

# ENVIRONMENTAL PRODUCT DECLARATION

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

LINE supply and exhaust air valves  
Climecon Oy



**EPD HUB, HUB-1318**

Publishing date 19 April 2024, last updated on 19 April 2024, valid until 19 April 2029.

## GENERAL INFORMATION

### MANUFACTURER

|                 |   |
|-----------------|---|
| Manufacturer    | Climecon Oy                                 |
| Address         | Lämmittäjänkatu 4A, 00880 Helsinki, FINLAND |
| Contact details | info@climecon.fi                            |
| Website         | https://climeconair.com/en-en/              |

### 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 1.1, 5 Dec 2023   |
| Sector             | Manufactured product   |
| Category of EPD    | Third party verified EPD   |
| Parent EPD number  | -  |
| Scope of the EPD   | Cradle to gate with options, A4-A5, and modules C1-C4, D   |
| EPD author         | Emma Piha  |
| EPD verification   | Independent verification of this EPD and data, according to ISO 14025:<br><input type="checkbox"/> Internal verification <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                      | LINE supply and exhaust air valves |
| Additional labels                 | LINE, LINEb, LINEc, LINE Accoya    |
| Product reference                 | -                                  |
| Place of production               | Kausala, Finland                   |
| Period for data                   | Calendar year 2023                 |
| Averaging in EPD                  | Multiple products                  |
| Variation in GWP-fossil for A1-A3 | +/- 1 %                            |

### ENVIRONMENTAL DATA SUMMARY

|  |          |
|--|----------|
| Declared unit                                | 1 kg     |
| Declared unit mass                           | 1 kg     |
| GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)      | 6,29E+00 |
| GWP-total, A1-A3 (kgCO <sub>2</sub> e)       | 4,35E+00 |
| Secondary material, inputs (%)               | 14       |
| Secondary material, outputs (%)              | 78.4     |
| Total energy use, A1-A3 (kWh)                | 29.7     |
| Net fresh water use, A1-A3 (m <sup>3</sup> ) | 0.07     |

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

We are Climecon, a responsible forerunner in indoor air design. With our indoor air design, we take a holistic approach to the well-being of people, buildings, and the environment. We design our solutions and products in a human-centric way, taking into account the perspective and needs of different users.

### PRODUCT DESCRIPTION

This environmental product declaration covers the environmental impacts of LINE residential valves manufactured by Climecon Oy in Kausala, Finland. LINE is Climecon's new, stylish, and advanced residential valve. The collection has been developed in collaboration with industrial and interior design professionals as well as Climecon's ventilation experts. The starting point for the cooperation was to combine interior design and ventilation with stylish valves. With the LINE collection, products' streamlined, graphic shapes and the materials seen in ventilation for the first time offer architects, interior designers, and those building and renovating their own houses, extensive opportunities to finish an interior decor with valves.

LINE is a finished valve for supply and exhaust air in residential locations. It is a unique, modern option, which is available in two basic shapes, with a round or square-shaped front plate. LINE is also easily customized according to the interior, as the visible deco part is available in various colours and materials. The EPD contains one product with two duct sizes and three visible deco part options:

- paint-coated steel
- Accoya wood
- opal glass

Further information can be found at <https://climeconair.com/en-en/>.

### PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass- % | Material origin |
|-----------------------|-----------------|-----------------|
| Metals                | 92.5%           | Finland         |
| Minerals              | -               |                 |
| Fossil materials      | 7.5%            | Finland, UK     |
| Bio-based materials   | -               |                 |

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

|  |       |
|--|-------|
| Biogenic carbon content in product, kg C   | 0     |
| Biogenic carbon content in packaging, kg C | 0.529 |

### FUNCTIONAL UNIT AND SERVICE LIFE

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

### SUBSTANCES, REACH - VERY HIGH CONCERN

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

# PRODUCT LIFE-CYCLE

## SYSTEM BOUNDARY

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

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

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

## MANUFACTURING AND PACKAGING (A1-A3)

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

The hot dip galvanized steel sheets are transported to the Kausala production site, where they are cut to specified shapes and bent mechanically. A part of the cut metal is sent for metal spinning, which is done by a subcontractor. The metal spun part is then transported back to Kausala. All the metal parts are then powder-coated in Climecon's own painting line.

The alternative visible deco parts, meaning the opal glass and the Accoya wood visible deco parts, are manufactured and cut by subcontracted firms and transported to the Kausala production site for the final assembly. The steel deco part is manufactured and painted in the Kausala production site.

The final product is then assembled. The final product includes magnetic tape to adjust the airflow through the valve. The magnetic tape is also manufactured by a subcontractor and then transported to the Kausala production site. A wooden pallet, corrugated cardboard box, and packaging plastics are used as packaging material for transporting the product from the factory gate.

The manufacturing process requires electricity for the different equipment as well as district heating. The steel waste produced at the plant is directed to recycling. The loss of material is considered, as well as wastewater treatments.



### 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 average distance of transportation from the production plant to the building site is assumed to be 105 km, which is the distance between the production plant and Climecon's headquarters in Helsinki. The transportation method is assumed to be a lorry. Vehicle capacity is assumed to be 100%, which means full load. In reality, it may vary, but as the role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Transportation does not cause losses as products are packaged properly. Installation consumes 0.01 kWh of energy for assembling 1 kg of product. Treatment of packaging material waste (wood, steel, and plastic) is considered in this module. Moreover, direct emissions of carbon dioxide to the air are also considered to balance emissions of biogenic CO<sub>2</sub>.



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

This EPD does not cover the use phase.

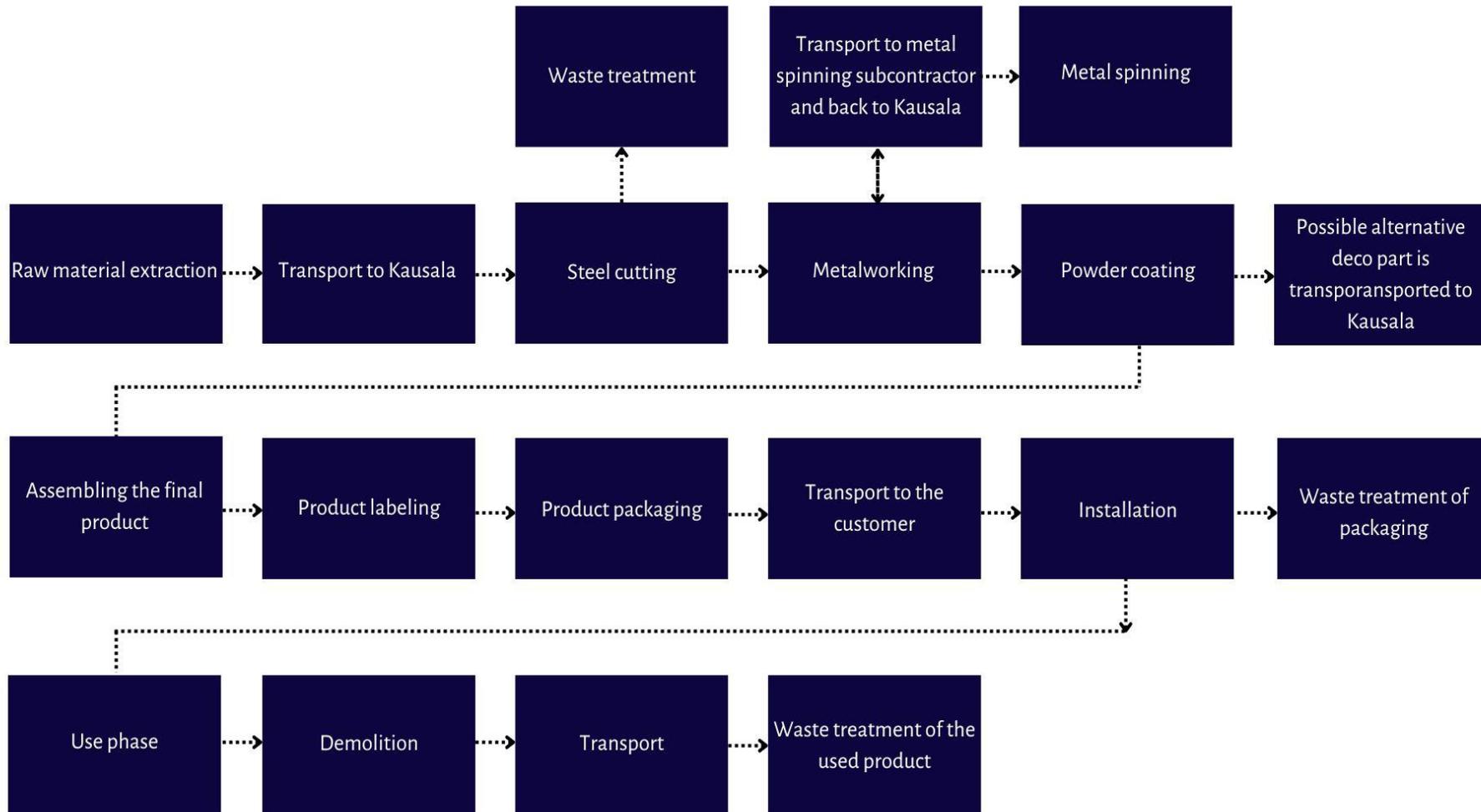
Air, soil, and water impacts during the use phase have not been studied.



### PRODUCT END OF LIFE (C1-C4, D)

Demolition is assumed to consume 0,01 kWh/kg of product. The source of energy is diesel fuel used by construction machines (C1). It is assumed that 100% of the waste is collected and transported to the waste treatment center. The transportation distance to treatment is assumed to be 50 km, and the transportation method is assumed to be a lorry (C2). Approximately 85% of steel is assumed to be recycled, according to The World Steel Association (C3). 100% of the metals in the magnetic tape and 96% of corrugated cardboard are assumed to be recycled, according to Statistics Finland (C3). It is assumed that the remaining 15% of steel, 16 % of the rubber seals, the rubber binder of the magnetic tape, and the powder coating are taken to the landfill for final disposal (C4). Due to the recycling process, the end-of-life product is converted into recycled steel, while the majority of the wood (97%), plastic packaging (85%), and 4% of corrugated cardboard are incinerated with energy recovery (D).

# MANUFACTURING PROCESS



## 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            | Allocated by revenue |
| Manufacturing energy and waste | Allocated by revenue |

### AVERAGES AND VARIABILITY

|                                   |                        |
|-----------------------------------|------------------------|
| Type of average                   | Multiple products      |
| Averaging method                  | Representative product |
| Variation in GWP-fossil for A1-A3 | +/- 1 %                |

This environmental product declaration covers Climecon Oys LINE products manufactured in Kausala, Finland. The EPD contains the body of the product in two sizes (100Ø and 125Ø), with three alternative visible deco parts:

- paint-coated steel (square and round face)
- Accoya wood (square and round face)
- opal glass (square and round face)

Both of the valve sizes have the same manufacturing materials, process and locations. The differences occur in the materials used in the products visible deco part, and the amount of powder coating used in the finished product depends on the chosen deco part, as the steel deco part is also painted. EPD data can be scaled for different valve sizes by multiplying EPD result table by the mass of product. The chosen deco part is then added to the equation. The full environmental impacts data tables of each visible deco part are indicated in the annex.

### PRODUCT SIZES

| Product size | Product mass (kg) | Scaling factor | GWP-total A1-A3 (kgCO2e) |
|--------------|-------------------|----------------|--------------------------|
| LINE 100∅    | 0.466 kg          | 0.466          | 2.03 kgCO2e              |
| LINE 125∅    | 0.465 kg          | 0.465          | 2.02 kgCO2e              |

LINE 125∅ body was used as the reference product, as it the most sold item in the LINE product family. Hence, it can be justified, as the 125∅ is more common duct size in the market. The GWP-total A1-A3 of the visible deco parts are calculated in a separate table below.

### VISIBLE DECO PART ALTERNATIVES

| Deco part type       | Deco part mass (kg) | GWP-total A1-A3 (kgCO2e) |
|----------------------|---------------------|--------------------------|
| Accoya wood, round   | 0.063 kg            | - 0.0989 kgCO2e          |
| Accoya wood, square  | 0.079 kg            | - 0.1240 kgCO2e          |
| Opal glass, round    | 0.330 kg            | 0.7161 kgCO2e            |
| Opal glass, square   | 0.400 kg            | 0.868 kgCO2e             |
| Coated steel, round  | 0.195 kg            | 1.012 kgCO2e             |
| Coated steel, square | 0.244 kg            | 1.2761 kgCO2e            |

### LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases 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   | 5,56E+00 | 6,10E-02 | -1,26E+00 | 4,35E+00  | 2,57E-02 | 2,03E+00 | MND | 3,31E-03 | 4,69E-03 | 1,63E-01 | 8,60E-04 | -1,70E+00 |
| GWP – fossil                        | kg CO <sub>2</sub> e   | 5,55E+00 | 6,10E-02 | 6,74E-01  | 6,29E+00  | 2,56E-02 | 8,84E-02 | MND | 3,31E-03 | 4,69E-03 | 1,63E-01 | 8,59E-04 | -1,70E+00 |
| GWP – biogenic                      | kg CO <sub>2</sub> e   | 0,00E+00 | 4,54E-06 | -1,94E+00 | -1,94E+00 | 9,92E-06 | 1,94E+00 | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| GWP – LULUC                         | kg CO <sub>2</sub> e   | 2,76E-03 | 2,25E-05 | 3,77E-03  | 6,56E-03  | 9,46E-06 | 3,66E-05 | MND | 3,30E-07 | 1,73E-06 | 2,69E-05 | 8,11E-07 | -2,73E-04 |
| Ozone depletion pot.                | kg CFC <sub>11</sub> e | 3,25E-07 | 1,40E-08 | 6,92E-08  | 4,08E-07  | 5,90E-09 | 3,56E-09 | MND | 7,07E-10 | 1,08E-09 | 2,43E-09 | 3,48E-10 | -7,59E-08 |
| Acidification potential             | mol H <sup>+</sup> e   | 2,14E-02 | 2,58E-04 | 3,75E-03  | 2,54E-02  | 1,09E-04 | 2,98E-04 | MND | 3,44E-05 | 1,99E-05 | 2,47E-04 | 8,08E-06 | -9,95E-03 |
| EP-freshwater <sup>2)</sup>         | kg Pe                  | 5,77E-04 | 4,99E-07 | 3,87E-05  | 6,16E-04  | 2,10E-07 | 5,67E-07 | MND | 1,10E-08 | 3,84E-08 | 9,03E-07 | 9,01E-09 | -6,65E-05 |
| EP-marine                           | kg Ne                  | 4,28E-03 | 7,68E-05 | 1,08E-03  | 5,44E-03  | 3,23E-05 | 1,30E-04 | MND | 1,52E-05 | 5,90E-06 | 5,63E-05 | 2,80E-06 | -1,12E-03 |
| EP-terrestrial                      | mol Ne                 | 4,37E-02 | 8,47E-04 | 1,07E-02  | 5,53E-02  | 3,56E-04 | 1,38E-03 | MND | 1,67E-04 | 6,51E-05 | 6,42E-04 | 3,08E-05 | -1,84E-02 |
| POCP (“smog”) <sup>3)</sup>         | kg NMVOCe              | 1,42E-02 | 2,71E-04 | 3,52E-03  | 1,79E-02  | 1,14E-04 | 3,50E-04 | MND | 4,59E-05 | 2,08E-05 | 1,74E-04 | 8,95E-06 | -6,93E-03 |
| ADP-minerals & metals <sup>4)</sup> | kg Sbe                 | 4,29E-05 | 1,43E-07 | 5,22E-06  | 4,82E-05  | 6,01E-08 | 1,28E-07 | MND | 1,68E-09 | 1,10E-08 | 2,27E-06 | 1,97E-09 | -9,39E-06 |
| ADP-fossil resources                | MJ                     | 7,44E+01 | 9,16E-01 | 1,50E+01  | 9,03E+01  | 3,85E-01 | 4,09E-01 | MND | 4,45E-02 | 7,05E-02 | 2,59E-01 | 2,36E-02 | -1,81E+01 |
| Water use <sup>5)</sup>             | m <sup>3</sup> e depr. | 1,94E+02 | 4,10E-03 | 5,23E-01  | 1,94E+02  | 1,72E-03 | 1,01E-01 | MND | 1,20E-04 | 3,15E-04 | 8,16E-03 | 7,48E-05 | 8,80E-02  |

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get 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 | 2,26E-07 | 7,03E-09 | 4,85E-08 | 2,82E-07 | 2,95E-09 | 4,35E-09 | MND | 9,22E-10 | 5,41E-10 | 3,19E-09 | 1,63E-10 | -1,04E-07 |
| Ionizing radiation <sup>6)</sup> | kBq U235e | 6,12E-01 | 4,36E-03 | 2,90E-01 | 9,07E-01 | 1,83E-03 | 5,08E-03 | MND | 2,05E-04 | 3,36E-04 | 1,59E-03 | 1,07E-04 | -1,28E-01 |
| Ecotoxicity (freshwater)         | CTUe      | 1,24E+02 | 8,24E-01 | 1,65E+01 | 1,41E+02 | 3,46E-01 | 9,64E-01 | MND | 2,68E-02 | 6,34E-02 | 1,39E+00 | 1,54E-02 | -3,81E+01 |
| Human toxicity, cancer           | CTUh      | 1,42E-08 | 2,02E-11 | 2,40E-09 | 1,66E-08 | 8,51E-12 | 7,81E-11 | MND | 1,03E-12 | 1,56E-12 | 3,55E-11 | 3,84E-13 | 4,01E-09  |
| Human tox. non-cancer            | CTUh      | 1,02E-07 | 8,16E-10 | 1,25E-08 | 1,15E-07 | 3,43E-10 | 3,30E-09 | MND | 1,94E-11 | 6,27E-11 | 1,53E-09 | 1,01E-11 | 3,77E-08  |
| SQP <sup>7)</sup>                | -         | 1,70E+01 | 1,06E+00 | 1,55E+02 | 1,73E+02 | 4,44E-01 | 2,33E-01 | MND | 5,79E-03 | 8,12E-02 | 5,02E-01 | 5,04E-02 | -1,33E+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             | 5,90E+00 | 1,03E-02 | 1,64E+01 | 2,23E+01 | 4,34E-03 | 2,85E-02  | MND | 2,54E-04 | 7,94E-04 | 3,79E-02  | 2,05E-04  | -3,67E+00 |
| Renew. PER as material             | MJ             | 0,00E+00 | 0,00E+00 | 1,70E+01 | 1,70E+01 | 0,00E+00 | -1,70E+01 | MND | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00  | 1,53E+01  |
| Total use of renew. PER            | MJ             | 5,90E+00 | 1,03E-02 | 3,34E+01 | 3,93E+01 | 4,34E-03 | -1,70E+01 | MND | 2,54E-04 | 7,94E-04 | 3,79E-02  | 2,05E-04  | 1,16E+01  |
| Non-re. PER as energy              | MJ             | 7,09E+01 | 9,16E-01 | 1,21E+01 | 8,40E+01 | 3,85E-01 | 4,09E-01  | MND | 4,45E-02 | 7,05E-02 | 2,59E-01  | 2,36E-02  | -1,79E+01 |
| Non-re. PER as material            | MJ             | 3,13E+00 | 0,00E+00 | 1,94E+00 | 5,07E+00 | 0,00E+00 | -1,94E+00 | MND | 0,00E+00 | 0,00E+00 | -2,40E+00 | -7,35E-01 | 1,94E+00  |
| Total use of non-re. PER           | MJ             | 7,41E+01 | 9,16E-01 | 1,41E+01 | 8,91E+01 | 3,85E-01 | -1,53E+00 | MND | 4,45E-02 | 7,05E-02 | -2,14E+00 | -7,11E-01 | -1,60E+01 |
| Secondary materials                | kg             | 1,40E-01 | 2,54E-04 | 1,59E-01 | 2,99E-01 | 1,07E-04 | 5,60E-04  | MND | 1,74E-05 | 1,96E-05 | 2,81E-04  | 4,95E-06  | 3,79E-01  |
| Renew. secondary fuels             | MJ             | 3,39E-03 | 2,57E-06 | 5,39E-01 | 5,42E-01 | 1,08E-06 | 1,72E-06  | MND | 5,70E-08 | 1,97E-07 | 1,43E-05  | 1,29E-07  | -6,98E-03 |
| Non-ren. secondary fuels           | MJ             | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 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> | 5,19E-02 | 1,19E-04 | 1,41E-02 | 6,61E-02 | 4,99E-05 | -1,91E-04 | MND | 2,70E-06 | 9,13E-06 | 3,01E-04  | 2,58E-05  | -2,86E-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   | 5,41E-01 | 1,21E-03 | 4,65E-02 | 5,88E-01 | 5,11E-04 | 5,93E-04 | MND | 5,96E-05 | 9,34E-05 | 1,85E-03 | 0,00E+00 | -5,32E-01 |
| Non-hazardous waste | kg   | 6,75E+00 | 2,00E-02 | 1,01E+00 | 7,78E+00 | 8,39E-03 | 1,47E+00 | MND | 4,19E-04 | 1,54E-03 | 9,24E-02 | 1,63E-01 | -5,17E+00 |
| Radioactive waste   | kg   | 2,28E-04 | 6,13E-06 | 7,81E-05 | 3,13E-04 | 2,58E-06 | 1,69E-06 | MND | 3,13E-07 | 4,71E-07 | 1,06E-06 | 0,00E+00 | -5,09E-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 | 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 | 1,90E+00 | 1,90E+00 | 0,00E+00 | 1,43E-01 | MND | 0,00E+00 | 0,00E+00 | 7,92E-01 | 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 | 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 | 1,17E+01 | MND | 0,00E+00 | 0,00E+00 | 8,72E-01 | 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               | 5,50E+00 | 6,04E-02 | 6,66E-01 | 6,23E+00 | 2,54E-02 | 8,93E-02 | MND | 3,27E-03 | 4,64E-03 | 1,63E-01 | 8,42E-04 | -1,64E+00 |
| Ozone depletion Pot. | kg CFC <sub>11</sub> e             | 2,85E-07 | 1,11E-08 | 5,93E-08 | 3,56E-07 | 4,67E-09 | 2,95E-09 | MND | 5,60E-10 | 8,55E-10 | 1,99E-09 | 2,75E-10 | -7,44E-08 |
| Acidification        | kg SO <sub>2</sub> e               | 1,76E-02 | 2,01E-04 | 2,88E-03 | 2,07E-02 | 8,43E-05 | 2,14E-04 | MND | 2,45E-05 | 1,54E-05 | 1,98E-04 | 6,11E-06 | -8,26E-03 |
| Eutrophication       | kg PO <sub>4</sub> <sup>3</sup> e  | 7,58E-03 | 4,57E-05 | 1,53E-03 | 9,15E-03 | 1,92E-05 | 2,31E-04 | MND | 5,69E-06 | 3,52E-06 | 7,05E-05 | 1,32E-06 | -3,50E-03 |
| POCP (“smog”)        | kg C <sub>2</sub> H <sub>4</sub> e | 1,71E-03 | 7,83E-06 | 3,03E-04 | 2,02E-03 | 3,29E-06 | 8,68E-06 | MND | 5,36E-07 | 6,03E-07 | 7,46E-06 | 2,56E-07 | -7,98E-04 |
| ADP-elements         | kg Sbe                             | 4,24E-05 | 1,38E-07 | 5,07E-06 | 4,76E-05 | 5,82E-08 | 1,20E-07 | MND | 1,65E-09 | 1,07E-08 | 2,26E-06 | 1,95E-09 | -9,25E-06 |
| ADP-fossil           | MJ                                 | 7,18E+01 | 9,16E-01 | 1,47E+01 | 8,74E+01 | 3,85E-01 | 4,05E-01 | MND | 4,45E-02 | 7,05E-02 | 2,59E-01 | 2,36E-02 | -1,81E+01 |

## 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  
19.04.2024

