FloPlast

wienerberger

# ENVIRONMENTAL PRODUCT DECLARATION

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

PVC Rainwater Fittings BS EN 607, BS EN 12200-1, BS EN 1462
FloPlast LTD

**EPD HUB, HUB-4256**
Published on 02.11.2025, last updated on 02.11.2025, valid until 01.11.2030
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.

One Click LCA Created with One Click LCA

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| **Manufacturer** | FloPlast LTD |
| **Address** | Castle Road, Eurolink Business Park, Sittingbourne, Kent, ME10 3FP |
| **Contact details** | technical@floplast.co.uk |
| **Website** | www.floplast.co.uk |

## 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** | Construction 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** | Aaminah Nisa |
| **EPD verification** | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal verification ☑ External verification |
| **EPD verifier** | Yazan Badour, 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** | PVC Rainwater Fittings |
| **Additional labels** | - |
| **Product reference** | ”Cast Iron Style”, Half Round, Hi-Cap, MiniFlo, Niagara Ogee, Squareline & Xtraflo |
| **Place(s) of raw material origin** | United Kingdom |
| **Place of production** | FloPlast Ltd, Castle Road, Eurolink Business Park, Sittingbourne, Kent ME10 3FP |
| **Place(s) of installation and use** | United Kingdom |
| **Period for data** | 01.01.2024 - 31.12.2024 |
| **Averaging in EPD** | No Grouping |
| **Variation in GWP-fossil for A1-A3 (%)** | - |
| **GTIN (Global Trade Item Number)** | - |
| **NOBB (Norwegian Building Product Database)** | - |
| **A1-A3 Specific data (%)** | 4.77 |

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| **Declared unit** | 1 kg |
| **Declared unit mass** | 1 kg |
| **GWP-fossil, A1-A3 ($kgCO_2e$)** | 1.88E+00 |
| **GWP-total, A1-A3 ($kgCO_2e$)** | 1.88E+00 |
| **Secondary material, inputs (%)** | 0.01 |
| **Secondary material, outputs (%)** | 94.3 |
| **Total energy use, A1-A3 (kWh)** | 15 |
| **Net freshwater use, A1-A3 ($m^3$)** | 0.18 |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

With their roots firmly planted in UK rainwater, soil, and waste products, FloPlast has built a reputation for manufacturing high-quality, innovative building materials that are trusted by both professionals and DIY enthusiasts alike. FloPlast offers a wide range of rainwater, drainage and hot and cold-water plumbing systems alongside PVC-UE cellular foam fascia, soffit and cladding solutions that are maintenance-free for both residential and commercial buildings.

FloPlast LTD is a multi-ISO holding company including 9001, 45001, 50001 & 14001 with over 30 years of UK manufacturing experience serving customers across UK and Europe. FloPlast employs circa 350 people with its modern manufacturing facility located in Sittingbourne, Kent.

## PRODUCT DESCRIPTION

FloPlast PVC Rainwater fittings are designed for use with gravity fed roof drainage installations and supplied in recycled plastic packaging. The product is certified to BS EN 607, 12200-1 & 1462 and guaranteed for 10 years.

Further information can be found at www.floplast.co.uk

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass % | Material origin |
|---|---|---|
| Metals | 0 | - |
| Minerals | 0 | - |
| Fossil materials | 100 | PVC; UK and EU |
| Bio-based materials | 0 | - |

## BIOGENIC CARBON CONTENT

**Product's biogenic carbon content at the factory gate**

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

## FUNCTIONAL UNIT AND SERVICE LIFE

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

## 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 | | |
| × | × | × | × | × | MND | MND | MND | MND | MND | MND | MND | × | × | × | × | × | | |
| Raw materials | Transport | Manufacturing | Transport | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction/ demolition | Transport | Waste processing | Disposal | Reuse | Recovery | Recycling |

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

## MANUFACTURING AND PACKAGING (A1-A3)

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

A market-based approach is used in modelling the electricity mix utilized in the factory.

PVC Rainwater fittings are produced with a mixture of virgin PVC, in-house recycled PVC regrind along with pigments and stabilisers both added to the mix in varying ratios depending on the products requirements.

The fittings are injection moulded, cooled and then ejected from the machine onto conveyor belts before being packaged as completed materials. Some materials may be semi-finished and require secondary completion (automated or manual) and some materials are produced as component parts for later assembly.

During all three stages we calculate a production loss of 0.9% which accounts for material waste during the manufacturing process. Additionally, the environmental impacts are modelled based on the electricity consumption required for production processes. Where an exact match was not available, the closest possible datapoint has been used.

In the LCA, packaging materials such as plastic bags are included as a material input in A3.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

## TRANSPORT AND INSTALLATION (A4-A5)

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

A4: Transport
The products are assumed to be transported to various locations within the UK. A standard transport distance of 228.64 km is applied, modelled using >32 metric ton, EURO6 vehicle.
A5: Installation
A 5% installation loss was applied.

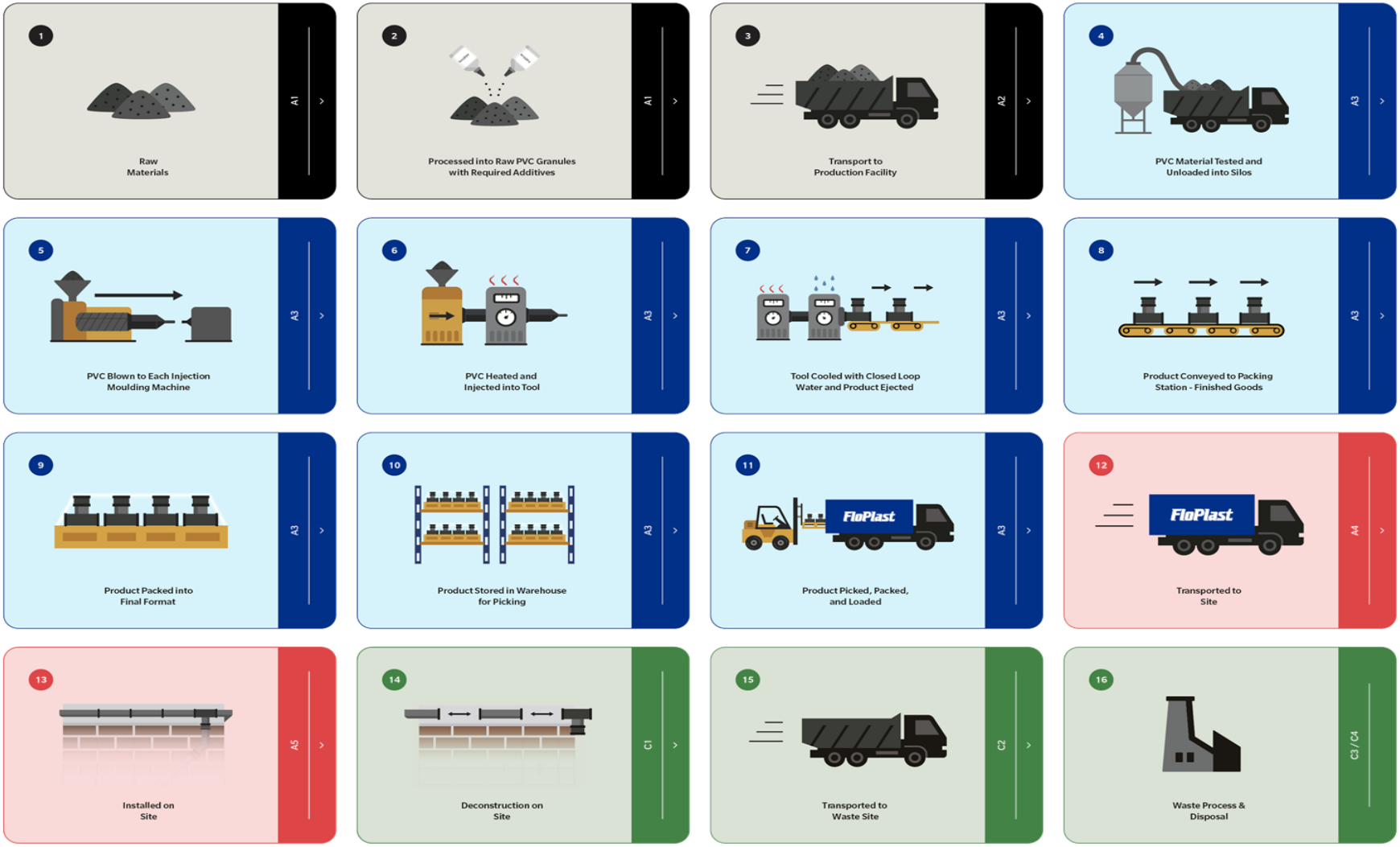
## PRODUCT USE AND MAINTENANCE (B1-B7)

B1 Use:
Rainwater fittings do not emit any emissions to air during their use, so this module is not relevant.
B2 Maintenance:
Once installed, rainwater fittings require no maintenance for a minimum of 10 years.
B3 Repair:
It is assumed that the rainwater fittings should not need any repair during its reference service life, so impacts are negligible.
B4 Replacement:
The reference service life of rainwater fittings extends beyond the 10-year guarantee period; therefore, replacement is not expected during the life of the building.
B5 Refurbishment:
It has been assumed that no refurbishment action that relates to the rainwater fittings will be required.
B6 Operational Energy Use:
No energy is consumed by rainwater fittings during operation, so this module is not relevant.
B7 Operational Water Use:
No water is consumed by any rainwater fittings during operation, so this module is not relevant.
Air, soil, and water impacts during the use phase have not been studied.

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

C1 Deconstruction, demolition: This element was not evaluated.
C2 End of life transport to waste processing: 1 kg of product is transported 15 km to a waste sorting plant. The assumed mode of transport is by lorry - Transport, freight, lorry >32 metric ton, EURO6
C3 waste processing for reuse, recovery and/or recycling: It is assumed that 94.3% of the material is recycled - (https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#recovery-rate-from-non-hazardous-construction-and-demolition-cd-waste).
C4 Disposal: It is assumed that 5.7% of the material is sent to landfill - (https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#recovery-rate-from-non-hazardous-construction-and-demolition-cd-waste).
D Benefits and loads beyond the system boundary:
includes the reuse, recovery and/or recycling potentials, expressed as net impacts and benefits. These included the recycling of plastic product and packaging waste from A3.

# RAINWATER FITTINGS MANUFACTURING PROCESS



# LIFE-CYCLE ASSESSMENT

## CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

## VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

## ALLOCATION, ESTIMATES AND ASSUMPTIONS

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

| Data type | Allocation |
|---|---|
| Raw materials | No allocation |
| Packaging material | No allocation |
| Ancillary materials | Not applicable |
| Manufacturing energy and waste | No allocation |

## AVERAGES AND VARIABILITY

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

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. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#recovery-rate-from-non-hazardous-construction-and-demolition-cd-waste

# 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 $CO_2e$ | 1.81E+00 | 1.68E-02 | 5.23E-02 | 1.88E+00 | 4.34E-02 | 9.95E-02 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 4.33E-03 | 6.20E-02 | 4.55E-02 | -1.56E+00 |
| GWP – fossil | kg $CO_2e$ | 1.81E+00 | 1.68E-02 | 5.19E-02 | 1.88E+00 | 4.34E-02 | 9.95E-02 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 4.33E-03 | 6.19E-02 | 4.55E-02 | -1.60E+00 |
| GWP – biogenic | kg $CO_2e$ | 0.00E+00 | 0.00E+00 | 1.18E-06 | 1.18E-06 | 0.00E+00 | -1.18E-06 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.76E-02 |
| GWP – LULUC | kg $CO_2e$ | 8.99E-06 | 7.20E-06 | 4.03E-04 | 4.19E-04 | 1.56E-05 | 2.78E-05 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 1.61E-06 | 1.14E-04 | 4.26E-07 | -9.20E-04 |
| Ozone depletion pot. | kg $CFC\text{-}_{11}e$ | 2.76E-09 | 3.14E-10 | 9.31E-12 | 3.09E-09 | 8.64E-10 | 2.17E-10 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 8.72E-11 | 3.49E-10 | 1.46E-11 | -7.61E-07 |
| Acidification potential | mol $H^+e$ | 6.05E-03 | 1.26E-04 | 2.14E-03 | 8.32E-03 | 9.03E-05 | 4.35E-04 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 9.56E-06 | 2.81E-04 | 1.51E-05 | -5.02E-03 |
| EP-freshwater[2)] | kg Pe | 4.78E-07 | 1.02E-06 | 1.41E-05 | 1.56E-05 | 2.92E-06 | 1.83E-06 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 2.96E-07 | 1.69E-05 | 8.30E-08 | -5.14E-04 |
| EP-marine | kg Ne | 7.75E-05 | 2.91E-05 | 7.42E-04 | 8.49E-04 | 2.17E-05 | 5.56E-05 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 2.41E-06 | 2.26E-04 | 1.62E-05 | -9.53E-04 |
| EP-terrestrial | mol Ne | 3.64E-04 | 3.21E-04 | 7.20E-03 | 7.88E-03 | 2.34E-04 | 4.52E-04 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 2.60E-05 | 8.50E-04 | 7.36E-05 | -9.09E-03 |
| POCP ("smog")[3)] | kg NMVOCe | 1.33E-03 | 1.15E-04 | 1.62E-03 | 3.07E-03 | 1.50E-04 | 1.75E-04 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 1.61E-05 | 2.70E-04 | 4.30E-05 | -6.89E-03 |
| ADP-minerals & metals[4)] | kg Sbe | 4.79E-08 | 4.80E-08 | 7.19E-08 | 1.68E-07 | 1.45E-07 | 4.49E-08 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 1.36E-08 | 5.47E-07 | 2.73E-09 | -3.22E-05 |
| ADP-fossil resources | MJ | 1.89E+01 | 2.30E-01 | 1.88E+01 | 3.79E+01 | 6.11E-01 | 1.95E+00 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 6.24E-02 | 4.69E-01 | 1.33E-02 | -4.50E+01 |
| Water use[5)] | $m^3e$ depr. | 2.48E-03 | 1.06E-03 | 8.47E-02 | 8.82E-02 | 3.03E-03 | 5.32E-03 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 3.14E-04 | 1.43E-02 | 7.56E-04 | -4.91E-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 | 2.28E-07 | 1.07E-09 | 1.53E-09 | 2.31E-07 | 3.20E-09 | 1.22E-08 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 3.58E-10 | 1.03E-08 | 2.15E-08 | -8.80E-09 |
| Ionizing radiation[6)] | kBq U235e | 3.24E-03 | 2.62E-04 | 1.50E-05 | 3.52E-03 | 7.88E-04 | 2.93E-04 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 7.80E-05 | 1.45E-03 | 1.11E-05 | -2.46E-01 |
| Ecotoxicity (freshwater) | CTUe | 1.71E-01 | 2.81E-02 | 1.73E-02 | 2.16E-01 | 8.12E-02 | 4.57E-02 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 7.96E-03 | 5.78E-01 | 1.84E-01 | -9.42E+00 |
| Human toxicity, cancer | CTUh | 9.07E-12 | 3.04E-12 | 1.39E-12 | 1.35E-11 | 7.28E-12 | 8.69E-12 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 7.24E-13 | 1.44E-10 | 9.86E-12 | -3.23E-09 |
| Human tox. non-cancer | CTUh | 1.44E-10 | 1.28E-10 | 5.40E-11 | 3.26E-10 | 3.86E-10 | 1.09E-10 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 3.98E-11 | 1.36E-09 | 3.35E-10 | -1.92E-08 |
| SQP[7)] | - | 3.60E-01 | 1.15E-01 | 8.76E-03 | 4.83E-01 | 3.69E-01 | 9.25E-02 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 4.76E-02 | 9.18E-01 | 3.85E-02 | -5.12E+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 | 3.37E+00 | 3.64E-03 | 1.42E+01 | 1.76E+01 | 1.07E-02 | 8.83E-01 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 1.06E-03 | 5.02E-02 | 1.93E-04 | -2.29E+00 |
| Renew. PER as material | MJ | 0.00E+00 | 0.00E+00 | 2.90E-06 | 2.90E-06 | 0.00E+00 | -2.90E-06 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total use of renew. PER | MJ | 3.37E+00 | 3.64E-03 | 1.42E+01 | 1.76E+01 | 1.07E-02 | 8.83E-01 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 1.06E-03 | 5.02E-02 | 1.93E-04 | -2.29E+00 |
| Non-re. PER as energy | MJ | 3.62E+01 | 2.30E-01 | 1.55E-01 | 3.66E+01 | 6.11E-01 | -2.39E-01 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 6.24E-02 | -3.96E+01 | -2.41E+00 | -6.47E+01 |
| Non-re. PER as material | MJ | 0.00E+00 | 0.00E+00 | 2.70E-03 | 2.70E-03 | 0.00E+00 | -2.70E-03 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.00E+01 |
| Total use of non-re. PER | MJ | 3.62E+01 | 2.30E-01 | 1.58E-01 | 3.66E+01 | 6.11E-01 | -2.41E-01 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 6.24E-02 | -3.96E+01 | -2.41E+00 | -2.47E+01 |
| Secondary materials | kg | 1.36E-04 | 1.12E-04 | 6.31E-05 | 3.11E-04 | 2.83E-04 | 1.86E-04 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 2.82E-05 | 2.94E-03 | 7.91E-06 | 9.87E-01 |
| Renew. secondary fuels | MJ | 6.20E-08 | 1.13E-06 | 2.36E-07 | 1.43E-06 | 3.58E-06 | 1.56E-06 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 3.56E-07 | 2.46E-05 | 7.01E-08 | -9.13E-05 |
| Non-ren. secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of net fresh water | m3 | 1.78E-01 | 2.86E-05 | 4.79E-03 | 1.83E-01 | 8.32E-05 | 9.17E-03 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 8.78E-06 | 2.70E-04 | 4.89E-06 | -1.31E-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 | 2.01E-03 | 3.39E-04 | 1.08E-04 | 2.45E-03 | 8.87E-04 | 6.24E-04 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 9.09E-05 | 8.58E-03 | 1.74E-04 | -8.36E-02 |
| Non-hazardous waste | kg | 3.79E-02 | 6.62E-03 | 2.32E-02 | 6.77E-02 | 1.87E-02 | 1.48E-02 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 1.88E-03 | 1.97E-01 | 5.77E-02 | -6.31E+01 |
| Radioactive waste | kg | 1.75E-06 | 6.50E-08 | 1.05E-05 | 1.23E-05 | 1.96E-07 | 6.44E-07 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 1.93E-08 | 3.68E-07 | 2.73E-09 | -6.44E-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 | 9.00E-03 | 9.00E-03 | 0.00E+00 | 4.50E-04 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Materials for recycling | kg | 1.08E-06 | 0.00E+00 | 0.00E+00 | 1.08E-06 | 0.00E+00 | 5.00E-02 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 9.43E-01 | 0.00E+00 | 0.00E+00 |
| Materials for energy rec | kg | 4.59E-10 | 0.00E+00 | 0.00E+00 | 4.59E-10 | 0.00E+00 | 2.29E-11 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy | MJ | 4.96E-05 | 0.00E+00 | 0.00E+00 | 4.96E-05 | 0.00E+00 | 2.48E-06 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy – Electricity | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 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 | 0.00E+00 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

## ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Global Warming Pot. | kg $CO_2$e | 1.79E+00 | 1.67E-02 | 5.71E-03 | 1.82E+00 | 4.31E-02 | 9.70E-02 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 4.30E-03 | 7.56E-02 | 4.50E-02 | -1.54E+00 |
| Ozone depletion Pot. | kg $CFC_{-11}$e | 0.00E+00 | 2.50E-10 | 8.62E-12 | 2.58E-10 | 6.87E-10 | 6.39E-11 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 6.94E-11 | 2.96E-10 | 1.18E-11 | -7.57E-07 |
| Acidification | kg $SO_2$e | 5.46E-03 | 1.02E-04 | 1.16E-04 | 5.68E-03 | 7.25E-05 | 2.99E-04 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 7.63E-06 | 2.20E-04 | 1.08E-05 | -4.17E-03 |
| Eutrophication | kg $PO_4^3$e | 8.47E-04 | 1.36E-05 | 2.76E-05 | 8.88E-04 | 1.83E-05 | 4.89E-05 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 1.92E-06 | 6.73E-05 | 4.12E-06 | -1.73E-03 |
| POCP (“smog”) | kg $C_2H_4$e | 7.23E-04 | 6.25E-06 | 8.78E-07 | 7.30E-04 | 7.67E-06 | 3.87E-05 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 7.92E-07 | 3.42E-05 | 1.52E-05 | -4.50E-04 |
| ADP-elements | kg Sbe | 0.00E+00 | 4.69E-08 | 5.18E-09 | 5.21E-08 | 1.41E-07 | 3.87E-08 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 1.33E-08 | 5.43E-07 | 2.57E-09 | -2.54E-05 |
| ADP-fossil | MJ | 5.13E+01 | 2.26E-01 | 1.83E+01 | 6.97E+01 | 5.97E-01 | 3.54E+00 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 6.11E-02 | 4.46E-01 | 1.31E-02 | -4.06E+01 |

## ENVIRONMENTAL IMPACTS – 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 $CO_2$e | 1.81E+00 | 1.68E-02 | 5.23E-02 | 1.88E+00 | 4.34E-02 | 9.95E-02 | MND | MND | MND | MND | MND | MND | MND | 0.00E+00 | 4.33E-03 | 6.20E-02 | 4.55E-02 | -1.60E+00 |

*9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.*

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# SCENARIO DOCUMENTATION

## MANUFACTURING ENERGY SCENARIO DOCUMENTATION

| Scenario parameter | Value |
|---|---|
| Electricity data source and quality | 1. Electricity from biomass (1 kWh), Germany, GaBi,<br>2. Biogas processed for gas grid, Processing\Biogas-Feed-In-Grass-0LUC-EU-2030, Europe, ProBas |
| Electricity kgCO2e / kWh<br>Electricity kgCO2e/MJ | 1. 0.0440<br>2. 0.0118 |
| District heating data source and quality | - |
| District heating CO2e / kWh | - |

## TRANSPORT SCENARIO DOCUMENTATION A4

| Scenario parameter | Value |
|---|---|
| Fuel and vehicle type. Eg, electric truck, diesel powered truck | Diesel lorry >32 metric ton, EURO6 |
| Average transport distance, km | 228.64 |
| Capacity utilization (including empty return) % | - |
| Bulk density of transported products | - |
| Volume capacity utilization factor | - |

## INSTALLATION SCENARIO DOCUMENTATION A5

| Scenario information | Value |
|---|---|
| Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, kg | 0.05 |
| Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, kg | 3.9E-6 |
| Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, kg | 3.6E-6 |
| Treatment of waste polyethylene, sanitary landfill, Ecoinvent, kg | 2.0E-6 |

## END OF LIFE SCENARIO DOCUMENTATION C1-C4

| Scenario information | Value |
|---|---|
| Average transport distance to nearest disposal site, km | 15 |
| C2: Transported mass, kg | 1.0 |
| C3: Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, kg | 0.943 |
| Treatment of waste polyethylene, Treatment of waste polyethylene/polypropylene product, collection for final disposal, Ecoinvent, kg | 0.057 |

# 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 15802+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

Yazan Badour, as an authorized verifier acting for EPD Hub Limited