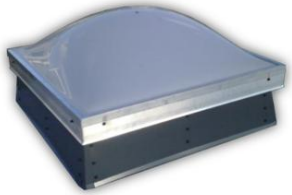
# ENVIRONMENTAL PRODUCT DECLARATION

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

FireVent motor-operated fire hatch (FireVent Brandgasventilator med elmotor)
FireVent AB






**EPD HUB, HUB-3560**
Published on 03.07.2025, last updated on 03.07.2030

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.

Created with One Click LCA

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| Manufacturer | Firevent AB |
| Address | Herman Kreftings gata 5, 46256 Vänersborg, Sweden |
| Contact details | info@firevent.se |
| Website | https://www.firevent.se/ |

## 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 1.1, 5 Dec 2023 |
| Sector | Construction product |
| Category of EPD | Third party verified EPD |
| Scope of the EPD | Cradle to gate with options, A4-B7, and modules C1-C4, D |
| EPD author | Oscar Ternström Ampiro Group AB |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal verification ☑ External verification |
| EPD verifier | Imane Uald Lamkaddam 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 | Firevent motor-operated fire hatch(Brandgasventilator med elmotor) |
| Additional labels | FVEP-CE-M, FVEL-CE-M,FVEK-CE-M |
| Place(s) of raw material origin | Sweden, Denmark |
| Place of production | Vänersborg, Sweden |
| Place(s) of installation and use | Sweden |
| Period for data | 2024 |
| Averaging in EPD | Multiple products |
| Variation in GWP-fossil for A1-A3 (%) | - 5% to + 19% |
| A1-A3 Specific data (%) | 99 |

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| **Declared unit** | 1 kg fire hatch intended for smoke extraction and fire safety in buildings. |
| **Declared unit mass** | 1 kg |
| **GWP-fossil, A1-A3 ($kgCO_2e$)** | 3,16E+00 |
| **GWP-total, A1-A3 ($kgCO_2e$)** | 1,74E+00 |
| **Secondary material, inputs (%)** | 47,5 |
| **Secondary material, outputs (%)** | 89,4 |
| **Total energy use, A1-A3 (kWh)** | 13,7 |
| **Net freshwater use, A1-A3 ($m^3$)** | 0,02 |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

FireVent AB supplies smoke ventilation systems and roof solutions with quick quotations, competitive prices, and reliable delivery times. Our products are tailored to your needs and maintain high quality. We help you find the right solution for your project, from skylights to hatches and accessories.

## PRODUCT DESCRIPTION

**The purpose of a smoke ventilator is to minimize the risk of flashover and limit damage in the event of a fire. Smoke ventilation facilitates the work of the fire and rescue services and extends the evacuation time, allowing people to reach safety.**

Almost 90% of all fire victims die as a result of toxic smoke rather than from the fire or heat itself.

The number and size of the ventilators are calculated using fire development models that also take into account the activities conducted within the building.

Typical customers for this product include construction contractors, roofing companies, and fire safety firms throughout Sweden. An electric smoke ventilator can be opened and closed from ground level via a fire-rated push button, making it suitable even for roofs with limited accessibility.

The ventilator is available in several different configurations:

- An insulated metal lid, clad inside and outside with standard Aluzinc sheet; color of choice available
- Light entry via acrylic dome
- Light entry via polycarbonate skylight

Each ventilator is delivered complete with an electric motor and can also be equipped with a heat detector for automatic opening – the same function as a traditional fusible link.

Common sizes have a clear opening of 1000 × 1000 mm (1 m²), while our largest approved size is 2400 × 1200 mm (2.88 m²).

The product has been tested by RISE (Research Institutes of Sweden AB), where extensive tests related to fire, wind load, durability, and snow load have been conducted to ensure functionality under Swedish conditions. The ventilator is CE-approved according to EN 12101-2:2003.

More information is available at: https://www.firevent.se/

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass % | Material origin |
|---|---|---|
| Metals | 53% | Sweden, Denmark |
| Minerals | 15% | Sweden |
| Fossil materials | 6% | Sweden |
| Bio-based materials | 26% | Sweden |

## BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

| | |
|---|---|
| Biogenic carbon content in product, kg C | 0,205 |
| Biogenic carbon content in packaging, kg C | 0,095 |

## FUNCTIONAL UNIT AND SERVICE LIFE

| | |
|---|---|
| Declared unit | 1 kg fire hatch intended for smoke extraction and fire safety in buildings. |
| Mass per declared unit | 1 kg |
| Reference service life | 30 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 | 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 | 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.

The raw materials enter the facility and are cut and otherwise processed into product parts. The machines consume electricity, and no air emissions are generated in the process. Waste from production consists of scrap steel and wood, which is handled by waste management for recycling.
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.

The transportation distance is defined according to the PCR. The average distance from the production plant to the building site is assumed to be 100 km, with transportation by lorry using diesel fuel. Vehicle capacity utilization by volume is assumed to be 100%, meaning full load. In practice, this may vary, but since the impact of transportation emissions on the total results is small, variations in load are considered negligible.

Empty return trips are not included, as it is assumed that the transport company uses return journeys to serve other clients. No product losses occur during transport, as the goods are properly loaded. The volume capacity utilization factor is also assumed to be 100% for the loaded products.

Installation includes energy use. The only waste generated during this process is a small number of steel screws, in case any break during installation. Packaging is also considered waste and is assumed to be transported 100 km to a waste management facility.

## PRODUCT USE AND MAINTENANCE (B1-B7)

During the product's lifetime, a small amount of electricity is consumed, as the hatch is always on standby, ready to open when needed. The spring, which enables the hatch to open, is replaced every 10 years. With a lifespan of 30 years, two replacements are considered in this EPD.

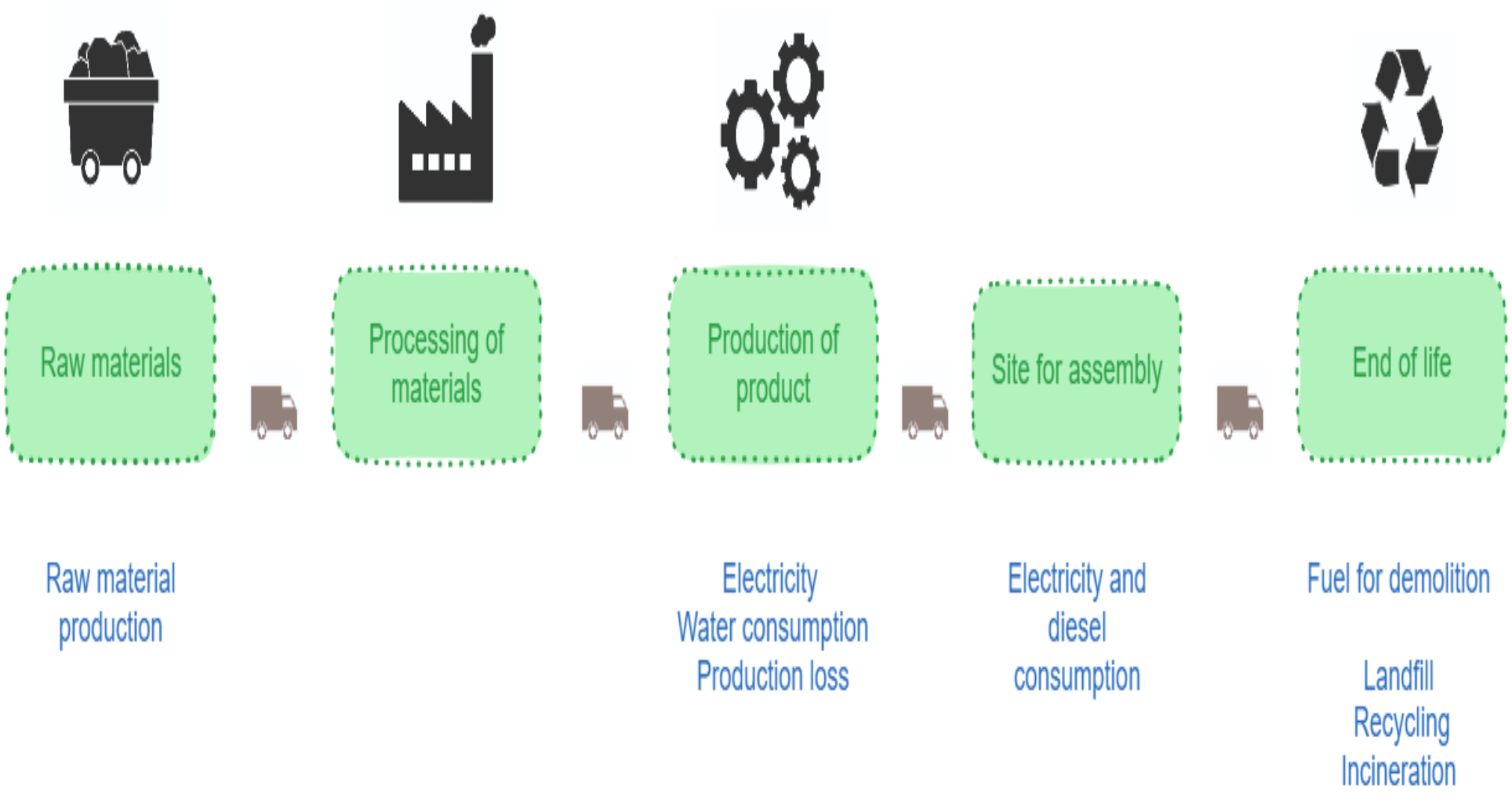
Air, soil, and water impacts during the use phase have not been studied.

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

The dismantled fire hatch is transported to the nearest construction waste facility. It is assumed that there is no mass loss during the product's use phase; therefore, the weight at end-of-life is considered equal to the declared product weight. The transport distance to the disposal facility is estimated at 50 km, with lorry transport as the assumed method.

The product can be dismantled into its original materials, and due to the low risk of contamination, it is assumed that each material is handled separately. Recycling rates are based on current Swedish market standards.

# 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 data in this analysis is from 2024, but since May 2025, 98% of shipments have been booked using trucks powered by HVO diesel.

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

## PRODUCT & MANUFACTURING SITES GROUPING

| | |
|---|---|
| Type of grouping | Multiple products |
| Grouping method | Based on a representative product |
| Variation in GWP-fossil for A1-A3, % | - 5% to + 19% |

The representetive product is bort the most iconinc for our product catalog and also the most produced and sold. Therefore, it´s a valid representetive for a group of products with the same function but with different materials in the lid. The representetive products is based on a steel hatch, were the minimun and maximum are acrylic and polycarbonate.

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

# 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 | 2,18E+00 | 2,17E-02 | -4,68E-01 | 1,74E+00 | 1,26E-02 | 3,00E-01 | MND | MND | MND | 8,97E-02 | MND | 5,20E-03 | MND | 3,61E-03 | 1,43E-02 | 8,14E-01 | 2,38E-03 | -1,85E+00 |
| GWP – fossil | kg $CO_2$e | 3,09E+00 | 2,17E-02 | 4,36E-02 | 3,16E+00 | 1,26E-02 | 1,01E-02 | MND | MND | MND | 8,76E-02 | MND | 4,47E-03 | MND | 3,60E-03 | 1,43E-02 | 6,26E-02 | 2,38E-03 | -1,97E+00 |
| GWP – biogenic | kg $CO_2$e | -9,15E-01 | 4,81E-06 | -5,12E-01 | -1,43E+00 | 2,85E-06 | 2,90E-01 | MND | MND | MND | 1,93E-03 | MND | 9,92E-05 | MND | 3,68E-07 | 2,84E-06 | 7,52E-01 | -3,73E-07 | 1,57E-01 |
| GWP – LULUC | kg $CO_2$e | 3,41E-03 | 9,71E-06 | 3,18E-04 | 3,74E-03 | 5,62E-06 | 3,49E-06 | MND | MND | MND | 1,71E-04 | MND | 6,28E-04 | MND | 3,69E-07 | 6,34E-06 | 1,96E-05 | 4,24E-07 | -3,37E-02 |
| Ozone depletion pot. | kg $CFC\text{-}_{11}$e | 1,03E-07 | 3,21E-10 | 1,02E-09 | 1,05E-07 | 1,85E-10 | 7,15E-11 | MND | MND | MND | 1,33E-09 | MND | 1,32E-10 | MND | 5,52E-11 | 2,03E-10 | 2,94E-10 | 2,34E-11 | -1,57E-08 |
| Acidification potential | mol $H^+$e | 2,47E-02 | 7,40E-05 | 1,86E-04 | 2,49E-02 | 4,28E-05 | 3,41E-05 | MND | MND | MND | 3,52E-04 | MND | 2,51E-05 | MND | 3,25E-05 | 4,79E-05 | 2,02E-04 | 5,57E-06 | -1,57E-02 |
| EP-freshwater[2)] | kg Pe | 3,82E-04 | 1,69E-06 | 1,51E-05 | 3,99E-04 | 9,78E-07 | 1,50E-06 | MND | MND | MND | 3,89E-05 | MND | 1,61E-06 | MND | 1,04E-07 | 1,11E-06 | 9,19E-06 | 1,66E-07 | -6,40E-04 |
| EP-marine | kg Ne | 3,51E-03 | 2,43E-05 | 5,33E-05 | 3,59E-03 | 1,41E-05 | 1,86E-05 | MND | MND | MND | 8,17E-05 | MND | 7,48E-06 | MND | 1,51E-05 | 1,56E-05 | 6,27E-05 | 5,10E-05 | -2,02E-03 |
| EP-terrestrial | mol Ne | 6,46E-02 | 2,65E-04 | 5,49E-04 | 6,54E-02 | 1,53E-04 | 1,52E-04 | MND | MND | MND | 7,51E-04 | MND | 6,87E-05 | MND | 1,65E-04 | 1,70E-04 | 6,56E-04 | 2,36E-05 | -2,08E-02 |
| POCP ("smog")[3)] | kg NMVOCe | 1,22E-02 | 1,09E-04 | 3,18E-04 | 1,26E-02 | 6,31E-05 | 4,35E-05 | MND | MND | MND | 2,65E-04 | MND | 1,73E-05 | MND | 4,93E-05 | 6,79E-05 | 1,92E-04 | 9,18E-06 | -7,33E-03 |
| ADP-minerals & metals[4)] | kg Sbe | 1,00E-03 | 6,06E-08 | 2,15E-07 | 1,00E-03 | 3,50E-08 | 1,50E-07 | MND | MND | MND | 5,55E-07 | MND | 1,04E-07 | MND | 1,29E-09 | 4,48E-08 | 7,84E-07 | 1,54E-09 | -6,04E-06 |
| ADP-fossil resources | MJ | 3,91E+01 | 3,15E-01 | 9,12E-01 | 4,03E+01 | 1,82E-01 | 6,20E-02 | MND | MND | MND | 1,34E+00 | MND | 7,37E-01 | MND | 4,72E-02 | 2,02E-01 | 2,69E-01 | 1,89E-02 | -1,98E+01 |
| Water use[5)] | $m^3$e depr. | 1,06E+00 | 1,56E-03 | 2,17E-02 | 1,08E+00 | 9,00E-04 | 4,91E-03 | MND | MND | MND | 4,33E-02 | MND | 4,06E-02 | MND | 1,18E-04 | 9,57E-04 | 9,17E-03 | 8,99E-05 | -1,34E+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 | 2,98E-07 | 2,17E-09 | 2,48E-09 | 3,03E-07 | 1,26E-09 | 5,80E-10 | MND | MND | MND | 5,47E-09 | MND | 4,34E-10 | MND | 9,25E-10 | 1,22E-09 | 4,13E-09 | 1,28E-10 | -2,11E-07 |
| Ionizing radiation[6] | kBq U235e | 1,18E-01 | 2,74E-04 | 4,38E-03 | 1,23E-01 | 1,59E-04 | 5,06E-04 | MND | MND | MND | 2,33E-02 | MND | 5,37E-02 | MND | 2,09E-05 | 1,68E-04 | 1,55E-03 | 1,86E-05 | -1,89E-01 |
| Ecotoxicity (freshwater) | CTUe | 5,68E+01 | 4,46E-02 | 2,13E-01 | 5,71E+01 | 2,58E-02 | 2,27E-02 | MND | MND | MND | 3,70E-01 | MND | 3,95E-02 | MND | 2,60E-03 | 3,10E-02 | 1,70E-01 | 1,80E-01 | -4,84E+00 |
| Human toxicity, cancer | CTUh | 5,46E-08 | 3,58E-12 | 1,75E-11 | 5,46E-08 | 2,07E-12 | 4,36E-12 | MND | MND | MND | 1,51E-10 | MND | 4,13E-12 | MND | 3,71E-13 | 2,41E-12 | 1,75E-11 | 1,89E-13 | -2,04E-09 |
| Human tox. non-cancer | CTUh | 6,22E-08 | 2,04E-10 | 3,47E-10 | 6,27E-08 | 1,18E-10 | 2,25E-10 | MND | MND | MND | 1,22E-09 | MND | 1,29E-10 | MND | 5,87E-12 | 1,28E-10 | 1,08E-09 | 1,39E-11 | -1,89E-08 |
| SQP[7] | - | 5,34E+01 | 3,17E-01 | 3,28E+01 | 8,66E+01 | 1,84E-01 | 3,01E-02 | MND | MND | MND | 5,45E-01 | MND | 1,57E-01 | MND | 3,30E-03 | 1,46E-01 | 3,74E-01 | 4,05E-02 | -6,96E+00 |

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 | 7,48E+00 | 4,32E-03 | 2,54E+00 | 1,00E+01 | 2,50E-03 | -1,76E+00 | MND | MND | MND | 2,45E-01 | MND | 5,03E-01 | MND | 2,99E-04 | 2,78E-03 | -2,51E+00 | -2,20E-01 | -1,27E+01 |
| Renew. PER as material | MJ | 7,70E+00 | 0,00E+00 | 1,78E+00 | 9,48E+00 | 0,00E+00 | -2,31E+00 | MND | MND | MND | 0,00E+00 | MND | 0,00E+00 | MND | 0,00E+00 | 0,00E+00 | -7,11E+00 | -5,26E-02 | -4,33E-01 |
| Total use of renew. PER | MJ | 1,52E+01 | 4,32E-03 | 4,32E+00 | 1,95E+01 | 2,50E-03 | -4,07E+00 | MND | MND | MND | 2,45E-01 | MND | 5,03E-01 | MND | 2,99E-04 | 2,78E-03 | -9,62E+00 | -2,72E-01 | -1,31E+01 |
| Non-re. PER as energy | MJ | 3,75E+01 | 3,15E-01 | 1,03E+00 | 3,89E+01 | 1,82E-01 | -2,26E-01 | MND | MND | MND | 1,33E+00 | MND | 7,37E-01 | MND | 4,72E-02 | 2,02E-01 | -5,09E-01 | -4,87E-01 | -1,98E+01 |
| Non-re. PER as material | MJ | 1,41E+00 | 0,00E+00 | 2,90E-01 | 1,70E+00 | 0,00E+00 | -2,97E-01 | MND | MND | MND | 5,95E-03 | MND | 0,00E+00 | MND | 0,00E+00 | 0,00E+00 | -1,34E+00 | -6,78E-02 | 1,28E-03 |
| Total use of non-re. PER | MJ | 3,89E+01 | 3,15E-01 | 1,32E+00 | 4,06E+01 | 1,82E-01 | -5,23E-01 | MND | MND | MND | 1,34E+00 | MND | 7,37E-01 | MND | 4,72E-02 | 2,02E-01 | -1,85E+00 | -5,55E-01 | -1,98E+01 |
| Secondary materials | kg | 4,75E-01 | 1,34E-04 | 3,98E-04 | 4,75E-01 | 7,76E-05 | 7,82E-05 | MND | MND | MND | 4,90E-02 | MND | 8,79E-05 | MND | 1,96E-05 | 8,95E-05 | 3,18E-04 | 5,89E-06 | 1,32E-01 |
| Renew. secondary fuels | MJ | 2,71E-01 | 1,70E-06 | 2,55E-04 | 2,71E-01 | 9,86E-07 | 1,61E-06 | MND | MND | MND | 4,72E-05 | MND | 2,82E-07 | MND | 5,12E-08 | 1,14E-06 | 8,88E-06 | 1,11E-07 | -1,36E-04 |
| Non-ren. secondary fuels | MJ | 1,74E-02 | 0,00E+00 | 0,00E+00 | 1,74E-02 | 0,00E+00 | 1,03E-04 | MND | MND | MND | 0,00E+00 | MND | 0,00E+00 | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of net fresh water | $m^3$ | 1,85E-02 | 4,66E-05 | 4,63E-04 | 1,90E-02 | 2,69E-05 | -2,32E-06 | MND | MND | MND | 1,01E-03 | MND | 9,59E-04 | MND | 3,12E-06 | 2,78E-05 | 1,58E-04 | -1,36E-04 | -3,12E-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 | 4,74E-01 | 5,34E-04 | 2,29E-03 | 4,76E-01 | 3,09E-04 | 7,77E-04 | MND | MND | MND | 2,58E-02 | MND | 5,25E-04 | MND | 5,25E-05 | 3,50E-04 | 2,58E-03 | 2,77E-05 | -6,62E-01 |
| Non-hazardous waste | kg | 6,86E+00 | 9,88E-03 | 1,88E-01 | 7,06E+00 | 5,72E-03 | 1,60E-01 | MND | MND | MND | 6,72E-01 | MND | 1,03E-02 | MND | 7,15E-04 | 6,53E-03 | 2,18E-01 | 1,92E-01 | -2,79E+00 |
| Radioactive waste | kg | 6,93E-05 | 6,72E-08 | 1,11E-06 | 7,05E-05 | 3,89E-08 | 1,32E-07 | MND | MND | MND | 5,70E-06 | MND | 1,15E-05 | MND | 5,12E-09 | 4,11E-08 | 3,94E-07 | 4,46E-09 | -4,33E-05 |

## END OF LIFE – OUTPUT FLOWS

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Components for re-use | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | MND | MND | 0,00E+00 | MND | 0,00E+00 | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for recycling | kg | 3,46E-03 | 0,00E+00 | 2,85E-02 | 3,20E-02 | 0,00E+00 | 5,89E-02 | MND | MND | MND | 3,81E-02 | MND | 0,00E+00 | MND | 0,00E+00 | 0,00E+00 | 7,27E-01 | 0,00E+00 | 0,00E+00 |
| Materials for energy rec | kg | 1,32E-02 | 0,00E+00 | 0,00E+00 | 1,32E-02 | 0,00E+00 | 9,76E-02 | MND | MND | MND | 3,20E-05 | MND | 0,00E+00 | MND | 0,00E+00 | 0,00E+00 | 1,67E-01 | 0,00E+00 | 0,00E+00 |
| Exported energy | MJ | 3,62E-04 | 0,00E+00 | 0,00E+00 | 3,62E-04 | 0,00E+00 | 2,01E+00 | MND | MND | MND | 1,26E-03 | MND | 0,00E+00 | 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 | 2,48E-01 | MND | MND | MND | 1,60E-04 | MND | 0,00E+00 | MND | 0,00E+00 | 0,00E+00 | 1,50E-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 | 1,76E+00 | MND | MND | MND | 1,10E-03 | MND | 0,00E+00 | MND | 0,00E+00 | 0,00E+00 | 2,90E-01 | 0,00E+00 | 0,00E+00 |

## ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

| 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 | 5,01E-01 | 2,16E-02 | 5,12E-02 | 5,74E-01 | 1,25E-02 | 1,04E-02 | MND | MND | MND | 8,93E-02 | MND | 5,14E-03 | MND | 3,59E-03 | 1,42E-02 | 6,29E-02 | 3,04E-03 | -1,98E+00 |
| Ozone depletion Pot. | kg $CFC_{-11}$e | 7,26E-05 | 2,56E-10 | 3,51E-09 | 7,26E-05 | 1,48E-10 | 5,07E-11 | MND | MND | MND | 1,10E-09 | MND | 1,11E-10 | MND | 4,37E-11 | 1,62E-10 | 2,40E-10 | 1,86E-11 | -1,32E-08 |
| Acidification | kg $SO_2$e | 6,73E-03 | 5,65E-05 | 1,51E-04 | 6,93E-03 | 3,27E-05 | 2,42E-05 | MND | MND | MND | 2,87E-04 | MND | 1,94E-05 | MND | 2,29E-05 | 3,67E-05 | 1,57E-04 | 4,10E-06 | -1,35E-02 |
| Eutrophication | kg $PO_4^3$e | 1,19E-03 | 1,38E-05 | 3,56E-04 | 1,56E-03 | 7,97E-06 | 7,36E-06 | MND | MND | MND | 6,57E-05 | MND | 4,43E-06 | MND | 5,34E-06 | 8,92E-06 | 3,11E-05 | 2,66E-06 | -9,40E-04 |
| POCP (“smog”) | kg $C_2H_4$e | 2,36E-04 | 5,04E-06 | 3,30E-05 | 2,74E-04 | 2,92E-06 | 2,00E-06 | MND | MND | MND | 2,43E-05 | MND | 1,44E-06 | MND | 1,71E-06 | 3,28E-06 | 1,04E-05 | 7,83E-07 | -1,11E-03 |
| ADP-elements | kg Sbe | 7,38E-04 | 5,91E-08 | 2,12E-07 | 7,38E-04 | 3,42E-08 | 9,04E-09 | MND | MND | MND | 5,40E-07 | MND | 1,05E-07 | MND | 1,26E-09 | 4,37E-08 | 7,81E-07 | 1,50E-09 | -5,63E-06 |
| ADP-fossil | MJ | 6,62E+00 | 3,11E-01 | 8,37E-01 | 7,77E+00 | 1,80E-01 | 5,16E-02 | MND | MND | MND | 9,64E-01 | MND | 2,76E-02 | MND | 4,68E-02 | 2,00E-01 | 2,43E-01 | 1,86E-02 | -1,69E+01 |

# THIRD-PARTY VERIFICATION STATEMENT

**VERIFICATION PROCESS FOR THIS EPD**

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

**THIRD-PARTY VERIFICATION STATEMENT**

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Imane Uald Lamkaddam as an authorized verifier for EPD Hub Limited
03.07.2025