# Environmental Profile

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

Ecochain v3.5.80

| | |
|---|---|
| Product: | 3021894 - Wafix PP Branch 88° GY 50x50x50 S/S/SP |
| Unit: | 1 piece |
| Manufacturer: | Wavin - PL -Buk - Extra products |

Wafix PP is a versatile, uncomplicated solution for your indoor drainage. You can easily install the impact-resistant pipes even in frost. Their excellent chemical resistance makes them ideal for cast-in applications.

| | |
|---|---|
| LCA standard: | EN15804+A2 (2019) |
| Standard database: | Worldwide - Ecoinvent v 3.6 Cut-Off |
| Externally verified: | Yes |
| Issue date: | 08-06-2023 |
| End of validity: | 08-06-2028 |
| 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 - PL -Buk - Extra products (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 | 1.07E-1 | 1.05E-3 | 1.45E-4 | 1.08E-1 | 1.93E-3 | 1.73E-1 | 9.11E-4 | -1.04E-1 | 1.80E-1 |
| GWP-f | kg CO2 eq | 2.05E-1 | 1.05E-3 | 1.46E-4 | 2.06E-1 | 1.93E-3 | 6.64E-2 | 9.11E-4 | -1.17E-1 | 1.58E-1 |
| GWP-b | kg CO2 eq | -9.84E-2 | 6.38E-7 | -1.54E-6 | -9.84E-2 | 1.17E-6 | 1.06E-1 | 7.93E-7 | 1.33E-2 | 2.11E-2 |
| GWP-luluc | kg CO2 eq | 2.35E-4 | 3.72E-7 | 1.49E-7 | 2.36E-4 | 6.84E-7 | 1.17E-5 | 1.55E-8 | -1.72E-4 | 7.57E-5 |
| ODP | kg CFC11 eq | 1.02E-8 | 2.42E-10 | 8.26E-12 | 1.04E-8 | 4.45E-10 | 1.79E-9 | 2.28E-11 | -7.10E-9 | 5.58E-9 |
| AP | mol H+ eq | 8.53E-4 | 5.99E-6 | 1.47E-6 | 8.60E-4 | 1.10E-5 | 7.36E-5 | 5.45E-7 | -4.22E-4 | 5.24E-4 |
| EP-fw | kg P eq | 5.10E-6 | 8.65E-9 | 8.24E-9 | 5.11E-6 | 1.59E-8 | 3.44E-7 | 7.12E-10 | -3.02E-6 | 2.45E-6 |
| EP-m | kg N eq | 1.67E-4 | 2.14E-6 | 1.55E-7 | 1.69E-4 | 3.94E-6 | 2.26E-5 | 3.54E-7 | -8.76E-5 | 1.08E-4 |
| EP-T | mol N eq | 1.83E-3 | 2.36E-5 | 1.85E-6 | 1.85E-3 | 4.34E-5 | 2.49E-4 | 2.21E-6 | -9.97E-4 | 1.15E-3 |
| POCP | kg NMVOC eq | 7.27E-4 | 6.75E-6 | 6.28E-7 | 7.35E-4 | 1.24E-5 | 7.73E-5 | 8.30E-7 | -3.88E-4 | 4.37E-4 |
| ADP-mm | kg Sb eq | 6.00E-6 | 2.72E-8 | 1.97E-8 | 6.05E-6 | 5.00E-8 | 2.87E-7 | 5.50E-10 | -9.43E-7 | 5.45E-6 |
| ADP-f | MJ | 6.20E+0 | 1.61E-2 | 1.36E-3 | 6.22E+0 | 2.97E-2 | 2.15E-1 | 1.67E-3 | -3.28E+0 | 3.18E+0 |
| WDP | m3 depriv. | 1.27E-1 | 4.95E-5 | 5.22E-5 | 1.27E-1 | 9.10E-5 | 3.90E-3 | 8.59E-6 | -7.63E-2 | 5.47E-2 |
| PM | disease inc. | 9.38E-9 | 9.49E-11 | 9.08E-12 | 9.48E-9 | 1.74E-10 | 1.18E-9 | 1.15E-11 | -5.42E-9 | 5.42E-9 |
| IR | kBq U-235 eq | 5.41E-3 | 7.05E-5 | 1.02E-6 | 5.48E-3 | 1.30E-4 | 6.85E-4 | 7.73E-6 | -2.96E-3 | 3.35E-3 |
| ETP-fw | CTUe | 3.82E+0 | 1.31E-2 | 1.21E-2 | 3.84E+0 | 2.41E-2 | 2.56E-1 | 1.40E-3 | -1.97E+0 | 2.16E+0 |
| HTP-c | CTUh | 1.24E-10 | 4.66E-13 | 6.17E-13 | 1.25E-10 | 8.57E-13 | 3.08E-11 | 4.09E-14 | -6.01E-11 | 9.64E-11 |
| HTP-nc | CTUh | 2.23E-9 | 1.56E-11 | 1.57E-11 | 2.26E-9 | 2.87E-11 | 3.67E-10 | 8.99E-13 | -8.54E-10 | 1.81E-9 |
| SQP | Pt | 9.22E+0 | 1.38E-2 | 2.24E-3 | 9.24E+0 | 2.54E-2 | 1.68E-1 | 4.28E-3 | -9.77E+0 | -3.31E-1 |
| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| PERE | MJ | 1.81E+0 | 2.31E-4 | 2.40E-2 | 1.83E+0 | 4.25E-4 | 1.01E-2 | 6.45E-5 | -1.58E+0 | 2.67E-1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 1.81E+0 | 2.31E-4 | 2.40E-2 | 1.83E+0 | 4.25E-4 | 1.01E-2 | 6.45E-5 | -1.58E+0 | 2.67E-1 |
| PENRE | MJ | 6.65E+0 | 1.71E-2 | 1.44E-3 | 6.67E+0 | 3.15E-2 | 2.29E-1 | 1.77E-3 | -3.53E+0 | 3.40E+0 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 6.65E+0 | 1.71E-2 | 1.44E-3 | 6.67E+0 | 3.15E-2 | 2.29E-1 | 1.77E-3 | -3.53E+0 | 3.40E+0 |
| PET | MJ | 8.46E+0 | 1.74E-2 | 2.55E-2 | 8.50E+0 | 3.19E-2 | 2.39E-1 | 1.83E-3 | -5.11E+0 | 3.67E+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 | 2.29E-3 | 1.83E-6 | 1.46E-6 | 2.30E-3 | 3.36E-6 | 1.21E-4 | 2.06E-6 | -1.44E-3 | 9.78E-4 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 2.11E-6 | 4.13E-8 | 2.73E-13 | 2.15E-6 | 7.58E-8 | 3.75E-7 | 2.01E-9 | -1.62E-6 | 9.86E-7 |
| NHWD | kg | 1.67E-2 | 1.00E-3 | 1.05E-6 | 1.77E-2 | 1.84E-3 | 1.08E-2 | 7.35E-3 | -7.58E-3 | 3.02E-2 |
| RWD | kg | 5.50E-6 | 1.10E-7 | 1.10E-13 | 5.61E-6 | 2.02E-7 | 8.87E-7 | 1.09E-8 | -2.92E-6 | 3.79E-6 |
| 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 |

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