# Environmental Profile

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

Ecochain v3.5.80

**Ecochain**

| | |
|---|---|
| Product: | 3071157 - PERT/EVOH/PERT Pipe IV 18x2.0 L=500 |
| Unit: | 1 piece |
| Manufacturer: | Wavin - PL - MPC |

| | |
|---|---|
| LCA standard: | EN15804+A2 (2019) |
| Standard database: | Worldwide - Ecoinvent v 3.6 Cut-Off |
| Externally verified: | Yes |
| Issue date: | 30-06-2023 |
| End of validity: | 30-06-2028 |
| Verifier: | Martijn van Hövell - SGS Search |

**WAVIN**
An Orbia business.

**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 - PL - MPC (2021). (☑ = 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 | 1.01E+2 | 3.68E+0 | 4.91E+0 | 1.09E+2 | 5.62E-1 | 1.10E+2 | 2.47E+0 | -6.47E+1 | 1.58E+2 |
| GWP-f | kg CO2 eq | 1.08E+2 | 3.68E+0 | 3.71E+0 | 1.15E+2 | 5.62E-1 | 1.03E+2 | 2.47E+0 | -6.51E+1 | 1.56E+2 |
| GWP-b | kg CO2 eq | -6.95E+0 | 1.38E-3 | 1.19E+0 | -5.76E+0 | 3.41E-4 | 7.63E+0 | 1.87E-3 | 4.88E-1 | 2.36E+0 |
| GWP-luluc | kg CO2 eq | 5.23E-2 | 1.48E-3 | 2.61E-3 | 5.64E-2 | 1.99E-4 | 2.57E-4 | 3.62E-5 | -9.04E-3 | 4.79E-2 |
| ODP | kg CFC11 eq | 3.08E-6 | 8.04E-7 | 2.14E-7 | 4.10E-6 | 1.29E-7 | 1.10E-7 | 5.31E-8 | -6.82E-6 | -2.43E-6 |
| AP | mol H+ eq | 3.99E-1 | 3.31E-2 | 2.51E-2 | 4.58E-1 | 3.20E-3 | 1.25E-2 | 1.27E-3 | -5.46E-2 | 4.20E-1 |
| EP-fw | kg P eq | 1.98E-3 | 3.45E-5 | 1.49E-4 | 2.16E-3 | 4.62E-6 | 1.29E-5 | 1.66E-6 | -1.67-4 | 2.01E-3 |
| EP-m | kg N eq | 6.98E-2 | 1.02E-2 | 3.41E-3 | 8.33E-2 | 1.14E-3 | 5.62E-3 | 9.44E-4 | -1.73E-2 | 7.37E-2 |
| EP-T | mol N eq | 7.84E-1 | 1.12E-1 | 3.64E-2 | 9.32E-1 | 1.26E-2 | 6.38E-2 | 5.15E-3 | -1.92E-1 | 8.22E-1 |
| POCP | kg NMVOC eq | 3.66E-1 | 3.10E-2 | 1.21E-2 | 4.09E-1 | 3.61E-3 | 1.70E-2 | 2.01E-3 | -6.32E-2 | 3.69E-1 |
| ADP-mm | kg Sb eq | 1.24E-3 | 8.53E-5 | 3.10E-4 | 1.63E-3 | 1.45E-5 | 6.33E-6 | 1.28E-6 | -3.67E-5 | 1.62E-3 |
| ADP-f | MJ | 3.70E+3 | 5.45E+1 | 3.06E+1 | 3.78E+3 | 8.62E+0 | 6.14E+0 | 3.88E+0 | -1.09E+3 | 2.72E+3 |
| WDP | m3 depriv. | 8.48E+1 | 1.83E-1 | 1.01E+0 | 8.60E+1 | 2.65E-2 | 2.06E-1 | 1.93E-2 | -3.22E+0 | 8.30E+1 |
| PM | disease inc. | 3.43E-6 | 3.05E-7 | 1.85E-7 | 3.92E-6 | 5.07E-8 | 1.02E-7 | 2.67E-8 | -3.29E-7 | 3.78E-6 |
| IR | kBq U-235 eq | 2.50E+0 | 2.29E-1 | 3.37E-2 | 2.76E+0 | 3.77E-2 | 2.00E-2 | 1.81E-2 | -3.66E-1 | 2.47E+0 |
| ETP-fw | CTUe | 7.78E+2 | 4.72E+1 | 2.04E+2 | 1.03E+3 | 7.00E+0 | 3.27E+1 | 3.57E+0 | -1.48E+2 | 9.24E+2 |
| HTP-c | CTUh | 3.47E-8 | 1.66E-9 | 1.05E-8 | 4.69E-8 | 2.49E-10 | 1.36E-8 | 9.57E-11 | -7.25E-9 | 5.36E-8 |
| HTP-nc | CTUh | 7.24E-7 | 5.05E-8 | 2.61E-7 | 1.03E-6 | 8.35E-9 | 1.03E-7 | 2.22E-9 | -9.04E-8 | 1.06E-6 |
| SQP | Pt | 7.84E+2 | 4.32E+1 | 3.85E+1 | 8.66E+2 | 7.38E+0 | 2.77E+0 | 9.95E+0 | -6.38E+2 | 2.48E+2 |

| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 1.56E+2 | 3.66E-2 | 3.71E+2 | 5.27E+2 | 1.24E-1 | 3.29E-1 | 1.54E-1 | -9.66E+1 | 4.31E+2 |
| PERM | MJ | 0 | 6.12E-1 | 0 | 6.12E-1 | 0 | 0 | 0 | 0 | 6.12E-1 |
| PERT | MJ | 1.56E+2 | 6.49E-1 | 3.71E+2 | 5.27E+2 | 1.24E-1 | 3.29E-1 | 1.54E-1 | -9.66E+1 | 4.32E+2 |
| PENRE | MJ | 3.97E+3 | 5.94E+0 | 3.27E+1 | 4.01E+3 | 9.15E+0 | 6.57E+0 | 4.12E+0 | -1.21E+3 | 2.82E+3 |
| PENRM | MJ | 0 | 5.19E+1 | 0 | 5.19E+1 | 0 | 0 | 0 | 0 | 5.19E+1 |
| PENRT | MJ | 3.97E+3 | 5.79E+1 | 3.27E+1 | 4.06E+3 | 9.15E+0 | 6.57E+0 | 4.12E+0 | -1.21E+3 | 2.88E+3 |
| PET | MJ | 4.13E+3 | 5.85E+1 | 4.03E+2 | 4.59E+3 | 9.28E+0 | 6.90E+0 | 4.27E+0 | -1.30E+3 | 3.31E+3 |
| 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 | 0RSF | 0 |
| FW | m3 | 1.39E+0 | 6.24E-3 | 2.80E-2 | 1.42E+0 | 9.76E-4 | 1.98E-2 | 4.79E-3 | -8.70E-2 | 1.36E+0 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 5.76E-4 | 1.29E-4 | 1.73E-5 | 7.22E-4 | 2.20E-5 | 3.20E-5 | 4.67E-6 | -1.34E-3 | -5.54E-4 |
| NHWD | kg | 4.61E+0 | 3.12E+0 | 2.95E-1 | 8.02E+0 | 5.34E-1 | 6.50E-1 | 1.71E+1 | -7.27E-1 | 2.56E+1 |
| RWD | kg | 2.26E-3 | 3.60E-4 | 2.52E-5 | 2.65E-3 | 5.86E-5 | 2.34E-5 | 2.54E-5 | -4.91E-4 | 2.27E-3 |
| 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 |