# Environmental Profile

This LCA is calculated according to: ISO 14044, ISO 14040 and EN 15804

Ecochain v3.5.80

| | |
|---|---|
| Product: | 3026053 - PVC Elbow 87°3 GY 80 S/S BC |
| Unit: | 1 Piece |
| Manufacturer: | Wavin - FR - Varennes |

The Wavin range of PVC pipes and fittings to be glued covers all the usual diameters and allows you to create networks that are 100% compatible, homogeneous and meet the requirements of the French market.

| | |
|---|---|
| LCA standard: | EN15804+A2 (2019) |
| Standard database: | Worldwide - Ecoinvent v 3.6 Cut-Off |
| Externally verified: | Yes |
| Issue date: | 24-11-2022 |
| End of validity: | 24-11-2027 |
| Verifier: | Martijn van Hövell - SGS Search |

This LCA was evaluated according to EN15804+A2. It was concluded that the LCA complies with this standard.

The LCA background information and project dossier have been registered in the online Ecochain application in the account Wavin - FR - Varennes (2020). (☑ = module declared, MND = module not declared).

| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ☑ | ☑ | ☑ | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | ☑ | ☑ | ☑ | ☑ |

**Product stage**

A1 Raw material supply A2 Transport A3 Manufacturing

**Construction process stage**

A4 Transport gate to site
A5 Assembly / Construction installation process

**Use stage**

B1 Use B2 Maintenance B3 Repair B4 Replacement B5 Refurbishment
B6 Operational energy use B7 Operational water use

**End-of-Life stage**

C1 De-construction demolition C2 Transport C3 Waste processing
C4 Disposal

**Benefits and loads beyond the system boundaries**

D Reuse- Recovery- Recycling- potential

## Environmental impacts and parameters

**GWP-total** = EF EN15804+A2 Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF EN15804+A2 Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF EN15804+A2 Climate Change - Land use and LU change [kg CO2 eq]; **ODP** = EF Ozone depletion [kg CFC11 eq]; **AP** = EF Acidification [mol H+ eq]; **EP-fw** = EF Eutrophication, freshwater [kg P eq]; **EP-m** = EF Eutrophication, marine [kg N eq]; **EP-T** = EF Eutrophication, terrestrial [mol N eq]; **POCP** = EF Photochemical ozone formation [kg NMVOC eq]; **ADP-mm** = EF Resource use, minerals and metals [kg Sb eq]; **ADP-f** = EF Resource use, fossils [MJ]; **WDP** = EF Water use [m3 depriv.]; **PM** = EF Particulate matter [disease inc.]; **IR** = EF Ionising radiation [kBq U-235 eq]; **ETP-fw** = EF Ecotoxicity, freshwater [CTUe]; **HTP-c** = EF Human toxicity, cancer [CTUh]; **HTP-nc** = EF Human toxicity, non-cancer [CTUh]; **SQP** = EF Land use [Pt]; **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials [MJ]; **PERM** = Use of renewable primary energy resources used as raw materials [MJ]; **PERT** = Total use of renewable primary energy resources [MJ]; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials [MJ]; **PENRM** = Use of non-renewable primary energy resources used as raw materials [MJ]; **PENRT** = Total use of non-renewable primary energy resources [MJ]; **PET** = Total energy [MJ]; **SM** = Use of secondary material [kg]; **RSF** = Use of renewable secondary fuels [MJ]; **NRSF** = Use of non-renewable secondary fuels [MJ]; **FW** = Use of net fresh water [m3]; **HWD** = Hazardous waste disposed [kg]; **NHWD** = Non-hazardous waste disposed [kg]; **RWD** = Radioactive waste disposed [kg]; **CRU** = Components for re-use [kg]; **MFR** = Materials for recycling [kg]; **MER** = Materials for energy recovery [kg]; **EE** = Exported energy [MJ]; **EET** = Exported energy thermic [MJ]; **EEE** = Exported energy electric [MJ]

## Statement of Confidentiality

# Results

| Environmental impact | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| GWP-total | kg CO2 eq | 3.39E-1 | 1.14E-2 | 1.54E-2 | 3.66E-1 | 4.77E-3 | 2.22E-1 | 1.47E-3 | -1.83E-1 | 4.12E-1 |
| GWP-f | kg CO2 eq | 4.03E-1 | 1.14E-2 | 1.22E-2 | 4.27E-1 | 4.76E-3 | 1.32E-1 | 1.47E-3 | -2.30E-1 | 3.36E-1 |
| GWP-b | kg CO2 eq | -6.45E-2 | 6.93E-6 | 3.21E-3 | -6.13E-2 | 2.89E-6 | 8.96E-2 | 1.85E-6 | 4.70E-2 | 7.54E-2 |
| GWP-luluc | kg CO2 eq | 6.21E-4 | 4.04E-6 | 1.10E-5 | 6.36E-4 | 1.69E-6 | 5.99E-5 | 3.92E-8 | -4.97E-4 | 2.01E-4 |
| ODP | kg CFC11 eq | 2.03E-7 | 2.63E-9 | 1.58E-9 | 2.07E-7 | 1.10E-9 | 1.67E-8 | 5.58E-11 | -1.04E-7 | 1.22E-7 |
| AP | mol H+ eq | 1.97E-3 | 6.50E-5 | 6.64E-5 | 2.11E-3 | 2.71E-5 | 2.95E-4 | 1.35E-6 | -1.03E-3 | 1.40E-3 |
| EP-fw | kg P eq | 2.01E-5 | 9.39E-8 | 2.90E-7 | 2.05E-5 | 3.92E-8 | 2.01E-6 | 1.77E-9 | -1.19E-5 | 1.07E-5 |
| EP-m | kg N eq | 3.85E-4 | 2.33E-5 | 1.96E-5 | 4.28E-4 | 9.71E-6 | 7.45E-5 | 8.30E-7 | -1.97E-4 | 3.15E-4 |
| EP-T | mol N eq | 4.11E-3 | 2.56E-4 | 2.33E-4 | 4.60E-3 | 1.07E-4 | 8.20E-4 | 5.40E-6 | -2.17E-3 | 3.36E-3 |
| POCP | kg NMVOC eq | 1.27E-3 | 7.33E-5 | 5.81E-5 | 1.40E-3 | 3.06E-5 | 2.45E-4 | 1.85E-6 | -6.93E-4 | 9.86E-4 |
| ADP-mm | kg Sb eq | 3.95E-4 | 2.95E-7 | 2.23E-7 | 3.96E-4 | 1.23E-7 | 1.17E-6 | 1.36E-9 | -4.51E-6 | 3.92E-4 |
| ADP-f | MJ | 9.68E+0 | 1.75E-1 | 1.71E-1 | 1.00E+1 | 7.31E-2 | 7.86E-1 | 4.07E-3 | -5.34E+0 | 5.55E+0 |
| WDP | m3 depriv. | 6.11E-1 | 5.38E-4 | 3.48E-1 | 9.60E-1 | 2.24E-4 | 2.97E-2 | 2.71E-5 | -3.56E-1 | 6.34E-1 |
| PM | disease inc. | 1.58E-8 | 1.03E-9 | 9.75E-10 | 1.78E-8 | 4.30E-10 | 3.71E-9 | 2.80E-11 | -1.05E-8 | 1.15E-8 |
| IR | kBq U-235 eq | 2.29E-2 | 7.66E-4 | 4.94E-4 | 2.42E-2 | 3.20E-4 | 2.80E-3 | 1.87E-5 | -1.26E-2 | 1.48E-2 |
| ETP-fw | CTUe | 1.55E+1 | 1.42E-1 | 1.55E-1 | 1.58E+1 | 5.94E-2 | 5.80E+0 | 6.33E-2 | -6.66E+0 | 1.51E+1 |
| HTP-c | CTUh | 3.56E-10 | 5.06E-12 | 1.22E-11 | 3.74E-10 | 2.11E-12 | 8.94E-11 | 1.12E-13 | -1.57E-10 | 3.09E-10 |
| HTP-nc | CTUh | 1.08E-8 | 1.70E-10 | 3.13E-10 | 1.13E-8 | 7.08E-11 | 2.06E-9 | 1.22E-11 | -4.77E-9 | 8.71E-9 |
| SQP | Pt | 8.90E+0 | 1.50E-1 | 7.28E-1 | 9.78E+0 | 6.26E-2 | 4.82E-1 | 1.04E-2 | -1.40E+1 | -3.66E+0 |
| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| PERE | MJ | 1.69E+0 | 2.51E-3 | 1.86E-1 | 1.87E+0 | 1.05E-3 | 5.50E-2 | 1.50E-4 | -2.50E+0 | -5.70E-1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 1.69E+0 | 2.51E-3 | 1.86E-1 | 1.87E+0 | 1.05E-3 | 5.50E-2 | 1.50E-4 | -2.50E+0 | -5.70E-1 |
| PENRE | MJ | 1.04E+1 | 1.86E-1 | 1.85E-1 | 1.08E+1 | 7.76E-2 | 8.36E-1 | 4.32E-3 | -5.74E+0 | 5.93E+0 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 1.04E+1 | 1.86E-1 | 1.85E-1 | 1.08E+1 | 7.76E-2 | 8.36E-1 | 4.32E-3 | -5.74E+0 | 5.93E+0 |
| PET | MJ | 1.21E+1 | 1.89E-1 | 3.70E-1 | 1.26E+1 | 7.87E-2 | 8.91E-1 | 4.47E-3 | -8.24E+0 | 5.36E+0 |
| SM | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FW | m3 | 7.20E-3 | 1.98E-5 | 8.15E-3 | 1.54E-2 | 8.28E-6 | 8.20E-4 | 4.98E-6 | -4.85E-3 | 1.14E-2 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 5.72E-5 | 4.48E-7 | 2.55E-7 | 5.79E-5 | 1.87E-7 | 1.32E-6 | 4.96E-9 | -4.91E-6 | 5.45E-5 |
| NHWD | kg | 4.75E-2 | 1.09E-2 | 1.87E-3 | 6.03E-2 | 4.53E-3 | 2.88E-2 | 1.81E-2 | -2.16E-2 | 9.01E-2 |
| RWD | kg | 2.06E-5 | 1.19E-6 | 5.15E-7 | 2.23E-5 | 4.97E-7 | 3.07E-6 | 2.65E-8 | -1.14E-5 | 1.44E-5 |
| CRU | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MFR | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MER | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EE | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EET | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EEE | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Ecochain

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777