# ENVIRONMENTAL PRODUCT DECLARATION

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

Lindab circular spiral duct

Lindab Ltd., United Kingdom

**EPD HUB, HUB-0506**
Publishing date 16 June 2023, last updated date 16 June 2023, valid until 16 June 2028

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| Manufacturer | Lindab Ltd |
| Address | Units 9-10 Carousel Way, Northampton, NN3 9HG |
| Contact details | 01604 788 350; sales@lindab.co.uk |
| Website | www.lindab.co.uk |

## 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 | Construction product |
| Category of EPD | Third party verified EPD |
| Scope of the EPD | Cradle to gate with options, A4-A5, and modules C1-C4, D |
| EPD author | Alice Andersen |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal certification ☑ External verification |
| EPD verifier | Silvia Vilcekova, 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 | Lindab circular spiral duct |
| Additional labels | - |
| Product reference | SR Spiral Ducts |
| Place of production | Manchester, UK |
| Period for data | Calendar year 2022 |
| Averaging in EPD | Not applicable |
| Variation in GWP-fossil for A1-A3 | - |

*More information on page 7.*

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| Declared unit | 1 kg of circular ventilation duct |
| Declared unit mass | 1 kg |
| GWP-fossil, A1-A3 (kgCO2e) | 2.77 |
| GWP-total, A1-A3 (kgCO2e) | 2.78 |
| Secondary material, inputs (%) | 26.4 |
| Secondary material, outputs (%) | 0.0 |
| Total energy use, A1-A3 (kWh) | 7.8 |
| Total water use, A1-A3 (m3e) | 0.0067 |

# MANUFACTURER

## ABOUT LINDAB

Lindab is a leading ventilation company in Europe, offering solutions for energy-efficient ventilation and a healthy indoor climate. The products are characterised by high quality, ease of installation and environmental thinking. In northern Europe, Lindab also offers an extensive range of roof, wall and rainwater systems.

## FOR A BETTER CLIMATE

We want to create a better climate. Most of us spend the majority of our time indoors. The air we breathe, in our homes, at our workplaces and at school, affects our well-being. Since air is not visible, we do not always think about it. However, the indoor climate is crucial for how we feel, for our energy levels, and whether we stay healthy. Lindab wants to contribute to the architecture and indoor climate of tomorrow. We also want a better climate for our planet. That is why we develop energy-efficient solutions for healthy indoor environments

## OUR VISION

We want to be the leading player in the area in which we are strongest – ventilation in Europe. We focus on air distribution and air diffusion. Since we offer high-quality products, we focus on Europe where demand for good ventilation is high, and we can offer superior availability. We specialise in those parts of the ventilation system where we are the strongest. We adapt our offering to the local market, with our core ventilation offering as the clear common denominator in all markets.

## THE IMPORTANCE OF VENTILATION

About 90 percent of the global population breathes poor air every day. A common misconception is that outdoor air is more polluted due to emissions, smog, and harmful chemicals. In fact, indoor air in homes, schools, offices, and factories can be as much as five times more polluted. People nonetheless spend most of their life indoors. The most common causes of indoor air pollution are mould; chemicals in, for example, furniture and building materials; dust; radon; and cigarette smoke; but above all, airborne particles from combustion and industrial processes, which are so small they can enter the human bloodstream via the respiratory system. Today, air pollution is a risk factor in several of the world's most common causes of death, including heart disease, pneumonia, stroke, diabetes, and lung cancer. Ventilation is an efficient and convenient method to remove those indoor air pollutants.

## SUSTAINABILITY PLAN

For us, sustainability is a way of thinking and working. This affects how we work with Lindab's strategy in all areas. Everything from the purchases we make, to the deliveries and the service we offer our customers. Lindab has three long-term, non-financial targets for the business, one that focuses on increasing our attractiveness as an employer, one for reducing our own carbon dioxide emissions, and one for a better working environment.

Read more about Lindab's sustainability work and non-financial targets on https://www.lindab.co.uk/For-a-better-climate/

## STEEL – A SUSTAINABLE MATERIAL

Steel provides products with a long service life. Steel has many advantages over other materials – it has a very long service life, is non-combustible and meets hygiene requirements. Steel is a fully recyclable material and scrap steel has a strong market position: steel recovered from structures and end products at the end of their lifecycle is efficiently recycled and re-used. We prioritise cooperation with steel suppliers driving development towards fossil-free steel and whose carbon dioxide intensity values are good. The steel we use must be free of particularly hazardous substances.

The use of steel in Lindab's products is what contributes most to Lindab's $CO_2$ emissions. The transition to fossil-free steel is Lindab's most significant individual action in terms of its effect on the environment. Through our collaboration with SSAB and H2 Green Steel, we will also be among the first in Europe to have access to $CO_2$ reduced steel in 2026. When it becomes available, we will make use of it in a green product line.

# PRODUCT

## PRODUCT DESCRIPTION

Lindab circular spiral duct is circular ventilation duct for air distribution to provide ventilation of buildings when used with Lindab Vent or Lindab Safe duct fittings.

The product is Eurovent certified for airtightness class D as part of the Lindab Safe air duct system.

Further information can be found at https://www.lindab.co.uk/spiralduct.

## PRODUCT RAW MATERIAL MAIN COMPOSITION VP

| Raw material category | Amount, mass- % | Material origin |
|---|---|---|
| Metals | 100 | EU |
| Minerals | | |
| Fossil materials | | |
| Bio-based materials | | |

## BIOGENIC CARBON CONTENT VP

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 |

## FUNCTIONAL UNIT AND SERVICE LIFE

| | |
|---|---|
| Declared unit | 1 |
| Mass per declared unit | 1 kg |
| Functional unit | |
| Reference service life | 50 years |

## SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm). More detailed information about the products material content can be found in the Building Product Declaration available online.

# 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 steel raw material is received, and goods inwards control is performed. The correct slitted coil is selected according to the manufacturing order. The unique ID number is connected to the manufacturing order for traceability.

The slitted coil is rigged in the spiral tube forming machine, followed by quality control of the first produced duct. If approved, the machine is set in auto mode. Quality control is done systematic on an hourly basis.

The produced ducts are placed in a steel stillage, labelled with the manufacturing order number. Ducts are picked in the warehouse and sent to the customer by truck. The stillages are reused and going back and forward to the building site by trucks. It reduces the amount of packaging.

## 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. Installation spills and handling of packaging material is considered. Material loss during installation is estimated to be zero.

### Transport from production place to user (A4)

| Type | Destination | Transportation method |
|---|---|---|
| Transportation | 300 | Lorry |

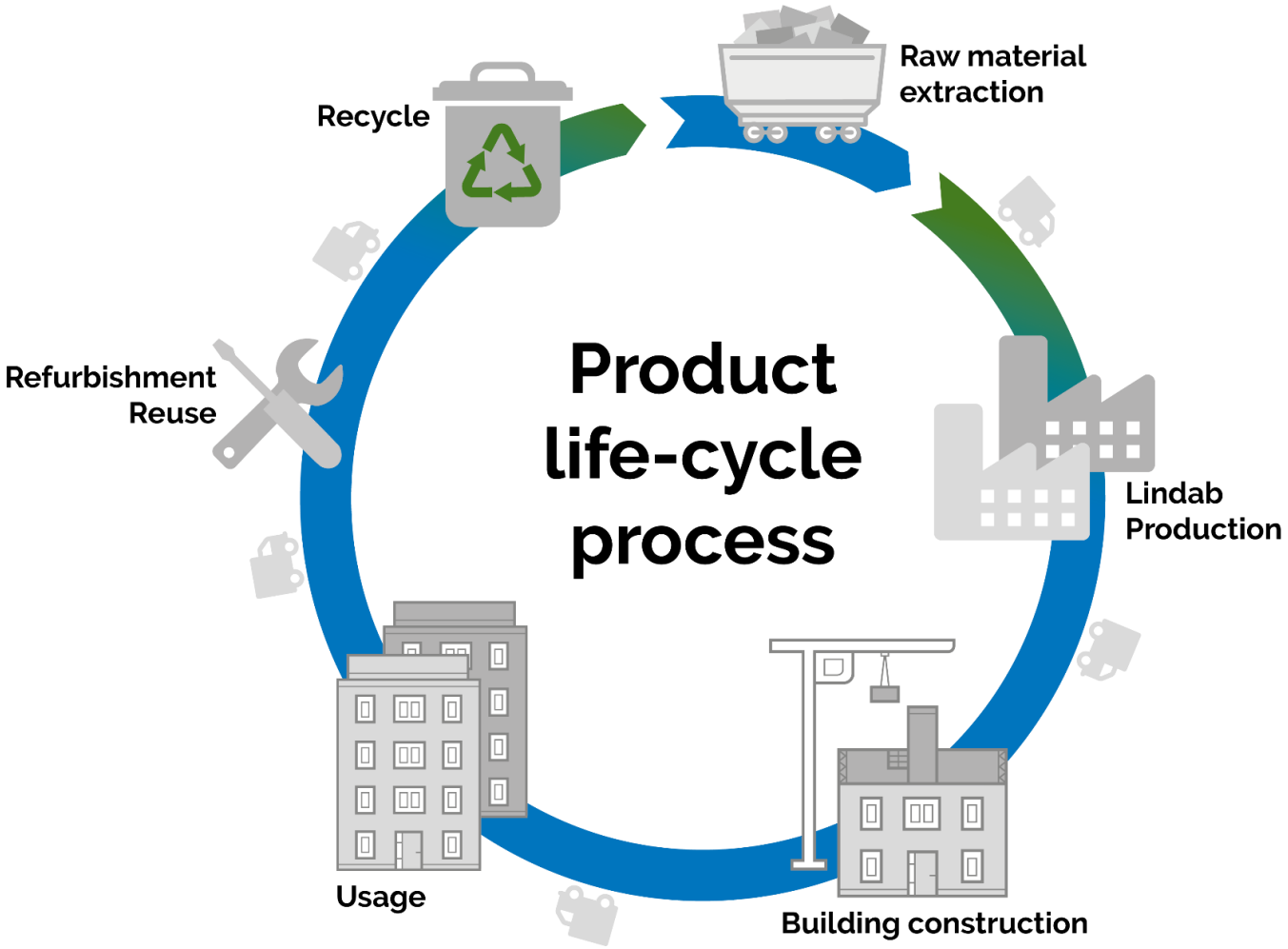
## PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase. These life cycle stages are dependent on how the product is used and should be developed and included as part of a holistic assessment of specific construction works.

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

The ventilation ducts are assumed dismantled using hand tools (C1) and transported 50 km to a local recycling (C2). The product is then dismantled assuming average recovery of materials of 95% (according to World Steel Association, 2017) (C3). That is to be seen as the proportion of the material in the product that will be recycled (or re-used) in a subsequent system. It is assumed that the remaining 5% steel is taken to landfill for disposal (C4). Due to the recycling process, the recycled metals are credited an avoided production of primary steel (D).

# 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. While cut-off criteria according to the PCR were employed, much data which would have fallen within that scope were included regardless, if available, resulting in a data set which is robust and captures all significant contributors to the LCA results.
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 | No allocation |
| Manufacturing energy and waste | Allocated by mass or volume |

## AVERAGES AND VARIABILITY

| | |
|---|---|
| Type of average | No averaging |
| Averaging method | Not applicable |
| Variation in GWP-fossil for A1-A3 | Not applicable |

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

## 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. Data from Arcelor has been used to represent the raw material. For other inputs Ecoinvent 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 | 2,73E0 | 4,97E-3 | 4,25E-2 | 2,78E0 | 9,23E-2 | 4,91E-3 | MND | MND | MND | MND | MND | MND | MND | 3,3E-3 | 4,55E-3 | 2,55E-2 | 2,64E-4 | -1,44E0 |
| GWP – FOSSIL | kg $CO_2$e | 2,72E0 | 4,96E-3 | 4,25E-2 | 2,77E0 | 9,33E-2 | 4,91E-3 | MND | MND | MND | MND | MND | MND | MND | 3,3E-3 | 4,54E-3 | 2,71E-2 | 2,63E-4 | -1,44E0 |
| GWP – BIOGENIC | kg $CO_2$e | 6,98E-3 | 3,6E-6 | -3,27E-5 | 6,95E-3 | 3,13E-5 | 3,56E-6 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 4,72E-3 |
| GWP – LULUC | kg $CO_2$e | 3,11E-4 | 1,49E-6 | 5,48E-5 | 3,67E-4 | 3,87E-5 | 1,48E-6 | MND | MND | MND | MND | MND | MND | MND | 2,79E-7 | 1,37E-6 | 3,18E-5 | 7,82E-8 | -2,83E-4 |
| OZONE DEPLETION POT. | kg CFC-$_{11}$e | 4,19E-12 | 1,17E-9 | 4,38E-9 | 5,55E-9 | 1,97E-8 | 1,15E-9 | MND | MND | MND | MND | MND | MND | MND | 7,12E-10 | 1,07E-9 | 3,31E-9 | 1,08E-10 | -4,66E-8 |
| ACIDIFICATION POTENTIAL | mol $H^+$e | 5,39E-3 | 2,08E-5 | 1,59E-4 | 5,57E-3 | 2,72E-4 | 2,06E-5 | MND | MND | MND | MND | MND | MND | MND | 3,45E-5 | 1,91E-5 | 3E-4 | 2,5E-6 | -7,11E-3 |
| EP-FRESHWATER[2)] | kg Pe | 3,72E-6 | 4,04E-8 | 1,31E-6 | 5,07E-6 | 9,85E-7 | 3,99E-8 | MND | MND | MND | MND | MND | MND | MND | 1,33E-8 | 3,7E-8 | 1,57E-6 | 3,18E-9 | -8,67E-5 |
| EP-MARINE | kg Ne | 1,29E-3 | 6,28E-6 | 3,1E-5 | 1,32E-3 | 5,11E-5 | 6,21E-6 | MND | MND | MND | MND | MND | MND | MND | 1,52E-5 | 5,75E-6 | 6,66E-5 | 8,61E-7 | -1,38E-3 |
| EP-TERRESTRIAL | mol Ne | 1,35E-2 | 6,94E-5 | 3,65E-4 | 1,39E-2 | 5,69E-4 | 6,86E-5 | MND | MND | MND | MND | MND | MND | MND | 1,67E-4 | 6,35E-5 | 7,68E-4 | 9,48E-6 | -1,57E-2 |
| POCP ("SMOG")[3)] | kg NMVOCe | 4,42E-3 | 2,23E-5 | 9,36E-5 | 4,53E-3 | 2,1E-4 | 2,21E-5 | MND | MND | MND | MND | MND | MND | MND | 4,59E-5 | 2,04E-5 | 2,1E-4 | 2,75E-6 | -7,47E-3 |
| ADP-MINERALS & METALS[4)] | kg Sbe | 1,34E-4 | 1,01E-6 | 1,54E-7 | 1,36E-4 | 3,16E-6 | 8,37E-8 | MND | MND | MND | MND | MND | MND | MND | 5,03E-9 | 7,75E-8 | 1,33E-6 | 2,41E-9 | -2,6E-5 |
| ADP-FOSSIL RESOURCE | MJ | 2,38E1 | 9,24E-1 | 1,03E0 | 2,57E1 | 1,35E0 | 7,63E-2 | MND | MND | MND | MND | MND | MND | MND | 4,54E-2 | 7,07E-2 | 3,33E-1 | 7,36E-3 | -1,18E1 |
| WATER USE[5)] | $m^3$e depr. | 2,29E-1 | 2,87E-4 | 3,49E-3 | 2,33E-1 | 5,39E-3 | 2,84E-4 | MND | MND | MND | MND | MND | MND | MND | 8,46E-5 | 2,63E-4 | 5,26E-3 | 3,4E-4 | -6,76E-1 |

## 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 | 1,45E0 | 1,16E-2 | 1,67E-1 | 1,63E0 | 1,72E-2 | 9,61E-4 | MND | MND | MND | MND | MND | MND | MND | 2,45E-4 | 8,9E-4 | 4,6E-2 | 5,95E-5 | -1,18E0 |
| RENEW. PER AS MATERIAL | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| TOTAL USE OF RENEW. PER | MJ | 1,45E0 | 1,16E-2 | 1,67E-1 | 1,63E0 | 1,72E-2 | 9,61E-4 | MND | MND | MND | MND | MND | MND | MND | 2,45E-4 | 8,9E-4 | 4,6E-2 | 5,95E-5 | -1,18E0 |
| NON-RE. PER AS ENERGY | MJ | 2,45E1 | 9,24E-1 | 1,03E0 | 2,65E1 | 1,35E0 | 7,63E-2 | MND | MND | MND | MND | MND | MND | MND | 4,54E-2 | 7,07E-2 | 3,33E-1 | 7,36E-3 | -1,18E1 |
| NON-RE. PER AS MATERIAL | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| TOTAL USE OF NON-RE. PER | MJ | 2,45E1 | 9,24E-1 | 1,03E0 | 2,65E1 | 1,35E0 | 7,63E-2 | MND | MND | MND | MND | MND | MND | MND | 4,54E-2 | 7,07E-2 | 3,33E-1 | 7,36E-3 | -1,18E1 |
| SECONDARY MATERIALS | kg | 8,44E-2 | 0E0 | 1,8E-1 | 2,64E-1 | 0E0 | 0E0 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 5,77E-1 |
| RENEW. SECONDARY FUELS | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| NON-REN. SECONDARY FUELS | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| USE OF NET FRESH WATER | $m^3$ | 6,16E-3 | 1,92E-4 | 3,65E-4 | 6,72E-3 | 2,26E-4 | 1,59E-5 | MND | MND | MND | MND | MND | MND | MND | 4,01E-6 | 1,47E-5 | 1,41E-4 | 8,05E-6 | -9,96E-3 |

## END OF LIFE – WASTE

| IMPACT CATEGORY | UNIT | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HAZARDOUS WASTE | kg | 1,6E-8 | 8,98E-4 | 3,03E-3 | 3,93E-3 | 1,93E-3 | 7,42E-5 | MND | MND | MND | MND | MND | MND | MND | 4,88E-5 | 6,87E-5 | 0E0 | 6,87E-6 | -5,6E-1 |
| NON-HAZARDOUS WASTE | kg | 1,19E-2 | 9,94E-2 | 4,58E-2 | 1,57E-1 | 8,45E-2 | 8,21E-3 | MND | MND | MND | MND | MND | MND | MND | 5,22E-4 | 7,6E-3 | 0E0 | 5E-2 | -4,71E0 |
| RADIOACTIVE WASTE | Kg | 2,72E-4 | 6,35E-6 | 7,93E-6 | 2,86E-4 | 8,82E-6 | 5,24E-7 | MND | MND | MND | MND | MND | MND | MND | 3,18E-7 | 4,85E-7 | 0E0 | 4,87E-8 | -2,2E-6 |

## 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 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1,8E-1 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| MATERIALS FOR RECYCLING | kg | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| MATERIALS FOR ENERGY REC | kg | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| EXPORTED ENERGY | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | MND | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |

## 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 $CO_2e$ | 2,65E0 | 5,89E-2 | 4,18E-2 | 2,75E0 | 9,23E-2 | 4,86E-3 | MND | MND | MND | MND | MND | MND | MND | 3,27E-3 | 4,5E-3 | 2,65E-2 | 2,58E-4 | -1,38E0 |
| OZONE DEPLETION POT. | kg $CFC_{-11}e$ | 5,37E-12 | 1,11E-8 | 4,95E-9 | 1,61E-8 | 1,57E-8 | 9,17E-10 | MND | MND | MND | MND | MND | MND | MND | 5,63E-10 | 8,49E-10 | 2,71E-9 | 8,59E-11 | -4,06E-8 |
| ACIDIFICATION | kg $SO_2e$ | 4,72E-3 | 1,21E-4 | 1,31E-4 | 4,97E-3 | 1,99E-4 | 9,99E-6 | MND | MND | MND | MND | MND | MND | MND | 4,87E-6 | 9,25E-6 | 1,9E-4 | 1,04E-6 | -5,85E-3 |
| EUTROPHICATION | kg $PO_4^3e$ | 4,88E-4 | 2,44E-5 | 4,12E-5 | 5,54E-4 | 4,59E-5 | 2,02E-6 | MND | MND | MND | MND | MND | MND | MND | 8,57E-7 | 1,87E-6 | 7,32E-5 | 2,02E-7 | -3,99E-3 |
| POCP (“SMOG”) | kg $C_2H_4e$ | 7,57E-4 | 7,66E-6 | 5,51E-6 | 7,7E-4 | 1,14E-5 | 6,33E-7 | MND | MND | MND | MND | MND | MND | MND | 5,01E-7 | 5,86E-7 | 8,82E-6 | 7,64E-8 | -9,48E-4 |
| ADP-ELEMENTS | kg Sbe | 1,34E-4 | 1,01E-6 | 1,54E-7 | 1,36E-4 | 3,16E-6 | 8,37E-8 | MND | MND | MND | MND | MND | MND | MND | 5,03E-9 | 7,75E-8 | 1,33E-6 | 2,41E-9 | -2,6E-5 |
| ADP-FOSSIL | MJ | 2,38E1 | 9,24E-1 | 1,03E0 | 2,57E1 | 1,35E0 | 7,63E-2 | MND | MND | MND | MND | MND | MND | MND | 4,54E-2 | 7,07E-2 | 3,33E-1 | 7,36E-3 | -1,18E1 |

# 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.

Silvia Vilčeková, as an authorized verifier acting for EPD Hub Limited
16.06.2023

# ANNEX: CONVERSION TO WEIGHT PER METER

| Diameter of duct (mm) | Standard weight (kg/m) |
|---|---|
| 63 | 0.89 |
| 80 | 1.13 |
| 100 | 1.42 |
| 125 | 1.77 |
| 140 | 1.79 |
| 150 | 2.21 |
| 160 | 2.26 |
| 180 | 3.05 |
| 200 | 3.39 |
| 224 | 3.79 |
| 250 | 4.23 |
| 280 | 4.74 |
| 300 | 5.08 |
| 315 | 5.33 |
| 355 | 8.01 |
| 400 | 9.03 |
| 450 | 10.15 |
| 500 | 11.28 |
| 560 | 12.63 |
| 600 | 13.53 |
| 630 | 13.33 |
| 710 | 15.33 |
| 800 | 17.33 |
| 900 | 25.37 |
| 1000 | 28.18 |
| 1120 | 40.67 |
| 1250 | 45.33 |