



# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Down conference chair  
VENTUS DANMARK



## EPD HUB, HUB-4284

Published on 29.10.2025, last updated on 29.10.2025, valid until 28.10.2030.

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

## GENERAL INFORMATION

### MANUFACTURER

|                 |   |
|-----------------|---|
| Manufacturer    | VENTUS DANMARK                              |
| Address         | Peder Hedes Vej 27, 6731 Tjæreborg, Denmark |
| Contact details | info@ventus-danmark.dk                      |
| Website         | https://ventus-denmark.dk/                  |

### EPD STANDARDS, SCOPE AND VERIFICATION

|                    |  |
|--------------------|--|
| Program operator   | EPD Hub, hub@epdhub.com  |
| Reference standard | EN 15804:2012+A2:2019/AC:2021 and ISO 14025  |
| PCR                | EPD Hub Core PCR Version 1.2, 24 Mar 2025  |
| Sector             | Manufactured product   |
| Category of EPD    | Third party verified EPD   |
| Scope of the EPD   | Cradle to gate with options, A4-A5, and modules C1-C4, D   |
| EPD author         | Stine Julius, Reccura  |
| 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       | Sergio Ballen Zamora   |

This EPD is intended for business-to-business and/or business-to-consumer communication. 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                               | Down conference chair   |
| Additional labels                          | Down with Chestnut PU Seat, Down with Black PU Seat, Down with Dark Brown PU Seat, Down with Cognac PU Seat |
| Product reference                          | EC15029-SW-A, Chestnut. EC15029-SW-A, Black. EC15029-SW-A, Dark Brown. EC15029-SW-A, Cognac.                |
| Place(s) of raw material origin            | China   |
| Place of production                        | Guangzhou, China  |
| Place(s) of installation and use           | Denmark   |
| Period for data                            | Calendar year 2024  |
| Averaging in EPD                           | No grouping   |
| Variation in GWP-fossil for A1-A3 (%)      | -   |
| GTIN (Global Trade Item Number)            | -   |
| NOBB (Norwegian Building Product Database) | -   |
| A1-A3 Specific data (%)                    | 44,9  |

## ENVIRONMENTAL DATA SUMMARY

|   |                                 |
|---|---------------------------------|
| Declared unit                               | 1 unit of Down conference chair |
| Declared unit mass                          | 8,5 kg                          |
| GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)     | 3,12E+01                        |
| GWP-total, A1-A3 (kgCO <sub>2</sub> e)      | 2,55E+01                        |
| Secondary material, inputs (%)              | 12,8                            |
| Secondary material, outputs (%)             | 103                             |
| Total energy use, A1-A3 (kWh)               | 129                             |
| Net freshwater use, A1-A3 (m <sup>3</sup> ) | 0,31                            |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

Ventus Danmark is an office furniture supplier, also specializing in seating solutions, with a focus on both design, functionality, and ergonomics. We deliver solutions to companies that want to increase employee well-being. Because when we feel good at work, we are inspired to do our best during the day. Our designs work well in modern Scandinavian interiors and strike a fine balance between ergonomics and aesthetics.

## PRODUCT DESCRIPTION

The Down conference chair is a meeting chair featuring a black steel base and a seat constructed from wood and foam, upholstered in PU. The chair is equipped with a rotating seat and integrated armrests.

The Down chair is available in four variations, distinguished solely by the color of the PU upholstery. Each version is manufactured using identical materials in the same quantities, and the production process remains consistent across all variants. Therefore, this Environmental Product Declaration (EPD) covers all four versions of the Down chair:

Down with Chestnut PU Seat, Down with Black PU Seat, Down with Dark Brown PU Seat, and Down with Cognac PU Seat.

The dimensions of the chair are:

Overall dimensions: 57 cm (W) × 80 cm (H) × 42.5 cm (D)

Seat dimensions: 54.5 cm (W) × 42.5 cm (D)

Seat height: 46 cm

Backrest height: 39.5 cm

The chairs are classified under the following UN CPC code: 38121 – Other metal furniture, of a kind used in offices.

Further information can be found at:

<https://ventus-denmark.dk/>

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass % | Material origin      |
|-----------------------|----------------|----------------------|
| Metals                | 58,94          | Steel                |
| Minerals              | 0              | -                    |
| Fossil materials      | 9,29           | Foam & PU upholstery |
| Bio-based materials   | 31,76          | Plywood              |

## BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

|  |      |
|--|------|
| Biogenic carbon content in product, kg C   | 1,22 |
| Biogenic carbon content in packaging, kg C | 0,46 |

## FUNCTIONAL UNIT AND SERVICE LIFE

|                        |                                 |
|------------------------|---------------------------------|
| Declared unit          | 1 unit of Down conference chair |
| Mass per declared unit | 8,5 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 | Deconstruction / demolition | 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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

### A1 – Raw material extraction and processing

All raw materials used in the chair and its packaging are of virgin origin and extracted and processed by suppliers based in China. These suppliers deliver materials and components to the manufacturer located in Guangzhou, China. The transportation distances for the materials are detailed in section A2.

Lubricants used to support the chair’s swivel function are excluded from the analysis, as the quantity per chair is less than 1% of the total weight.

Although the base is painted black, the paint is excluded due to its negligible volume (less than 2% of the total weight).

### A2 – Transport to the manufacturer

All materials are transported within China to the manufacturer. The assumed transport distances are:

- Plywood: 350 km
- Steel: 60 km
- PU upholstery: 100 km
- PU foam: 10 km
- Cardboard (packaging): 20 km
- Plastic bag & foam (packaging): 60 km

The transport is assumed to be by a diesel lorry.

Packaging used for transporting materials/components is excluded due to its minor contribution to resource use.

### A3 – Manufacturing

The manufacturer in China handles the production and final processing.

Both diesel and electricity are used during production. The material waste (production loss) per chair is:

- 0,72 kg plywood
- 0,26 kg steel
- 0,027 kg PU foam
- 0,029 kg PU upholstery

Waste is assumed to be handled per Chinese waste standards (references are highlighted in square brackets and are listed in the bibliography):

- PU foam & upholstery: 50% incinerated and 50% landfilled [1]
- Steel: 85% recycled, 15% landfilled [2]
- Plywood: 46% recycled, 53% incinerated [3], and it is assumed that 1% landfilled

Waste is assumed to be transported 60 km by diesel lorry.

The chair is packaged before export, but only the raw material usage for packaging is included in the analysis. The packaging process and associated material losses are not included.

There are no contractual instruments (such as GOs, RECs, etc.) used in manufacturing.

## 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.

### A4 – Transport to customers

Transport of the chair including packaging involves four steps:

1. 200 km by diesel lorry to the nearest Chinese port

2. 18.759 km by ship to Denmark
3. 93,421 km by diesel lorry to the supplier in Esbjerg
4. 150 km on average by diesel lorry to Danish customers

### A5 – Installation

A5 is not applicable, as the chair is assembled manually with a handheld screwdriver. Related emissions are therefore zero.

## PRODUCT USE AND MAINTENANCE (B1-B7)

### B1-B7

B1-B7 is not declared.

No need for or use of energy or materials during the product's use stage. Air, soil, and water impacts during the use phase have not been studied.

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

### C1 – Deinstallation

The disassembly of the chair is performed manually and therefore does not consume energy in module C1. Related emissions are therefore zero.

### C2 – Waste transport

Waste is assumed to be transported 10 km to a local sorting facility and then 50 km to a treatment facility in Denmark, all by diesel lorry.

### C3 – Waste processing

Chair and packaging are assumed to be handled by the customers and per Danish waste standards.

The chair is assumed to be sorted as follows:

- Steel: 90% recycled [4]
- Wood: 46% recycled, 53% incinerated [3], and it is assumed that 1% is landfilled

- PU foam and upholstery: 50% incinerated and 50% landfill [1]

Packaging is assumed to be sorted as follows:

- Cardboard: 82% recycled, 9% incinerated, 9% landfilled [5]
- PP (plastic bag): 41% recycled, 37% incinerated, 23% landfilled [5]
- PE (foam): 41% recycled, 37% incinerated, 23% landfilled [5]

#### **C4 – Waste disposal**

The following assumptions were made under waste disposal of product materials and packaging:

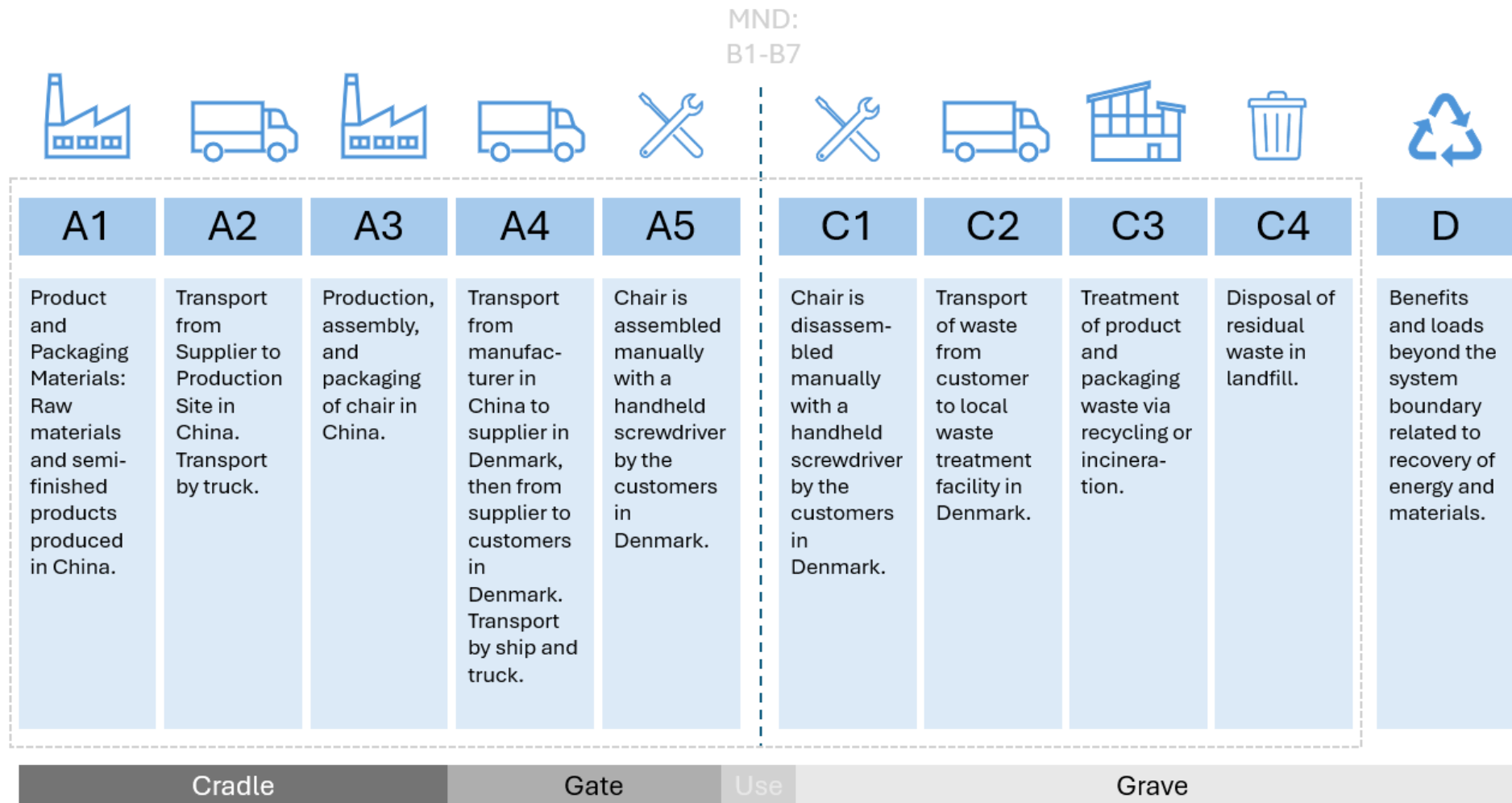
- Steel: 10% landfilled [4]
- PU plastics: 50% landfilled [1]
- Wood: 1% landfilled [3]
- Cardboard: 9% landfilled [5]
- PP and PE plastics: 23% landfilled [5]

#### **D – Benefits and Loads Outside System Boundaries**

End-of-life material handling includes assumed associated benefits and burdens:

- Steel: 90% recycling [4]
- Wood: 46% recycling, 53% incineration [3]
- PU plastics: 50% incineration [1]
- PP/PE plastics: 41% recycling, 37% incineration [5]
- Cardboard: 82% recycling, 9% incineration [5]

# 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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

### A1–A3 – Raw Material Supply, Transport, and Manufacturing

- Packaging materials used for raw materials prior to delivery to the manufacturer are excluded from the analysis.
- Lubrication used in the rotating seat is excluded, as the quantity is approximately 2,5 grams, representing less than 1% of the product's total weight.
- Raw materials used in the packaging of the product are included in the analysis. However, the packaging process itself, including any potential packaging waste, is not included.
- The coating (paint) of the chair base has been excluded from the assessment due to the minimal quantities used, which are considered insignificant in the overall environmental impact.

### A4–A5 – Transport and Installation

- No process cut-offs have been applied in these modules.

### C1–C4 and D – End-of-Life and Beyond

- No process cut-offs have been applied in these modules.

## VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

## 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 material             | No allocation |
| Ancillary materials            | No allocation |
| Manufacturing energy and waste | No allocation |

### A1–A3 – Raw Material Supply, Transport, and Manufacturing

- It is assumed that all transport within China is by a diesel lorry, 16–32 tonnes, EURO 5 standard.
- Emissions and processes related to the Chair are assumed to be identical across the four available colors/versions.

- All production waste is assumed to be handled in China in accordance with Chinese standards. The analysis includes processes for transporting the waste to a local waste facility and subsequent treatment steps.
- It is assumed that only virgin materials are used in the production of the chair (i.e., there are no secondary materials).
- Electricity consumption during manufacturing is modelled using the medium voltage consumption mix from the EastChinaGrid, as this was the best available data and this EPD's owner has no control over the manufacturing processes.

#### A4–A5 – Transport and Installation

- It is assumed that all transport within China is by a diesel lorry, 16–32 tonnes, EURO 5.
- Transport modelling is based on logistics data provided by the freight company used by the supplier. Generic data has also been applied.
- The chair is shipped from China to Denmark by sea using a container vessel.
- All transport within Denmark is also assumed to be by a diesel lorry, 16–32 tonnes, EURO 5.
- The average delivery distance from the supplier to customers is estimated based on the assumption that most customers are located in Southern Jutland and on the island of Funen, both of which are in Denmark.
- Module A5 is not applicable, as there is no formal installation process. Related emissions are therefore zero. Assembly consists of connecting pre-manufactured components using a handheld screwdriver, and this is carried out by the customer. Packaging is also handled by the customer, therefore is packaging considered part of the waste treatment under modules C2–C4.

#### B1–B7 – Use stage

- Module B1-B7 is not declared, there is no need for or use of energy or materials during the products use stage.

#### C1–C4 – End-of-Life

- The disassembly of the chair is performed manually and therefore does not consume energy in module C1. Related emissions are therefore zero.
- The chair and its packaging are assumed to be handled by the customers in accordance with Danish waste treatment standards.
- All waste transport is assumed to be by a diesel lorry, 16–32 tonnes, EURO 5.

#### D – Benefits and Loads Beyond the System Boundary

- Any potential benefits and loads included under module D are associated with waste streams handled in module C3.

### PRODUCT & MANUFACTURING SITES GROUPING

|                                      |                |
|--------------------------------------|----------------|
| Type of grouping                     | No grouping    |
| Grouping method                      | Not applicable |
| Variation in GWP-fossil for A1-A3, % |                |

This EPD is product and factory specific.

## 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 v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

- [1] The Climate Drive, Recycle polyurethane reactor in refrigeration industry. <https://www.theclimatedrive.org/action-library/recycle-polyurethane-reactor-in-refrigeration-industry>. Accessed 03 September 2025.
- [2] Broadbent, C. (2016). Steel's recyclability: demonstrating the benefits of recycling steel to achieve a circular economy. *Int J Life Cycle Assess* 21, 1658–1665. <https://doi.org/10.1007/s11367-016-1081-1>.
- [3] Pazzaglia, A. & Castellani, B. (2023). A Decision Tool for the Valorization of Wood Waste. *Environmental and Climate Technologies*, 27(1), 2023. 824-835. <https://doi.org/10.2478/rtuct-2023-0060>.
- [4] EuRIC Metal Recycling Factsheet, Steel Recycling Sector in the EU, [https://circulareconomy.europa.eu/platform/sites/default/files/euric\\_metal\\_recycling\\_factsheet.pdf](https://circulareconomy.europa.eu/platform/sites/default/files/euric_metal_recycling_factsheet.pdf). Accessed 21 July 2025.09.03
- [5] PSR-0014-ed2.0-EN-2023 07 13. PEP Ecopassport Program PSR: Specific rules for lumineries. <https://share.google/QJoV2ATJAJ4vesc1K>.

# ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

## CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

| Impact category                     | Unit                   | A1        | A2       | A3        | A1-A3     | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D         |
|-------------------------------------|------------------------|-----------|----------|-----------|-----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|-----------|
| GWP – total <sup>1)</sup>           | kg CO <sub>2</sub> e   | 2,08E+01  | 3,11E-01 | 4,37E+00  | 2,55E+01  | 2,73E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,14E-01 | 8,64E+00 | 1,02E-02 | -2,19E+01 |
| GWP – fossil                        | kg CO <sub>2</sub> e   | 2,58E+01  | 3,11E-01 | 5,03E+00  | 3,12E+01  | 2,73E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,14E-01 | 1,33E+00 | 8,24E-03 | -2,20E+01 |
| GWP – biogenic                      | kg CO <sub>2</sub> e   | -5,09E+00 | 6,68E-05 | -7,03E-01 | -5,80E+00 | 4,69E-04 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,27E-05 | 7,30E+00 | 1,94E-03 | 1,45E-01  |
| GWP – LULUC                         | kg CO <sub>2</sub> e   | 2,90E-02  | 1,38E-04 | 4,12E-02  | 7,03E-02  | 1,35E-03 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,02E-05 | 1,40E-04 | 2,42E-06 | -2,29E-02 |
| Ozone depletion pot.                | kg CFC-11e             | 1,94E-07  | 4,35E-09 | 5,27E-08  | 2,51E-07  | 4,16E-08 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,26E-09 | 2,48E-09 | 2,05E-10 | -1,58E-07 |
| Acidification potential             | mol H <sup>+</sup> e   | 9,77E-02  | 1,04E-03 | 2,52E-02  | 1,24E-01  | 5,81E-02 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,56E-04 | 1,77E-03 | 4,40E-05 | -1,23E-01 |
| EP-freshwater <sup>2)</sup>         | kg Pe                  | 6,77E-03  | 2,42E-05 | 1,35E-03  | 8,14E-03  | 1,19E-04 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 7,55E-06 | 6,41E-05 | 6,39E-07 | -6,77E-03 |
| EP-marine                           | kg Ne                  | 2,36E-02  | 3,36E-04 | 7,60E-03  | 3,15E-02  | 1,47E-02 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,20E-04 | 1,12E-03 | 5,40E-05 | -2,22E-02 |
| EP-terrestrial                      | mol Ne                 | 2,54E-01  | 3,65E-03 | 6,21E-02  | 3,20E-01  | 1,63E-01 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,30E-03 | 7,89E-03 | 1,94E-04 | -2,36E-01 |
| POCP (“smog”) <sup>3)</sup>         | kg NMVOCe              | 8,07E-02  | 1,44E-03 | 1,83E-02  | 1,00E-01  | 4,55E-02 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 5,58E-04 | 2,03E-03 | 7,20E-05 | -7,58E-02 |
| ADP-minerals & metals <sup>4)</sup> | kg Sbe                 | 1,41E-04  | 1,02E-06 | 9,62E-06  | 1,51E-04  | 4,60E-06 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,72E-07 | 2,23E-06 | 9,53E-09 | -5,62E-04 |
| ADP-fossil resources                | MJ                     | 3,19E+02  | 4,36E+00 | 6,22E+01  | 3,86E+02  | 3,49E+01 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,60E+00 | 1,91E+00 | 1,62E-01 | -2,45E+02 |
| Water use <sup>5)</sup>             | m <sup>3</sup> e depr. | 1,20E+01  | 2,02E-02 | 1,07E+00  | 1,31E+01  | 1,21E-01 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 7,85E-03 | 1,69E-01 | 4,07E-03 | -6,45E+00 |

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

### ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

| 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     | 1,88E-06 | 2,47E-08 | 3,88E-07 | 2,29E-06 | 1,22E-07 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 8,95E-09 | 1,54E-08 | 1,05E-09 | -1,77E-06 |
| Ionizing radiation <sup>6)</sup> | kBq<br>11235e | 6,88E-01 | 3,53E-03 | 4,36E-01 | 1,13E+00 | 2,30E-02 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,04E-03 | 1,96E-02 | 1,35E-04 | -1,22E+00 |
| Ecotoxicity (freshwater)         | CTUe          | 3,01E+02 | 6,90E-01 | 1,99E+01 | 3,22E+02 | 3,40E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,12E-01 | 4,56E+00 | 6,08E-02 | -6,25E+01 |
| Human toxicity, cancer           | CTUh          | 2,95E-07 | 5,28E-11 | 1,28E-09 | 2,97E-07 | 5,43E-10 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,94E-11 | 2,38E-10 | 1,04E-12 | -1,95E-08 |
| Human tox. non-cancer            | CTUh          | 2,86E-07 | 2,73E-09 | 4,21E-08 | 3,30E-07 | 1,30E-08 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,00E-09 | 8,61E-09 | 3,34E-11 | -4,35E-07 |
| SQP <sup>7)</sup>                | -             | 6,41E+02 | 2,60E+00 | 9,62E+01 | 7,40E+02 | 8,84E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 9,51E-01 | 4,25E+00 | 3,28E-01 | -1,19E+02 |

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             | 1,00E+02 | 5,98E-02 | -6,74E+00 | 9,36E+01 | 3,61E-01 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,76E-02 | -5,41E+01 | -2,19E+00 | -4,92E+01 |
| Renew. PER as material             | MJ             | 4,20E+01 | 0,00E+00 | 6,57E+00  | 4,86E+01 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | -4,86E+01 | 0,00E+00  | 3,13E+00  |
| Total use of renew. PER            | MJ             | 1,42E+02 | 5,98E-02 | -1,74E-01 | 1,42E+02 | 3,61E-01 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,76E-02 | -1,03E+02 | -2,19E+00 | -4,60E+01 |
| Non-re. PER as energy              | MJ             | 3,09E+02 | 4,36E+00 | 5,70E+01  | 3,71E+02 | 3,49E+01 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,60E+00 | -1,33E+01 | -1,26E+01 | -2,45E+02 |
| Non-re. PER as material            | MJ             | 1,00E+01 | 0,00E+00 | 1,71E+00  | 1,17E+01 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | -1,17E+01 | 0,00E+00  | 1,67E+00  |
| Total use of non-re. PER           | MJ             | 3,19E+02 | 4,36E+00 | 5,87E+01  | 3,82E+02 | 3,49E+01 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,60E+00 | -2,50E+01 | -1,26E+01 | -2,43E+02 |
| Secondary materials                | kg             | 1,09E+00 | 1,96E-03 | 9,16E-01  | 2,01E+00 | 1,64E-02 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 7,32E-04 | 2,95E-03  | 4,18E-05  | 2,56E+00  |
| Renew. secondary fuels             | MJ             | 1,79E-03 | 2,49E-05 | 1,33E-01  | 1,35E-01 | 9,20E-05 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 9,24E-06 | 1,24E-04  | 9,17E-07  | -5,82E-03 |
| Non-ren. secondary fuels           | MJ             | 0,00E+00 | 0,00E+00 | 2,12E-03  | 2,12E-03 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00  | 0,00E+00  |
| Use of net fresh water             | m <sup>3</sup> | 2,81E-01 | 5,78E-04 | 2,43E-02  | 3,06E-01 | 3,15E-03 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,15E-04 | 2,66E-03  | -5,95E-05 | -1,97E-01 |

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   | 5,52E+00 | 7,60E-03 | 4,90E-01 | 6,02E+00 | 4,91E-02 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,29E-03 | 3,69E-02 | 1,59E-04 | -2,11E+01 |
| Non-hazardous waste | kg   | 4,06E+01 | 1,43E-01 | 6,86E+00 | 4,76E+01 | 7,83E-01 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,84E-02 | 2,91E+00 | 2,86E-01 | -4,57E+01 |
| Radioactive waste   | kg   | 8,13E-04 | 8,64E-07 | 1,06E-04 | 9,20E-04 | 5,64E-06 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 5,06E-07 | 5,03E-06 | 3,19E-08 | -2,98E-04 |

## END OF LIFE – OUTPUT FLOWS

| Impact category               | Unit | A1       | A2       | A3       | A1-A3    | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D        |
|-------------------------------|------|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|----------|
| Components for re-use         | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for recycling       | kg   | 0,00E+00 | 0,00E+00 | 5,52E-01 | 5,52E-01 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 6,78E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy rec      | kg   | 0,00E+00 | 0,00E+00 | 4,10E-01 | 4,10E-01 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 1,97E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy               | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy – Electricity | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy – Heat        | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## ADDITIONAL INDICATOR – GWP-GHG

| Impact category       | Unit                 | A1       | A2       | A3       | A1-A3    | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D         |
|-----------------------|----------------------|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|-----------|
| GWP-GHG <sup>9)</sup> | kg CO <sub>2</sub> e | 2,59E+01 | 3,11E-01 | 5,07E+00 | 3,12E+01 | 2,73E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,14E-01 | 1,33E+00 | 8,24E-03 | -2,20E+01 |

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH<sub>4</sub> fossil, CH<sub>4</sub> biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO<sub>2</sub> is set to zero.

## SCENARIO DOCUMENTATION

### Manufacturing energy scenario documentation

| Scenario parameter                       | Value  |
|--|--|
| Electricity data source and quality      | Market for electricity, medium voltage (Reference product: electricity, medium voltage), EastChinaGrid China; Ecoinvent 3.10.1 |
| Electricity CO2e / kWh                   | 0,86   |
| District heating data source and quality | District heating for building is excluded from the analysis  |
| District heating CO2e / kWh              | N/A  |

### Transport scenario documentation A4

| Scenario parameter  | Value                                 |
|---|---------------------------------------|
| Fuel and vehicle type. Eg, electric truck, diesel powered truck | Diesel powered lorry & container ship |
| Average transport distance, km                                  | 19.202,75                             |
| Capacity utilization (including empty return) %                 | 50                                    |
| Bulk density of transported products                            | N/A                                   |
| Volume capacity utilization factor                              |                                       |

### End of life scenario documentation

| Scenario information  | Value   |
|---|---|
| Collection process – kg collected separately                    | N/A   |
| Collection process – kg collected with mixed construction waste | N/A   |
| Recovery process – kg for re-use                                | 0   |
| Recovery process – kg for recycling                             | 6,727 kg  |
| Recovery process – kg for energy recovery                       | 2,578 kg  |
| Disposal (total) – kg for final deposition                      | 0,501 kg  |
| Scenario assumptions e.g. transportation                        | Waste is assumed to be transported 10 km to a local sorting facility and then 50 km to a treatment facility in Denmark, all by diesel lorry. The waste is assumed to be sorted and treated according to Danish standards. |

## THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

### Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Sergio Ballen Zamora, as an authorized verifier for EPD Hub Limited  
29.10.2025

