8,99E-10 | 0,00E+00 | -8,40E-08 |
| Acidification potential             | mol H <sup>+</sup> e   | 1,94E-01 | 4,89E-04 | 1,49E-03  | 1,96E-01  | 3,52E-04 | 3,88E-05 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,99E-05 | 1,32E-04 | 0,00E+00 | -1,18E-01 |
| EP-freshwater <sup>2)</sup>         | kg Pe                  | 8,60E-04 | 9,45E-07 | 4,95E-06  | 8,66E-04  | 6,80E-07 | 4,74E-07 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,84E-08 | 1,29E-06 | 0,00E+00 | -5,18E-04 |
| EP-marine                           | kg Ne                  | 9,54E-03 | 1,45E-04 | 3,57E-04  | 1,00E-02  | 1,05E-04 | 8,86E-06 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 5,90E-06 | 4,56E-05 | 0,00E+00 | -5,72E-03 |
| EP-terrestrial                      | mol Ne                 | 1,37E-01 | 1,60E-03 | 3,89E-03  | 1,42E-01  | 1,15E-03 | 8,54E-05 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 6,51E-05 | 3,73E-04 | 0,00E+00 | -8,24E-02 |
| POCP (“smog”) <sup>3)</sup>         | kg NMVOCe              | 3,76E-02 | 5,12E-04 | 1,43E-03  | 3,96E-02  | 3,69E-04 | 2,73E-05 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,08E-05 | 1,21E-04 | 0,00E+00 | -2,26E-02 |
| ADP-minerals & metals <sup>4)</sup> | kg Sbe                 | 4,83E-03 | 2,70E-07 | 3,19E-06  | 4,83E-03  | 1,95E-07 | 8,35E-08 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,10E-08 | 6,94E-07 | 0,00E+00 | -2,96E-03 |
| ADP-fossil resources                | MJ                     | 3,35E+01 | 1,73E+00 | 1,37E+01  | 4,89E+01  | 1,25E+00 | 1,19E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 7,05E-02 | 1,62E-01 | 0,00E+00 | -1,83E+01 |
| Water use <sup>5)</sup>             | m <sup>3</sup> e depr. | 2,52E+00 | 7,75E-03 | 1,22E-01  | 2,65E+00  | 5,58E-03 | 3,80E-03 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,15E-04 | 3,80E-03 | 0,00E+00 | -1,46E+00 |

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 PO<sub>4</sub>e; 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 | 4,41E-07 | 1,33E-08 | 9,59E-09 | 4,64E-07 | 9,57E-09 | 5,20E-10 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 5,41E-10 | 1,38E-08 | 0,00E+00 | -2,55E-07 |
| Ionizing radiation <sup>6)</sup> | kBq U235e | 3,43E-01 | 8,25E-03 | 1,11E-02 | 3,63E-01 | 5,94E-03 | 1,74E-03 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,36E-04 | 1,15E-03 | 0,00E+00 | -1,67E-01 |
| Ecotoxicity (freshwater)         | CTUe      | 1,81E+03 | 1,56E+00 | 4,12E+00 | 1,82E+03 | 1,12E+00 | 2,31E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 6,34E-02 | 2,77E+01 | 0,00E+00 | -1,11E+03 |
| Human toxicity, cancer           | CTUh      | 3,67E-08 | 3,83E-11 | 3,09E-10 | 3,70E-08 | 2,76E-11 | 2,42E-11 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,56E-12 | 2,25E-10 | 0,00E+00 | -1,45E-08 |
| Human tox. non-cancer            | CTUh      | 2,61E-06 | 1,54E-09 | 3,70E-09 | 2,62E-06 | 1,11E-09 | 1,80E-10 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 6,27E-11 | 1,48E-09 | 0,00E+00 | -1,60E-06 |
| SQP <sup>7)</sup>                | -         | 6,37E+01 | 2,00E+00 | 1,54E+00 | 6,73E+01 | 1,44E+00 | 7,04E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 8,12E-02 | 8,46E-01 | 0,00E+00 | -3,84E+01 |

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 <sup>8)</sup> | MJ             | 8,77E+00 | 1,95E-02 | 8,99E+00 | 1,78E+01 | 1,41E-02 | 1,48E-02  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 7,94E-04 | 2,19E-02 | 0,00E+00 | -5,07E+00 |
| Renew. PER as material             | MJ             | 0,00E+00 | 0,00E+00 | 4,21E-01 | 4,21E-01 | 0,00E+00 | -4,21E-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             | 8,77E+00 | 1,95E-02 | 9,41E+00 | 1,82E+01 | 1,41E-02 | -4,07E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 7,94E-04 | 2,19E-02 | 0,00E+00 | -5,07E+00 |
| Non-re. PER as energy              | MJ             | 3,35E+01 | 1,73E+00 | 1,27E+01 | 4,79E+01 | 1,25E+00 | 1,19E-01  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 7,05E-02 | 1,62E-01 | 0,00E+00 | -1,83E+01 |
| Non-re. PER as material            | MJ             | 0,00E+00 | 0,00E+00 | 1,01E+00 | 1,01E+00 | 0,00E+00 | -1,01E+00 | 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 non-re. PER           | MJ             | 3,35E+01 | 1,73E+00 | 1,37E+01 | 4,89E+01 | 1,25E+00 | -8,91E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 7,05E-02 | 1,62E-01 | 0,00E+00 | -1,83E+01 |
| Secondary materials                | kg             | 8,49E-01 | 4,81E-04 | 3,46E-02 | 8,84E-01 | 3,46E-04 | 4,27E-04  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,96E-05 | 2,91E-04 | 0,00E+00 | 2,59E-01  |
| Renew. secondary fuels             | MJ             | 6,84E-04 | 4,85E-06 | 8,59E-04 | 1,55E-03 | 3,49E-06 | 4,15E-06  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,97E-07 | 2,41E-05 | 0,00E+00 | -3,89E-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 <sup>3</sup> | 8,35E-02 | 2,24E-04 | 2,72E-03 | 8,64E-02 | 1,62E-04 | 8,40E-05  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 9,13E-06 | 9,28E-05 | 0,00E+00 | -4,83E-02 |

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   | 8,07E-01 | 2,30E-03 | 1,84E-02 | 8,28E-01 | 1,65E-03 | 1,42E-03 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 9,34E-05 | 1,66E-03 | 0,00E+00 | -3,77E-01 |
| Non-hazardous waste | kg   | 5,56E+01 | 3,78E-02 | 4,13E-01 | 5,61E+01 | 2,72E-02 | 2,12E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,54E-03 | 3,13E-02 | 0,00E+00 | -3,37E+01 |
| Radioactive waste   | kg   | 1,23E-04 | 1,16E-05 | 4,67E-06 | 1,39E-04 | 8,35E-06 | 6,21E-07 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,71E-07 | 5,22E-07 | 0,00E+00 | -6,21E-05 |

## END OF LIFE – OUTPUT FLOWS

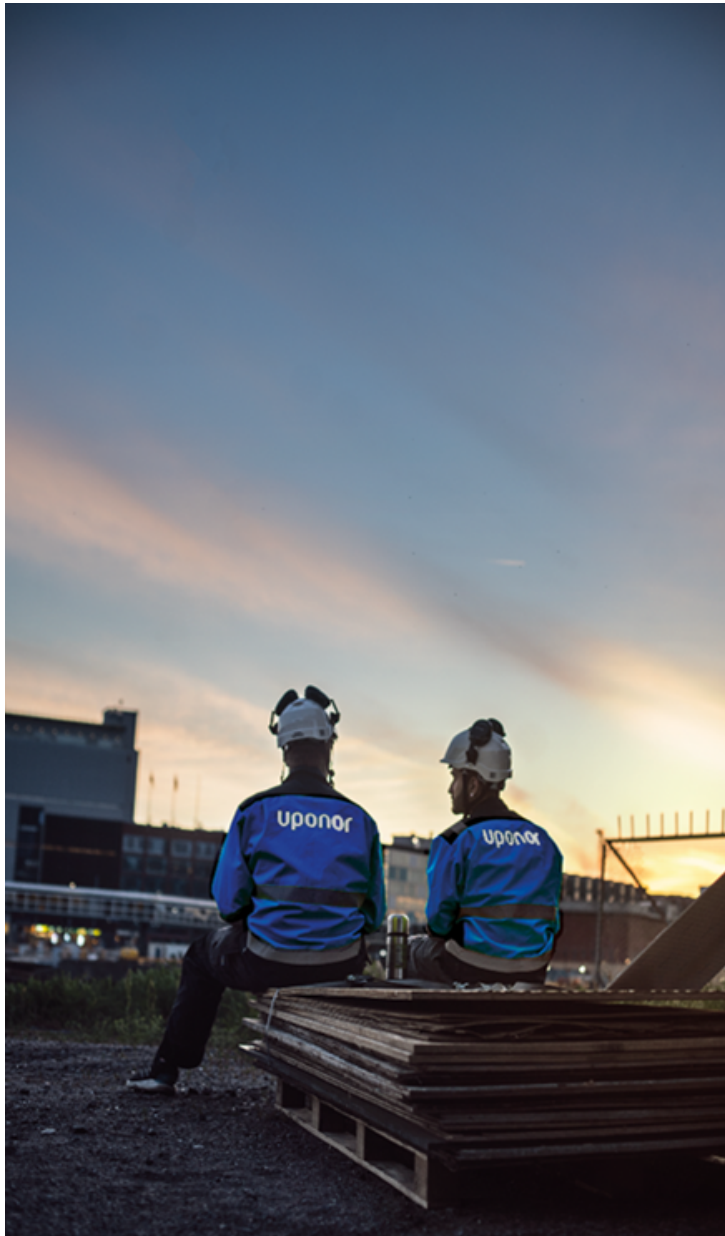
| Impact category          | Unit | A1       | A2       | A3       | A1-A3    | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D        |
|--------------------------|------|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|----------|
| 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 | 2,08E-01 | 2,08E-01 | 0,00E+00 | 5,36E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 1,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy rec | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy          | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 |

## 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               | 2,64E+00 | 1,14E-01 | 7,65E-01 | 3,52E+00 | 8,22E-02 | 1,17E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,64E-03 | 5,00E-02 | 0,00E+00 | -1,47E+00 |
| Ozone depletion Pot. | kg CFC <sub>11</sub> e             | 1,26E-07 | 2,10E-08 | 1,13E-07 | 2,60E-07 | 1,51E-08 | 6,32E-10 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 8,55E-10 | 7,43E-10 | 0,00E+00 | -6,98E-08 |
| Acidification        | kg SO <sub>2</sub> e               | 1,70E-01 | 3,80E-04 | 1,20E-03 | 1,72E-01 | 2,73E-04 | 3,15E-05 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,54E-05 | 1,04E-04 | 0,00E+00 | -1,04E-01 |
| Eutrophication       | kg PO <sub>4</sub> <sup>3</sup> e  | 5,19E-02 | 8,64E-05 | 3,09E-04 | 5,23E-02 | 6,22E-05 | 3,23E-05 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,52E-06 | 2,99E-04 | 0,00E+00 | -3,14E-02 |
| POCP ("smog")        | kg C <sub>2</sub> H <sub>4</sub> e | 6,46E-03 | 1,48E-05 | 1,08E-04 | 6,58E-03 | 1,07E-05 | 2,33E-06 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 6,03E-07 | 2,42E-05 | 0,00E+00 | -3,93E-03 |
| ADP-elements         | kg Sbe                             | 4,82E-03 | 2,62E-07 | 3,16E-06 | 4,82E-03 | 1,89E-07 | 8,23E-08 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,07E-08 | 6,92E-07 | 0,00E+00 | -2,95E-03 |
| ADP-fossil           | MJ                                 | 3,35E+01 | 1,73E+00 | 1,37E+01 | 4,89E+01 | 1,25E+00 | 1,19E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 7,05E-02 | 1,62E-01 | 0,00E+00 | -1,83E+01 |

## ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

| Impact category       | Unit                 | A1       | A2       | A3       | A1-A3    | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D         |
|-----------------------|----------------------|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|-----------|
| GWP-GHG <sup>9)</sup> | kg CO <sub>2</sub> e | 2,70E+00 | 1,15E-01 | 7,84E-01 | 3,60E+00 | 8,31E-02 | 1,15E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,69E-03 | 2,02E-02 | 0,00E+00 | -1,50E+00 |



## 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 compliance 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  
21.02.2024

