

# Environmental Profile

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

Ecochain v3.5.80



Product: 3080473 - Wadal PVC Bend 45° WT 32 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                                                             |    |    |     |     | Use stage                                                                                                          |     |     |     |     |     |     | End-of-Life stage                                                          |    |    |    |   |
| A1 Raw material supply A2 Transport A3 Manufacturing                      |    |    |     |     | B1 Use B2 Maintenance B3 Repair B4 Replacement B5 Refurbishment B6 Operational energy use B7 Operational water use |     |     |     |     |     |     | C1 De-construction demolition C2 Transport C3 Waste processing C4 Disposal |    |    |    |   |
| Construction process stage                                                |    |    |     |     |                                                                                                                    |     |     |     |     |     |     | Benefits and loads beyond the system boundaries                            |    |    |    |   |
| A4 Transport gate to site A5 Assembly / Construction installation process |    |    |     |     |                                                                                                                    |     |     |     |     |     |     | 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

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# Results

| Environmental impact | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3       | C4       | D         | Total    |
|----------------------|--------------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|
| GWP-total            | kg CO2 eq    | 8.98E-2  | 1.31E-4  | 1.45E-4  | 9.01E-2  | 1.23E-3  | 8.23E-2  | 3.87E-4  | -6.42E-2  | 1.10E-1  |
| GWP-f                | kg CO2 eq    | 1.22E-1  | 1.31E-4  | 1.46E-4  | 1.23E-1  | 1.23E-3  | 4.75E-2  | 3.87E-4  | -6.70E-2  | 1.05E-1  |
| GWP-b                | kg CO2 eq    | -3.26E-2 | 7.94E-8  | -1.54E-6 | -3.26E-2 | 7.49E-7  | 3.47E-2  | 4.97E-7  | 2.88E-3   | 4.97E-3  |
| GWP-luluc            | kg CO2 eq    | 1.23E-4  | 4.63E-8  | 1.49E-7  | 1.23E-4  | 4.36E-7  | 1.60E-5  | 9.92E-9  | -7.28E-5  | 6.67E-5  |
| ODP                  | kg CFC11 eq  | 5.59E-8  | 3.01E-11 | 8.26E-12 | 5.60E-8  | 2.84E-10 | 4.47E-9  | 1.46E-11 | -2.81E-8  | 3.26E-8  |
| AP                   | mol H+ eq    | 5.59E-4  | 7.45E-7  | 1.47E-6  | 5.61E-4  | 7.02E-6  | 7.71E-5  | 3.53E-7  | -2.52E-4  | 3.94E-4  |
| EP-fw                | kg P eq      | 5.19E-6  | 1.08E-9  | 8.24E-9  | 5.19E-6  | 1.01E-8  | 5.37E-7  | 4.54E-10 | -2.46E-6  | 3.28E-6  |
| EP-m                 | kg N eq      | 1.00E-4  | 2.66E-7  | 1.55E-7  | 1.01E-4  | 2.51E-6  | 1.93E-5  | 2.22E-7  | -4.82E-5  | 7.46E-5  |
| EP-T                 | mol N eq     | 1.08E-3  | 2.94E-6  | 1.85E-6  | 1.09E-3  | 2.77E-5  | 2.13E-4  | 1.41E-6  | -5.26E-4  | 8.03E-4  |
| POCP                 | kg NMVOC eq  | 3.83E-4  | 8.39E-7  | 6.28E-7  | 3.85E-4  | 7.92E-6  | 6.32E-5  | 4.85E-7  | -1.81E-4  | 2.75E-4  |
| ADP-mm               | kg Sb eq     | 3.12E-6  | 3.38E-9  | 1.97E-8  | 3.14E-6  | 3.19E-8  | 2.98E-7  | 3.51E-10 | -1.18E-6  | 2.29E-6  |
| ADP-f                | MJ           | 3.00E+0  | 2.01E-3  | 1.36E-3  | 3.01E+0  | 1.89E-2  | 2.04E-1  | 1.06E-3  | -1.53E+0  | 1.71E+0  |
| WDP                  | m3 depriv.   | 1.75E-1  | 6.16E-6  | 5.22E-5  | 1.75E-1  | 5.81E-5  | 8.06E-3  | 5.68E-6  | -8.26E-2  | 1.01E-1  |
| PM                   | disease inc. | 4.44E-9  | 1.18E-11 | 9.08E-12 | 4.46E-9  | 1.11E-10 | 9.44E-10 | 7.32E-12 | -2.21E-9  | 3.32E-9  |
| IR                   | kBq U-235 eq | 6.04E-3  | 8.77E-6  | 1.02E-6  | 6.05E-3  | 8.27E-5  | 7.27E-4  | 4.91E-6  | -2.91E-3  | 3.96E-3  |
| ETP-fw               | CTUe         | 2.44E+0  | 1.63E-3  | 1.21E-2  | 2.45E+0  | 1.54E-2  | 1.59E+0  | 1.75E-2  | -1.13E+0  | 2.95E+0  |
| HTP-c                | CTUh         | 9.07E-11 | 5.80E-14 | 6.17E-13 | 9.14E-11 | 5.47E-13 | 2.34E-11 | 2.86E-14 | -4.23E-11 | 7.30E-11 |
| HTP-nc               | CTUh         | 2.53E-9  | 1.94E-12 | 1.57E-11 | 2.54E-9  | 1.83E-11 | 5.57E-10 | 3.33E-12 | -1.09E-9  | 2.03E-9  |
| SQP                  | Pt           | 3.30E+0  | 1.72E-3  | 2.24E-3  | 3.30E+0  | 1.62E-2  | 1.25E-1  | 2.73E-3  | -3.06E+0  | 3.85E-1  |
| Resource use         | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3       | C4       | D         | Total    |
| PERE                 | MJ           | 7.36E-1  | 2.88E-5  | 2.40E-2  | 7.60E-1  | 2.72E-4  | 1.47E-2  | 4.04E-5  | -5.11E-1  | 2.64E-1  |
| PERM                 | MJ           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        |
| PERT                 | MJ           | 7.36E-1  | 2.88E-5  | 2.40E-2  | 7.60E-1  | 2.72E-4  | 1.47E-2  | 4.04E-5  | -5.11E-1  | 2.64E-1  |
| PENRE                | MJ           | 3.22E+0  | 2.13E-3  | 1.44E-3  | 3.23E+0  | 2.01E-2  | 2.17E-1  | 1.13E-3  | -1.65E+0  | 1.82E+0  |
| PENRM                | MJ           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        |
| PENRT                | MJ           | 3.22E+0  | 2.13E-3  | 1.44E-3  | 3.23E+0  | 2.01E-2  | 2.17E-1  | 1.13E-3  | -1.65E+0  | 1.82E+0  |
| PET                  | MJ           | 3.96E+0  | 2.16E-3  | 2.55E-2  | 3.99E+0  | 2.04E-2  | 2.32E-1  | 1.17E-3  | -2.16E+0  | 2.08E+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           | 2.06E-3  | 2.27E-7  | 1.46E-6  | 2.06E-3  | 2.14E-6  | 2.23E-4  | 1.31E-6  | -9.66E-4  | 1.32E-3  |

| Output flows and waste categories | Unit | A1      | A2      | A3       | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|----------|---------|---------|---------|---------|----------|---------|
| HWD                               | kg   | 2.38E-6 | 5.13E-9 | 2.73E-13 | 2.39E-6 | 4.84E-8 | 3.37E-7 | 1.29E-9 | -1.47E-6 | 1.30E-6 |
| NHWD                              | kg   | 1.28E-2 | 1.24E-4 | 1.05E-6  | 1.29E-2 | 1.17E-3 | 7.94E-3 | 4.69E-3 | -5.69E-3 | 2.10E-2 |
| RWD                               | kg   | 5.42E-6 | 1.36E-8 | 1.10E-13 | 5.43E-6 | 1.29E-7 | 7.81E-7 | 6.94E-9 | -2.66E-6 | 3.69E-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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