

# Environmental Profile

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

Ecochain v3.5.80



Product: 3003140 - Wadal PVC Bend 45° GY 125 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]

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# Results

| Environmental impact SBK set 1 | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3       | C4       | D         | Total    |
|--------------------------------|--------------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|
| ECI                            | euro         | 0.09     | 0        | 0.01     | 0.1      | 0        | 0.03     | 0        | -0.05     | 0.08     |
| ADPE                           | kg Sb-eq     | 8.00E-4  | 2.83E-7  | 1.26E-6  | 8.02E-4  | 2.63E-7  | 2.40E-6  | 2.94E-9  | -9.18E-6  | 7.95E-4  |
| ADPF                           | kg Sb-eq     | 9.39E-3  | 8.13E-5  | 2.16E-4  | 9.69E-3  | 7.40E-5  | 8.26E-4  | 4.07E-6  | -5.16E-3  | 5.44E-3  |
| GWP                            | kg CO2-eq    | 7.89E-1  | 1.11E-2  | 4.11E-2  | 8.41E-1  | 1.01E-2  | 2.81E-1  | 2.77E-3  | -4.44E-1  | 6.92E-1  |
| ODP                            | kg CFC-11-eq | 4.44E-7  | 1.96E-9  | 3.25E-9  | 4.49E-7  | 1.87E-9  | 3.47E-8  | 9.69E-11 | -2.24E-7  | 2.62E-7  |
| POCP                           | kg ethene-eq | 4.51E-4  | 6.67E-6  | 1.78E-5  | 4.76E-4  | 6.05E-6  | 6.55E-5  | 7.18E-7  | -2.31E-4  | 3.17E-4  |
| AP                             | kg SO2-eq    | 3.16E-3  | 4.86E-5  | 1.77E-4  | 3.39E-3  | 4.34E-5  | 4.82E-4  | 2.19E-6  | -1.52E-3  | 2.39E-3  |
| EP                             | kg PO4 3--eq | 4.10E-4  | 9.55E-6  | 2.27E-5  | 4.42E-4  | 8.66E-6  | 7.32E-5  | 8.63E-7  | -2.09E-4  | 3.16E-4  |
| HTP                            | kg 1,4-DB-eq | 3.08E-1  | 4.66E-3  | 1.91E-2  | 3.32E-1  | 4.31E-3  | 1.26E-1  | 2.30E-4  | -1.45E-1  | 3.17E-1  |
| FAETP                          | kg 1,4-DB-eq | 9.46E-3  | 1.36E-4  | 6.52E-4  | 1.03E-2  | 1.26E-4  | 1.91E-3  | 7.08E-5  | -4.17E-3  | 8.19E-3  |
| MAETP                          | kg 1,4-DB-eq | 2.18E+1  | 4.89E-1  | 2.57E+0  | 2.49E+1  | 4.51E-1  | 6.61E+0  | 8.66E-2  | -9.40E+0  | 2.26E+1  |
| TETP                           | kg 1,4-DB-eq | 2.29E-3  | 1.65E-5  | 1.42E-3  | 3.73E-3  | 1.53E-5  | 4.47E-4  | 7.73E-7  | -1.39E-3  | 2.80E-3  |
| Environmental impact           | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3       | C4       | D         | Total    |
| GWP-total                      | kg CO2 eq    | 8.16E-1  | 1.12E-2  | 4.70E-2  | 8.74E-1  | 1.02E-2  | 3.02E-1  | 3.23E-3  | -4.13E-1  | 7.77E-1  |
| GWP-f                          | kg CO2 eq    | 8.07E-1  | 1.12E-2  | 3.61E-2  | 8.54E-1  | 1.02E-2  | 2.83E-1  | 3.22E-3  | -4.53E-1  | 6.98E-1  |
| GWP-b                          | kg CO2 eq    | 8.10E-3  | 5.15E-6  | 7.45E-3  | 1.56E-2  | 6.17E-6  | 1.89E-2  | 4.08E-6  | 4.10E-2   | 7.55E-2  |
| GWP-luluc                      | kg CO2 eq    | 9.31E-4  | 4.09E-6  | 3.43E-3  | 4.36E-3  | 3.60E-6  | 1.29E-4  | 8.47E-8  | -5.87E-4  | 3.91E-3  |
| ODP                            | kg CFC11 eq  | 4.38E-7  | 2.46E-9  | 3.82E-9  | 4.44E-7  | 2.34E-9  | 3.57E-8  | 1.20E-10 | -2.22E-7  | 2.61E-7  |
| AP                             | mol H+ eq    | 3.86E-3  | 6.47E-5  | 2.20E-4  | 4.14E-3  | 5.79E-5  | 6.05E-4  | 2.93E-6  | -1.85E-3  | 2.96E-3  |
| EP-fw                          | kg P eq      | 3.92E-5  | 1.13E-7  | 6.33E-7  | 3.99E-5  | 8.36E-8  | 4.31E-6  | 3.83E-9  | -1.98E-5  | 2.45E-5  |
| EP-m                           | kg N eq      | 6.95E-4  | 2.28E-5  | 5.20E-5  | 7.69E-4  | 2.07E-5  | 1.48E-4  | 1.82E-6  | -3.31E-4  | 6.09E-4  |
| EP-T                           | mol N eq     | 7.47E-3  | 2.51E-4  | 5.74E-4  | 8.30E-3  | 2.28E-4  | 1.63E-3  | 1.17E-5  | -3.56E-3  | 6.61E-3  |
| POCP                           | kg NMVOC eq  | 2.38E-3  | 7.17E-5  | 1.63E-4  | 2.62E-3  | 6.52E-5  | 4.88E-4  | 4.02E-6  | -1.18E-3  | 1.99E-3  |
| ADP-mm                         | kg Sb eq     | 8.00E-4  | 2.83E-7  | 1.26E-6  | 8.02E-4  | 2.63E-7  | 2.40E-6  | 2.94E-9  | -9.18E-6  | 7.95E-4  |
| ADP-f                          | MJ           | 2.00E+1  | 1.68E-1  | 4.04E-1  | 2.06E+1  | 1.56E-1  | 1.63E+0  | 8.79E-3  | -1.09E+1  | 1.15E+1  |
| WDP                            | m3 depriv.   | 1.33E+0  | 6.02E-4  | 3.12E-1  | 1.64E+0  | 4.79E-4  | 6.47E-2  | 5.70E-5  | -6.89E-1  | 1.01E+0  |
| PM                             | disease inc. | 2.62E-8  | 1.00E-9  | 2.72E-9  | 2.99E-8  | 9.17E-10 | 7.49E-9  | 6.05E-11 | -1.45E-8  | 2.39E-8  |
| IR                             | kBq U-235 eq | 4.59E-2  | 7.05E-4  | 6.42E-4  | 4.73E-2  | 6.82E-4  | 5.79E-3  | 4.04E-5  | -2.29E-2  | 3.09E-2  |
| ETP-fw                         | CTUe         | 2.51E+1  | 1.50E-1  | 9.38E-1  | 2.62E+1  | 1.27E-1  | 1.27E+1  | 1.40E-1  | -9.34E+0  | 2.99E+1  |
| HTP-c                          | CTUh         | 6.69E-10 | 4.86E-12 | 3.25E-11 | 7.06E-10 | 4.51E-12 | 1.82E-10 | 2.43E-13 | -2.55E-10 | 6.37E-10 |
| HTP-nc                         | CTUh         | 2.21E-8  | 1.64E-10 | 1.01E-9  | 2.33E-8  | 1.51E-10 | 4.40E-9  | 2.69E-11 | -8.82E-9  | 1.90E-8  |
| SQP                            | Pt           | 4.37E+0  | 1.46E-1  | 3.02E-2  | 4.54E+0  | 1.33E-1  | 9.95E-1  | 2.25E-2  | -9.00E+0  | -3.30E+0 |

| Resource use                      | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|---------|---------|---------|---------|---------|----------|---------|
| PERE                              | MJ   | 1.36E+0 | 2.11E-3 | 1.96E+0 | 3.33E+0 | 2.24E-3 | 1.18E-1 | 3.28E-4 | -1.88E+0 | 1.56E+0 |
| PERM                              | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PERT                              | MJ   | 1.36E+0 | 2.11E-3 | 1.96E+0 | 3.33E+0 | 2.24E-3 | 1.18E-1 | 3.28E-4 | -1.88E+0 | 1.56E+0 |
| PENRE                             | MJ   | 2.15E+1 | 1.79E-1 | 4.37E-1 | 2.21E+1 | 1.66E-1 | 1.74E+0 | 9.33E-3 | -1.17E+1 | 1.23E+1 |
| PENRM                             | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PENRT                             | MJ   | 2.15E+1 | 1.79E-1 | 4.37E-1 | 2.21E+1 | 1.66E-1 | 1.74E+0 | 9.33E-3 | -1.17E+1 | 1.23E+1 |
| PET                               | MJ   | 2.28E+1 | 1.81E-1 | 2.40E+0 | 2.54E+1 | 1.68E-1 | 1.86E+0 | 9.66E-3 | -1.36E+1 | 1.39E+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   | 1.49E-2 | 2.05E-5 | 7.39E-3 | 2.23E-2 | 1.76E-5 | 1.77E-3 | 1.08E-5 | -8.17E-3 | 1.59E-2 |
| Output flows and waste categories | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
| HWD                               | kg   | 1.15E-4 | 4.26E-7 | 4.29E-7 | 1.16E-4 | 3.99E-7 | 2.67E-6 | 1.07E-8 | -9.23E-6 | 1.10E-4 |
| NHWD                              | kg   | 8.45E-2 | 1.07E-2 | 6.62E-4 | 9.58E-2 | 9.67E-3 | 5.89E-2 | 3.86E-2 | -3.68E-2 | 1.66E-1 |
| RWD                               | kg   | 3.99E-5 | 1.10E-6 | 7.95E-7 | 4.18E-5 | 1.06E-6 | 6.21E-6 | 5.72E-8 | -2.04E-5 | 2.88E-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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