# Environmental Profile

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

Ecochain v3.5.80

| | |
|---|---|
| Product: | 3003173 - Wadal PVC Tee 45° GY 110 S/S/S |
| Unit: | 1 piece |
| Manufacturer: | Wavin - NL - Hardenberg - Verified |
| Address: | J.C. Kellerlaan 3<br>7772 SG Hardenberg<br>Netherlands |

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: | NMD Bepalingsmethode 1.1 (2022) |
| 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 - NL - Hardenberg - Verified (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

**ECI** = Environmental Costs Indicator [euro]; **ADPE** = Abiotic depletion potential for non-fossil resources [kg Sb-eq]; **ADPF** = Abiotic depletion potential for fossil resources [kg Sb-eq]; **GWP** = Global warming potential [kg CO2-eq]; **ODP** = Depletion potential of the stratospheric ozone layer [kg CFC-11-eq]; **POCP** = Formation potential of tropospheric ozone photochemical oxidants [kg ethene-eq]; **AP** = Acidification potential of land and water [kg SO2-eq]; **EP** = Eutrophication potential [kg PO4 3−-eq]; **HTP** = Human toxicity potential [kg 1,4-DB-eq]; **FAETP** = Freshwater aquatic ecotoxicity potential [kg 1,4-DB-eq]; **MAETP** = Marine aquatic ecotoxicity potential [kg 1,4-DB-eq]; **TETP** = Terrestrial ecotoxicity potential [kg 1,4-DB-eq]; **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 SBK set 1 | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| ECI | euro | 0.13 | 0 | 0.01 | 0.14 | 0 | 0.04 | 0 | -0.07 | 0.12 |
| ADPE | kg Sb-eq | 1.22E-3 | 4.24E-7 | 1.89E-6 | 1.22E-3 | 4.00E-7 | 3.62E-6 | 4.46E-9 | -1.39E-5 | 1.21E-3 |
| ADPF | kg Sb-eq | 1.42E-2 | 1.22E-4 | 3.24E-4 | 1.47E-2 | 1.13E-4 | 1.25E-3 | 6.18E-6 | -7.80E-3 | 8.23E-3 |
| GWP | kg CO2-eq | 1.19E+0 | 1.66E-2 | 6.15E-2 | 1.27E+0 | 1.53E-2 | 4.27E-1 | 4.21E-3 | -6.68E-1 | 1.05E+0 |
| ODP | kg CFC-11-eq | 6.73E-7 | 2.94E-9 | 4.86E-9 | 6.81E-7 | 2.84E-9 | 5.26E-8 | 1.47E-10 | -3.40E-7 | 3.97E-7 |
| POCP | kg ethene-eq | 6.81E-4 | 1.00E-5 | 2.67E-5 | 7.18E-4 | 9.20E-6 | 9.86E-5 | 1.09E-6 | -3.47E-4 | 4.80E-4 |
| AP | kg SO2-eq | 4.77E-3 | 7.29E-5 | 2.64E-4 | 5.11E-3 | 6.60E-5 | 7.29E-4 | 3.33E-6 | -2.27E-3 | 3.63E-3 |
| EP | kg PO4 3−-eq | 6.10E-4 | 1.43E-5 | 3.40E-5 | 6.59E-4 | 1.32E-5 | 1.10E-4 | 1.31E-6 | -3.05E-4 | 4.79E-4 |
| HTP | kg 1,4-DB-eq | 4.65E-1 | 6.98E-3 | 2.86E-2 | 5.01E-1 | 6.56E-3 | 1.90E-1 | 3.49E-4 | -2.17E-1 | 4.80E-1 |
| FAETP | kg 1,4-DB-eq | 1.40E-2 | 2.04E-4 | 9.76E-4 | 1.51E-2 | 1.92E-4 | 2.89E-3 | 1.08E-4 | -6.00E-3 | 1.23E-2 |
| MAETP | kg 1,4-DB-eq | 3.29E+1 | 7.33E-1 | 3.85E+0 | 3.74E+1 | 6.86E-1 | 9.94E+0 | 1.32E-1 | -1.41E+1 | 3.41E+1 |
| TETP | kg 1,4-DB-eq | 3.44E-3 | 2.47E-5 | 2.12E-3 | 5.59E-3 | 2.32E-5 | 6.78E-4 | 1.18E-6 | -2.00E-3 | 4.29E-3 |
| Environmental impact | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| GWP-total | kg CO2 eq | 1.23E+0 | 1.67E-2 | 7.04E-2 | 1.32E+0 | 1.55E-2 | 4.53E-1 | 4.91E-3 | -6.33E-1 | 1.16E+0 |
| GWP-f | kg CO2 eq | 1.22E+0 | 1.67E-2 | 5.41E-2 | 1.29E+0 | 1.55E-2 | 4.30E-1 | 4.90E-3 | -6.83E-1 | 1.05E+0 |
| GWP-b | kg CO2 eq | 1.21E-2 | 7.72E-6 | 1.12E-2 | 2.33E-2 | 9.38E-6 | 2.36E-2 | 6.20E-6 | 5.04E-2 | 9.74E-2 |
| GWP-luluc | kg CO2 eq | 1.35E-3 | 6.13E-6 | 5.13E-3 | 6.49E-3 | 5.47E-6 | 1.95E-4 | 1.29E-7 | -8.11E-4 | 5.88E-3 |
| ODP | kg CFC11 eq | 6.64E-7 | 3.69E-9 | 5.72E-9 | 6.74E-7 | 3.56E-9 | 5.41E-8 | 1.83E-10 | -3.36E-7 | 3.95E-7 |
| AP | mol H+ eq | 5.80E-3 | 9.70E-5 | 3.30E-4 | 6.23E-3 | 8.80E-5 | 9.15E-4 | 4.45E-6 | -2.75E-3 | 4.48E-3 |
| EP-fw | kg P eq | 5.89E-5 | 1.69E-7 | 9.47E-7 | 6.00E-5 | 1.27E-7 | 6.54E-6 | 5.83E-9 | -2.91E-5 | 3.75E-5 |
| EP-m | kg N eq | 1.04E-3 | 3.42E-5 | 7.79E-5 | 1.15E-3 | 3.15E-5 | 2.23E-4 | 2.76E-6 | -4.90E-4 | 9.15E-4 |
| EP-T | mol N eq | 1.12E-2 | 3.77E-4 | 8.59E-4 | 1.24E-2 | 3.47E-4 | 2.46E-3 | 1.78E-5 | -5.27E-3 | 9.96E-3 |
| POCP | kg NMVOC eq | 3.58E-3 | 1.08E-4 | 2.44E-4 | 3.93E-3 | 9.92E-5 | 7.36E-4 | 6.11E-6 | -1.76E-3 | 3.02E-3 |
| ADP-mm | kg Sb eq | 1.22E-3 | 4.24E-7 | 1.89E-6 | 1.22E-3 | 4.00E-7 | 3.62E-6 | 4.46E-9 | -1.39E-5 | 1.21E-3 |
| ADP-f | MJ | 3.03E+1 | 2.52E-1 | 6.05E-1 | 3.11E+1 | 2.37E-1 | 2.47E+0 | 1.34E-2 | -1.64E+1 | 1.74E+1 |
| WDP | m3 depriv. | 2.01E+0 | 9.03E-4 | 4.68E-1 | 2.48E+0 | 7.28E-4 | 9.83E-2 | 8.66E-5 | -1.03E+0 | 1.55E+0 |
| PM | disease inc. | 3.89E-8 | 1.50E-9 | 4.07E-9 | 4.45E-8 | 1.39E-9 | 1.13E-8 | 9.20E-11 | -2.10E-8 | 3.63E-8 |
| IR | kBq U-235 eq | 6.93E-2 | 1.06E-3 | 9.61E-4 | 7.13E-2 | 1.04E-3 | 8.76E-3 | 6.14E-5 | -3.41E-2 | 4.71E-2 |
| ETP-fw | CTUe | 3.68E+1 | 2.25E-1 | 1.40E+0 | 3.84E+1 | 1.93E-1 | 1.93E+1 | 2.13E-1 | -1.33E+1 | 4.48E+1 |
| HTP-c | CTUh | 1.01E-9 | 7.30E-12 | 4.86E-11 | 1.07E-9 | 6.85E-12 | 2.75E-10 | 3.69E-13 | -3.81E-10 | 9.67E-10 |
| HTP-nc | CTUh | 3.34E-8 | 2.46E-10 | 1.52E-9 | 3.52E-8 | 2.30E-10 | 6.67E-9 | 4.09E-11 | -1.32E-8 | 2.90E-8 |
| SQP | Pt | 6.16E+0 | 2.19E-1 | 4.52E-2 | 6.43E+0 | 2.03E-1 | 1.51E+0 | 3.42E-2 | -1.16E+1 | -3.39E+0 |

| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 1.97E+0 | 3.16E-3 | 2.94E+0 | 4.92E+0 | 3.40E-3 | 1.79E-1 | 4.99E-4 | -2.48E+0 | 2.62E+0 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 1.97E+0 | 3.16E-3 | 2.94E+0 | 4.92E+0 | 3.40E-3 | 1.79E-1 | 4.99E-4 | -2.48E+0 | 2.62E+0 |
| PENRE | MJ | 3.25E+1 | 2.68E-1 | 6.54E-1 | 3.34E+1 | 2.52E-1 | 2.63E+0 | 1.42E-2 | -1.77E+1 | 1.86E+1 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 3.25E+1 | 2.68E-1 | 6.54E-1 | 3.34E+1 | 2.52E-1 | 2.63E+0 | 1.42E-2 | -1.77E+1 | 1.86E+1 |
| PET | MJ | 3.45E+1 | 2.71E-1 | 3.59E+0 | 3.83E+1 | 2.55E-1 | 2.81E+0 | 1.47E-2 | -2.02E+1 | 2.12E+1 |
| 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 | 2.25E-2 | 3.07E-5 | 1.11E-2 | 3.36E-2 | 2.68E-5 | 2.69E-3 | 1.64E-5 | -1.20E-2 | 2.43E-2 |
| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| HWD | kg | 1.75E-4 | 6.39E-7 | 6.42E-7 | 1.76E-4 | 6.07E-7 | 4.04E-6 | 1.63E-8 | -1.39E-5 | 1.67E-4 |
| NHWD | kg | 1.26E-1 | 1.60E-2 | 9.91E-4 | 1.43E-1 | 1.47E-2 | 8.90E-2 | 5.88E-2 | -5.50E-2 | 2.51E-1 |
| RWD | kg | 6.02E-5 | 1.66E-6 | 1.19E-6 | 6.30E-5 | 1.61E-6 | 9.37E-6 | 8.69E-8 | -3.03E-5 | 4.38E-5 |
| 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 |