

# Environmental Profile

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

Ecochain v3.5.80



Product: 3020591 - Wafix PP Bend 88° BK 40 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                                                                |    |    |     |     | Use stage                                                                                                             |     |     |     |     |     |     | End-of-Life stage                                                             |    |    |    |   |
| A1 Raw material supply A2 Transport A3 Manufacturing                         |    |    |     |     | B1 Use B2 Maintenance B3 Repair B4 Replacement B5 Refurbishment<br>B6 Operational energy use B7 Operational water use |     |     |     |     |     |     | C1 De-construction demolition C2 Transport C3 Waste processing<br>C4 Disposal |    |    |    |   |
| Construction process stage                                                   |    |    |     |     |                                                                                                                       |     |     |     |     |     |     | Benefits and loads beyond the system boundaries                               |    |    |    |   |
| A4 Transport gate to site<br>A5 Assembly / Construction installation process |    |    |     |     |                                                                                                                       |     |     |     |     |     |     | 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

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# Results

| Environmental impact | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3       | C4       | D         | Total    |
|----------------------|--------------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|
| GWP-total            | kg CO2 eq    | 7.48E-2  | 5.37E-4  | 1.45E-4  | 7.55E-2  | 9.80E-4  | 8.57E-2  | 4.62E-4  | -5.20E-2  | 1.11E-1  |
| GWP-f                | kg CO2 eq    | 1.24E-1  | 5.36E-4  | 1.46E-4  | 1.24E-1  | 9.79E-4  | 3.26E-2  | 4.62E-4  | -5.89E-2  | 9.96E-2  |
| GWP-b                | kg CO2 eq    | -4.91E-2 | 3.26E-7  | -1.54E-6 | -4.91E-2 | 5.95E-7  | 5.31E-2  | 4.03E-7  | 6.98E-3   | 1.10E-2  |
| GWP-luluc            | kg CO2 eq    | 1.28E-4  | 1.90E-7  | 1.49E-7  | 1.28E-4  | 3.47E-7  | 5.91E-6  | 7.74E-9  | -8.72E-5  | 4.73E-5  |
| ODP                  | kg CFC11 eq  | 7.40E-9  | 1.24E-10 | 8.26E-12 | 7.53E-9  | 2.26E-10 | 9.08E-10 | 1.16E-11 | -3.27E-9  | 5.41E-9  |
| AP                   | mol H+ eq    | 5.30E-4  | 3.05E-6  | 1.47E-6  | 5.35E-4  | 5.58E-6  | 3.72E-5  | 2.75E-7  | -2.13E-4  | 3.64E-4  |
| EP-fw                | kg P eq      | 3.04E-6  | 4.41E-9  | 8.24E-9  | 3.06E-6  | 8.06E-9  | 1.75E-7  | 3.57E-10 | -1.53E-6  | 1.71E-6  |
| EP-m                 | kg N eq      | 1.05E-4  | 1.09E-6  | 1.55E-7  | 1.06E-4  | 2.00E-6  | 1.14E-5  | 1.80E-7  | -4.42E-5  | 7.55E-5  |
| EP-T                 | mol N eq     | 1.16E-3  | 1.20E-5  | 1.85E-6  | 1.18E-3  | 2.20E-5  | 1.26E-4  | 1.12E-6  | -5.03E-4  | 8.24E-4  |
| POCP                 | kg NMVOC eq  | 4.50E-4  | 3.44E-6  | 6.28E-7  | 4.54E-4  | 6.29E-6  | 3.90E-5  | 4.20E-7  | -1.97E-4  | 3.03E-4  |
| ADP-mm               | kg Sb eq     | 4.68E-6  | 1.39E-8  | 1.97E-8  | 4.71E-6  | 2.53E-8  | 1.46E-7  | 2.77E-10 | -4.69E-7  | 4.42E-6  |
| ADP-f                | MJ           | 3.60E+0  | 8.23E-3  | 1.36E-3  | 3.61E+0  | 1.50E-2  | 1.09E-1  | 8.44E-4  | -1.66E+0  | 2.08E+0  |
| WDP                  | m3 depriv.   | 7.43E-2  | 2.53E-5  | 5.22E-5  | 7.43E-2  | 4.61E-5  | 1.97E-3  | 3.86E-6  | -3.83E-2  | 3.81E-2  |
| PM                   | disease inc. | 5.81E-9  | 4.84E-11 | 9.08E-12 | 5.87E-9  | 8.84E-11 | 5.96E-10 | 5.80E-12 | -2.76E-9  | 3.81E-9  |
| IR                   | kBq U-235 eq | 3.57E-3  | 3.60E-5  | 1.02E-6  | 3.60E-3  | 6.57E-5  | 3.47E-4  | 3.92E-6  | -1.47E-3  | 2.55E-3  |
| ETP-fw               | CTUe         | 2.26E+0  | 6.68E-3  | 1.21E-2  | 2.28E+0  | 1.22E-2  | 1.30E-1  | 7.07E-4  | -1.00E+0  | 1.42E+0  |
| HTP-c                | CTUh         | 7.73E-11 | 2.38E-13 | 6.17E-13 | 7.82E-11 | 4.34E-13 | 1.52E-11 | 2.03E-14 | -3.00E-11 | 6.38E-11 |
| HTP-nc               | CTUh         | 1.44E-9  | 7.97E-12 | 1.57E-11 | 1.46E-9  | 1.46E-11 | 1.85E-10 | 4.53E-13 | -3.76E-10 | 1.29E-9  |
| SQP                  | Pt           | 4.74E+0  | 7.04E-3  | 2.24E-3  | 4.75E+0  | 1.29E-2  | 8.53E-2  | 2.17E-3  | -4.92E+0  | -6.21E-2 |
| Resource use         | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3       | C4       | D         | Total    |
| PERE                 | MJ           | 9.74E-1  | 1.18E-4  | 2.40E-2  | 9.98E-1  | 2.16E-4  | 5.15E-3  | 3.29E-5  | -7.94E-1  | 2.09E-1  |
| PERM                 | MJ           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        |
| PERT                 | MJ           | 9.74E-1  | 1.18E-4  | 2.40E-2  | 9.98E-1  | 2.16E-4  | 5.15E-3  | 3.29E-5  | -7.94E-1  | 2.09E-1  |
| PENRE                | MJ           | 3.86E+0  | 8.74E-3  | 1.44E-3  | 3.87E+0  | 1.60E-2  | 1.16E-1  | 8.96E-4  | -1.78E+0  | 2.22E+0  |
| PENRM                | MJ           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        |
| PENRT                | MJ           | 3.86E+0  | 8.74E-3  | 1.44E-3  | 3.87E+0  | 1.60E-2  | 1.16E-1  | 8.96E-4  | -1.78E+0  | 2.22E+0  |
| PET                  | MJ           | 4.83E+0  | 8.86E-3  | 2.55E-2  | 4.87E+0  | 1.62E-2  | 1.21E-1  | 9.29E-4  | -2.58E+0  | 2.43E+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           | 1.38E-3  | 9.31E-7  | 1.46E-6  | 1.38E-3  | 1.70E-6  | 6.09E-5  | 1.04E-6  | -7.31E-4  | 7.18E-4  |

| Output flows and waste categories | Unit | A1      | A2      | A3       | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|----------|---------|---------|---------|---------|----------|---------|
| HWD                               | kg   | 1.46E-6 | 2.10E-8 | 2.73E-13 | 1.48E-6 | 3.84E-8 | 1.90E-7 | 1.01E-9 | -8.29E-7 | 8.82E-7 |
| NHWD                              | kg   | 1.43E-2 | 5.10E-4 | 1.05E-6  | 1.48E-2 | 9.32E-4 | 5.45E-3 | 3.72E-3 | -3.80E-3 | 2.11E-2 |
| RWD                               | kg   | 3.81E-6 | 5.60E-8 | 1.10E-13 | 3.87E-6 | 1.02E-7 | 4.49E-7 | 5.52E-9 | -1.46E-6 | 2.97E-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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