

# Environmental Profile

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

Ecochain v3.5.80



Product: 3003193 - Wadal PVC Tee 45° GY 160x110 S/S/S  
Unit: 1 piece  
Manufacturer: Wavin - NL - Hardenberg - Verified  
Address: J.C. Kellerlaan 3  
7772 SG Hardenberg  
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                                                                |    |    |     |     | 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

**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

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# Results

| Environmental impact SBK set 1 | Unit         | A1      | A2       | A3       | A1-A3   | C2       | C3       | C4       | D         | Total    |
|--------------------------------|--------------|---------|----------|----------|---------|----------|----------|----------|-----------|----------|
| ECI                            | euro         | 0.26    | 0        | 0.01     | 0.27    | 0        | 0.08     | 0        | -0.13     | 0.23     |
| ADPE                           | kg Sb-eq     | 2.31E-3 | 8.23E-7  | 3.21E-6  | 2.32E-3 | 7.60E-7  | 6.96E-6  | 8.49E-9  | -2.66E-5  | 2.30E-3  |
| ADPF                           | kg Sb-eq     | 2.72E-2 | 2.37E-4  | 5.52E-4  | 2.80E-2 | 2.14E-4  | 2.39E-3  | 1.18E-5  | -1.50E-2  | 1.57E-2  |
| GWP                            | kg CO2-eq    | 2.29E+0 | 3.22E-2  | 1.05E-1  | 2.43E+0 | 2.91E-2  | 8.14E-1  | 8.00E-3  | -1.29E+0  | 1.99E+0  |
| ODP                            | kg CFC-11-eq | 1.28E-6 | 5.72E-9  | 8.28E-9  | 1.30E-6 | 5.40E-9  | 1.00E-7  | 2.80E-10 | -6.48E-7  | 7.56E-7  |
| POCP                           | kg ethene-eq | 1.31E-3 | 1.94E-5  | 4.55E-5  | 1.37E-3 | 1.75E-5  | 1.90E-4  | 2.08E-6  | -6.73E-4  | 9.10E-4  |
| AP                             | kg SO2-eq    | 9.18E-3 | 1.42E-4  | 4.50E-4  | 9.78E-3 | 1.25E-4  | 1.40E-3  | 6.33E-6  | -4.45E-3  | 6.85E-3  |
| EP                             | kg PO4 3--eq | 1.20E-3 | 2.78E-5  | 5.79E-5  | 1.28E-3 | 2.50E-5  | 2.13E-4  | 2.49E-6  | -6.17E-4  | 9.05E-4  |
| HTP                            | kg 1,4-DB-eq | 8.94E-1 | 1.36E-2  | 4.87E-2  | 9.56E-1 | 1.25E-2  | 3.64E-1  | 6.64E-4  | -4.23E-1  | 9.10E-1  |
| FAETP                          | kg 1,4-DB-eq | 2.78E-2 | 3.96E-4  | 1.66E-3  | 2.99E-2 | 3.65E-4  | 5.54E-3  | 2.05E-4  | -1.24E-2  | 2.36E-2  |
| MAETP                          | kg 1,4-DB-eq | 6.33E+1 | 1.42E+0  | 6.55E+0  | 7.13E+1 | 1.30E+0  | 1.92E+1  | 2.50E-1  | -2.74E+1  | 6.47E+1  |
| TETP                           | kg 1,4-DB-eq | 6.67E-3 | 4.79E-5  | 3.62E-3  | 1.03E-2 | 4.42E-5  | 1.29E-3  | 2.24E-6  | -4.15E-3  | 7.53E-3  |
| Environmental impact           | Unit         | A1      | A2       | A3       | A1-A3   | C2       | C3       | C4       | D         | Total    |
| GWP-total                      | kg CO2 eq    | 2.37E+0 | 3.25E-2  | 1.20E-1  | 2.52E+0 | 2.94E-2  | 8.81E-1  | 9.33E-3  | -1.19E+0  | 2.25E+0  |
| GWP-f                          | kg CO2 eq    | 2.34E+0 | 3.25E-2  | 9.22E-2  | 2.47E+0 | 2.94E-2  | 8.20E-1  | 9.32E-3  | -1.32E+0  | 2.01E+0  |
| GWP-b                          | kg CO2 eq    | 2.36E-2 | 1.50E-5  | 1.90E-2  | 4.26E-2 | 1.78E-5  | 6.02E-2  | 1.18E-5  | 1.31E-1   | 2.34E-1  |
| GWP-luluc                      | kg CO2 eq    | 2.76E-3 | 1.19E-5  | 8.75E-3  | 1.15E-2 | 1.04E-5  | 3.72E-4  | 2.45E-7  | -1.78E-3  | 1.01E-2  |
| ODP                            | kg CFC11 eq  | 1.27E-6 | 7.17E-9  | 9.74E-9  | 1.28E-6 | 6.77E-9  | 1.03E-7  | 3.48E-10 | -6.41E-7  | 7.53E-7  |
| AP                             | mol H+ eq    | 1.12E-2 | 1.88E-4  | 5.62E-4  | 1.19E-2 | 1.67E-4  | 1.76E-3  | 8.47E-6  | -5.40E-3  | 8.48E-3  |
| EP-fw                          | kg P eq      | 1.14E-4 | 3.28E-7  | 1.61E-6  | 1.16E-4 | 2.42E-7  | 1.25E-5  | 1.11E-8  | -5.84E-5  | 7.03E-5  |
| EP-m                           | kg N eq      | 2.03E-3 | 6.64E-5  | 1.33E-4  | 2.23E-3 | 5.99E-5  | 4.31E-4  | 5.25E-6  | -9.70E-4  | 1.75E-3  |
| EP-T                           | mol N eq     | 2.18E-2 | 7.32E-4  | 1.46E-3  | 2.40E-2 | 6.60E-4  | 4.74E-3  | 3.38E-5  | -1.05E-2  | 1.90E-2  |
| POCP                           | kg NMVOC eq  | 6.93E-3 | 2.09E-4  | 4.16E-4  | 7.55E-3 | 1.89E-4  | 1.42E-3  | 1.16E-5  | -3.45E-3  | 5.72E-3  |
| ADP-mm                         | kg Sb eq     | 2.31E-3 | 8.23E-7  | 3.21E-6  | 2.32E-3 | 7.60E-7  | 6.96E-6  | 8.49E-9  | -2.66E-5  | 2.30E-3  |
| ADP-f                          | MJ           | 5.80E+1 | 4.90E-1  | 1.03E+0  | 5.96E+1 | 4.51E-1  | 4.73E+0  | 2.54E-2  | -3.16E+1  | 3.32E+1  |
| WDP                            | m3 depriv.   | 3.84E+0 | 1.75E-3  | 7.97E-1  | 4.64E+0 | 1.38E-3  | 1.87E-1  | 1.65E-4  | -2.01E+0  | 2.81E+0  |
| PM                             | disease inc. | 7.66E-8 | 2.92E-9  | 6.94E-9  | 8.65E-8 | 2.65E-9  | 2.17E-8  | 1.75E-10 | -4.32E-8  | 6.79E-8  |
| IR                             | kBq U-235 eq | 1.33E-1 | 2.05E-3  | 1.64E-3  | 1.37E-1 | 1.97E-3  | 1.68E-2  | 1.17E-4  | -6.69E-2  | 8.89E-2  |
| ETP-fw                         | CTUe         | 7.42E+1 | 4.37E-1  | 2.39E+0  | 7.70E+1 | 3.66E-1  | 3.68E+1  | 4.06E-1  | -2.80E+1  | 8.66E+1  |
| HTP-c                          | CTUh         | 1.94E-9 | 1.42E-11 | 8.28E-11 | 2.03E-9 | 1.30E-11 | 5.27E-10 | 7.02E-13 | -7.44E-10 | 1.83E-9  |
| HTP-nc                         | CTUh         | 6.40E-8 | 4.78E-10 | 2.59E-9  | 6.71E-8 | 4.37E-10 | 1.27E-8  | 7.78E-11 | -2.57E-8  | 5.46E-8  |
| SQP                            | Pt           | 1.31E+1 | 4.25E-1  | 7.70E-2  | 1.36E+1 | 3.86E-1  | 2.88E+0  | 6.51E-2  | -2.83E+1  | -1.13E+1 |

| Resource use                      | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|---------|---------|---------|---------|---------|----------|---------|
| PERE                              | MJ   | 4.04E+0 | 6.13E-3 | 5.01E+0 | 9.06E+0 | 6.47E-3 | 3.42E-1 | 9.49E-4 | -5.85E+0 | 3.55E+0 |
| PERM                              | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PERT                              | MJ   | 4.04E+0 | 6.13E-3 | 5.01E+0 | 9.06E+0 | 6.47E-3 | 3.42E-1 | 9.49E-4 | -5.85E+0 | 3.55E+0 |
| PENRE                             | MJ   | 6.23E+1 | 5.20E-1 | 1.11E+0 | 6.39E+1 | 4.79E-1 | 5.03E+0 | 2.70E-2 | -3.40E+1 | 3.55E+1 |
| PENRM                             | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PENRT                             | MJ   | 6.23E+1 | 5.20E-1 | 1.11E+0 | 6.39E+1 | 4.79E-1 | 5.03E+0 | 2.70E-2 | -3.40E+1 | 3.55E+1 |
| PET                               | MJ   | 6.63E+1 | 5.26E-1 | 6.12E+0 | 7.29E+1 | 4.85E-1 | 5.38E+0 | 2.79E-2 | -3.98E+1 | 3.90E+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   | 4.32E-2 | 5.97E-5 | 1.88E-2 | 6.21E-2 | 5.10E-5 | 5.13E-3 | 3.11E-5 | -2.41E-2 | 4.32E-2 |
| Output flows and waste categories | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
| HWD                               | kg   | 3.33E-4 | 1.24E-6 | 1.09E-6 | 3.35E-4 | 1.15E-6 | 7.76E-6 | 3.09E-8 | -2.68E-5 | 3.17E-4 |
| NHWD                              | kg   | 2.45E-1 | 3.11E-2 | 1.69E-3 | 2.78E-1 | 2.79E-2 | 1.71E-1 | 1.12E-1 | -1.07E-1 | 4.81E-1 |
| RWD                               | kg   | 1.16E-4 | 3.22E-6 | 2.03E-6 | 1.21E-4 | 3.07E-6 | 1.80E-5 | 1.65E-7 | -5.96E-5 | 8.29E-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       |



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