

# ENVIRONMENTAL PRODUCT DECLARATION

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

LED mirror cabinet, VPK700
Polaria Oy



**EPD HUB, HUB-6239**

Published on 03.06.2026, last updated on 03.06.2026, valid until 03.06.2031

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.

Created with One Click LCA

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| Manufacturer | Polaria Oy |
| Address | 4 Yrittäjäntie, Mäntyharju, Finland |
| Contact details | myynti@polaria.fi |
| Website | www.polaria.fi |

## 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 | Construction product |
| Category of EPD | Third party verified EPD |
| Parent EPD number | |
| Scope of the EPD | Cradle to gate with options, A4-B7, and modules C1-C4, D |
| EPD author | Rami Leppänen, Polaria Oy |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal verification ☑ External verification |
| EPD verifier | Yazan Badour as an authorized verifier for EPD Hub |

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 | LED mirror cabinet, VPK700 |
| Additional labels | VPK700, VPK700 IPR, VPK700 VVS |
| Product reference | V2020342, V2020352, V2020312, V2020344, V2020354 |
| Place(s) of raw material origin | World |
| Place of production | Finland |
| Place(s) of installation and use | Finland |
| Period for data | Calendar year 2024 |
| Averaging in EPD | No grouping |
| Variation in GWP-fossil for A1-A3 (%) | - |
| GTIN (Global Trade Item Number) | 6417292021042, 6417292021059, 6417292021080, 6417292021066, 6417292021073. |
| NOBB (Norwegian Building Product Database) | - |
| A1-A3 Specific data (%) | 61,6 |

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| **Declared unit** | Steel cabinet with LED light source that delivers artificial luminous flux of 1100 lumens for 15 years. |
| **Declared unit mass** | 12,2 kg |
| **Mass of packaging** | 0,8 kg |
| **GWP-fossil, A1-A3 ($kgCO_2e$)** | 41,4 |
| **GWP-total, A1-A3 ($kgCO_2e$)** | 40,4 |
| **Secondary material, inputs (%)** | 3,39 |
| **Total energy use, A1-A3 (kWh)** | 181 |
| **Net freshwater use, A1-A3 ($m^3$)** | 0,2 |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

Polaria Oy was founded in 1970 in Mäntyharju, Finland. Polaria manufactures high-quality and durable bathroom furniture for the Finnish and Swedish markets. Its main customers are wholesalers, hardware stores and construction companies.

Polaria's durable steel bathroom furnishings are made for living. Polaria is a Finnish company that has been manufacturing and selling steel bathroom furnishings for more than 50 years. Polaria products are made of powder-painted steel with nanoceramic finishing and therefore have excellent water resistance. We have been working for over half a century for a functional and sustainable everyday life.

## PRODUCT DESCRIPTION

Polaria's mirror cabinets VPK700 are suitable for all types of bathrooms—from detached houses to apartment buildings, terraced homes, and even cottages.

Special attention has been paid to the practicality of the mirror cabinets in their design. A mirror cabinet is a great hiding place for items like toothbrushes and an excellent storage solution for small bathroom essentials. The metal cabinet is easy to keep clean and built to withstand the pace of everyday life. The edge of the bottom shelf ensures that even the smallest items stay securely inside the cabinet. Thanks to the double-sided mirrors, you can easily view yourself from different angles.

The product is 100% recyclable. Installation is simple, as the cabinet is delivered fully assembled.

Further information can be found at:
www.polaria.fi

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass % | Material origin |
|---|---|---|
| Metals | 60 | EU |
| Minerals | 39 | EU, Asia |
| Fossil materials | 1 | EU |
| Bio-based materials | 0 | - |

## 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 | 0,33 |

## FUNCTIONAL UNIT AND SERVICE LIFE

| | |
|---|---|
| Declared unit | 1 unit of VPK 700 steel cabinet |
| Mass per declared unit | 12 kg |
| Functional unit | Steel cabinet with LED light source that delivers artificial luminous flux of 1100 lumens for 15 years. |
| Reference service life | 15 years |

## 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 | ND | ND | ND | ND | ND | x | ND | 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 |

*Not declared = ND.*

## 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.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

## 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: 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. Average distance of transportation from production plant to retailers' site is 97 km and the transportation mode is lorry. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transportation does not cause losses as product is packaged properly.

A5: There is no material losses associated with the installation process. Both electricity and material consumption during installation are considered negligible and do not contribute significantly to environmental impacts. Installation waste considered in module A5 includes packaging materials such as cardboard and plastic.

Waste treatment assumptions:
• Cardboard: recycled 83%, incinerated 8 %, landfilled 9%
• Plastic: recycled 40%, incinerated 37%, landfilled 23%

Waste is delivered to the nearest (50 km) waste treatment facility.
The distance of waste transport is estimated to be typical in the EU.
Cardboard and plastic waste management of packaging materials is based on EU statistical data.

## PRODUCT USE AND MAINTENANCE (B1-B7)

B1-B3, B5: These modules do not include any material or energy flows

B4: It is assumed that the lamp is used for approximately 3 hours per day, which corresponds to 1095 hours per year, or a total of 16425 hours over a 15-year period. The lamp has a Rated Service Life (RSL) of at least 25,000 hours, which is higher than the projected usage over those 15 years. As a result, the LED does not require replacement during its expected service life. Therefore, the environmental impacts associated with maintenance activities, such as replacing the light source, do not apply in this case.

B6: The use phase is considered, and emissions arising from the electricity consumption are calculated based on the following scenario:
LED light source delivers artificial luminous flux of 1100 lumens. With electricity efficiency class C, we can assume needed power per lumen to be 110 lm/W. Assuming use of 3 hours/day, 365 days/year, 15years, the power usage of the led tube is 164 kilowatt hours.

$$\frac{1100\ lm}{110\ lm/W} * 3\ h * 365\ days * 15\ years \approx 164\ kWh$$

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

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

C1: The disassembly of the product unit is assumed to be done using hand tools, with the help of battery-powered electric tools. The amount of energy needed for disassembly is considered negligible.

C2-C4: The materials of the product are partly recyclable. Following end of life scenarios have been applied:

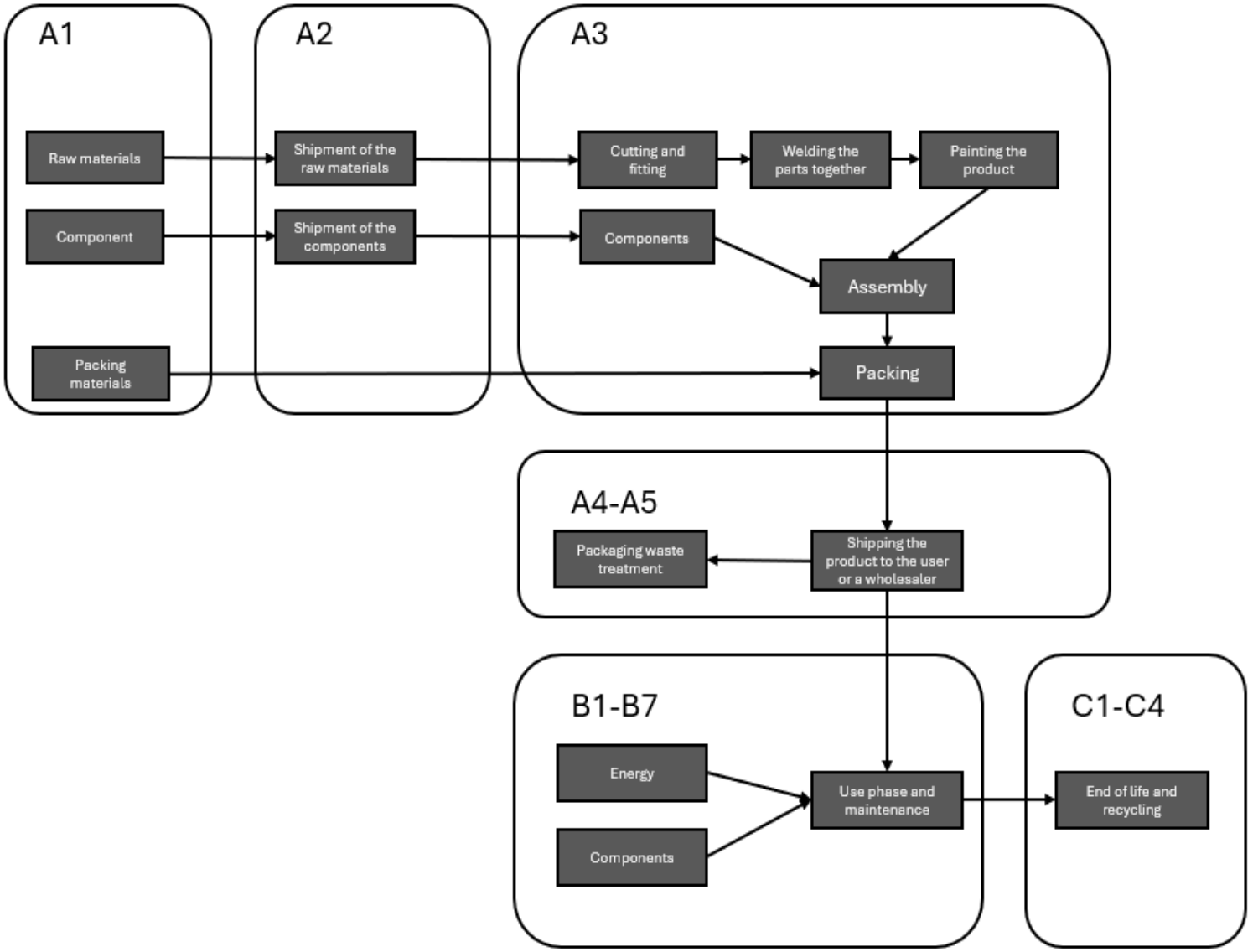
- Steel (including production losses): recycled 85%, landfilled 15% (Source: World Stainless 2024; ICDA 2023
- LED lamps: recycled 60%, landfilled 40% (Source: EN 50693)
- Plastics: incinerated 75%, landfilled 25% (Source: EN 50693)
- Electrical components: recycled 50%, landfilled 50% (Source: EN 50693)
- Ferrous metals: recycled 80%, landfilled 20% (Source: EN 50693)
- Mirrors: recycled 60%, landfilled 40% (Source: Gervasio & Dimova, JRC Technical Report, 2018)
- Copper wiring: recycled 60%, landfilled 40% (Source: EN 50693)

Waste transport distances (EU average estimates):

- 50 km to landfill
- 150km to incineration
- 250km to recycling

D: This module considers the environmental benefits resulting from energy and material recovery at the product's end of life. Recycling is modeled up to the point where the material reaches the end-of-waste state, making it ready for reuse. The benefits come from the substitution of virgin materials, such as steel, by recycled materials. Additionally, the energy recovered from waste incineration is assumed to replace electricity and heat that would otherwise be produced from primary energy sources.

# 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 that is 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.

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 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 that is 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.

## 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 made according to 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 | Allocated by mass or volume |
| Manufacturing energy and waste | Allocated by mass or volume |

All estimations and assumptions regarding the cut off criteria and the allocation are declared in the part "Cut-off Criteria except the estimations/assumptions below:

Proxy data is used for certain materials due to their unavailability in the database.
- Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as the role of transportation emission in total results is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as

implemented through an average load factor in the Ecoinvent transport datapoints.

## PRODUCT & MANUFACTURING SITES GROUPING

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

This EPD has been developed for MIRROR CABINET VPK 550 LED VVS. The product is available in both right-hand and left-hand configurations. In addition to this model, there are two other product variations with same size, but different features which are as follows:

- VPK 550 has a socket installed, but not a circuit breaker.
- VPK 550 IPR does not have a socket nor a circuit breaker.
- VPK 550 VVS has a socket and a circuit breaker.

The environmental impacts of these alternative versions are not described in the main body of the EPD but are presented separately in **Annex 1.**

## LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD System Verification v3.2.3. 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'.


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# 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[1)] | kg $CO_2$e | 3,55E+01 | 7,01E-01 | 4,28E+00 | 4,04E+01 | 1,33E-01 | 1,23E+00 | ND | ND | ND | ND | ND | 1,28E+02 | ND | 0,00E+00 | 4,29E-01 | 3,39E-01 | 1,81E+00 | -9,40E+00 |
| GWP – fossil | kg $CO_2$e | 3,53E+01 | 7,01E-01 | 5,43E+00 | 4,14E+01 | 1,33E-01 | 2,56E-02 | ND | ND | ND | ND | ND | 1,28E+02 | ND | 0,00E+00 | 4,29E-01 | 3,39E-01 | 1,81E+00 | -9,40E+00 |
| GWP – biogenic | kg $CO_2$e | 1,63E-01 | 1,42E-04 | -1,19E+00 | -1,03E+00 | 2,80E-05 | 1,21E+00 | ND | ND | ND | ND | ND | 1,81E-02 | ND | 0,00E+00 | 9,43E-05 | -3,77E-04 | -1,24E-04 | 0,00E+00 |
| GWP – LULUC | kg $CO_2$e | 2,90E-02 | 2,76E-04 | 3,58E-02 | 6,50E-02 | 5,00E-05 | 1,52E-05 | ND | ND | ND | ND | ND | 1,92E-03 | ND | 0,00E+00 | 1,90E-04 | 2,50E-04 | 1,99E-05 | -5,53E-04 |
| Ozone depletion pot. | kg $CFC\text{-}_{11}$e | 3,41E-07 | 1,36E-08 | 1,93E-07 | 5,48E-07 | 2,68E-09 | 2,03E-10 | ND | ND | ND | ND | ND | 5,47E-06 | ND | 0,00E+00 | 6,06E-09 | 2,49E-09 | 8,23E-10 | -5,08E-08 |
| Acidification potential | mol $H^+$e | 1,90E-01 | 3,61E-03 | 1,78E-02 | 2,12E-01 | 4,29E-04 | 1,08E-04 | ND | ND | ND | ND | ND | 6,87E-01 | ND | 0,00E+00 | 1,44E-03 | 2,04E-03 | 3,08E-04 | -4,62E-02 |
| EP-freshwater[2)] | kg Pe | 2,02E-02 | 4,62E-05 | 8,30E-04 | 2,11E-02 | 8,97E-06 | 6,30E-06 | ND | ND | ND | ND | ND | 1,99E-02 | ND | 0,00E+00 | 3,34E-05 | 1,11E-04 | 1,13E-04 | -1,12E-02 |
| EP-marine | kg Ne | 3,64E-02 | 1,09E-03 | 5,79E-03 | 4,32E-02 | 1,46E-04 | 1,86E-04 | ND | ND | ND | ND | ND | 9,78E-02 | ND | 0,00E+00 | 4,67E-04 | 4,73E-04 | 1,89E-04 | -1,08E-02 |
| EP-terrestrial | mol Ne | 3,76E-01 | 1,19E-02 | 5,58E-02 | 4,43E-01 | 1,59E-03 | 3,36E-04 | ND | ND | ND | ND | ND | 1,01E+00 | ND | 0,00E+00 | 5,08E-03 | 5,27E-03 | 1,36E-03 | -1,28E-01 |
| POCP ("smog")[3)] | kg NMVOCe | 1,04E-01 | 4,54E-03 | 1,56E-02 | 1,24E-01 | 7,00E-04 | 1,26E-04 | ND | ND | ND | ND | ND | 2,86E-01 | ND | 0,00E+00 | 2,02E-03 | 1,57E-03 | 3,82E-04 | -3,78E-02 |
| ADP-minerals & metals[4)] | kg Sbe | 6,21E-03 | 1,85E-06 | 2,96E-05 | 6,24E-03 | 3,67E-07 | 1,74E-07 | ND | ND | ND | ND | ND | 1,21E-05 | ND | 0,00E+00 | 1,37E-06 | 1,13E-05 | 1,67E-07 | -1,92E-04 |
| ADP-fossil resources | MJ | 3,07E+02 | 1,00E+01 | 2,70E+02 | 5,87E+02 | 1,93E+00 | 2,19E-01 | ND | ND | ND | ND | ND | 1,57E+03 | ND | 0,00E+00 | 6,06E+00 | 2,46E+00 | 6,54E-01 | -8,46E+01 |
| Water use[5)] | $m^3$e depr. | 4,83E+00 | 5,02E-02 | 3,01E+00 | 7,89E+00 | 9,87E-03 | 7,06E-03 | ND | ND | ND | ND | ND | 1,15E+03 | ND | 0,00E+00 | 2,84E-02 | 5,13E-02 | 2,84E-02 | -2,27E+00 |

*1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterization 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 | 1,07E-06 | 6,62E-08 | 1,91E-07 | 1,33E-06 | 1,32E-08 | 1,40E-09 | ND | ND | ND | ND | ND | 1,49E-06 | ND | 0,00E+00 | 3,57E-08 | 2,78E-08 | 1,00E-08 | -6,96E-07 |
| Ionizing radiation[6)] | kBq U235e | 1,12E+00 | 1,18E-02 | 1,63E+01 | 1,74E+01 | 2,32E-03 | 1,65E-03 | ND | ND | ND | ND | ND | 3,79E+01 | ND | 0,00E+00 | 4,97E-03 | 1,88E-02 | 9,74E-04 | 3,09E-01 |
| Ecotoxicity (freshwater) | CTUe | 2,07E+03 | 1,17E+00 | 1,28E+02 | 2,20E+03 | 2,27E-01 | 9,37E-01 | ND | ND | ND | ND | ND | 2,05E+02 | ND | 0,00E+00 | 9,39E-01 | 1,70E+00 | 5,06E-01 | -4,68E+02 |
| Human toxicity, cancer | CTUh | 1,17E-03 | 1,18E-10 | 1,50E-09 | 1,17E-03 | 2,19E-11 | 2,04E-11 | ND | ND | ND | ND | ND | 5,91E-09 | ND | 0,00E+00 | 7,25E-11 | 1,60E-10 | 1,62E-10 | -9,74E-10 |
| Human tox. non-cancer | CTUh | 1,16E-02 | 6,26E-09 | 4,95E-08 | 1,16E-02 | 1,25E-09 | 1,09E-09 | ND | ND | ND | ND | ND | 5,50E-07 | ND | 0,00E+00 | 3,82E-09 | 1,03E-08 | 2,39E-09 | -5,63E-08 |
| SQP[7)] | - | 9,88E+01 | 9,52E+00 | 1,17E+02 | 2,25E+02 | 1,94E+00 | 1,95E-01 | ND | ND | ND | ND | ND | 5,41E+01 | ND | 0,00E+00 | 4,09E+00 | 4,47E+00 | 1,12E+00 | -1,88E+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[8)] | MJ | 3,41E+01 | 1,60E-01 | 4,41E+01 | 7,84E+01 | 3,14E-02 | -1,28E+01 | ND | ND | ND | ND | ND | 5,08E+01 | ND | 0,00E+00 | 8,30E-02 | 4,11E-01 | 1,58E-02 | -5,90E+00 |
| Renew. PER as material | MJ | 0,00E+00 | 0,00E+00 | 1,03E+01 | 1,03E+01 | 0,00E+00 | -1,03E+01 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Total use of renew. PER | MJ | 3,41E+01 | 1,60E-01 | 5,44E+01 | 8,87E+01 | 3,14E-02 | -2,31E+01 | ND | ND | ND | ND | ND | 5,08E+01 | ND | 0,00E+00 | 8,30E-02 | 4,11E-01 | 1,58E-02 | -5,90E+00 |
| Non-re. PER as energy | MJ | 2,92E+02 | 1,00E+01 | 2,70E+02 | 5,72E+02 | 1,93E+00 | 2,19E-01 | ND | ND | ND | ND | ND | 1,82E+03 | ND | 0,00E+00 | 6,06E+00 | 2,75E-02 | -2,27E+01 | -8,46E+01 |
| Non-re. PER as material | MJ | 4,77E+00 | 0,00E+00 | 3,75E-02 | 4,81E+00 | 0,00E+00 | -3,75E-02 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 0,00E+00 | 0,00E+00 | -1,19E+00 | -3,50E+00 | 1,19E+00 |
| Total use of non-re. PER | MJ | 2,96E+02 | 1,00E+01 | 2,70E+02 | 5,76E+02 | 1,93E+00 | 1,82E-01 | ND | ND | ND | ND | ND | 1,82E+03 | ND | 0,00E+00 | 6,06E+00 | -1,16E+00 | -2,62E+01 | -8,34E+01 |
| Secondary materials | kg | 4,06E-01 | 4,39E-03 | 8,07E-01 | 1,22E+00 | 8,34E-04 | 4,13E-04 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 0,00E+00 | 2,69E-03 | 2,73E-03 | 6,47E-04 | 6,59E+00 |
| Renew. secondary fuels | MJ | 4,47E-03 | 5,20E-05 | 7,66E-02 | 8,12E-02 | 1,05E-05 | 2,18E-06 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 0,00E+00 | 3,43E-05 | 1,23E-04 | 5,27E-06 | 1,29E-02 |
| Non-ren. secondary fuels | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of net fresh water | $m^3$ | 1,34E-01 | 1,44E-03 | 6,82E-02 | 2,04E-01 | 2,85E-04 | -1,61E-04 | ND | ND | ND | ND | ND | 1,55E+00 | ND | 0,00E+00 | 8,20E-04 | 2,94E-04 | -5,10E-03 | -4,08E-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 | 1,27E+00 | 1,46E-02 | 1,73E-01 | 1,46E+00 | 2,79E-03 | 4,42E-03 | ND | ND | ND | ND | ND | 4,41E-04 | ND | 0,00E+00 | 1,05E-02 | 1,77E-02 | 1,71E-02 | -3,09E+00 |
| Non-hazardous waste | kg | 3,59E+01 | 2,87E-01 | 3,85E+00 | 4,00E+01 | 5,58E-02 | 5,10E-01 | ND | ND | ND | ND | ND | 6,30E+00 | ND | 0,00E+00 | 1,96E-01 | 2,04E+00 | 7,83E+00 | -3,50E+01 |
| Radioactive waste | kg | 3,61E-03 | 2,91E-06 | 3,38E-03 | 7,00E-03 | 5,75E-07 | 4,21E-07 | ND | ND | ND | ND | ND | 3,94E-03 | ND | 0,00E+00 | 1,22E-06 | 4,81E-06 | 2,48E-07 | 7,91E-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 | 1,04E-07 | 0,00E+00 | 0,00E+00 | 1,04E-07 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 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 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,65E-01 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 0,00E+00 | 0,00E+00 | 9,28E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy rec | kg | 4,66E-02 | 0,00E+00 | 0,00E+00 | 4,66E-02 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 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 | 3,19E-01 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 0,00E+00 | 0,00E+00 | 7,80E-01 | 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 | 1,31E-01 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 0,00E+00 | 0,00E+00 | 3,30E-01 | 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 | 1,88E-01 | ND | ND | ND | ND | ND | 0,00E+00 | ND | 0,00E+00 | 0,00E+00 | 4,50E-01 | 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[9)] | kg $CO_2e$ | 3,53E+01 | 7,01E-01 | 5,47E+00 | 4,15E+01 | 1,33E-01 | 2,56E-02 | ND | ND | ND | ND | ND | 1,28E+02 | ND | 0,00E+00 | 4,29E-01 | 3,39E-01 | 1,81E+00 | -9,40E+00 |

*9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterization factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero*

## SCENARIO DOCUMENTATION

## DATA SOURCES

### Manufacturing energy scenario documentation

| Scenario parameter | Value |
|---|---|
| Electricity data source and quality | Green electricity mix, Veni Oy, Finland |
| Electricity CO2e / kWh | 0,068 |
| District heating data source and quality | Heat and power co-generation, wood chips, 6667 kW, state-of-the-art 2014, Finland, Ecoinvent |
| District heating CO2e / MJ | 0,0026 |

### Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry >32 metric ton, EURO5, 97 km

### Transport to the building site (A4) - Scenario documentation

| Scenario parameter | Value |
|---|---|
| Capacity utilization (including empty return) % | 100 |
| Bulk density of transported products | 1,42E+02 |
| Volume capacity utilization factor | 1 |

### Installation at the building site (A5) - Scenario documentation

| Scenario parameter | Value |
|---|---|
| Energy: type and consumption (MJ or kWh) | - |
| Water use ($m^3$) | - |
| Ancillary materials: type and mass (kg) | - |
| Waste materials: type and mass (kg) | 0,049 of plastic packaging,<br>0,72kg of cardboard packaging |
| Waste materials: output routes | Cardboard: recycled 83%, incinerated 8 %, landfilled 9%<br>Plastic: recycled 40%, incinerated 37%, landfilled 23% |
| Direct emissions (kg) | 0 |

**Use stages scenario documentation - B6-B7 Use of energy and use of water**

| Scenario information | Value |
|---|---|
| Type of energy, consumption (kWh) | Market electricity mix, low voltage for Finland in 2023, 164 kWh |
| Freshwater consumption (m3) | - |
| Performance characteristics, E.g, Power rating, efficiency, capacity | Energy class C |

**End of life (C1-C4) - Scenario documentation**

| Scenario information | Value |
|---|---|
| Collection process: collected separately (kg) | 12 |
| Collection process: Mixed waste (kg) | 0 |
| Recovery: re-use (kg) | 0 |
| Recovery: recycling (kg) | 9,3 |
| Recovery: energy recovery (kg) | 0,1 |
| Disposal (kg) | 2,6 |
| Scenario assumptions e.g. transportation (mode, km) & other | 50-150 km, Transport, freight, lorry >32 metric ton, EURO5 - Europe |

# 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 15804+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

Yazan Badour as an authorized verifier for EPD Hub Limited 03.06.2026





# ANNEX I: SCALING TABLE

| Product Name | Mass | A1-A3, EN 15804+A2 | | | B6 EN 15804+A2 | | |
|---|---|---|---|---|---|---|---|
| | | $GWP_{-total}$ | $GWP_{-fossil}$ | $GWP_{-biogenic}$ | $GWP_{-total}$ | $GWP_{-fossil}$ | $GWP_{-biogenic}$ |
| VPK 700 | 11,7 kg | 3,364E+01 | 3,462E+01 | -1,031E+00 | 1,277E+02 | 1,277E+02 | 1,809E-02 |
| VPK 700 IPR | 12 kg | 3,34E+01 | 3,44E+01 | -1,03E+00 | 1,277E+02 | 1,277E+02 | 1,809E-02 |
| VPK 700 VVS | 12,2 kg | 4,04E+01 | 4,14E+01 | -1,03E+00 | 1,277E+02 | 1,277E+02 | 1,809E-02 |