

# Environmental Profile

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

Ecochain v3.5.80



Product: 3026223 - PVC Bend 45° GY 40 S/SP  
Unit: 1 Piece  
Manufacturer: Wavin - FR - Varennes

The Wavin range of PVC pipes and fittings to be glued covers all the usual diameters and allows you to create networks that are 100% compatible, homogeneous and meet the requirements of the French market.

LCA standard: EN15804+A2 (2019)  
Standard database: Worldwide - Ecoinvent v 3.6 Cut-Off  
Externally verified: Yes  
Issue date: 24-11-2022  
End of validity: 24-11-2027  
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 - FR - Varennes (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

**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    | 6.79E-2  | 2.45E-3  | 3.25E-3  | 7.36E-2  | 9.48E-4  | 6.04E-2  | 2.90E-4  | -3.83E-2  | 9.70E-2  |
| GWP-f                | kg CO2 eq    | 8.99E-2  | 2.45E-3  | 2.50E-3  | 9.48E-2  | 9.48E-4  | 3.17E-2  | 2.90E-4  | -5.13E-2  | 7.64E-2  |
| GWP-b                | kg CO2 eq    | -2.22E-2 | 1.49E-6  | 7.48E-4  | -2.14E-2 | 5.75E-7  | 2.87E-2  | 3.59E-7  | 1.32E-2   | 2.05E-2  |
| GWP-luluc            | kg CO2 eq    | 1.55E-4  | 8.66E-7  | 3.11E-6  | 1.59E-4  | 3.35E-7  | 1.17E-5  | 8.03E-9  | -1.29E-4  | 4.12E-5  |
| ODP                  | kg CFC11 eq  | 3.99E-8  | 5.64E-10 | 3.33E-10 | 4.08E-8  | 2.18E-10 | 3.24E-9  | 1.10E-11 | -2.09E-8  | 2.34E-8  |
| AP                   | mol H+ eq    | 4.50E-4  | 1.39E-5  | 1.71E-5  | 4.81E-4  | 5.40E-6  | 6.01E-5  | 2.68E-7  | -2.30E-4  | 3.16E-4  |
| EP-fw                | kg P eq      | 4.43E-6  | 2.01E-8  | 6.09E-8  | 4.51E-6  | 7.80E-9  | 3.91E-7  | 3.57E-10 | -2.72E-6  | 2.19E-6  |
| EP-m                 | kg N eq      | 9.06E-5  | 4.99E-6  | 4.81E-6  | 1.00E-4  | 1.93E-6  | 1.57E-5  | 1.60E-7  | -4.58E-5  | 7.24E-5  |
| EP-T                 | mol N eq     | 9.67E-4  | 5.50E-5  | 6.15E-5  | 1.08E-3  | 2.13E-5  | 1.73E-4  | 1.07E-6  | -5.08E-4  | 7.71E-4  |
| POCP                 | kg NMVOC eq  | 3.01E-4  | 1.57E-5  | 1.42E-5  | 3.31E-4  | 6.08E-6  | 5.17E-5  | 3.67E-7  | -1.60E-4  | 2.29E-4  |
| ADP-mm               | kg Sb eq     | 9.83E-5  | 6.33E-8  | 6.61E-8  | 9.84E-5  | 2.45E-8  | 2.37E-7  | 2.72E-10 | -9.26E-7  | 9.77E-5  |
| ADP-f                | MJ           | 2.14E+0  | 3.76E-2  | 3.44E-2  | 2.22E+0  | 1.45E-2  | 1.58E-1  | 8.05E-4  | -1.15E+0  | 1.24E+0  |
| WDP                  | m3 depriv.   | 1.22E-1  | 1.15E-4  | 6.43E-2  | 1.86E-1  | 4.46E-5  | 5.71E-3  | 6.51E-6  | -7.56E-2  | 1.17E-1  |
| PM                   | disease inc. | 4.02E-9  | 2.21E-10 | 2.40E-10 | 4.48E-9  | 8.55E-11 | 7.69E-10 | 5.53E-12 | -2.60E-9  | 2.74E-9  |
| IR                   | kBq U-235 eq | 5.10E-3  | 1.64E-4  | 9.35E-5  | 5.36E-3  | 6.36E-5  | 5.66E-4  | 3.67E-6  | -2.77E-3  | 3.22E-3  |
| ETP-fw               | CTUe         | 3.83E+0  | 3.05E-2  | 4.07E-2  | 3.91E+0  | 1.18E-2  | 1.10E+0  | 1.19E-2  | -1.64E+0  | 3.39E+0  |
| HTP-c                | CTUh         | 8.08E-11 | 1.09E-12 | 2.79E-12 | 8.47E-11 | 4.20E-13 | 1.96E-11 | 2.28E-14 | -3.65E-11 | 6.82E-11 |
| HTP-nc               | CTUh         | 2.35E-9  | 3.64E-11 | 7.73E-11 | 2.46E-9  | 1.41E-11 | 4.10E-10 | 2.30E-12 | -1.04E-9  | 1.85E-9  |
| SQP                  | Pt           | 2.72E+0  | 3.21E-2  | 2.64E-1  | 3.02E+0  | 1.24E-2  | 9.84E-2  | 2.05E-3  | -4.11E+0  | -9.82E-1 |
| Resource use         | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3       | C4       | D         | Total    |
| PERE                 | MJ           | 4.83E-1  | 5.39E-4  | 6.70E-2  | 5.50E-1  | 2.09E-4  | 1.07E-2  | 2.87E-5  | -7.18E-1  | -1.56E-1 |
| PERM                 | MJ           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        |
| PERT                 | MJ           | 4.83E-1  | 5.39E-4  | 6.70E-2  | 5.50E-1  | 2.09E-4  | 1.07E-2  | 2.87E-5  | -7.18E-1  | -1.56E-1 |
| PENRE                | MJ           | 2.30E+0  | 3.99E-2  | 3.72E-2  | 2.38E+0  | 1.54E-2  | 1.68E-1  | 8.54E-4  | -1.24E+0  | 1.32E+0  |
| PENRM                | MJ           | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        |
| PENRT                | MJ           | 2.30E+0  | 3.99E-2  | 3.72E-2  | 2.38E+0  | 1.54E-2  | 1.68E-1  | 8.54E-4  | -1.24E+0  | 1.32E+0  |
| PET                  | MJ           | 2.78E+0  | 4.04E-2  | 1.04E-1  | 2.93E+0  | 1.57E-2  | 1.79E-1  | 8.83E-4  | -1.96E+0  | 1.16E+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           | 1.56E-3  | 4.25E-6  | 1.51E-3  | 3.07E-3  | 1.65E-6  | 1.59E-4  | 9.79E-7  | -1.11E-3  | 2.12E-3  |

| Output flows and waste categories | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4       | D        | Total   |
|-----------------------------------|------|---------|---------|---------|---------|---------|---------|----------|----------|---------|
| HWD                               | kg   | 1.40E-5 | 9.60E-8 | 4.70E-8 | 1.41E-5 | 3.72E-8 | 2.72E-7 | 9.90E-10 | -1.12E-6 | 1.33E-5 |
| NHWD                              | kg   | 1.08E-2 | 2.33E-3 | 3.45E-4 | 1.35E-2 | 9.02E-4 | 6.16E-3 | 3.60E-3  | -4.91E-3 | 1.93E-2 |
| RWD                               | kg   | 4.79E-6 | 2.55E-7 | 9.50E-8 | 5.14E-6 | 9.89E-8 | 6.31E-7 | 5.23E-9  | -2.55E-6 | 3.32E-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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