# ENVIRONMENTAL PRODUCT DECLARATION

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

Steel panel and column radiators
Lenhovda Radiatorfabrik AB

**EPD HUB, HUB-0764**
Publishing date 19 October 2023, last updated on 19 October 2023, valid until 19 October 2028.

Created with One Click LCA

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| Manufacturer | Lenhovda Radiatorfabrik AB |
| Address | Apoteksgatan 20, 364 42 Lenhovda, Sweden |
| Contact details | info@lenhovda.com |
| Website | https://lenhovda.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 – A5, C1 – C4, and D |
| EPD author | Felix Meyer, Gidås Sustainability Agency |
| 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 | Steel panel and column radiators |
| Additional labels | - |
| Product reference | - |
| Place of production | Lenhovda, Sweden |
| Period for data | 01/01/2022 – 31/12/2022 |
| Averaging in EPD | Multiple products |
| Variation in GWP-fossil for A1-A3 | 5.1 % |

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| **Declared unit** | 1 kg |
| **Declared unit mass** | 1 kg |
| **GWP-fossil, A1-A3 (kgCO2e)** | 2.57 |
| **GWP-total, A1-A3 (kgCO2e)** | 2.31 |
| **Secondary material, inputs (%)** | 14.4 |
| **Secondary material, outputs (%)** | 99.5 |
| **Total energy use, A1-A3 (kWh)** | 10.5 |
| **Total water use, A1-A3 (m3e)** | 0.0176 |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

Established in 1936, Lenhovda Radiatorfabrik use decades of experience and a combination of the latest industrial technologies and traditional craftsmanship, to offer flexible heating solutions to their customers.

Lenhovda Radiatorfabrik is a Swedish manufacturer of convectors and a wide range of radiators which are custom made to fit the needs of their clients. Both modern heating solutions and traditional designs are offered while maintaining energy efficiency throughout.

Quality and longevity of the products is very important to the business, which is why Lenhovda Radiatorfabrik offer all customers are offered a 15-year warranty on Lenhovda Radiatorfabrik's products.

## PRODUCT DESCRIPTION

This EPD considers the environmental impacts of the *LP Radiators, MP Radiators,* and *Sectional Radiators* manufactured by Lenhovda Radiatorfabrik AB. These radiators are used for indoor heating and are manufactured in a variety of sizes, shapes, and colours as requested by the client. Manufacturing is flexible, so that the radiators may be curved, free standing or designed for use in stairways.

All radiators are made of partly recycled steel and covered in a powder coating of various colours depending on the customer's preference. The products are manufactured in accordance to EN 442-1&2:2014.

Further information can be found at https://lenhovda.com/.

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass- % | Material origin |
|---|---|---|
| Metals | 98 | SE / TR |
| Minerals | 0 | - |
| Fossil materials | 2 | SE |
| 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 | 0.073 |

## FUNCTIONAL UNIT AND SERVICE LIFE

| | |
|---|---|
| Declared unit | 1 kg |
| Mass per declared unit | 1 kg |
| Functional unit | Not relevant |
| Reference service life | Use stage not included |

## SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

# PRODUCT LIFE-CYCLE

## SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

| Product stage | | | Assembly stage | | Use stage | | | | | | | End of life stage | | | | Beyond the system boundaries | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D | | |
| x | x | x | x | x | MND | MND | MND | MND | MND | MND | MND | x | x | x | x | x | | |
| Raw materials | Transport | Manufacturing | Transport | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | 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 radiators manufactured by Lenhovda Radiatorfabrik are produced by pressing Coldrolled steel coils into the desired shape and welding the individual pieces together. Steel connections are welded onto the body of the radiator. Client-specific adjustments and customisations are performed before the radiator is sent to pressure testing, surface treatment and painting. Before the entire radiator is assembled, packed and sent to the customer, precise quality controls are performed.

The electricity mix used for all manufacturing energy consumption is Swedish electricity mix from the national grid (0.0415 kg $CO_2$e/kWh) as well as private electricity generation using solar PV's (9% of total supply).

If transport modes and distances were unknown for certain materials, a transport distance of 50 km was assumed, in combination with Lorry, >32 tonne, EURO 5 being the chosen transport mode. These assumptions were made for all life cycle modules unless longer distances or other modes (e.g. sea or air travel) were relevant.

The packaging used to transport the product are wooden pallets, corrugated board boxes, shrink film and plastic straps (the plastic packaging is recyclable).

The ancillary materials used are water and various surface treatment products, which are exchanged twice a year and treated as hazardous waste.

As processes for recycling steel are highly efficient in Sweden, it has been assumed that 100 % of the steel manufacturing losses go to recycling. Waste coating powder is sent to incineration with energy recovery.

## TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final product delivery to construction site (A4) cover direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. See previous section for additional transport information.

Energy consumption during installation has not been included as a very limited amount of electricity is needed to attach the product to a wall or

floor. The environmental impact from this activity was therefore considered negligible.

No losses have been assumed for the installation of the radiators as the entire product is delivered ready to install without any need for adjustments of dimensions. Any damages are unlikely to occur and have thus been excluded from the analysis.

While 100 % of the waste packaging is assumed to be sorted for municipal incineration, an efficiency rate of 73 % when recovering energy and electricity during incineration of the packaging materials has been assumed. The transport distance from customer to the nearest waste treatment plant was set to 50 km, in combination with Lorry, >32 tonne, EURO 5 being the chosen transport mode.

## PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

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

The end-of-life stage C1-C4 & D includes:

- Deconstruction/demolition (C1)
- Transport to waste management facility (C2)
- Waste processing for reuse, recovery and/or recycling (C3)
- Waste disposal (C4)

Waste processing and disposal credits are assigned to module D.

Module D includes reuse, recovery and/or recycling potentials conveyed as benefits and net impacts. It was assumed that the recycling of waste steel replaces the production of its virgin counterpart, which is seen as an environmental benefit. However, the loads from the recycling processes have also been reported. As the steel and steel connections used in the product contain 26 % and 25 % recycled material respectively, only the recycling benefits from 26 % or 25 % of the steel materials have been reported.

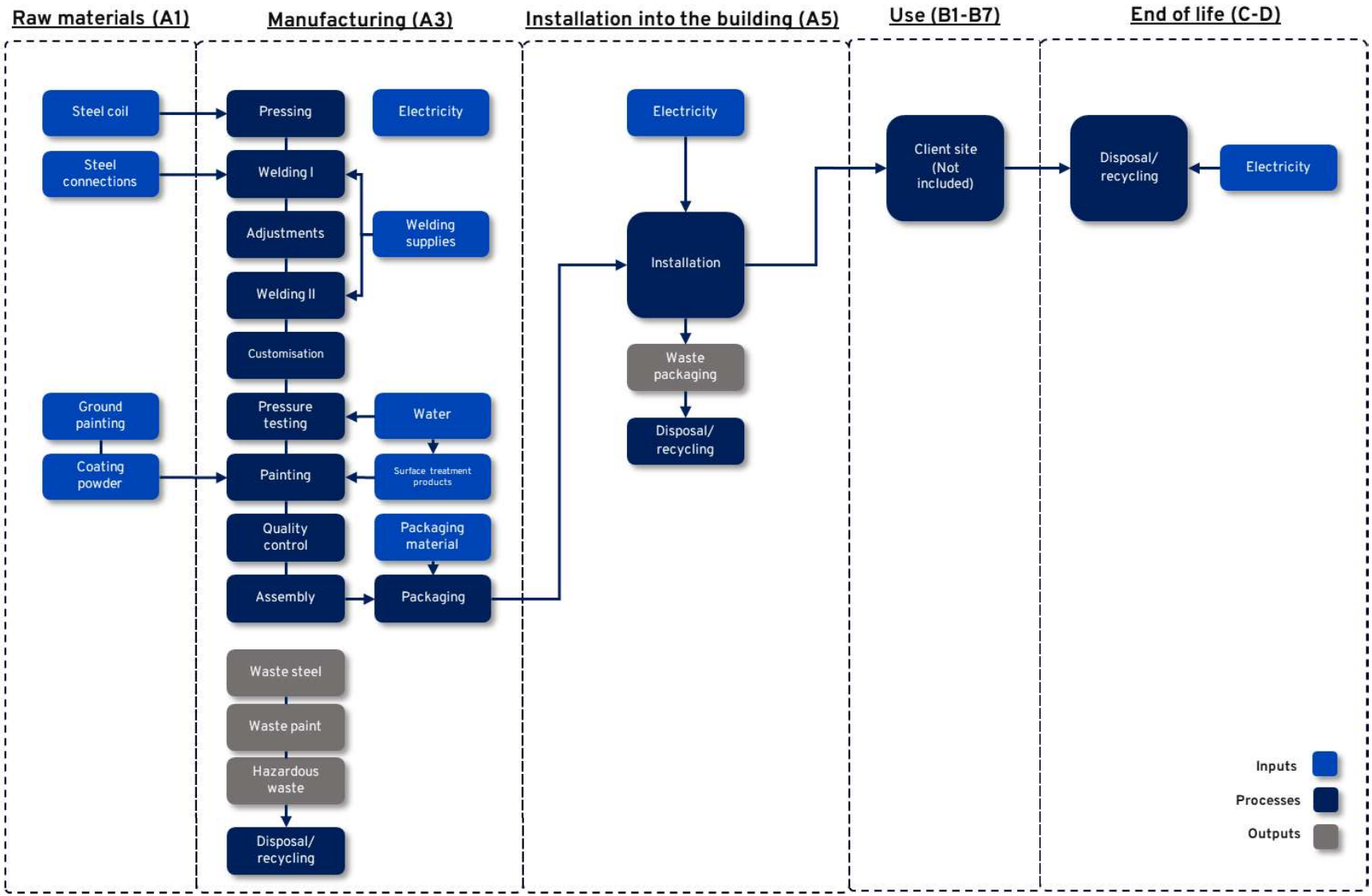
While 100 % of the waste packaging and is assumed to be incinerated in a municipal incineration plant, an efficiency rate of 73 % when recovering energy and electricity during incineration of these materials has been assumed.

Energy consumption during demolition (C1) has not been included as a very limited amount of electricity is needed to detach the product from a wall or floor. The environmental impact from this activity was therefore considered negligible.

The end-of-life of the product is assumed to take place in Sweden, which is why all assumptions and scenarios are made to be representative of Swedish waste treatment processes. As the radiators are large individual units made of metal, they are easy to recycle. Thus, it was assumed that 100 % of the product can be sent to the nearest recycling facility.

If transport modes and distances were unknown for certain materials, a transport distance of 50 km was assumed, in combination with Lorry, >32 tonne, EURO 5 being the chosen transport mode.

# 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 exceeds 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, or 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 | Allocated by mass or volume |
| 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 | Averaged by shares of total mass |
| Variation in GWP-fossil for A1-A3 | 5.1 % |

## 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 3.8 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 $CO_2e$ | 2,40E+00 | 1,84E-02 | -1,03E-01 | 2,31E+00 | 3,71E-02 | 2,69E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,70E-03 | 1,99E-02 | 0,00E+00 | -1,21E+00 |
| GWP – fossil | kg $CO_2e$ | 2,39E+00 | 1,83E-02 | 1,60E-01 | 2,57E+00 | 3,71E-02 | 1,65E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,69E-03 | 2,19E-02 | 0,00E+00 | -1,15E+00 |
| GWP – biogenic | kg $CO_2e$ | 2,34E-03 | 7,25E-06 | -2,67E-01 | -2,65E-01 | 0,00E+00 | 2,67E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | -2,09E-03 | 0,00E+00 | -5,73E-02 |
| GWP – LULUC | kg $CO_2e$ | 4,81E-03 | 6,64E-06 | 4,57E-03 | 9,39E-03 | 1,39E-05 | 1,54E-06 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,73E-06 | 1,82E-05 | 0,00E+00 | -2,67E-04 |
| Ozone depletion pot. | kg $CFC_{-11}e$ | 1,66E-08 | 4,34E-09 | 1,53E-08 | 3,62E-08 | 9,25E-09 | 4,81E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,08E-09 | 1,01E-09 | 0,00E+00 | -4,65E-08 |
| Acidification potential | mol $H^+e$ | 6,14E-03 | 7,68E-05 | 7,97E-04 | 7,01E-03 | 1,18E-04 | 4,94E-06 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,99E-05 | 1,01E-04 | 0,00E+00 | -4,94E-03 |
| EP-freshwater[2)] | kg Pe | 7,57E-06 | 1,32E-07 | 8,58E-06 | 1,63E-05 | 2,65E-07 | 5,94E-08 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,84E-08 | 8,63E-07 | 0,00E+00 | -4,90E-05 |
| EP-marine | kg Ne | 1,14E-03 | 2,31E-05 | 2,16E-04 | 1,38E-03 | 2,61E-05 | 1,14E-06 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,91E-06 | 3,87E-05 | 0,00E+00 | -1,00E-03 |
| EP-terrestrial | mol Ne | 1,21E-02 | 2,55E-04 | 2,15E-03 | 1,45E-02 | 2,89E-04 | 1,11E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 6,52E-05 | 2,57E-04 | 0,00E+00 | -1,17E-02 |
| POCP ("smog")[3)] | kg NMVOCe | 4,03E-03 | 8,20E-05 | 6,28E-04 | 4,74E-03 | 1,14E-04 | 3,30E-06 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,08E-05 | 7,24E-05 | 0,00E+00 | -5,93E-03 |
| ADP-minerals & metals[4)] | kg Sbe | 4,17E-06 | 4,30E-08 | 3,00E-06 | 7,21E-06 | 9,08E-08 | 1,32E-08 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,10E-08 | 6,84E-07 | 0,00E+00 | -2,25E-05 |
| ADP-fossil resources | MJ | 2,14E+01 | 2,79E-01 | 9,41E+00 | 3,11E+01 | 5,93E-01 | 1,27E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,05E-02 | 1,63E-01 | 0,00E+00 | -1,07E+01 |
| Water use[5)] | $m^3e$ depr. | 1,95E-01 | 1,28E-03 | 3,83E-01 | 5,79E-01 | 2,73E-03 | 3,97E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,15E-04 | 5,31E-03 | 0,00E+00 | -2,19E-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 | 9,75E-09 | 2,15E-09 | 1,26E-08 | 2,45E-08 | 4,31E-09 | 6,82E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,41E-00 | 1,70E-09 | 0,00E+00 | -7,93E-08 |
| Ionizing radiation[6)] | kBq U235e | 2,29E-02 | 1,41E-03 | 5,89E-01 | 6,14E-01 | 3,05E-03 | 2,57E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,36E-04 | 2,62E-03 | 0,00E+00 | 3,18E-02 |
| Ecotoxicity (freshwater) | CTUe | 5,47E+00 | 2,37E-01 | 5,61E+00 | 1,13E+01 | 4,93E-01 | 3,08E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 6,34E-02 | 2,91E+00 | 0,00E+00 | -4,24E+01 |
| Human toxicity, cancer | CTUh | 3,46E-00 | 6,14E-02 | 5,41E-00 | 8,93E-00 | 1,28E-01 | 2,38E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,56E-02 | 4,58E-01 | 0,00E+00 | 1,00E-08 |
| Human tox. non-cancer | CTUh | 4,31E-09 | 2,47E-00 | 3,87E-09 | 8,43E-09 | 5,02E-00 | 2,48E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 6,28E-01 | 7,28E-00 | 0,00E+00 | -2,81E-08 |
| SQP[7)] | - | 9,70E-01 | 3,25E-01 | 2,16E+01 | 2,29E+01 | 6,90E-01 | 7,92E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 8,12E-02 | 8,34E-01 | 0,00E+00 | -3,82E+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 | 1,29E+00 | 3,50E-03 | 5,46E+00 | 6,76E+00 | 7,67E-03 | 1,91E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,94E-04 | 2,65E-02 | 0,00E+00 | -9,40E-01 |
| Renew. PER as material | MJ | 2,77E-02 | 0,00E+00 | 2,33E+00 | 2,36E+00 | 0,00E+00 | -2,33E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | -2,77E-02 | 0,00E+00 | 0,00E+00 |
| Total use of renew. PER | MJ | 1,32E+00 | 3,50E-03 | 7,80E+00 | 9,12E+00 | 7,67E-03 | -2,33E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,94E-04 | -1,16E-03 | 0,00E+00 | -9,40E-01 |
| Non-re. PER as energy | MJ | 2,13E+01 | 2,79E-01 | 9,24E+00 | 3,08E+01 | 5,93E-01 | 1,27E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,05E-02 | 1,63E-01 | 0,00E+00 | -1,06E+01 |
| Non-re. PER as material | MJ | 2,22E-01 | 0,00E+00 | 2,79E-01 | 5,01E-01 | 0,00E+00 | -3,07E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | -1,94E-01 | 0,00E+00 | -1,87E-01 |
| Total use of non-re. PER | MJ | 2,15E+01 | 2,79E-01 | 9,52E+00 | 3,13E+01 | 5,93E-01 | -2,94E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,05E-02 | -3,11E-02 | 0,00E+00 | -1,08E+01 |
| Secondary materials | kg | 1,44E-01 | 7,85E-05 | 3,66E-02 | 1,80E-01 | 1,67E-04 | 2,90E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,96E-05 | 2,93E-04 | 0,00E+00 | 6,79E-01 |
| Renew. secondary fuels | MJ | 3,12E-04 | 7,16E-07 | 7,07E-02 | 7,10E-02 | 1,47E-06 | 1,74E-07 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,98E-07 | 2,38E-05 | 0,00E+00 | -1,09E-04 |
| 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 | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of net fresh water | $m^3$ | 7,86E-03 | 3,69E-05 | 9,69E-03 | 1,76E-02 | 7,86E-05 | 1,13E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 9,13E-06 | 1,37E-04 | 0,00E+00 | -2,78E-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 | 2,89E-02 | 3,17E-04 | 2,22E-02 | 5,14E-02 | 6,35E-04 | 1,32E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 9,35E-05 | 2,13E-03 | 0,00E+00 | -3,94E-01 |
| Non-hazardous waste | kg | 5,17E-01 | 5,43E-03 | 2,94E-01 | 8,17E-01 | 1,11E-02 | 3,39E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,54E-03 | 6,81E-02 | 0,00E+00 | -1,91E+00 |
| Radioactive waste | kg | 1,34E-04 | 1,91E-06 | 1,29E-04 | 2,64E-04 | 4,09E-06 | 7,62E-08 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,72E-07 | 9,52E-07 | 0,00E+00 | 8,05E-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 | ND | ND | ND | ND | ND | ND | 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 | 5,00E-02 | 5,00E-02 | 0,00E+00 | 4,40E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 9,80E-01 | 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 | ND | ND | ND | ND | ND | ND | 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 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 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 | 2,40E+00 | 1,82E-02 | 1,64E-01 | 2,58E+00 | 3,68E-02 | 1,82E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,65E-03 | 3,52E-02 | 0,00E+00 | -1,09E+00 |
| Ozone depletion Pot. | kg $CFC_{-11}$e | 1,55E-08 | 3,44E-09 | 1,34E-08 | 3,23E-08 | 7,33E-09 | 4,19E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 8,55E-00 | 8,40E-00 | 0,00E+00 | -5,17E-08 |
| Acidification | kg $SO_2$e | 4,94E-03 | 5,96E-05 | 6,17E-04 | 5,62E-03 | 9,59E-05 | 3,99E-06 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,54E-05 | 8,02E-05 | 0,00E+00 | -4,00E-03 |
| Eutrophication | kg $PO_4^3$e | 8,51E-04 | 1,34E-05 | 3,82E-04 | 1,25E-03 | 2,03E-05 | 6,09E-06 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,52E-06 | 1,33E-04 | 0,00E+00 | -2,01E-03 |
| POCP (“smog”) | kg $C_2H_4$e | 5,23E-04 | 2,34E-06 | 4,94E-05 | 5,74E-04 | 4,47E-06 | 3,56E-07 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 6,03E-07 | 7,95E-06 | 0,00E+00 | -6,77E-04 |
| ADP-elements | kg Sbe | 2,69E-06 | 4,18E-08 | 2,95E-06 | 5,68E-06 | 8,83E-08 | 1,31E-08 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,07E-08 | 6,81E-07 | 0,00E+00 | -2,25E-05 |
| ADP-fossil | MJ | 2,64E+01 | 2,79E-01 | 9,37E+00 | 3,60E+01 | 5,93E-01 | 1,27E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,05E-02 | 1,63E-01 | 0,00E+00 | -1,07E+01 |

# 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.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
19.10.2023

# APPENDIX 1 – SCALING TABLE

The following table can be used to convert the average results presented in this EPD, to each of the three products included in the analysis. This can be done by simply multiplying the results by the relevant conversion factor presented in the table below. This is valid for all environmental impact indicators (Impact categories) included in this EPD.

| Product | Conversion factor |
|---|---|
| LP Radiators | 0.97 |
| MP Radiators | 0.97 |
| Section Radiators | 1.03 |