# ENVIRONMENTAL PRODUCT DECLARATION

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

Halton Rex 600 (RE6) 2400
Oy Halton Group

**EPD HUB, HUB-1092**
Publishing date 8 February 2024, last updated on 8 February 2024, valid until 8 February 2029.

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| Manufacturer | Oy Halton Group |
| Address | Haltonintie 1-3, 47400 Kausala |
| Contact details | - |
| Website | https://www.halton.com/ |

## EPD STANDARDS, SCOPE AND VERIFICATION

| | |
|---|---|
| Program operator | EPD Hub, hub@epdhub.com |
| Reference standard | EN 15804+A2:2019 and ISO 14025 |
| PCR | EPD Hub Core PCR version 1.0, 1 Feb 2022 |
| Sector | Manufactured 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 | Monika Kokko, Halton Oy |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal certification ☑ External verification |
| EPD verifier | Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited |

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

## PRODUCT

| | |
|---|---|
| Product name | Halton Rex 600 (RE6) 2400 |
| Additional labels | Halton Rex 600 (RE6), Halton Rex REE, Halton Rex RXP |
| Product reference | RE6/A-2400-2100-R2 |
| Place of production | Finland, Kausala |
| Period for data | Calendar year, 2022 |
| Averaging in EPD | Multiple products |
| Variation in GWP-fossil for A1-A3 | -20/-9 % |

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| **Declared unit** | 1 kg |
| **Declared unit mass** | 1 kg |
| **GWP-fossil, A1-A3 (kgCO2e)** | 6,25E+00 |
| **GWP-total, A1-A3 (kgCO2e)** | 5,84E+00 |
| **Secondary material, inputs (%)** | 5.75 |
| **Secondary material, outputs (%)** | 100,0 |
| **Total energy use, A1-A3 (kWh)** | 30,1 |
| **Total water use, A1-A3 (m3e)** | 4,39E-02 |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

Halton Group is a family-owned, global technology leader in indoor air solutions for demanding spaces. At Halton, our mission is to enable people's well-being in these environments.
We design, manufacture, and deliver indoor environment solutions for
• Commercial and public buildings
• Healthcare institutions and laboratories
• Professional kitchens and restaurants
• Energy production and heavy industry environments
• Marine vessels
We work in close cooperation with our customers and partners to meet their special needs and even exceed expectations. We enable safe, comfortable, and productive indoor environments that are energy-efficient and comply with sustainable principles.

## PRODUCT DESCRIPTION

Halton Rex 600 chilled beam is:

Combined cooling, heating, and supply air unit for flush installation within a suspended ceiling.
Well suited for spaces with high cooling loads, low humidity loads, and variable ventilation requirements.
Ideal solution for applications where high-quality environmental conditions, demand-based ventilation, and individual room control are appreciated.

Typical applications: office rooms, landscape offices, and meeting rooms.

The Halton Rex 600 chilled beam is designed for typical office space ventilation requirements with high flexibility of airflow adjustability. The Halton Rex 600 operation can be easily adapted to changed operation conditions and requirements from the design to the end of the building life cycle.

Easy and fast selection with the Halton HIT Design tool
Individually adjustable velocity conditions with Halton Velocity Control (HVC)
In-built flexibility of operation for partition wall relocations with Halton Velocity Control
Individually adjustable supply air flow rate for changes in space layout using Halton Air Quality (HAQ) control
Demand-based control of supply air flow rate for efficient use of energy in constant-pressure ductwork zone applications; when the air flow rate changes do not affect the coil cooling/heating capacities of the chilled beam.
Effective site logistics
Enhanced life cycle performance with optimized low air and water flow rates

Further information can be found at https://www.halton.com/.

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass- % | Material origin |
|---|---|---|
| Metals | 99,5 | EU |
| Minerals | - | - |
| Fossil materials | 0,5 | EU |
| Bio-based materials | - | - |

## BIOGENIC CARBON CONTENT

The product's biogenic carbon content at the factory gate

| | |
|---|---|
| Biogenic carbon content in product, kg C | 0 |
| Biogenic carbon content in packaging, kg C | 0,12 |

## FUNCTIONAL UNIT AND SERVICE LIFE

| | |
|---|---|
| Declared unit | 1 kg |
| Mass per declared unit | 1 kg |
| Functional unit | 1 kg of RE6 Size 2400 heating and cooling capacity, sustaining airflow of 360 $m^3/h$ throughout the Reference Service Life (RSL). Operational 24/7, 365 days a year |
| Reference service life | 25 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 | Deconstr./demol. | Transport | Waste processing | Disposal | Reuse | Recovery | Recycling |

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

## MANUFACTURING AND PACKAGING (A1-A3)

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

The active chilled beams can be tailored to suit various customer needs. For example, different sizes, colors, and device integration options are available. The production stage (A3) on Haltons production sites covers the following manufacturing processes; raw material supply (steel, plastics, and sealants), steel cutting, steel bending, painting, assembly, and packaging. After that, products will be transported to the client. The production processes of products are presented in the figure below. The chilled beams are manufactured in the Kausala factory in Finland.

## TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurring from final product delivery to the construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The installation of the product requires zero to minimal amount of electricity and doesn't need the use of heavy machinery. Installation loss is zero as the correct product size is selected when ordering.

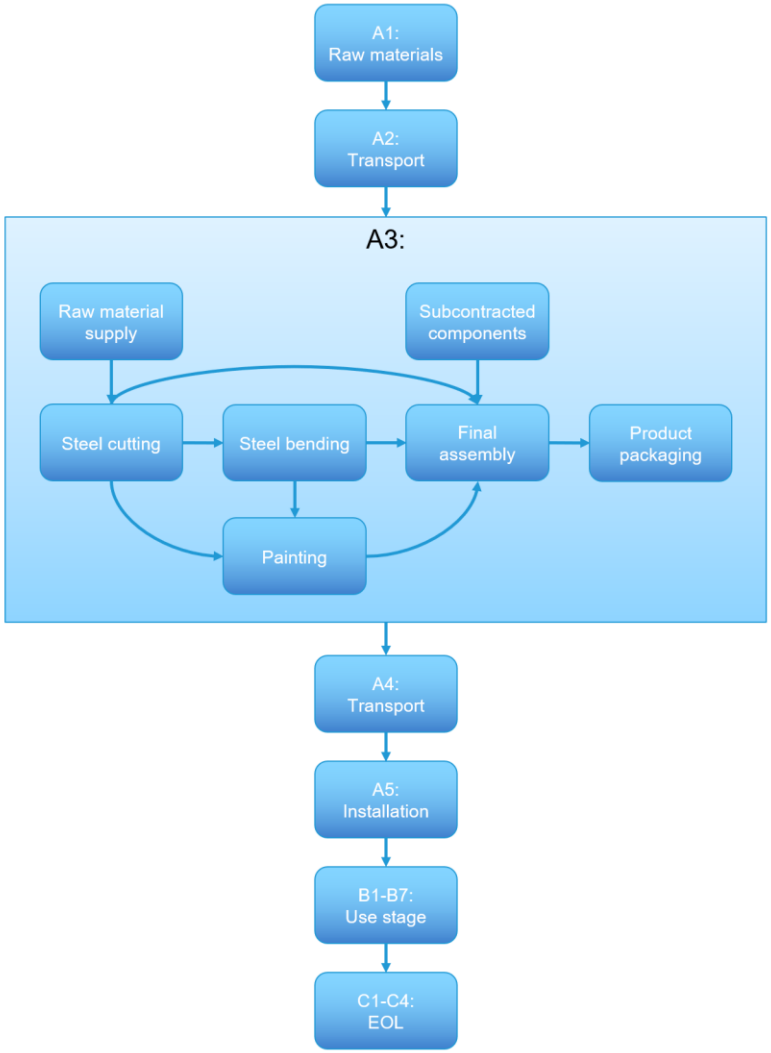
## PRODUCT USE AND MAINTENANCE (B1-B7)

The product doesn't have any wearing parts or need for any consumables replacement. The product operates without consuming energy and is maintenance-free, but can be wiped with a damp cloth if necessary. Additionally, it is compatible with all energy sources.
Air, soil, and water impacts during the use phase have not been studied.

## PRODUCT END OF LIFE (C1-c4, D)

The product undergoes complete recycling at the end of its life within the EU area. In the EU area, 90% of steel is recycled. The study considers the advantages and environmental impacts of recycling as a benefit, replacing the use of virgin materials. Additionally, the study accounts for the benefits derived from the incineration of materials for energy generation.

# MANUFACTURING PROCESS



# LIFE-CYCLE ASSESSMENT

## CUT-OFF CRITERIA

The study does not exclude any modules or processes that are stated as 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 materials and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module-specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

## ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

| Data type | Allocation |
|---|---|
| Raw materials | No allocation |
| Packaging materials | No allocation |
| Ancillary materials | Allocated by mass or volume |
| Manufacturing energy and waste | Allocated by mass or volume |

## AVERAGES AND VARIABILITY

| | |
|---|---|
| Type of average | Multiple products |
| Averaging method | Representative product |
| Variation in GWP-fossil for A1-A3 | -20/-9 % |

The EPD averages three products: RE6, REE, and RXP ranging in different sizes. The averaging was done by calculating the weighted average of a representative product of total units produced. The manufacturing process is similar in all declared products and produced using similar materials. All products are produced in the same location. The variation is due to some structural differences in the products.

## 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. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.

# ENVIRONMENTAL IMPACT DATA

## CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP – total[1)] | kg $CO_2$e | 5,17E+00 | 1,52E-02 | 6,55E-01 | 5,84E+00 | 1,60E-02 | 4,42E-01 | MND | 4,05E-03 | MND | MND | MND | MND | MND | MNR | 6,87E-03 | 2,03E-02 | 1,47E-02 | -1,40E+00 |
| GWP – fossil | kg $CO_2$e | 5,15E+00 | 1,52E-02 | 1,09E+00 | 6,25E+00 | 1,60E-02 | 7,13E-03 | MND | 4,05E-03 | MND | MND | MND | MND | MND | MNR | 6,87E-03 | 2,03E-02 | 1,47E-02 | -1,40E+00 |
| GWP – biogenic | kg $CO_2$e | 2,60E-04 | 0,00E+00 | -4,35E-01 | -4,35E-01 | 0,00E+00 | 4,35E-01 | MND | 0,00E+00 | MND | MND | MND | MND | MND | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | -4,52E-03 |
| GWP – LULUC | kg $CO_2$e | 2,53E-02 | 5,59E-06 | 9,52E-04 | 2,62E-02 | 5,90E-06 | 2,70E-06 | MND | 6,07E-06 | MND | MND | MND | MND | MND | MNR | 2,47E-06 | 2,64E-05 | 1,25E-07 | -2,62E-04 |
| Ozone depletion pot. | kg $CFC_{-11}$e | 1,56E-07 | 3,52E-09 | 7,75E-08 | 2,37E-07 | 3,68E-09 | 6,77E-10 | MND | 2,95E-10 | MND | MND | MND | MND | MND | MNR | 1,64E-09 | 2,66E-09 | 3,23E-11 | -5,44E-08 |
| Acidification potential | mol $H^+$e | 3,60E-02 | 6,43E-05 | 9,85E-03 | 4,59E-02 | 6,78E-05 | 5,69E-05 | MND | 3,71E-05 | MND | MND | MND | MND | MND | MNR | 2,87E-05 | 2,56E-04 | 3,40E-06 | -5,75E-03 |
| EP-freshwater[2)] | kg Pe | 6,05E-04 | 1,22E-07 | 4,43E-05 | 6,50E-04 | 1,31E-07 | 8,89E-08 | MND | 4,80E-06 | MND | MND | MND | MND | MND | MNR | 4,70E-08 | 1,07E-06 | 3,87E-09 | -5,92E-05 |
| EP-marine | kg Ne | 7,70E-03 | 1,92E-05 | 2,47E-03 | 1,02E-02 | 2,01E-05 | 2,55E-05 | MND | 1,06E-04 | MND | MND | MND | MND | MND | MNR | 8,68E-06 | 5,48E-05 | 1,59E-06 | -1,16E-03 |
| EP-terrestrial | mol Ne | 1,06E-01 | 2,11E-04 | 3,25E-02 | 1,39E-01 | 2,22E-04 | 2,72E-04 | MND | 9,64E-05 | MND | MND | MND | MND | MND | MNR | 9,56E-05 | 6,32E-04 | 1,63E-05 | -1,36E-02 |
| POCP ("smog")[3)] | kg NMVOCe | 2,37E-02 | 6,76E-05 | 7,14E-03 | 3,09E-02 | 7,11E-05 | 6,88E-05 | MND | 1,70E-05 | MND | MND | MND | MND | MND | MNR | 3,08E-05 | 1,74E-04 | 3,96E-06 | -6,91E-03 |
| ADP-minerals & metals[4)] | kg Sbe | 4,11E-04 | 3,57E-08 | 5,18E-06 | 4,16E-04 | 3,75E-08 | 2,37E-08 | MND | 4,50E-08 | MND | MND | MND | MND | MND | MNR | 1,61E-08 | 2,66E-06 | 1,33E-09 | -2,63E-05 |
| ADP-fossil resources | MJ | 5,92E+01 | 2,29E-01 | 3,25E+01 | 9,19E+01 | 2,40E-01 | 6,45E-02 | MND | 5,62E-02 | MND | MND | MND | MND | MND | MNR | 1,05E-01 | 2,82E-01 | 2,74E-03 | -1,24E+01 |
| Water use[5)] | $m^3$e depr. | 1,58E+00 | 1,03E-03 | 1,41E+00 | 2,99E+00 | 1,08E-03 | 2,02E-02 | MND | 2,36E-02 | MND | MND | MND | MND | MND | MNR | 4,85E-04 | 5,24E-03 | 5,83E-04 | -2,60E-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 | 2,98E-07 | 1,76E-09 | 9,49E-08 | 3,94E-07 | 1,84E-09 | 7,39E-10 | MND | 5,40E-10 | MND | MND | MND | MND | MND | MNR | 8,08E-10 | 3,38E-09 | 1,66E-11 | -9,21E-08 |
| Ionizing radiation[6)] | kBq U235e | 2,35E-01 | 1,10E-03 | 1,36E+00 | 1,59E+00 | 1,14E-03 | 2,42E-04 | MND | 9,20E-04 | MND | MND | MND | MND | MND | MNR | 5,41E-04 | 3,05E-03 | 8,41E-06 | 3,89E-02 |
| Ecotoxicity (freshwater) | CTUe | 1,00E+03 | 2,04E-01 | 2,63E+01 | 1,03E+03 | 2,16E-01 | 1,04E-01 | MND | 2,04E+00 | MND | MND | MND | MND | MND | MNR | 8,74E-02 | 1,22E+00 | 3,10E-02 | -4,94E+01 |
| Human toxicity, cancer | CTUh | 7,76E-09 | 5,06E-12 | 2,52E-09 | 1,03E-08 | 5,31E-12 | 1,51E-11 | MND | 2,60E-11 | MND | MND | MND | MND | MND | MNR | 2,31E-12 | 3,74E-11 | 1,31E-12 | 1,16E-08 |
| Human tox. non-cancer | CTUh | 9,57E-08 | 2,04E-10 | 6,99E-08 | 1,66E-07 | 2,14E-10 | 6,57E-10 | MND | 5,97E-10 | MND | MND | MND | MND | MND | MNR | 9,25E-11 | 1,67E-09 | 5,01E-11 | -3,32E-08 |
| SQP[7)] | - | 1,55E+01 | 2,64E-01 | 4,02E+01 | 5,60E+01 | 2,77E-01 | 4,41E-02 | MND | 4,24E-02 | MND | MND | MND | MND | MND | MNR | 1,23E-01 | 5,70E-01 | 9,20E-04 | -4,63E+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 | 1,39E+01 | 2,63E-03 | 3,15E+00 | 1,70E+01 | 2,71E-03 | 1,71E-03 | MND | 6,98E-03 | MND | MND | MND | MND | MND | MNR | 1,36E-03 | 4,76E-02 | 1,07E-04 | -1,08E+00 |
| Renew. PER as material | MJ | 0,00E+00 | 0,00E+00 | 3,80E+00 | 3,80E+00 | 0,00E+00 | -3,80E+00 | MND | 0,00E+00 | MND | MND | MND | MND | MND | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | -3,76E-03 |
| Total use of renew. PER | MJ | 1,39E+01 | 2,63E-03 | 6,95E+00 | 2,08E+01 | 2,71E-03 | -3,80E+00 | MND | 6,98E-03 | MND | MND | MND | MND | MND | MNR | 1,36E-03 | 4,76E-02 | 1,07E-04 | -1,08E+00 |
| Non-re. PER as energy | MJ | 5,90E+01 | 2,29E-01 | 3,20E+01 | 9,12E+01 | 2,40E-01 | 6,45E-02 | MND | 5,61E-02 | MND | MND | MND | MND | MND | MNR | 1,05E-01 | 2,83E-01 | 2,74E-03 | -1,24E+01 |
| Non-re. PER as material | MJ | 1,60E-01 | 0,00E+00 | 5,05E-01 | 6,65E-01 | 0,00E+00 | -5,05E-01 | MND | 0,00E+00 | MND | MND | MND | MND | MND | MNR | 0,00E+00 | -1,60E-01 | 0,00E+00 | -2,10E-04 |
| Total use of non-re. PER | MJ | 5,92E+01 | 2,29E-01 | 3,25E+01 | 9,19E+01 | 2,40E-01 | -4,41E-01 | MND | 5,61E-02 | MND | MND | MND | MND | MND | MNR | 1,05E-01 | 1,23E-01 | 2,74E-03 | -1,24E+01 |
| Secondary materials | kg | 5,75E-02 | 6,37E-05 | 2,04E-02 | 7,80E-02 | 6,67E-05 | 1,22E-04 | MND | 2,00E-04 | MND | MND | MND | MND | MND | MNR | 2,96E-05 | 3,01E-04 | 2,44E-06 | 7,96E-01 |
| Renew. secondary fuels | MJ | 4,84E-04 | 6,32E-07 | 1,28E-01 | 1,28E-01 | 6,73E-07 | 4,48E-07 | MND | 2,78E-07 | MND | MND | MND | MND | MND | MNR | 2,61E-07 | 1,56E-05 | 8,59E-08 | -5,62E-04 |
| Non-ren. secondary fuels | MJ | 2,52E-09 | 0,00E+00 | 0,00E+00 | 2,52E-09 | 0,00E+00 | 0,00E+00 | MND | 0,00E+00 | MND | MND | MND | MND | MND | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of net fresh water | $m^3$ | 3,30E-02 | 2,98E-05 | 1,09E-02 | 4,39E-02 | 3,11E-05 | -5,60E-05 | MND | 5,56E-04 | MND | MND | MND | MND | MND | MNR | 1,39E-05 | 1,73E-04 | 2,18E-05 | -3,26E-03 |

*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 | 7,16E-01 | 2,96E-04 | 6,69E-01 | 1,39E+00 | 3,19E-04 | 1,02E-04 | MND | 5,50E-04 | MND | MND | MND | MND | MND | MNR | 1,13E-04 | 1,82E-03 | 0,00E+00 | -4,60E-01 |
| Non-hazardous waste | kg | 3,85E+00 | 4,90E-03 | 3,36E+00 | 7,21E+00 | 5,24E-03 | 3,00E-01 | MND | 1,01E-02 | MND | MND | MND | MND | MND | MNR | 1,96E-03 | 1,58E-01 | 6,19E-03 | -2,37E+00 |
| Radioactive waste | kg | 7,90E-04 | 1,54E-06 | 3,37E-04 | 1,13E-03 | 1,61E-06 | 1,66E-07 | MND | 2,88E-07 | MND | MND | MND | MND | MND | MNR | 7,25E-07 | 1,57E-06 | 0,00E+00 | 9,18E-07 |

## END OF LIFE – OUTPUT FLOWS

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Components for re-use | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | 0,00E+00 | MND | MND | MND | MND | MND | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for recycling | kg | 0,00E+00 | 0,00E+00 | 2,81E-01 | 2,81E-01 | 0,00E+00 | 1,17E-02 | MND | 0,00E+00 | MND | MND | MND | MND | MND | MNR | 0,00E+00 | 1,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy rec | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | 0,00E+00 | MND | MND | MND | MND | MND | MNR | 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 | 0,00E+00 | MND | 0,00E+00 | MND | MND | MND | MND | MND | MNR | 0,00E+00 | 1,91E-01 | 0,00E+00 | 0,00E+00 |

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

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Global Warming Pot. | kg $CO_2$e | 5,01E+00 | 1,51E-02 | 1,22E+00 | 6,25E+00 | 1,58E-02 | 6,93E-03 | MND | 4,02E-03 | MND | MND | MND | MND | MND | MNR | 6,80E-03 | 2,00E-02 | 1,47E-02 | -1,32E+00 |
| Ozone depletion Pot. | kg $CFC_{-11}$e | 1,34E-07 | 2,79E-09 | 6,80E-08 | 2,05E-07 | 2,92E-09 | 5,61E-10 | MND | 2,69E-10 | MND | MND | MND | MND | MND | MNR | 1,30E-09 | 2,14E-09 | 2,91E-11 | -6,06E-08 |
| Acidification | kg $SO_2$e | 2,74E-02 | 4,99E-05 | 7,25E-03 | 3,47E-02 | 5,27E-05 | 4,05E-05 | MND | 2,80E-05 | MND | MND | MND | MND | MND | MNR | 2,22E-05 | 2,06E-04 | 2,42E-06 | -4,66E-03 |
| Eutrophication | kg $PO_4^3$e | 3,79E-02 | 1,13E-05 | 1,80E-02 | 5,59E-02 | 1,20E-05 | 4,45E-05 | MND | 7,29E-05 | MND | MND | MND | MND | MND | MNR | 4,96E-06 | 6,77E-05 | 1,75E-06 | -2,43E-03 |
| POCP (“smog”) | kg $C_2H_4$e | 1,59E-03 | 1,95E-06 | 7,12E-04 | 2,31E-03 | 2,06E-06 | 1,46E-06 | MND | 1,23E-06 | MND | MND | MND | MND | MND | MNR | 8,74E-07 | 7,83E-06 | 5,24E-08 | -7,88E-04 |
| ADP-elements | kg Sbe | 4,11E-04 | 3,46E-08 | 4,61E-06 | 4,15E-04 | 3,63E-08 | 2,21E-08 | MND | 3,96E-08 | MND | MND | MND | MND | MND | MNR | 1,57E-08 | 2,66E-06 | 1,04E-09 | -2,62E-05 |
| ADP-fossil | MJ | 5,74E+01 | 2,29E-01 | 3,25E+01 | 9,01E+01 | 2,40E-01 | 6,45E-02 | MND | 5,61E-02 | MND | MND | MND | MND | MND | MNR | 1,05E-01 | 2,82E-01 | 2,74E-03 | -1,24E+01 |

# VERIFICATION STATEMENT

## VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified following ISO 14025 by an independent, third-party verifier by reviewing results, documents, and compliance with reference standards, 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 the 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 concerning the procedural and methodological requirements in ISO 14025:2010 and reference standard.

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

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

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

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
08.02.2024