# Environmental Profile

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

Ecochain v3.5.80

| | |
|---|---|
| Product: | 3003147 - Wadal PVC Branch 88° GY 40 S/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 | 1.82E-1 | 2.46E-3 | 1.45E-4 | 1.84E-1 | 2.34E-3 | 1.15E-1 | 7.49E-4 | -1.09E-1 | 1.93E-1 |
| GWP-f | kg CO2 eq | 2.13E-1 | 2.45E-3 | 1.46E-4 | 2.16E-1 | 2.34E-3 | 7.83E-2 | 7.49E-4 | -1.15E-1 | 1.82E-1 |
| GWP-b | kg CO2 eq | -3.14E-2 | 1.49E-6 | -1.54E-6 | -3.14E-2 | 1.42E-6 | 3.64E-2 | 9.35E-7 | 6.38E-3 | 1.13E-2 |
| GWP-luluc | kg CO2 eq | 2.33E-4 | 8.68E-7 | 1.49E-7 | 2.34E-4 | 8.28E-7 | 2.93E-5 | 2.00E-8 | -1.30E-4 | 1.34E-4 |
| ODP | kg CFC11 eq | 1.01E-7 | 5.65E-10 | 8.26E-12 | 1.01E-7 | 5.39E-10 | 8.11E-9 | 2.77E-11 | -5.21E-8 | 5.79E-8 |
| AP | mol H+ eq | 1.03E-3 | 1.40E-5 | 1.47E-6 | 1.04E-3 | 1.33E-5 | 1.40E-4 | 6.77E-7 | -4.47E-4 | 7.49E-4 |
| EP-fw | kg P eq | 9.78E-6 | 2.02E-8 | 8.24E-9 | 9.80E-6 | 1.92E-8 | 9.82E-7 | 8.98E-10 | -4.53E-6 | 6.28E-6 |
| EP-m | kg N eq | 1.84E-4 | 5.00E-6 | 1.55E-7 | 1.89E-4 | 4.77E-6 | 3.47E-5 | 4.15E-7 | -8.29E-5 | 1.46E-4 |
| EP-T | mol N eq | 2.01E-3 | 5.51E-5 | 1.85E-6 | 2.06E-3 | 5.25E-5 | 3.83E-4 | 2.69E-6 | -8.99E-4 | 1.60E-3 |
| POCP | kg NMVOC eq | 6.63E-4 | 1.58E-5 | 6.28E-7 | 6.80E-4 | 1.50E-5 | 1.14E-4 | 9.28E-7 | -3.05E-4 | 5.05E-4 |
| ADP-mm | kg Sb eq | 1.98E-4 | 6.35E-8 | 1.97E-8 | 1.98E-4 | 6.05E-8 | 5.48E-7 | 6.83E-10 | -2.17E-6 | 1.97E-4 |
| ADP-f | MJ | 5.14E+0 | 3.77E-2 | 1.36E-3 | 5.18E+0 | 3.59E-2 | 3.75E-1 | 2.03E-3 | -2.69E+0 | 2.90E+0 |
| WDP | m3 depriv. | 3.15E-1 | 1.16E-4 | 5.22E-5 | 3.16E-1 | 1.10E-4 | 1.47E-2 | 1.49E-5 | -1.56E-1 | 1.74E-1 |
| PM | disease inc. | 7.47E-9 | 2.22E-10 | 9.08E-12 | 7.70E-9 | 2.11E-10 | 1.73E-9 | 1.40E-11 | -3.68E-9 | 5.97E-9 |
| IR | kBq U-235 eq | 1.12E-2 | 1.65E-4 | 1.02E-6 | 1.14E-2 | 1.57E-4 | 1.33E-3 | 9.29E-6 | -5.34E-3 | 7.56E-3 |
| ETP-fw | CTUe | 6.15E+0 | 3.06E-2 | 1.21E-2 | 6.20E+0 | 2.92E-2 | 2.87E+0 | 3.17E-2 | -2.06E+0 | 7.07E+0 |
| HTP-c | CTUh | 1.88E-10 | 1.09E-12 | 6.17E-13 | 1.90E-10 | 1.04E-12 | 4.44E-11 | 5.72E-14 | -6.95E-11 | 1.66E-10 |
| HTP-nc | CTUh | 5.66E-9 | 3.65E-11 | 1.57E-11 | 5.72E-9 | 3.48E-11 | 1.02E-9 | 6.09E-12 | -2.08E-9 | 4.69E-9 |
| SQP | Pt | 3.79E+0 | 3.22E-2 | 2.24E-3 | 3.83E+0 | 3.07E-2 | 2.31E-1 | 5.18E-3 | -3.87E+0 | 2.25E-1 |
| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| PERE | MJ | 1.13E+0 | 5.40E-4 | 2.40E-2 | 1.16E+0 | 5.15E-4 | 2.69E-2 | 7.47E-5 | -6.86E-1 | 5.00E-1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 1.13E+0 | 5.40E-4 | 2.40E-2 | 1.16E+0 | 5.15E-4 | 2.69E-2 | 7.47E-5 | -6.86E-1 | 5.00E-1 |
| PENRE | MJ | 5.51E+0 | 4.00E-2 | 1.44E-3 | 5.55E+0 | 3.81E-2 | 3.99E-1 | 2.15E-3 | -2.90E+0 | 3.09E+0 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 5.51E+0 | 4.00E-2 | 1.44E-3 | 5.55E+0 | 3.81E-2 | 3.99E-1 | 2.15E-3 | -2.90E+0 | 3.09E+0 |
| PET | MJ | 6.65E+0 | 4.05E-2 | 2.55E-2 | 6.71E+0 | 3.86E-2 | 4.26E-1 | 2.23E-3 | -3.59E+0 | 3.59E+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 | 3.76E-3 | 4.26E-6 | 1.46E-6 | 3.77E-3 | 4.06E-6 | 4.05E-4 | 2.48E-6 | -1.82E-3 | 2.36E-3 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 2.85E-5 | 9.63E-8 | 2.73E-13 | 2.86E-5 | 9.18E-8 | 6.18E-7 | 2.48E-9 | -2.43E-6 | 2.69E-5 |
| NHWD | kg | 2.25E-2 | 2.33E-3 | 1.05E-6 | 2.48E-2 | 2.23E-3 | 1.42E-2 | 8.90E-3 | -9.59E-3 | 4.06E-2 |
| RWD | kg | 9.90E-6 | 2.56E-7 | 1.10E-13 | 1.02E-5 | 2.44E-7 | 1.43E-6 | 1.32E-8 | -4.82E-6 | 7.03E-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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