

# Environmental Product Declaration

---

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:  
**Shower set**

from

**Oras Group**

Programme:

Programme operator:

EPD registration number:

Publication date:

Valid until:

The International EPD® System, [www.environdec.com](http://www.environdec.com)

EPD International AB

S-P-06395

2022-06-29

2027-06-29

*An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com)*



# General information

## Programme information

|                  |                                                                     |
|------------------|---------------------------------------------------------------------|
| <b>Programme</b> | The International EPD® System                                       |
| <b>Address</b>   | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| <b>Website</b>   | www.environdec.com                                                  |
| <b>E-mail</b>    | info@environdec.com                                                 |

## Accountabilities for PCR, LCA and independent, third-party verification

|                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Category Rules (PCR)</b>                                                                                                                           | <p>CEN standard EN 15804 serves as the Core Product Category Rules (PCR)</p> <p>Product Category Rules (PCR): Construction products, 2019:14, version 1.11, UN CPC 42911 - Sinks, washbasins, baths and other sanitary ware and parts thereof, of iron, steel, copper or aluminium.</p> <p>PCR review was conducted by: The Technical Committee of the International EPD® System. Chair of the PCR review: Claudia A. Peña. The review panel may be contacted via info@environdec.com.</p> |
| <b>Life Cycle Assessment (LCA)</b>                                                                                                                            | <p>LCA accountability: Aleksi Laurila, Environmental consultant.<br/>Organization: Ecobio Oy.</p>                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Third-party verification</b>                                                                                                                               | <p>Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:</p> <p><input checked="" type="checkbox"/> EPD verification by individual verifier</p> <p>Third-party verifier: Hannu Karppi, Ramboll Finland Oy</p> <p></p> <p>Approved by: The International EPD® System</p>                                                                                   |
| <p>Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

|                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Owner of the EPD</b>                                            | Oras Group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Contact</b>                                                     | Phone: +358 2 83 161<br>Email: info@orasgroup.com<br>www.orasgroup.com                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description of the organisation</b>                             | <p>Oras Group is a significant European provider of sanitary fittings: the market leader in the Nordics and a leading company in Continental Europe. The company's mission is to create the smartest water experiences for everyone and its vision is to become the Perfect Flow Company. The Group has two strong brands, Oras and Hansa. Oras Group is owned by Oras Invest, a family company, and an industrial owner.</p> <p>The domicile of Oras Ltd, the parent company of the Group, is located in Rauma, Finland, and the Group has three manufacturing sites: Kralovice (Czech Republic), Olesno (Poland) and Rauma (Finland). The Group operates with its own staff in 17 markets. Oras Group's net sales were 233.5 million euros in 2021 and at the end of the period the company employed 1255 people.</p> |
| <b>Product-related or management system-related certifications</b> | Designation according to standards EN 1112 (hand shower) and EN 1113 (shower hose)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Management system related certifications</b>                    | ISO 9001:2015<br>ISO14001:2015<br>ISO 45001: 2018<br>ISO 50001:2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Name and location of production sites</b>                       | Oras Group Rauma production site<br>Isometsäntie 2, FI 26101 Rauma, Finland                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

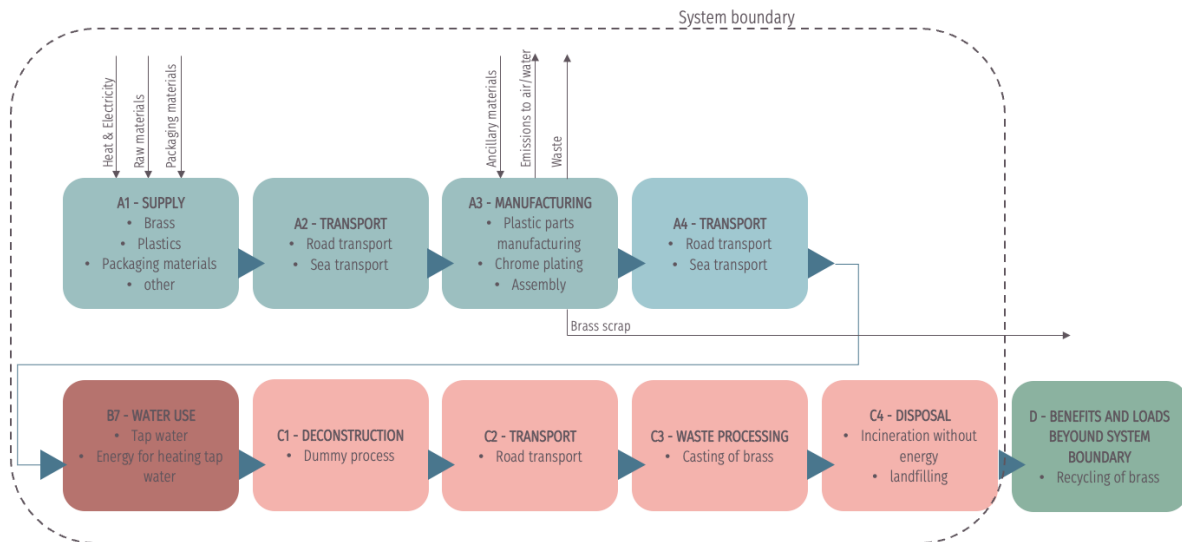
## Product information

|                               |                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product name</b>           | Shower set                                                                                                                                                                                                                                                                                                                            |
| <b>Product identification</b> | Shower Set consisting of hand shower, G1/2, according to EN 1112 and shower hose G1/2 x G1/2, according to EN 1113                                                                                                                                                                                                                    |
| <b>Product description</b>    | Oras Group products are manufactured in our own European factories by focusing into sustainable energy sources, highly efficient processes and minimized material usage and waste. Faucets include built-in features for water flow and temperature limitation to ensure sustainable product life cycle with efficient use of energy. |
| <b>UN CPC code</b>            | 42911 - Sinks, washbasins, baths and other sanitary ware and parts thereof, of iron, steel, copper or aluminium                                                                                                                                                                                                                       |
| <b>Geographical scope</b>     | Europe                                                                                                                                                                                                                                                                                                                                |

## LCA information

|                                         |                                                                                                                                                                                                                                       |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Functional unit / declared unit</b>  | 1 kg of Shower set                                                                                                                                                                                                                    |
| <b>Reference service life</b>           | The reference service life for shower set is 10 years.<br>The technical service life for shower set is 15 years.                                                                                                                      |
| <b>Time representativeness</b>          | The data was collected covering production year 2020, which is considered to represent average production year for shower sets. The material declarations used as a basis for modelling the raw material supply are compiled in 2022. |
| <b>Databases and LCA software</b>       | Ecoinvent 3.8 and SimaPro (Version 9.3.0.3).                                                                                                                                                                                          |
| <b>Description of system boundaries</b> | Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules).<br>The additional modules are A4 and B7.                                                                       |

# System diagram



|                                                                         |                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LCA practitioner</b>                                                 | Ecobio Oy, <a href="http://www.ecobio.fi">www.ecobio.fi</a>                                                                                                                                                                                                                                                                                                                       |
| <b>Allocation</b>                                                       | No co-product allocation was applied.                                                                                                                                                                                                                                                                                                                                             |
| <b>Electricity used in module A3</b>                                    | <p>The electricity used in module A3 accounts for more than 30 % of the total energy consumption in modules A1-A3. Therefore, the used energy sources for electricity production and climate change impact of the electricity mix are stated.</p> <p>The electricity is 100 % based on hydropower. GWP-GHG impact of the used electricity mix is 5,4 g CO<sub>2</sub>-eq/kWh.</p> |
| <b>Information about scenarios and additional technical information</b> | The scenario for operational water use is described on chapter "Additional Information".                                                                                                                                                                                                                                                                                          |

# Modules declared

geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

|                      | Product stage            |           |               | Construction process stage |                           | Use stage |             |        |             |               |                        |                       | End of life stage          |           |                  |          | Resource recovery stage            |
|----------------------|--------------------------|-----------|---------------|----------------------------|---------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------------|
|                      | Raw material supply      | Transport | Manufacturing | Transport                  | Construction installation | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| Module               | A1                       | A2        | A3            | A4                         | A5                        | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                                  |
| Modules declared     | x                        | x         | x             | x                          | MND                       | MND       | MND         | MND    | MND         | MND           | MND                    | x                     | x                          | x         | x                | x        | x                                  |
| Geography            | EU27                     | EU27      | EU27          | EU27                       | -                         | -         | -           | -      | -           | -             | -                      | EU27                  | EU27                       | EU27      | EU27             | EU27     | EU27                               |
| Specific data used   | > 90 %                   |           |               |                            |                           | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – products | < 10 %                   |           |               |                            |                           | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – sites    | Only one production site |           |               |                            |                           | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |

# Modules explained

| LCA Modules                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A1 Raw material supply</b><br><p>This module contains the supply of raw materials including brass, stainless steel, plastics, rubbers and other materials in smaller quantities.</p>                                                                                                                                                                                                                                                                                           | <b>C1 De-construction</b><br><p>This module is assumed to not cause environmental impacts as the de-construction of shower set can be done with manual labour and does not require external energy sources.</p>                                                                                                                                                                                       |
| <b>A2 Transportation</b><br><p>This module contains the transportation of raw materials and prefabricated components from suppliers to Oras Group's production facilities. Average transportation route covering all the relevant raw materials was developed as there is wide range of possible supply locations even for single raw materials and components. Transportation takes place by road and sea.</p>                                                                   | <b>C2 Transport</b><br><p>This module contains the transportation of product for waste processing to nearest waste processing facility. Transportation is done by road and the distance is assumed to be 50 km.</p>                                                                                                                                                                                   |
| <b>A3 Manufacturing</b><br><p>This module contains the relevant production processes for shower sets. The most relevant processes are production of plastic parts and chrome-plating of plastic parts. Treatment of waste and wastewater are also included. There is no casting of brass components as the brass components are pre-casted by suppliers before arriving to assembly. The used electricity mix for manufacturing stage is stated on chapter "LCA Information".</p> | <b>C3 Waste processing</b><br><p>This module contains the waste processing related to material recycling of brass. It is assumed that 90 % of the brass is headed for material recycling process, which includes casting of brass into brass ingots.</p>                                                                                                                                              |
| <b>A4 Transport</b><br><p>This module contains the transportation of the final product to warehouses from where further distribution takes place. The scenario does not include transportation to construction site.</p>                                                                                                                                                                                                                                                          | <b>C4 Disposal</b><br><p>This module contains final disposal of materials that are not headed for material or energy recovery. Stainless steel, plastic components, rubber components, packaging materials of the final product and 10 % of brass are assumed to be headed for incineration without energy recovery. Other components in smaller quantities are assumed to be headed to landfill.</p> |
| <b>B7 Operational water use</b><br><p>This module contains the production, heating and wastewater treatment of tap water related to the use of shower set. The scenario for operational water use is described more precisely on chapter "Additional Information".</p>                                                                                                                                                                                                            | <b>D Benefits and loads beyond system boundary</b><br><p>This module contains the benefits related to material recycling of brass. Brass is recycled through casting process, and it is assumed to substitute virgin brass production from the market</p>                                                                                                                                             |

# Content information

| Product components                      | Weight, kg | Post-consumer material, weight-% | Renewable material, weight-% |
|-----------------------------------------|------------|----------------------------------|------------------------------|
| <i>Acrylonitrile butadiene styrene</i>  | 0,1333     | 0 %                              | 0 %                          |
| <i>Brass</i>                            | 0,0877     | 0 %                              | 0 %                          |
| <i>Chromium</i>                         | 0,0001     | 0 %                              | 0 %                          |
| <i>Copper</i>                           | 0,0003     | 0 %                              | 0 %                          |
| <i>Ethylene propylene diene monomer</i> | 0,0004     | 0 %                              | 0 %                          |
| <i>Nitrile butadiene rubber</i>         | 0,0006     | 0 %                              | 0 %                          |
| <i>Nickel</i>                           | 0,0003     | 0 %                              | 0 %                          |
| <i>Other</i>                            | 0,0440     | 0 %                              | 0 %                          |
| <i>Polybutylene terephthalate</i>       | 0,0273     | 0 %                              | 0 %                          |
| <i>Polyethylene terephthalate</i>       | 0,0083     | 0 %                              | 0 %                          |
| <i>Polymethyl methacrylate</i>          | 0,1248     | 0 %                              | 0 %                          |
| <i>Polyphenylene oxide</i>              | 0,2198     | 0 %                              | 0 %                          |
| <i>Silicone</i>                         | 0,0083     | 0 %                              | 0 %                          |
| <i>Stainless steel</i>                  | 0,1950     | 0 %                              | 0 %                          |
| <i>Thermoplastic elastomer</i>          | 0,1499     | 0 %                              | 0 %                          |
| <b>TOTAL</b>                            | 1,0000     | 0 %                              | 0 %                          |
| Packaging materials                     | Weight, kg | Weight-% (versus the product)    |                              |
| <i>Corrugated board</i>                 | 0,2544     | 25,44 %                          |                              |
| <i>Polyamide</i>                        | 0,0024     | 0,24 %                           |                              |
| <i>Paper</i>                            | 0,0450     | 4,50 %                           |                              |
| <i>Polyethylene</i>                     | 0,0036     | 0,36 %                           |                              |
| <b>TOTAL</b>                            | 0,3053     | 30,53 %                          |                              |

The shower sets do not contain substances which exceed the limits for registration with the European Chemicals Agency regarding the "Candidate List of Substances of Very High Concern for authorization".

# Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per 1 kg of Shower set

| Indicator                       | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | A1       | A2       | A3        | Tot.<br>A1-A3 | A4       | B7       | C1       | C2       | C3       | C4       | D         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|-----------|---------------|----------|----------|----------|----------|----------|----------|-----------|
| <b>GWP-fossil</b>               | kg CO2 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5,05E+00 | 2,48E-01 | 5,83E-01  | 5,89E+00      | 2,49E-01 | 2,11E+03 | 0,00E+00 | 1,07E-02 | 1,89E-03 | 1,57E+00 | -6,52E-01 |
| <b>GWP-biogenic</b>             | kg CO2 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5,15E-02 | 5,15E-04 | 4,58E-02  | 9,77E-02      | 4,84E-04 | 6,43E+02 | 0,00E+00 | 3,35E-05 | 2,48E-04 | 4,85E-01 | -7,36E-03 |
| <b>GWP-luluc</b>                | kg CO2 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2,70E-03 | 1,16E-04 | 1,86E-03  | 4,68E-03      | 1,17E-04 | 1,88E+00 | 0,00E+00 | 5,04E-06 | 5,95E-07 | 3,76E-05 | -1,44E-03 |
| <b>GWP-total</b>                | kg CO2 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5,11E+00 | 2,49E-01 | 6,31E-01  | 5,99E+00      | 2,50E-01 | 2,76E+03 | 0,00E+00 | 1,08E-02 | 2,13E-03 | 2,06E+00 | -6,61E-01 |
| <b>ODP</b>                      | kg CFC 11 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 6,95E-07 | 5,54E-08 | 6,93E-08  | 8,20E-07      | 5,53E-08 | 2,25E-04 | 0,00E+00 | 2,41E-09 | 2,30E-10 | 1,30E-08 | -3,68E-08 |
| <b>AP</b>                       | mol H+ eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 7,08E-02 | 2,57E-03 | 2,63E-03  | 7,60E-02      | 3,12E-03 | 9,02E+00 | 0,00E+00 | 4,26E-05 | 4,42E-06 | 5,86E-04 | -4,74E-02 |
| <b>EP-freshwater</b>            | kg PO43- eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4,73E-03 | 1,44E-05 | 2,87E-04  | 5,03E-03      | 1,35E-05 | 1,03E+00 | 0,00E+00 | 8,05E-07 | 3,69E-07 | 1,37E-05 | -3,77E-03 |
| <b>EP-freshwater</b>            | kg P eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1,75E-03 | 5,32E-06 | 1,06E-04  | 1,86E-03      | 5,01E-06 | 3,81E-01 | 0,00E+00 | 2,98E-07 | 1,37E-07 | 5,08E-06 | -1,40E-03 |
| <b>EP-marine</b>                | kg N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5,73E-03 | 6,75E-04 | 1,15E-03  | 7,55E-03      | 8,15E-04 | 7,58E+00 | 0,00E+00 | 1,24E-05 | 1,25E-06 | 3,09E-04 | -2,43E-03 |
| <b>EP-terrestrial</b>           | mol N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6,65E-02 | 7,45E-03 | 7,66E-03  | 8,17E-02      | 9,02E-03 | 1,79E+01 | 0,00E+00 | 1,35E-04 | 1,46E-05 | 2,74E-03 | -3,34E-02 |
| <b>POCP</b>                     | kg NMVOC eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1,75E-02 | 1,83E-03 | 1,47E-03  | 2,08E-02      | 2,20E-03 | 4,16E+00 | 0,00E+00 | 3,36E-05 | 3,45E-06 | 6,21E-04 | -8,30E-03 |
| <b>ADP-minerals&amp;metals*</b> | kg Sb eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1,34E-03 | 7,45E-07 | 3,69E-06  | 1,34E-03      | 7,02E-07 | 7,68E-03 | 0,00E+00 | 4,88E-08 | 8,50E-09 | 3,12E-07 | -1,18E-03 |
| <b>ADP-fossil*</b>              | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 8,07E+01 | 3,62E+00 | 5,75E+00  | 9,01E+01      | 3,60E+00 | 3,31E+04 | 0,00E+00 | 1,60E-01 | 2,96E-02 | 4,10E-01 | -8,12E+00 |
| <b>WDP</b>                      | m3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 7,27E+00 | 9,64E-03 | -1,65E-01 | 7,11E+00      | 9,03E-03 | 1,31E+03 | 0,00E+00 | 5,13E-04 | 1,40E-04 | 2,14E-02 | -8,16E-01 |
| <b>Acronyms</b>                 | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |          |          |           |               |          |          |          |          |          |          |           |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potential environmental impact – additional mandatory and voluntary indicators

| Results per 1 kg of Shower set |            |          |          |          |               |          |          |          |          |          |          |           |
|--------------------------------|------------|----------|----------|----------|---------------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                      | Unit       | A1       | A2       | A3       | Tot.<br>A1-A3 | A4       | B7       | C1       | C2       | C3       | C4       | D         |
| GWP-GHG1                       | kg CO2 eq. | 4,92E+00 | 2,46E-01 | 5,97E-01 | 5,76E+00      | 2,47E-01 | 2,08E+03 | 0,00E+00 | 1,06E-02 | 1,84E-03 | 1,58E+00 | -6,42E-01 |

## Use of resources

| Results per 1 kg of Shower set |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |          |          |               |          |          |          |          |          |          |           |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|---------------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                      | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | A1       | A2       | A3       | Tot.<br>A1-A3 | A4       | B7       | C1       | C2       | C3       | C4       | D         |
| PERE                           | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5,28E+00 | 4,53E-02 | 1,33E+01 | 1,86E+01      | 4,34E-02 | 6,50E+03 | 0,00E+00 | 2,70E-03 | 7,82E-03 | 3,52E-02 | -2,14E+00 |
| PERM                           | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0        | 0        | 0        | 0             | 0        | 0        | 0        | 0        | 0        | 0        | 0         |
| PERT                           | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5,28E+00 | 4,53E-02 | 1,33E+01 | 1,86E+01      | 4,34E-02 | 6,50E+03 | 0,00E+00 | 2,70E-03 | 7,82E-03 | 3,52E-02 | -2,14E+00 |
| PENRE                          | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 7,70E+01 | 3,63E+00 | 6,43E+00 | 8,70E+01      | 3,61E+00 | 3,79E+04 | 0,00E+00 | 1,62E-01 | 3,26E-02 | 5,01E-01 | -1,02E+01 |
| PENRM                          | MJ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0        | 0        | 0        | 0             | 0        | 0        | 0        | 0        | 0        | 0        | 0         |
| PENRT                          | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 7,70E+01 | 3,63E+00 | 6,43E+00 | 8,70E+01      | 3,61E+00 | 3,79E+04 | 0,00E+00 | 1,62E-01 | 3,26E-02 | 5,01E-01 | -1,02E+01 |
| SM                             | kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0        | 0        | 0        | 0             | 0        | 0        | 0        | 0        | 0        | 0        | 0         |
| RSF                            | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0        | 0        | 0        | 0             | 0        | 0        | 0        | 0        | 0        | 0        | 0         |
| NRSF                           | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0        | 0        | 0        | 0             | 0        | 0        | 0        | 0        | 0        | 0        | 0         |
| FW                             | m3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1,70E-01 | 3,38E-04 | 3,75E-02 | 2,08E-01      | 3,21E-04 | 3,91E+01 | 0,00E+00 | 1,90E-05 | 2,68E-05 | 1,05E-03 | -1,91E-02 |
| Acronyms                       | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |          |          |          |               |          |          |          |          |          |          |           |

<sup>1</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

# Waste production and output flows

## Waste production

| Results per 1 kg of Shower set |      |          |          |          |               |          |          |          |          |          |          |           |
|--------------------------------|------|----------|----------|----------|---------------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                      | Unit | A1       | A2       | A3       | Tot.<br>A1-A3 | A4       | B7       | C1       | C2       | C3       | C4       | D         |
| Hazardous waste disposed       | kg   | 2,30E-01 | 8,27E-06 | 1,79E-04 | 2,30E-01      | 7,79E-06 | 8,15E-02 | 0,00E+00 | 4,29E-07 | 3,77E-08 | 1,38E-06 | -3,32E-04 |
| Non-hazardous waste disposed   | kg   | 1,34E+00 | 1,52E-01 | 1,87E-01 | 1,68E+00      | 1,39E-01 | 2,59E+02 | 0,00E+00 | 6,78E-03 | 2,43E-03 | 2,77E-02 | -2,55E-01 |
| Radioactive waste disposed     | kg   | 6,59E-05 | 2,45E-05 | 2,06E-05 | 1,11E-04      | 2,45E-05 | 1,45E-01 | 0,00E+00 | 1,07E-06 | 1,28E-07 | 1,41E-06 | -3,00E-05 |

## Output flows

| Results per 1 kg of Shower set |      |    |    |    |               |    |    |    |    |      |    |   |
|--------------------------------|------|----|----|----|---------------|----|----|----|----|------|----|---|
| Indicator                      | Unit | A1 | A2 | A3 | Tot.<br>A1-A3 | A4 | B7 | C1 | C2 | C3   | C4 | D |
| Components for re-use          | kg   | 0  | 0  | 0  | 0             | 0  | 0  | 0  | 0  | 0    | 0  | 0 |
| Material for recycling         | kg   | 0  | 0  | 0  | 0             | 0  | 0  | 0  | 0  | 0,12 | 0  | 0 |
| Materials for energy recovery  | kg   | 0  | 0  | 0  | 0             | 0  | 0  | 0  | 0  | 0    | 0  | 0 |
| Exported energy, electricity   | MJ   | 0  | 0  | 0  | 0             | 0  | 0  | 0  | 0  | 0    | 0  | 0 |
| Exported energy, thermal       | MJ   | 0  | 0  | 0  | 0             | 0  | 0  | 0  | 0  | 0    | 0  | 0 |

## Information on biogenic carbon content

| Results per 1 kg of Shower set       |      |          |
|--------------------------------------|------|----------|
| BIOGENIC CARBON CONTENT              | Unit | QUANTITY |
| Biogenic carbon content in product   | kg C | 0,0000   |
| Biogenic carbon content in packaging | kg C | 0,1497   |

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.

# Additional information

The scenario for module B7 “Operational water use” is based on Unified Water Label (UWL), which is a product label developed by European bathroom industry to demonstrate water and energy efficiency of bathroom products. The technical criteria of UWL correlates with existing European and National standards while establishing harmonised calculation criteria for bathroom products. The following parameters were applied when developing the scenario related to operational water use.

| <i>Parameter</i>                 | <i>Amount</i> | <i>Unit</i>    |
|----------------------------------|---------------|----------------|
| <i>Reference flow</i>            | 12            | l/min          |
| <i>Use cycles per day</i>        | 1             | use cycles/day |
| <i>Length of use cycle</i>       | 7             | min            |
| <i>Use cycles per year</i>       | 365           | days           |
| <i>Cold water temperature</i>    | 15            | °C             |
| <i>Hot water temperature</i>     | 38            | °C             |
| <i>Heat coefficient of water</i> | 4,18          | kJ/kgK         |
| <i>Density of water</i>          | 0,981         | kg/l           |
| <i>Length of the use stage</i>   | 10            | years          |

The annual water consumption according to the parameters stated above is 30 660 l. It is assumed that 90 % of the water consumption for shower set is hot water. This means that 27 594 l of water is heated annually. 722,91 kWh of energy is consumed annually for the heating of water. The scenario for operational water use covers 10 years which is the reference service life of shower sets. The energy profile for heating of water is based on Eurostat statistics describing disaggregated final energy consumption in households used for water heating in year 2018. The geographical coverage of the data is Europe (EU27). The following values were applied when modelling the energy profile for heating of domestic water.

| <i>Source of energy</i>            | <i>Amount</i> | <i>Unit</i> |
|------------------------------------|---------------|-------------|
| <i>Solid fossil fuels and peat</i> | 1,21          | %           |
| <i>Natural gas</i>                 | 32,89         | %           |
| <i>Liquefied natural gas</i>       | 2,48          | %           |
| <i>Oil and petroleum products</i>  | 9,15          | %           |
| <i>Other kerosene</i>              | 0,42          | %           |
| <i>Gas oil and diesel oil</i>      | 6,25          | %           |
| <i>Renewables and biofuels</i>     | 10,54         | %           |
| <i>Solar thermal</i>               | 4,03          | %           |
| <i>Ambient heat (heat pumps)</i>   | 1,06          | %           |
| <i>Primary solid biofuels</i>      | 5,34          | %           |
| <i>Biogases</i>                    | 0,09          | %           |
| <i>Electricity</i>                 | 16,23         | %           |
| <i>District heat</i>               | 10,31         | %           |
| <i>Total</i>                       | 100,00        | %           |

# Operational water use scenario

The scenario for operational water use covers the water and energy consumption related to use of shower sets by one person for 10 years according to the calculation parameters described in UWL methodology. The scenario presented in this EPD is an estimation of the potential environmental impacts related to the use stage of shower set and the scenario aims to emphasize the significance of the use stage in relation to the products life cycle. In reality, the environmental impacts arising from the use stage of the product are very dependent on behavior of the user, nominal flow of the shower set and energy sources used for heating of domestic water.

## Differences versus previous versions

This is the first version of the EPD so there are no differences versus previous versions of the EPD.

## References

Disaggregated final energy consumption in households – Energy use – Water heating. Eurostat. 2022.  
 Ecobio LCA report – Faucet products. Oras Group. 2022.  
 General Programme Instructions of the International EPD® System. Version 3.01.  
 MEErP Preparatory Study on Taps and Showers. European Commission. 2014.  
 PCR 2019:14. Construction products. Version 1.11.  
 Taps & showers technical criteria. Unified Water Label. 2020.

