# ENVIRONMENTAL PRODUCT DECLARATION

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

SpiroVent AA 22mm
Spirotech BV


**EPD HUB, HUB-7200**
Published on 17.08.2026, last updated on 17.08.2026, valid until 16.08.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| Manufacturer | Spirotech BV |
| Address | Postbus 207, 5700 AE Helmond, Nederland |
| Contact details | info@spirotech.com |
| Website | https://www.spirotech.com/ |

## 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 1.2, 24 Mar 2025 |
| Sector | Manufactured product |
| Category of EPD | Third party verified EPD |
| Parent EPD number | - |
| Scope of the EPD | Cradle to gate with options, A4-A5, and modules C1-C4, D |
| EPD author | Lien De Coen & Johannes Spaas, both Mantis Consulting |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal verification ☑ External verification |
| EPD verifier | Afzal khan Peerukhan 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 | SpiroVent AA022 |
| Additional labels | N/A |
| Product reference | AA022, AA022/019 and AA022/002 |
| Place(s) of raw material origin | China, Europe |
| Place of production | Helmond, The Netherlands |
| Place(s) of installation and use | Global, mainly Europe |
| Period for data | Calendar year 2024 |
| Averaging in EPD | No grouping |
| Variation in GWP-fossil for A1-A3 (%) | N/A |
| GTIN (Global Trade Item Number) | N/A |
| NOBB (Norwegian Building Product Database) | N/A |
| A1-A3 Specific data (%) | 16,2 |

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| **Declared unit** | 1 SpiroVent AA |
| **Declared unit mass** | 1,202 kg |
| **Mass of packaging** | 0,082 kg |
| **GWP-fossil, A1-A3 ($kgCO_2e$)** | 2,42 |
| **GWP-total, A1-A3 ($kgCO_2e$)** | 2,32 |
| **Secondary material, inputs (%)** | 75,8 |
| **Secondary material, outputs (%)** | 94,3 |
| **Total energy use, A1-A3 (kWh)** | 10,9 |
| **Net freshwater use, A1-A3 ($m^3$)** | 0,02 |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

Spirotech is an expert and market leader in the field of system water quality in heating and cooling systems. Our products have been prescribed for many years by international boiler and heat pump manufacturers, installers and consultants in residential and non-residential projects.

As a Helmond family business, we were the first in the Netherlands to start developing air and dirt separators for use in heating and cooling installations/systems. With an air and dirt separator you not only save energy, but you also prevent wear and tear on the (often) expensive components in your system, such as the heating boiler or heat pump.

Our products are mostly produced in the Netherlands with high-quality materials such as brass and steel. In addition, we use high-quality magnets to remove all the harmful magnetite. We also produce and supply products for vacuum degassing, pressure maintenance, hydraulic distributors and additives. We also provide tailor-made advice on the basis of an extensive water analysis.

## PRODUCT DESCRIPTION

The SpiroVent AA is a brass microbubble deaerator with a horizontal connection, available in 6 connection sizes from 22 mm to G2 (2 in.). It is assembled from brass (body and deaeration cap), copper (Spirotube), TPX (float) and Viton (valve seal).

### SPIROVENT PRODUCT FAMILY

SpiroVent microbubble deaerators are fully integrated into the system and continuously remove circulating air and microbubbles from the system fluid. The presence of air is one of the primary causes of dirt formation and the related losses in efficiency, increased failure sensitivity, and accelerated wear. The SpiroVent AA is the classic, field-proven brass deaerator in the SpiroVent range, with a fixed horizontal connection.

### FUNCTION OF THE SPIROVENT AA

Installed inline at the hottest point in the system, the SpiroVent AA works continuously. At its core is the Spirotube separation element, which causes microbubbles to rise automatically into the integrated air chamber. The air chamber provides sufficient volume to absorb pressure fluctuations and protects the valve from contamination, one of the main causes of leaks. The leak-proof air release valve with solid valve seat closes perfectly at all times, preventing sputtering and unintended air ingress from outside the system.

### PRODUCT VARIATIONS

The SpiroVent AA range covers connection sizes 22 mm, G¾, G1, G1¼, G1½ and G2. All variants share the same brass construction and Spirotube technology, differing in connection size, flow capacity and weight. The 22 mm version (article number AA022) is considered the representative product.

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

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass % | Material origin |
|---|---|---|
| Metals | 99,3 | China, Europe |
| Minerals | 0 | N/A |
| Fossil materials | 0,7 | China, Europe |
| Bio-based materials | 0 | N/A |

## 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 | 0,0333 |

1 kg of biogenic carbon corresponds to the uptake of 44/12 kg of CO2.

## FUNCTIONAL UNIT AND SERVICE LIFE

| | |
|---|---|
| Declared unit | 1 SpiroVent AA |
| Mass per declared unit | 1,202 kg |
| Functional unit | 1 SpiroVent AA |
| Reference service life | 20 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 | ND | ND | ND | ND | ND | ND | ND | 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 |

*Not declared = ND.*

As such, the Use stage (modules B1-B7) were excluded.

## 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.

This product is assembled from brass (80% recycled input), copper, and plastic pieces. The components are partially sourced from China and partially within Europe. Components sourced from China are transported to the port by lorry (16-32 ton, EURO5), then to the port of Rotterdam by container ship, and finally from the port of Rotterdam to Helmond by lorry (16-32 ton, EURO6). Components sourced within Europe are transported by lorry (16-32 ton, EURO6).

The manufacturing process requires electricity (Dutch residual mix) for the different equipment, and only soldering fluid and water are used as ancillary materials. As the production concerns assembly, production losses are negligible. The only manufacturing waste is thus soldering fluid (transport 150 km, 16-32 ton, EURO6, hazardous waste incineration) and wastewater (average waste water treatment).

The product is packed with a manual (paper) in a cardboard box. Per 12 units, the products are packed in a larger cardboard box.

## 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 product is sold and installed globally, with the majority of products distributed within Europe. The average weighted distance of transportation from production plant to the retail site is 372 km and the transportation method is assumed to be lorry (16-32 tonnes, EURO6). Vehicle capacity utilization volume factor is smaller than 1. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transportation does not cause losses as product is packaged properly.

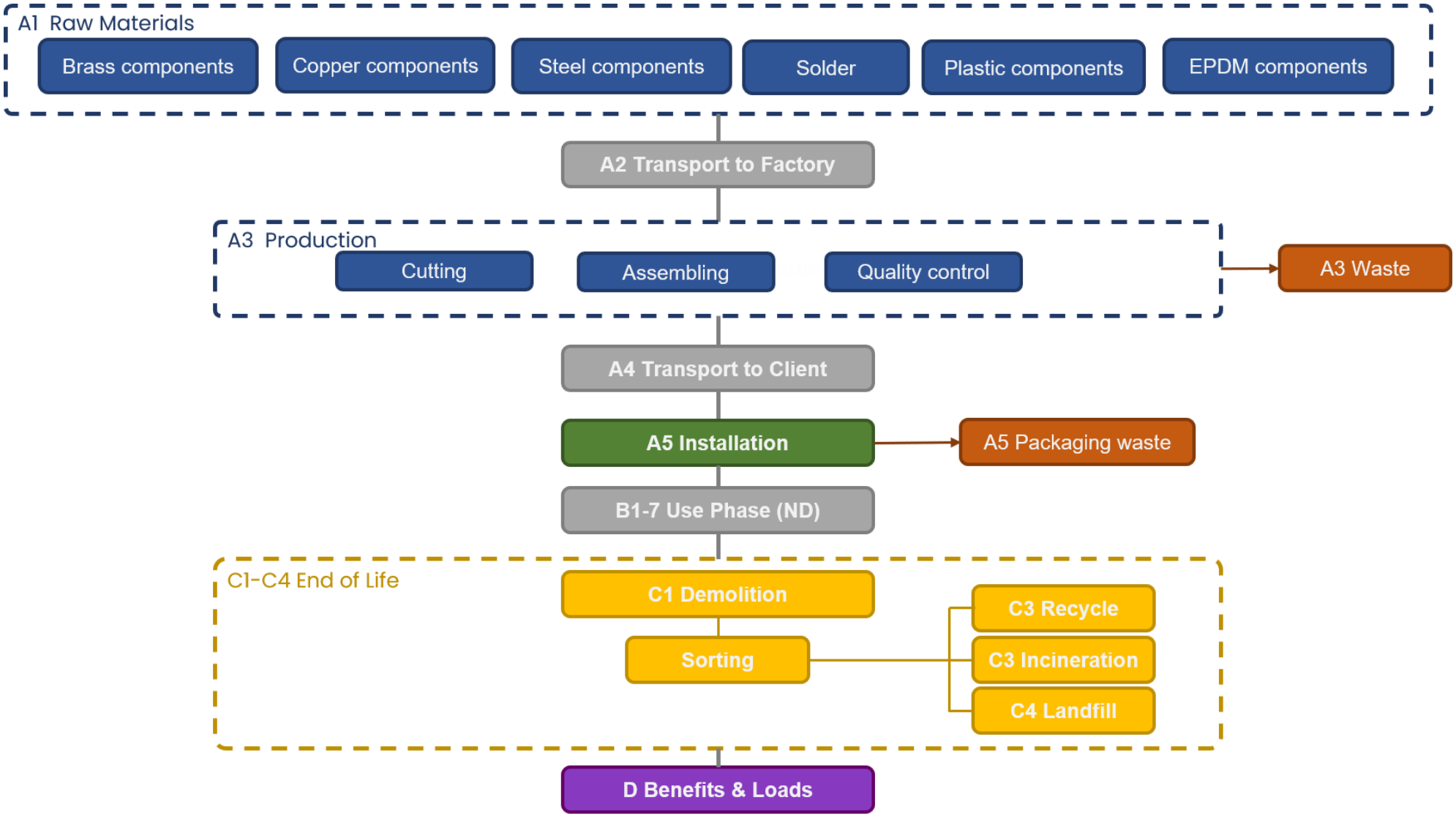
Environmental impacts from installation into the building include generation of waste packaging materials (A5). The impacts of material production, its processing and disposal as installation waste are also included.

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

As the majority of the products are installed in Europe, the end-of-life stage is modeled for Europe.

The consumption of energy for disassembling the product at EoL is assumed to be negligible (C1). The end-of-life product is assumed to be sent to the closest facilities by lorry (C2). 94% of the product is sent to recycling and 1% to incineration facilities (C3). 5% of the end-of-life product goes to landfill (C4). Due to the recycling and incineration potential of metals and plastics, the end-of-life product is converted into recycled materials, while energy and heat is produced from material incineration (D). The benefits and loads of waste packaging materials in A5 are also considered in module D.

# LIFE CYCLE FLOW DIAGRAM



# 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 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.

The following materials and processes are excluded:

- Glue (Loctite) consumption (~0,06g per product)
- Sea transport (relevant to less than 0,01% of production volume)

## 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 | Physical Properties |
| Manufacturing energy and waste | Physical Properties |

The product-specific raw material and packaging material inputs were determined based on actual consumption values per declared unit. Ancillary materials, manufacturing energy and waste were allocated based on annual consumption and production ratios at site-level.

The applied allocation method for post-consumer waste is cut-off.

Neither the mass balance approach nor other offsetting processes are applied in this EPD.

## PRODUCT & MANUFACTURING SITES GROUPING

| | |
|---|---|
| Type of grouping | No grouping |
| Grouping method | Not applicable |
| Variation in GWP-fossil for A1-A3, % | N/A |

This EPD is product and factory specific.

## LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.5. 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'.

Default values for waste treatment scenarios associated with:

Installation waste (A5): One Click LCA Paper Packaging EU Scenario (EUROSTAT).

End-of-Life (C1-C4, D): Method for Determining the Environmental Performance of Buildings (*Dutch title: Forfaitaire waarden voor verwerking-scenario's einde leven behorende bij: Bepalingsmethode Milieuprestatie Bouwwerken*). NMD, 2024.

Environmental data sources:

ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.

ÖKOBAUDAT 2021-II, Allocation, German Federal Ministry for Housing, Urban Development and Building.

ProBas, German Federal Environment Agency.

One Click LCA, One Click LCA.

# 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 | 1,96E+00 | 2,70E-01 | 8,95E-02 | 2,32E+00 | 9,06E-02 | 1,25E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,44E-02 | 4,56E-02 | 5,53E-04 | -1,04E+00 |
| GWP – fossil | kg $CO_2$e | 1,95E+00 | 2,70E-01 | 2,08E-01 | 2,42E+00 | 9,06E-02 | 2,95E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,44E-02 | 4,56E-02 | 5,53E-04 | -9,38E-01 |
| GWP – biogenic | kg $CO_2$e | 7,85E-03 | 4,44E-05 | -1,22E-01 | -1,14E-01 | 1,82E-05 | 1,22E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,09E-05 | -5,43E-05 | -2,23E-07 | -9,73E-02 |
| GWP – LULUC | kg $CO_2$e | 4,88E-03 | 1,49E-04 | 3,23E-03 | 8,26E-03 | 3,25E-05 | 1,62E-06 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,95E-05 | 3,16E-05 | 2,47E-07 | -1,71E-03 |
| Ozone depletion pot. | kg CFC-$_{11}$e | 3,91E-09 | 3,90E-09 | 8,49E-09 | 1,63E-08 | 1,80E-09 | 2,98E-11 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,08E-09 | 3,47E-10 | 1,19E-11 | -9,39E-09 |
| Acidification potential | mol $H^+$e | 4,59E-02 | 6,88E-03 | 8,35E-04 | 5,36E-02 | 1,88E-04 | 1,19E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,13E-04 | 3,06E-04 | 2,97E-06 | -7,37E-02 |
| EP-freshwater[2)] | kg Pe | 5,37E-04 | 1,02E-05 | 5,91E-05 | 6,06E-04 | 6,10E-06 | 6,58E-07 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,66E-06 | 1,65E-05 | 2,81E-05 | -9,74E-03 |
| EP-marine | kg Ne | 2,58E-03 | 1,72E-03 | 2,69E-04 | 4,57E-03 | 4,53E-05 | 1,92E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,72E-05 | 6,84E-05 | 1,42E-06 | -5,14E-03 |
| EP-terrestrial | mol Ne | 3,28E-02 | 1,91E-02 | 2,14E-03 | 5,41E-02 | 4,89E-04 | 3,77E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,93E-04 | 7,72E-04 | 1,24E-05 | -7,34E-02 |
| POCP ("smog")[3)] | kg NMVOCe | 9,95E-03 | 5,24E-03 | 5,72E-04 | 1,58E-02 | 3,14E-04 | 1,44E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,88E-04 | 2,28E-04 | 4,44E-06 | -1,82E-02 |
| ADP-minerals & metals[4)] | kg Sbe | 8,10E-04 | 3,54E-07 | 3,69E-04 | 1,18E-03 | 3,02E-07 | 1,91E-08 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,81E-07 | 1,81E-06 | 7,20E-10 | -1,03E-03 |
| ADP-fossil resources | MJ | 2,59E+01 | 3,37E+00 | 2,50E+00 | 3,18E+01 | 1,27E+00 | 2,70E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,65E-01 | 3,44E-01 | 1,01E-02 | -1,18E+01 |
| Water use[5)] | $m^3$e depr. | 6,99E-01 | 1,05E-02 | 1,35E+00 | 2,06E+00 | 6,33E-03 | 7,39E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,80E-03 | 6,80E-03 | 3,15E-05 | -7,71E-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, 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 | 1,60E-07 | 9,90E-09 | 4,66E-09 | 1,74E-07 | 6,67E-09 | 1,60E-10 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,01E-09 | 4,14E-09 | 6,76E-11 | -1,86E-07 |
| Ionizing radiation[6)] | kBq U235e | 3,38E-02 | 1,76E-03 | 2,28E-02 | 5,83E-02 | 1,64E-03 | 1,77E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 9,87E-04 | 2,91E-03 | 6,78E-06 | -1,09E-01 |
| Ecotoxicity (freshwater) | CTUe | 2,07E+01 | 3,00E-01 | 8,93E-01 | 2,19E+01 | 1,70E-01 | 9,61E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,02E-01 | 2,11E-01 | 3,20E-03 | -1,47E+02 |
| Human toxicity, cancer | CTUh | 6,75E-09 | 5,55E-11 | 3,57E-11 | 6,84E-09 | 1,52E-11 | 2,14E-12 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 9,13E-12 | 2,33E-11 | 1,43E-12 | -7,28E-09 |
| Human tox. non-cancer | CTUh | 3,93E-07 | 1,03E-09 | 1,03E-09 | 3,95E-07 | 8,06E-10 | 1,14E-10 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,84E-10 | 1,57E-09 | 4,54E-11 | -7,17E-07 |
| SQP[7)] | - | 6,22E+02 | 5,51E-01 | 4,11E+00 | 6,27E+02 | 7,70E-01 | 1,99E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,63E-01 | 6,67E-01 | 2,24E-02 | -3,50E+01 |

*6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on 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 | 7,87E+00 | 2,94E-02 | -3,18E-02 | 7,87E+00 | 2,23E-02 | -1,18E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,34E-02 | 6,39E-02 | 1,05E-04 | -5,71E+00 |
| Renew. PER as material | MJ | 0,00E+00 | 0,00E+00 | 1,06E+00 | 1,06E+00 | 0,00E+00 | -1,06E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 9,51E-01 |
| Total use of renew. PER | MJ | 7,87E+00 | 2,94E-02 | 1,02E+00 | 8,93E+00 | 2,23E-02 | -2,23E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,34E-02 | 6,39E-02 | 1,05E-04 | -4,76E+00 |
| Non-re. PER as energy | MJ | 2,56E+01 | 3,37E+00 | 2,52E+00 | 3,15E+01 | 1,27E+00 | 2,69E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,65E-01 | 7,76E-02 | -4,57E-02 | -1,19E+01 |
| Non-re. PER as material | MJ | 2,78E-01 | 0,00E+00 | 4,03E-03 | 2,82E-01 | 0,00E+00 | -4,03E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | -2,31E-01 | -4,72E-02 | 4,58E-03 |
| Total use of non-re. PER | MJ | 2,59E+01 | 3,37E+00 | 2,53E+00 | 3,18E+01 | 1,27E+00 | 2,29E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,65E-01 | -1,53E-01 | -9,29E-02 | -1,18E+01 |
| Secondary materials | kg | 1,43E+00 | 1,59E-03 | 7,48E-02 | 1,50E+00 | 5,92E-04 | 4,45E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,55E-04 | 4,21E-04 | 2,74E-06 | 1,77E-01 |
| Renew. secondary fuels | MJ | 7,29E-04 | 6,10E-06 | 7,40E-03 | 8,13E-03 | 7,48E-06 | 2,51E-07 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,49E-06 | 1,94E-05 | 5,63E-08 | -3,54E-04 |
| Non-ren. secondary fuels | MJ | 7,63E-04 | 0,00E+00 | 0,00E+00 | 7,63E-04 | 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 | $m^3$ | 2,18E-02 | 2,65E-04 | 2,14E-03 | 2,42E-02 | 1,74E-04 | -1,52E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,04E-04 | 1,89E-04 | 5,24E-06 | -3,43E-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 | 4,85E-02 | 4,67E-03 | 5,54E-03 | 5,87E-02 | 1,85E-03 | 4,56E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,11E-03 | 2,52E-03 | 6,81E-03 | -3,04E-01 |
| Non-hazardous waste | kg | 3,76E+00 | 6,82E-02 | 1,54E-01 | 3,99E+00 | 3,91E-02 | 5,16E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,35E-02 | 8,87E-02 | 7,42E-03 | -1,74E+01 |
| Radioactive waste | kg | 1,78E-03 | 4,29E-07 | 3,97E-06 | 1,78E-03 | 4,08E-07 | 4,51E-08 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,45E-07 | 7,45E-07 | 1,65E-09 | -2,85E-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 | 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 | 9,36E-04 | 0,00E+00 | 1,00E-03 | 1,94E-03 | 0,00E+00 | 6,79E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 1,13E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy rec | kg | 0,00E+00 | 0,00E+00 | 2,58E-03 | 2,58E-03 | 0,00E+00 | 6,54E-03 | 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 | 3,52E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 8,74E-02 | 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 | 1,47E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 3,68E-02 | 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 | 2,04E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 5,06E-02 | 0,00E+00 | 0,00E+00 |

## ADDITIONAL INDICATOR – GWP-GHG

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP-GHG[9)] | kg $CO_2e$ | 1,95E+00 | 2,70E-01 | 2,11E-01 | 2,43E+00 | 9,06E-02 | 2,96E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,44E-02 | 4,57E-02 | 5,53E-04 | -9,40E-01 |

*9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero*

## SCENARIO DOCUMENTATION

## DATA SOURCES

### Manufacturing energy scenario documentation

1. Electricity, Netherlands, residual mix, 2024, Netherlands, One Click LCA, 0,59 kgCO2e/kWh
2. Natural gas space heating (2020), Netherlands, ProBas, 0,0737 kgCO2e/MJ

### Transport scenario documentation - A4 (Transport resources)

1. Transport, freight, lorry 16-32 metric ton, EURO6, 372 km

### Transport to the building site (A4) - Scenario documentation

| Scenario parameter | Value |
|---|---|
| Capacity utilization (including empty return) % | 50 |
| Bulk density of transported products | 1280 |
| Volume capacity utilization factor | <1 |

### Installation at the building site (A5) - Scenario documentation

Packaging waste recycling scenario: One Click LCA Paper Packaging EU Scenario (EUROSTAT).

| Scenario parameter | Value |
|---|---|
| Energy: type and consumption (MJ or kWh) | N/A |
| Water use ($m^3$) | N/A |
| Ancillary materials: type and mass (kg) | N/A |
| Waste materials: type and mass (kg) | Paper packaging waste: 0,082 kg |
| Waste materials: output routes | Paper and cardboard waste (82,5% recycling, 7,9% incineration with energy recovery, 9,5% landfill) |
| Direct emissions (kg) | N/A |

### End of life (C1-C4) - Scenario documentation

End-of-life recycling scenarios: Method for Determining the Environmental Performance of Buildings (Dutch title: Forfaitaire waarden voor verwerking-scenario's einde leven behorende bij: Bepalingsmethode Milieuprestatie Bouwwerken). NMD, 2024.

| Scenario information | Value |
|---|---|
| Collection process: collected separately (kg) | 1,202 |
| Collection process: Mixed waste (kg) | N/A |
| Recovery: re-use (kg) | 0 |
| Recovery: recycling (kg) | 1,13 |
| Recovery: energy recovery (kg) | 0,007 |
| Disposal (kg) | 0,07 |
| Scenario assumptions e.g. transportation (mode, km) & other | Landfill, 50 km. Incineration, 150 km. Recycling, 250 km. |

# THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Afzal khan Peerukhan as an authorized verifier for EPD Hub Limited 17.08.2026

VERIFIED ISO 14025

# ANNEX

This EPD covers the SpiroVent AA variants type AA022: AA022, AA022/019 and AA022/002; which together account for about 10% of the sales volume of the SpiroVent AA product range. The AA100 variants represent the largest share of sales volume (40%). This EPD focuses on the AA022 variant to increase comparability with the SpiroVent UA range (where the UA022 variant is the most sold product).

In addition to the variants covered by this EPD, the SpiroVent AA product range also includes the following variants (with increasing outer pipe diameters):

- Type AA075: AA075, AA075/019, AA075/002;
- Type AA100: AA100, AA100/019, AA100/002;
- Type AA125: AA125, AA125/019, AA125/002;
- Type AA150: AA150, AA150/019, AA150/002, AA150/008;
- Type AA200: AA200, AA200/019, AA200K27;

Additionally, variants of these products specifically for use in solar installations exist. These are the variants indicated by the suffix “FBA08”, “FBA08/019” or “FBK48”. They contain a different type of float and extra bi-metal discs. In the table underneath, the impact of this design variation on the impact categories is indicated. Similarly, variants with suffix “/025” exist. These variants are suited for use at higher temperatures and pressures. They are somewhat larger and contain more and different floats. Again, the impact of this design variation on the impact categories is indicated.

Furthermore, there are some variants with larger shares of steel:

- Type AA125/R002: AA125/R002, AA125/R007;
- AA125/R004;
- AAS125RTBLFRA01

The EN 15804+A2 GWP indicators for each design variation within this product range are reported in the table below. Results for other life cycle impact categories are available from Spirotech on request.

| Impact category | Unit | A1-A3 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Product reference | / | AA022 | AA075 | AA100 | AA125 | AA150 | AA200 | -FBA08 | -/025 | AA125/R002 | AA125/R004 | AAS125RTBLFRA01 |
| Product weight | kg | 1,202 | 1,233 | 1,312 | 1,448 | 1,651 | 3,863 | ...+0,009 | ...+0,209 | 1,428 | 1,707 | 1,428 |
| Packaging mass | kg | 0,082 | 0,082 | 0,148 | 0,156 | 0,128 | 0,226 | ... | ...+0,056 | 0,156 | 0,128 | 0,093 |
| GWP-total | kg $CO_2$e | 2,32 | 2,35 | 2,56 | 2,87 | 3,35 | 10,60 | ...+0,05 | ...+0,37 | 3,29 | 3,77 | 3,33 |
| GWP-fossil | kg CO2e | 2,42 | 2,46 | 2,76 | 3,08 | 3,52 | 10,80 | ...+0,05 | ...+0,47 | 3,50 | 3,94 | 3,45 |
| GWP-biogenic | kg CO2e | -0,114 | -0,114 | -0,211 | -0,222 | -0,176 | -0,235 | ... | ...-0,083 | -0,221 | -0,177 | -0,127 |
| GWP-luluc | kg CO2e | 0,0083 | 0,0084 | 0,0115 | 0,0125 | 0,0122 | 0,0265 | ... | ...+0,0032 | 0,0124 | 0,0123 | 0,0098 |