# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

**EPD HUB, HUB-3292**
Published on 09.05.2025,
last updated on 09.05.2025,
valid until 09.05.2030

## Kleva CE L600

Aura Light AB

### MANUFACTURER AND SITE

| | |
|---|---|
| Manufacturer | Aura Light AB |
| Address | Fönstergatan 17, 59821, Vimmerby,SE |
| Contact details | emil.gustavsson@auralight.com |
| Website | www.auralight.com |
| Place of production | Vimmerby, Sweden |
| Period for data | Calendar year 2024 |

### EPD STANDARDS, SCOPE AND VERIFICATION

| | |
|---|---|
| Program operator | EPD Hub, hub@epdhub.com |
| Reference standard | EN 15804+A2 and ISO 14025 |
| PCR | EPD Hub Core PCR version 1.1, 5 Dec 2023 |
| Sector | Electrical 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 | Emil Gustavsson |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal verification ☑ External verification |
| EPD verifier | EPD Hub Limited |

### PRODUCT SPECIFICATION

| | |
|---|---|
| Product name | Kleva CE L600 |
| Product number / reference | 51308406600 |
| Product description | Kleva is an environmentally and energy-efficient lighting fixture with high performance and good light quality. It is IP44 rated and suitable for tough industrial environments, but thanks to its design it also suits public spaces as corridors. Kleva is easy to install and has accessories for various mounting options. It is made of 75% recycled aluminum and has a climate-neutral PC plastic diffuser. |
| GTIN (Global Trade Item Number) | - |
| NOBB (Norwegian Building Product Database) | - |

This EPD is intended for business-to-business and/or business-to-consumer communication.
Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 2023) and JRC characterization factors EF 3.1.
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 CLASSIFICATION

| | |
|---|---|
| Declared operating voltage, Volt | 230 |
| Light source color temperature, Kelvin | 4000 |
| Protection index for water and dust (IP) | 44 |
| Impact resistance index (IK) | 7 |
| Luminous flux, Lumen | 2310 |
| Electrical power, Watt | 15 |
| Luminous efficiency, Lm/W | 154 |
| Additional characteristic | For more information regarding Kleva, please visit our website: https://www.auralight.com/en/luminaires/kleva |

## ABOUT THE MANUFACTURER

Aura Light was founded in 1930 under the LUMA brand. From here we have further developed our cutting-edge expertise in lighting and provide the market with a complete range of tailor-made, high-tech and sustainable lighting solutions.

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| Declared unit | 1 unit |
| Declared unit mass, kg | 1,4534 |
| Mass of packaging, kg | 0,118 |
| Functional unit | Provide lighting that delivers an outgoing artificial luminous flux of 1,000 lumens during a reference lifetime of 35,000 hours |
| Reference service life (years) | 25 |
| Assigned lifetime (hours) | 100000 |
| GWP-total, A1-A3 (kg $CO_2e$) | 6,30E+00 |
| GWP-fossil, A1-A3 (kg $CO_2e$) | 6,44E+00 |
| Secondary material, inputs (%) | 41,5 |
| Secondary material, outputs (%) | 41,3 |
| Total energy use, A1-A3 (kWh) | 33,7 |
| Net freshwater use, A1-A3 ($m^3$) | 4,77E+01 |

# LIFE CYCLE ASSESSMENT

## 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 | X | X | X | X | X | X | X | X | X | X | X | X |
| Raw materials | Transport | Manufacturing | Transport | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstr./demo. | Transport | Waste processing | Disposal | Reuse, Recovery, Recycling |

*Modules not declared = MND.*

## 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. 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.

## 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/AC2021 and JRC EF 3.1.

## ALLOCATION, ESTIMATES AND ASSUMPTIONS

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 mass |
| Manufacturing energy and waste | Allocated by mass |

## AVERAGES AND VARIABILITY

This EPD is product and factory-specific and does not contain average calculations.

## LCA SOFTWARE AND BIBLIOGRAPHY

The LCA and EPD have been prepared according to the reference standards, EN 50693, and ISO 14040/14044. Ecoinvent v3.10.1 and One Click LCA databases were used as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, cut-off, EN 15804+A2'.

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass- % | Material origin |
|---|---|---|
| Metals | 53,426 | EU |
| Minerals | 0,000 | |
| Fossil materials | 8,668 | EU/Asia |
| Bio-based materials | 19,631 | EU |
| Electronic parts | 18,274 | EU/Asia |

## 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 | 0,0482 |

## 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

## MANUFACTURING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production. The material losses occurring during the manufacturing processes are treated as per the waste handling practices in the factory, while scenario assumptions are made in the absence of exact data. The study also considers the fuels used by machines as well as losses during electricity transmission.

The product is made of metals, plastics, and electronic components. All components are transported to the production facility, where the main manufacturing processes are associated with assembly of different parts and components. The finished product is packaged with polyethylene, cardboard, and/or paper as packaging material before being sent to customers.

## TRANSPORT AND INSTALLATION (A4-A5)

Transportation distances from manufacturing sites to customer locations are based on sales volume-based weighted averages. In the absence of exact data, conservative assumptions are made (A4). Environmental impacts from installation include waste packaging materials (A5). The impacts of energy consumption and the used ancillary materials during installation are considered negligible.

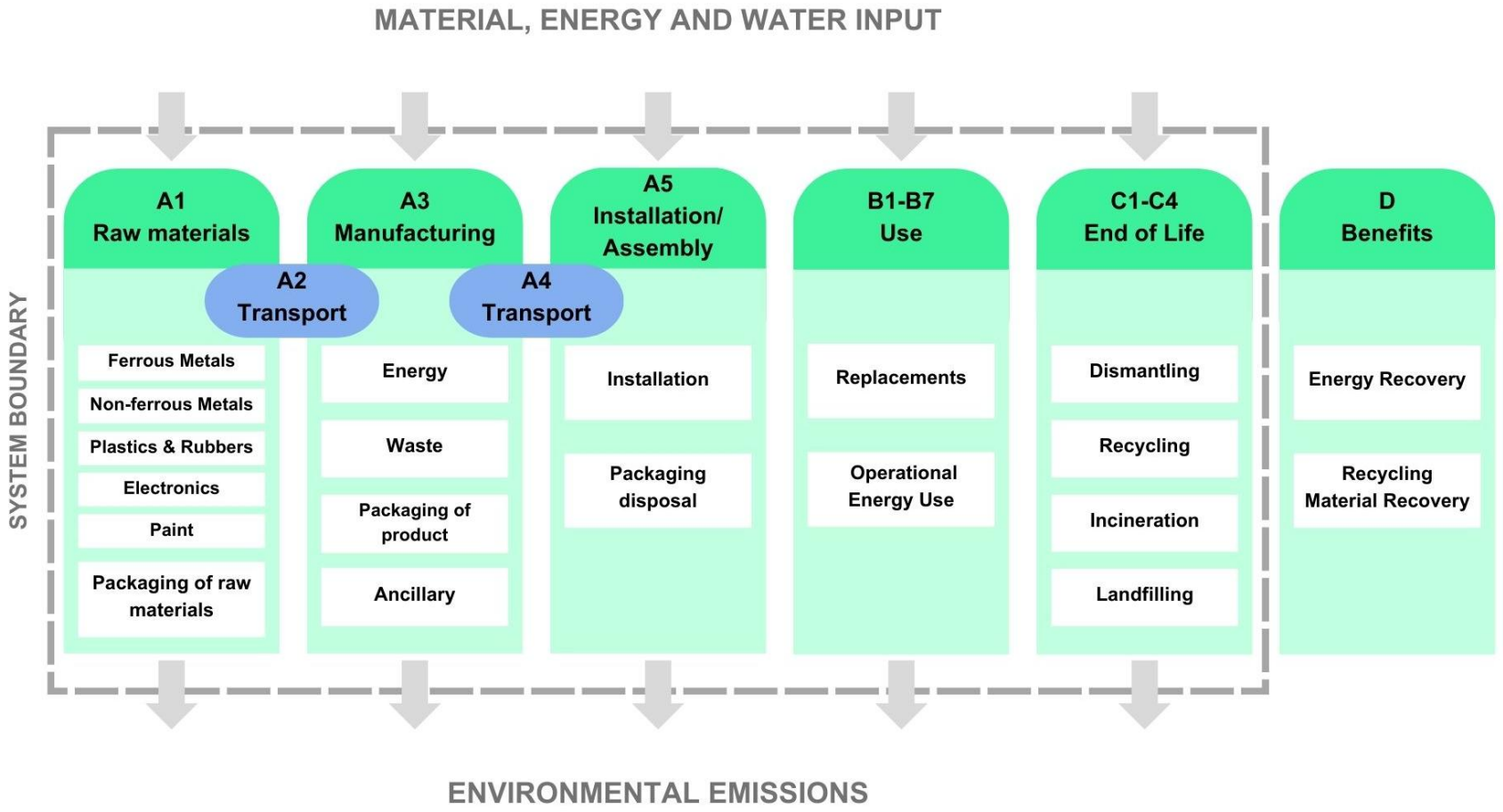
## PRODUCT USE AND MAINTENANCE (B1-B7)

During the use phase, the product consumes electricity (B6). Impacts due to electricity production include direct emissions to air, transformation, and transmission losses.

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

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment centre. The transport distance is 150 km while the transportation method is assumed to be lorry (C2). According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat production (D). The benefits and loads of incineration and recycling are included in Module D.

# LIFE CYCLE FLOW DIAGRAM



# ENVIRONMENTAL IMPACT DATA, RESULTS PER DECLARED UNIT

## 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[1)] | kg $CO_2$e | 5,51E+00 | 3,06E-02 | 7,65E-01 | 6,30E+00 | 1,02E-01 | 1,84E-01 | MNR | MNR | MNR | 3,30E+00 | MNR | 4,92E+02 | MNR | 0,00E+00 | 3,39E-02 | 3,62E-01 | 1,84E-01 | 1,55E+00 |
| GWP – fossil | kg $CO_2$e | 5,48E+00 | 3,06E-02 | 9,35E-01 | 6,44E+00 | 1,02E-01 | 6,49E-03 | MNR | MNR | MNR | 3,30E+00 | MNR | 4,91E+02 | MNR | 0,00E+00 | 3,39E-02 | 3,62E-01 | 1,84E-01 | 1,55E+00 |
| GWP – biogenic | kg $CO_2$e | 0,00E+00 | 0,00E+00 | -1,77E-01 | -1,77E-01 | 0,00E+00 | 1,77E-01 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| GWP – LULUC | kg $CO_2$e | 3,08E-02 | 1,16E-05 | 7,47E-03 | 3,82E-02 | 3,62E-05 | 3,43E-06 | MNR | MNR | MNR | 1,50E-04 | MNR | 1,51E+00 | MNR | 0,00E+00 | 1,50E-05 | 2,98E-05 | 1,11E-05 | -1,61E-03 |
| Ozone depletion pot. | kg $CFC_{-11}$e | 5,23E-07 | 5,66E-10 | 1,84E-08 | 5,42E-07 | 2,04E-09 | 6,93E-11 | MNR | MNR | MNR | 1,12E-07 | MNR | 9,05E-06 | MNR | 0,00E+00 | 4,74E-10 | 3,26E-10 | 1,92E-10 | 1,70E-09 |
| Acidification potential | mol $H^+$e | 4,40E-02 | 9,78E-05 | 5,36E-03 | 4,94E-02 | 3,20E-04 | 2,52E-05 | MNR | MNR | MNR | 3,98E-02 | MNR | 2,89E+00 | MNR | 0,00E+00 | 1,13E-04 | 2,72E-04 | 8,37E-05 | -2,49E-02 |
| EP-freshwater[2)] | kg Pe | 1,20E-03 | 2,12E-06 | 8,31E-04 | 2,03E-03 | 6,79E-06 | 9,71E-07 | MNR | MNR | MNR | 3,17E-04 | MNR | 4,57E-01 | MNR | 0,00E+00 | 2,63E-06 | 1,15E-05 | 1,69E-06 | -1,47E-03 |
| EP-marine | kg Ne | 5,15E-03 | 3,27E-05 | 1,03E-03 | 6,22E-03 | 1,08E-04 | 2,31E-05 | MNR | MNR | MNR | 3,10E-03 | MNR | 4,53E-01 | MNR | 0,00E+00 | 3,66E-05 | 8,90E-05 | 1,64E-04 | 9,24E-04 |
| EP-terrestrial | mol Ne | 5,48E-02 | 3,56E-04 | 8,61E-03 | 6,38E-02 | 1,17E-03 | 7,98E-05 | MNR | MNR | MNR | 3,55E-02 | MNR | 4,06E+00 | MNR | 0,00E+00 | 3,98E-04 | 8,55E-04 | 3,77E-04 | 1,91E-03 |
| POCP ("smog")[3)] | kg NMVOCe | 1,96E-02 | 1,51E-04 | 2,70E-03 | 2,25E-02 | 5,02E-04 | 3,20E-05 | MNR | MNR | MNR | 1,11E-02 | MNR | 1,34E+00 | MNR | 0,00E+00 | 1,57E-04 | 2,35E-04 | 1,08E-04 | 5,89E-04 |
| ADP-minerals & metals[4)] | kg Sbe | 4,54E-04 | 9,60E-08 | 1,16E-05 | 4,66E-04 | 3,35E-07 | 3,50E-08 | MNR | MNR | MNR | 6,80E-04 | MNR | 6,63E-03 | MNR | 0,00E+00 | 1,11E-07 | 1,01E-06 | 2,99E-08 | -7,61E-04 |
| ADP-fossil resources | MJ | 6,87E+01 | 4,33E-01 | 2,08E+01 | 8,99E+01 | 1,44E+00 | 7,09E-02 | MNR | MNR | MNR | 1,14E+01 | MNR | 1,14E+04 | MNR | 0,00E+00 | 4,75E-01 | 3,06E-01 | 1,49E-01 | 1,27E+01 |
| Water use[5)] | $m^3$e depr. | 4,75E+00 | 2,13E-03 | 5,90E-01 | 5,34E+00 | 7,06E-03 | 1,57E-03 | MNR | MNR | MNR | 2,03E+00 | MNR | 3,11E+02 | MNR | 0,00E+00 | 2,20E-03 | 2,65E-02 | 1,28E-02 | -2,84E-01 |

*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, 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 | 3,78E-07 | 2,58E-09 | 2,22E-08 | 4,03E-07 | 8,05E-09 | 4,14E-10 | MNR | MNR | MNR | 4,89E-07 | MNR | 1,03E-05 | MNR | 0,00E+00 | 2,69E-09 | 3,11E-09 | 1,11E-09 | 1,04E-08 |
| Ionizing radiation[6)] | kBq U235e | 3,46E-01 | 5,05E-04 | 5,42E-01 | 8,89E-01 | 1,83E-03 | 2,72E-04 | MNR | MNR | MNR | 3,46E-01 | MNR | 3,16E+02 | MNR | 0,00E+00 | 3,84E-04 | 1,27E-03 | 2,22E-04 | 3,05E-02 |
| Ecotoxicity (freshwater) | CTUe | 8,12E+01 | 5,80E-02 | 3,96E+00 | 8,52E+01 | 1,89E-01 | 4,98E-01 | MNR | MNR | MNR | 2,45E+01 | MNR | 1,74E+03 | MNR | 0,00E+00 | 7,51E-02 | 8,00E-01 | 1,78E+01 | -3,90E+01 |
| Human toxicity, cancer | CTUh | 5,40E-09 | 5,16E-12 | 3,13E-10 | 5,72E-09 | 1,75E-11 | 3,29E-12 | MNR | MNR | MNR | 5,41E-09 | MNR | 1,66E-07 | MNR | 0,00E+00 | 5,76E-12 | 4,52E-11 | 2,37E-11 | -5,89E-09 |
| Human tox. non-cancer | CTUh | 1,02E-07 | 2,74E-10 | 1,53E-08 | 1,17E-07 | 9,03E-10 | 1,78E-10 | MNR | MNR | MNR | 3,30E-08 | MNR | 8,60E-06 | MNR | 0,00E+00 | 2,97E-10 | 1,96E-09 | 1,28E-09 | -6,77E-07 |
| SQP[7)] | - | 1,16E+01 | 3,06E-01 | 8,86E+00 | 2,07E+01 | 8,56E-01 | 4,76E-02 | MNR | MNR | MNR | 2,88E+00 | MNR | 2,54E+03 | MNR | 0,00E+00 | 2,84E-01 | 4,03E-01 | 1,89E-01 | -1,43E+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 the 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 | 1,82E+01 | 7,06E-03 | 4,66E+00 | 2,29E+01 | 2,49E-02 | -1,91E+00 | MNR | MNR | MNR | 5,06E+00 | MNR | 3,13E+03 | MNR | 0,00E+00 | 6,51E-03 | 3,91E-02 | 3,94E-03 | -1,71E+00 |
| Renew. PER as material | MJ | 0,00E+00 | 0,00E+00 | 1,51E+00 | 1,51E+00 | 0,00E+00 | -1,51E+00 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Total use of renew. PER | MJ | 1,82E+01 | 7,06E-03 | 6,17E+00 | 2,44E+01 | 2,49E-02 | -3,43E+00 | MNR | MNR | MNR | 5,06E+00 | MNR | 3,13E+03 | MNR | 0,00E+00 | 6,51E-03 | 3,91E-02 | 3,94E-03 | -1,71E+00 |
| Non-re. PER as energy | MJ | 7,72E+01 | 4,33E-01 | 2,08E+01 | 9,85E+01 | 1,44E+00 | 7,09E-02 | MNR | MNR | MNR | 4,70E+01 | MNR | 1,14E+04 | MNR | 0,00E+00 | 4,75E-01 | -5,49E+00 | -5,10E+00 | 1,31E+01 |
| Non-re. PER as material | MJ | 9,36E+00 | 0,00E+00 | 4,94E-03 | 9,37E+00 | 0,00E+00 | -4,94E-03 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | -4,93E+00 | -4,43E+00 | 0,00E+00 |
| Total use of non-re. PER | MJ | 8,66E+01 | 4,33E-01 | 2,09E+01 | 1,08E+02 | 1,44E+00 | 6,60E-02 | MNR | MNR | MNR | 4,70E+01 | MNR | 1,14E+04 | MNR | 0,00E+00 | 4,75E-01 | -1,04E+01 | -9,54E+00 | 1,31E+01 |
| Secondary materials | kg | 6,03E-01 | 0,00E+00 | 0,00E+00 | 6,03E-01 | 0,00E+00 | 0,00E+00 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Renew. secondary fuels | MJ | 5,60E-03 | 2,46E-06 | 1,10E-02 | 1,66E-02 | 8,32E-06 | 5,76E-07 | MNR | MNR | MNR | 4,25E-03 | MNR | 1,51E-02 | MNR | 0,00E+00 | 2,72E-06 | 1,42E-05 | 2,48E-06 | -1,65E-04 |
| Non-ren. secondary fuels | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of net fresh water | $m^3$ | 4,77E+01 | 5,98E-05 | 1,82E-02 | 4,77E+01 | 1,94E-04 | -1,05E-05 | MNR | MNR | MNR | 1,50E-02 | MNR | 9,87E+00 | MNR | 0,00E+00 | 6,29E-05 | 4,96E-04 | -4,02E-04 | -1,42E-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 | 5,11E-01 | 6,51E-04 | 5,50E-02 | 5,67E-01 | 2,06E-03 | 5,39E-04 | MNR | MNR | MNR | 2,58E-01 | MNR | 2,89E+01 | MNR | 0,00E+00 | 8,28E-04 | 7,79E-03 | 1,68E-02 | 2,63E-01 |
| Non-hazardous waste | kg | 1,07E+01 | 1,32E-02 | 3,92E+00 | 1,46E+01 | 4,35E-02 | 7,58E-02 | MNR | MNR | MNR | 4,26E+00 | MNR | 2,24E+03 | MNR | 0,00E+00 | 1,55E-02 | 2,11E-01 | 1,20E+00 | -1,34E+01 |
| Radioactive waste | kg | 1,14E-03 | 1,25E-07 | 1,39E-04 | 1,28E-03 | 4,56E-07 | 6,91E-08 | MNR | MNR | MNR | 1,93E-04 | MNR | 8,11E-02 | MNR | 0,00E+00 | 9,42E-08 | 3,12E-07 | 5,49E-08 | 5,99E-06 |

## 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 reuse | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for recycling | kg | 8,62E-01 | 0,00E+00 | 0,00E+00 | 8,62E-01 | 0,00E+00 | 9,67E-02 | MNR | MNR | MNR | 4,20E-02 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | 6,01E-01 | 0,00E+00 | 0,00E+00 |
| Materials for energy rec | kg | 7,91E-04 | 0,00E+00 | 0,00E+00 | 7,91E-04 | 0,00E+00 | 0,00E+00 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy | MJ | 5,26E-03 | 0,00E+00 | 0,00E+00 | 5,26E-03 | 0,00E+00 | 5,44E-02 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | 1,69E+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 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 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 | MNR | MNR | MNR | 0,00E+00 | MNR | 0,00E+00 | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Global Warming Pot. | kg $CO_2$e | 5,43E+00 | 3,04E-02 | 9,42E-01 | 6,41E+00 | 1,02E-01 | 2,16E-02 | MNR | MNR | MNR | 3,26E+00 | MNR | 4,91E+02 | MNR | 0,00E+00 | 3,37E-02 | 3,62E-01 | 1,83E-01 | 1,53E+00 |
| Ozone depletion Pot. | kg $CFC_{-11}$e | 3,11E-07 | 4,51E-10 | 1,53E-08 | 3,27E-07 | 1,62E-09 | 5,65E-11 | MNR | MNR | MNR | 8,86E-08 | MNR | 7,56E-06 | MNR | 0,00E+00 | 3,78E-10 | 2,79E-10 | 1,59E-10 | 2,27E-09 |
| Acidification | kg $SO_2$e | 3,76E-02 | 7,44E-05 | 4,50E-03 | 4,22E-02 | 2,43E-04 | 1,94E-05 | MNR | MNR | MNR | 3,52E-02 | MNR | 2,46E+00 | MNR | 0,00E+00 | 8,64E-05 | 2,12E-04 | 6,04E-05 | -2,26E-02 |
| Eutrophication | kg $PO_4^3$e | 1,04E-02 | 1,87E-05 | 7,54E-04 | 1,12E-02 | 6,19E-05 | 1,76E-05 | MNR | MNR | MNR | 4,81E-03 | MNR | 3,18E-01 | MNR | 0,00E+00 | 2,10E-05 | 4,24E-05 | 3,01E-05 | -8,55E-04 |
| POCP (“smog”) | kg $C_2H_4$e | 2,63E-03 | 6,97E-06 | 2,59E-04 | 2,90E-03 | 2,32E-05 | 5,10E-06 | MNR | MNR | MNR | 1,85E-03 | MNR | 1,34E-01 | MNR | 0,00E+00 | 7,74E-06 | 1,31E-05 | 5,65E-06 | -5,55E-04 |
| ADP-elements | kg Sbe | 4,54E-04 | 9,38E-08 | 1,16E-05 | 4,66E-04 | 3,27E-07 | 3,42E-08 | MNR | MNR | MNR | 6,84E-04 | MNR | 6,61E-03 | MNR | 0,00E+00 | 1,09E-07 | 9,95E-07 | 2,55E-08 | -7,61E-04 |
| ADP-fossil | MJ | 7,76E+01 | 4,25E-01 | 1,13E+01 | 8,92E+01 | 1,41E+00 | 6,63E-02 | MNR | MNR | MNR | 4,46E+01 | MNR | 5,86E+03 | MNR | 0,00E+00 | 4,69E-01 | 2,86E-01 | 1,46E-01 | 1,22E+01 |

# THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier and has been generated using an end-to-end verified tool.

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. EPD Hub confirms that it possesses sufficient knowledge and experience in construction products and the relevant standards to carry the verification.

Nemanja Nedic
Program Manager, EPD Hub

EPD Hub has performed a detailed examination of the end-to-end verified tool and underlying data to ensure that there are no deviations in the studied Environmental Product Declaration (EPD), its Life Cycle Assessment (LCA), and project report. The tool is implemented according to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules version 1.1 and General Program Instructions version 1.2.

Tool verifier: Hai Ha Nguyen & Nemanja Nedic
Tool verification validity: 11 July 2024 - 11 July 2027

EPD Hub has examined the company-specific data for plausibility and consistency. The declaration owner is responsible for ensuring its factual integrity and legal compliance.

# ANNEX I: METHODOLOGY

To create a transparent and representative Environmental Product Declaration (EPD), we have conducted a thorough selection of products from our existing product family. In this selection, we aimed to include products that represent the entire range of environmental performance – from the most optimized and sustainable versions to those with potentially greater environmental impact.

By declaring products that reflect this spectrum, we provide a fair view of the potential variation in environmental footprint within our product portfolio. This approach enables our customers and stakeholders to gain a more nuanced understanding of the products' environmental impact and to make informed choices based on their specific needs and sustainability goals.

It's important to note that lighting control technology is currently excluded from the basis of this EPD. However, we want to emphasize that adding this technology can lead to significant emission reductions in the B6 module, with a potential reduction of between 25 and 45 percent. We are committed to exploring and implementing technologies that reduce our environmental impact, and lighting control is one example of such an opportunity.

To ensure a consistent and relevant assessment of our products' environmental impact, we have used the Nordic-European electricity mix as a parameter in our calculations. This applies both to manufacturing emissions related to electricity consumption and during lifetime calculations. The choice of this electricity mix reflects our business's geographical context and provides a realistic picture of the energy-related emissions.

We believe that this method provides an honest and transparent picture of our products' environmental impact and underscores our commitment to sustainability and continuous product improvement.