# Environmental Profile

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

Ecochain v3.5.80

| | |
|---|---|
| Product: | 3003112 - Wadal PVC Bend 45° GY 50 S/SP |
| Unit: | 1 piece |
| Manufacturer: | Wavin - PL -Buk - Extra products |

With Wadal you opt for a tensile-resistant system whose connections cannot slide apart. There is a solution for every indoor drainage situation, thanks to the very extensive range of PVC adhesive fittings and pipes. KOMO certified.

| | |
|---|---|
| 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 | 1.67E-1 | 2.25E-3 | 1.45E-4 | 1.70E-1 | 2.16E-3 | 1.10E-1 | 6.88E-4 | -1.01E-1 | 1.81E-1 |
| GWP-f | kg CO2 eq | 1.99E-1 | 2.25E-3 | 1.46E-4 | 2.01E-1 | 2.15E-3 | 7.32E-2 | 6.88E-4 | -1.07E-1 | 1.70E-1 |
| GWP-b | kg CO2 eq | -3.16E-2 | 1.37E-6 | -1.54E-6 | -3.16E-2 | 1.31E-6 | 3.64E-2 | 8.62E-7 | 6.44E-3 | 1.12E-2 |
| GWP-luluc | kg CO2 eq | 2.16E-4 | 7.96E-7 | 1.49E-7 | 2.17E-4 | 7.63E-7 | 2.72E-5 | 1.83E-8 | -1.25E-4 | 1.20E-4 |
| ODP | kg CFC11 eq | 9.36E-8 | 5.19E-10 | 8.26E-12 | 9.41E-8 | 4.97E-10 | 7.52E-9 | 2.55E-11 | -4.82E-8 | 5.40E-8 |
| AP | mol H+ eq | 9.51E-4 | 1.28E-5 | 1.47E-6 | 9.65E-4 | 1.23E-5 | 1.30E-4 | 6.23E-7 | -4.17E-4 | 6.91E-4 |
| EP-fw | kg P eq | 9.01E-6 | 1.85E-8 | 8.24E-9 | 9.03E-6 | 1.77E-8 | 9.09E-7 | 8.22E-10 | -4.24E-6 | 5.72E-6 |
| EP-m | kg N eq | 1.70E-4 | 4.59E-6 | 1.55E-7 | 1.75E-4 | 4.39E-6 | 3.23E-5 | 3.83E-7 | -7.78E-5 | 1.34E-4 |
| EP-T | mol N eq | 1.85E-3 | 5.05E-5 | 1.85E-6 | 1.91E-3 | 4.84E-5 | 3.56E-4 | 2.48E-6 | -8.44E-4 | 1.47E-3 |
| POCP | kg NMVOC eq | 6.17E-4 | 1.44E-5 | 6.28E-7 | 6.32E-4 | 1.38E-5 | 1.06E-4 | 8.54E-7 | -2.86E-4 | 4.67E-4 |
| ADP-mm | kg Sb eq | 1.50E-4 | 5.82E-8 | 1.97E-8 | 1.50E-4 | 5.57E-8 | 5.08E-7 | 6.27E-10 | -2.01E-6 | 1.48E-4 |
| ADP-f | MJ | 4.79E+0 | 3.45E-2 | 1.36E-3 | 4.83E+0 | 3.31E-2 | 3.48E-1 | 1.87E-3 | -2.51E+0 | 2.71E+0 |
| WDP | m3 depriv. | 2.92E-1 | 1.06E-4 | 5.22E-5 | 2.93E-1 | 1.01E-4 | 1.36E-2 | 1.32E-5 | -1.45E-1 | 1.61E-1 |
| PM | disease inc. | 7.02E-9 | 2.03E-10 | 9.08E-12 | 7.23E-9 | 1.94E-10 | 1.61E-9 | 1.29E-11 | -3.49E-9 | 5.55E-9 |
| IR | kBq U-235 eq | 1.04E-2 | 1.51E-4 | 1.02E-6 | 1.05E-2 | 1.45E-4 | 1.23E-3 | 8.56E-6 | -4.98E-3 | 6.93E-3 |
| ETP-fw | CTUe | 5.49E+0 | 2.80E-2 | 1.21E-2 | 5.53E+0 | 2.69E-2 | 2.66E+0 | 2.94E-2 | -1.95E+0 | 6.30E+0 |
| HTP-c | CTUh | 1.69E-10 | 9.98E-13 | 6.17E-13 | 1.71E-10 | 9.56E-13 | 4.09E-11 | 5.23E-14 | -6.53E-11 | 1.47E-10 |
| HTP-nc | CTUh | 5.07E-9 | 3.34E-11 | 1.57E-11 | 5.12E-9 | 3.20E-11 | 9.41E-10 | 5.64E-12 | -1.94E-9 | 4.16E-9 |
| SQP | Pt | 3.74E+0 | 2.95E-2 | 2.24E-3 | 3.77E+0 | 2.83E-2 | 2.14E-1 | 4.78E-3 | -3.85E+0 | 1.66E-1 |
| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| PERE | MJ | 1.10E+0 | 4.96E-4 | 2.40E-2 | 1.13E+0 | 4.74E-4 | 2.49E-2 | 6.91E-5 | -6.77E-1 | 4.73E-1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 1.10E+0 | 4.96E-4 | 2.40E-2 | 1.13E+0 | 4.74E-4 | 2.49E-2 | 6.91E-5 | -6.77E-1 | 4.73E-1 |
| PENRE | MJ | 5.14E+0 | 3.67E-2 | 1.44E-3 | 5.18E+0 | 3.51E-2 | 3.70E-1 | 1.98E-3 | -2.70E+0 | 2.89E+0 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 5.14E+0 | 3.67E-2 | 1.44E-3 | 5.18E+0 | 3.51E-2 | 3.70E-1 | 1.98E-3 | -2.70E+0 | 2.89E+0 |
| PET | MJ | 6.24E+0 | 3.72E-2 | 2.55E-2 | 6.31E+0 | 3.56E-2 | 3.95E-1 | 2.05E-3 | -3.38E+0 | 3.36E+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 | 3.48E-3 | 3.91E-6 | 1.46E-6 | 3.48E-3 | 3.74E-6 | 3.75E-4 | 2.28E-6 | -1.70E-3 | 2.16E-3 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 2.21E-5 | 8.83E-8 | 2.73E-13 | 2.22E-5 | 8.46E-8 | 5.73E-7 | 2.28E-9 | -2.27E-6 | 2.06E-5 |
| NHWD | kg | 2.09E-2 | 2.14E-3 | 1.05E-6 | 2.31E-2 | 2.05E-3 | 1.32E-2 | 8.19E-3 | -8.98E-3 | 3.75E-2 |
| RWD | kg | 9.16E-6 | 2.35E-7 | 1.10E-13 | 9.40E-6 | 2.25E-7 | 1.33E-6 | 1.21E-8 | -4.50E-6 | 6.46E-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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