# Environmental Profile

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

Ecochain v3.5.80

| | |
|---|---|
| Product: | 3030830 - PVC RWA Pipe WT 100x1.8 L=6 |
| Unit: | 1 piece |
| Manufacturer: | Wavin - NL - Hardenberg - Verified |
| Address: | J.C. Kellerlaan 3<br>7772 SG Hardenberg<br>Netherlands |

Wavin carries a complete PVC range of outdoor sewers. With PVC as a material, a smooth-walled, flexible and completely watertight piping system is obtained. Moreover, PVC is absolutely resistant to all substances that occur in domestic waste water. By working with a light material, large pipe lengths and plug connections, a very fast installation is guaranteed.

| | |
|---|---|
| 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

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# Results

| Environmental impact SBK set 1 | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| ECI | euro | 1.15 | 0.02 | 0.05 | 1.22 | 0.02 | 0.4 | 0 | -0.56 | 1.08 |
| ADPE | kg Sb-eq | 6.10E-3 | 5.22E-6 | 8.42E-6 | 6.11E-3 | 3.58E-6 | 3.07E-5 | 3.86E-8 | -1.13E-4 | 6.03E-3 |
| ADPF | kg Sb-eq | 1.26E-1 | 1.50E-3 | 2.26E-3 | 1.29E-1 | 1.01E-3 | 1.08E-2 | 5.39E-5 | -6.62E-2 | 7.50E-2 |
| GWP | kg CO2-eq | 1.03E+1 | 2.04E-1 | 4.01E-1 | 1.09E+1 | 1.37E-1 | 4.07E+0 | 3.52E-2 | -5.64E+0 | 9.51E+0 |
| ODP | kg CFC-11-eq | 5.60E-6 | 3.63E-8 | 3.77E-8 | 5.67E-6 | 2.55E-8 | 4.40E-7 | 1.29E-9 | -2.82E-6 | 3.31E-6 |
| POCP | kg ethene-eq | 6.48E-3 | 1.23E-4 | 1.77E-4 | 6.78E-3 | 8.24E-5 | 8.62E-4 | 9.26E-6 | -2.84E-3 | 4.90E-3 |
| AP | kg SO2-eq | 4.13E-2 | 8.99E-4 | 1.57E-3 | 4.37E-2 | 5.91E-4 | 6.30E-3 | 2.89E-5 | -1.80E-2 | 3.26E-2 |
| EP | kg PO4 3−-eq | 5.06E-3 | 1.77E-4 | 2.49E-4 | 5.49E-3 | 1.18E-4 | 9.65E-4 | 1.12E-5 | -2.26E-3 | 4.32E-3 |
| HTP | kg 1,4-DB-eq | 3.99E+0 | 8.60E-2 | 1.51E-1 | 4.23E+0 | 5.87E-2 | 1.67E+0 | 2.98E-3 | -1.74E+0 | 4.22E+0 |
| FAETP | kg 1,4-DB-eq | 9.99E-2 | 2.51E-3 | 6.17E-3 | 1.09E-1 | 1.72E-3 | 2.71E-2 | 9.04E-4 | -3.80E-2 | 1.00E-1 |
| MAETP | kg 1,4-DB-eq | 2.74E+2 | 9.04E+0 | 2.52E+1 | 3.08E+2 | 6.15E+0 | 8.64E+1 | 1.11E+0 | -1.11E+2 | 2.90E+2 |
| TETP | kg 1,4-DB-eq | 2.79E-2 | 3.04E-4 | 9.41E-3 | 3.76E-2 | 2.08E-4 | 5.92E-3 | 9.95E-6 | -1.26E-2 | 3.11E-2 |
| Environmental impact | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| GWP-total | kg CO2 eq | 8.79E+0 | 2.06E-1 | 4.73E-1 | 9.47E+0 | 1.39E-1 | 5.95E+0 | 4.11E-2 | -5.81E+0 | 9.79E+0 |
| GWP-f | kg CO2 eq | 1.06E+1 | 2.06E-1 | 3.70E-1 | 1.11E+1 | 1.38E-1 | 4.10E+0 | 4.10E-2 | -5.77E+0 | 9.65E+0 |
| GWP-b | kg CO2 eq | -1.78E+0 | 9.51E-5 | 8.00E-2 | -1.70E+0 | 8.41E-5 | 1.85E+0 | 5.21E-5 | -3.86E-2 | 1.11E-1 |
| GWP-luluc | kg CO2 eq | 9.75E-3 | 7.55E-5 | 2.26E-2 | 3.24E-2 | 4.90E-5 | 1.67E-3 | 1.10E-6 | -3.84E-3 | 3.03E-2 |
| ODP | kg CFC11 eq | 5.52E-6 | 4.55E-8 | 4.47E-8 | 5.61E-6 | 3.19E-8 | 4.54E-7 | 1.60E-9 | -2.80E-6 | 3.30E-6 |
| AP | mol H+ eq | 5.00E-2 | 1.20E-3 | 2.02E-3 | 5.32E-2 | 7.88E-4 | 7.93E-3 | 3.86E-5 | -2.19E-2 | 4.01E-2 |
| EP-fw | kg P eq | 4.81E-4 | 2.08E-6 | 5.29E-6 | 4.88E-4 | 1.14E-6 | 5.58E-5 | 4.97E-8 | -2.07E-4 | 3.38E-4 |
| EP-m | kg N eq | 8.70E-3 | 4.21E-4 | 5.95E-4 | 9.72E-3 | 2.82E-4 | 1.96E-3 | 2.36E-5 | -3.91E-3 | 8.08E-3 |
| EP-T | mol N eq | 9.59E-2 | 4.64E-3 | 6.38E-3 | 1.07E-1 | 3.11E-3 | 2.17E-2 | 1.54E-4 | -4.29E-2 | 8.89E-2 |
| POCP | kg NMVOC eq | 3.21E-2 | 1.33E-3 | 1.80E-3 | 3.53E-2 | 8.89E-4 | 6.46E-3 | 5.27E-5 | -1.43E-2 | 2.84E-2 |
| ADP-mm | kg Sb eq | 6.10E-3 | 5.22E-6 | 8.42E-6 | 6.11E-3 | 3.58E-6 | 3.07E-5 | 3.86E-8 | -1.13E-4 | 6.03E-3 |
| ADP-f | MJ | 2.66E+2 | 3.11E+0 | 4.28E+0 | 2.74E+2 | 2.12E+0 | 2.14E+1 | 1.16E-1 | -1.38E+2 | 1.59E+2 |
| WDP | m3 depriv. | 1.71E+1 | 1.11E-2 | 2.90E+0 | 2.00E+1 | 6.52E-3 | 8.35E-1 | 7.41E-4 | -7.97E+0 | 1.28E+1 |
| PM | disease inc. | 4.08E-7 | 1.85E-8 | 3.13E-8 | 4.58E-7 | 1.25E-8 | 9.83E-8 | 7.99E-10 | -1.47E-7 | 4.22E-7 |
| IR | kBq U-235 eq | 5.79E-1 | 1.30E-2 | 7.73E-3 | 6.00E-1 | 9.29E-3 | 7.50E-2 | 5.34E-4 | -2.60E-1 | 4.25E-1 |
| ETP-fw | CTUe | 2.31E+2 | 2.77E+0 | 7.15E+0 | 2.41E+2 | 1.73E+0 | 1.61E+2 | 1.78E+0 | -8.46E+1 | 3.21E+2 |
| HTP-c | CTUh | 8.40E-9 | 8.99E-11 | 2.44E-10 | 8.73E-9 | 6.14E-11 | 2.51E-9 | 3.14E-12 | -3.04E-9 | 8.27E-9 |
| HTP-nc | CTUh | 2.59E-7 | 3.03E-9 | 7.46E-9 | 2.70E-7 | 2.06E-9 | 5.72E-8 | 3.41E-10 | -1.04E-7 | 2.25E-7 |
| SQP | Pt | 2.03E+2 | 2.70E+0 | 3.20E-1 | 2.06E+2 | 1.82E+0 | 1.33E+1 | 2.96E-1 | -5.02E+1 | 1.71E+2 |

| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 3.83E+1 | 3.89E-2 | 1.29E+1 | 5.12E+1 | 3.05E-2 | 1.53E+0 | 4.23E-3 | -1.30E+1 | 3.98E+1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 3.83E+1 | 3.89E-2 | 1.29E+1 | 5.12E+1 | 3.05E-2 | 1.53E+0 | 4.23E-3 | -1.30E+1 | 3.98E+1 |
| PENRE | MJ | 2.86E+2 | 3.30E+0 | 4.64E+0 | 2.94E+2 | 2.26E+0 | 2.27E+1 | 1.24E-1 | -1.49E+2 | 1.70E+2 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 2.86E+2 | 3.30E+0 | 4.64E+0 | 2.94E+2 | 2.26E+0 | 2.27E+1 | 1.24E-1 | -1.49E+2 | 1.70E+2 |
| PET | MJ | 3.24E+2 | 3.34E+0 | 1.76E+1 | 3.45E+2 | 2.29E+0 | 2.43E+1 | 1.28E-1 | -1.62E+2 | 2.10E+2 |
| 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 | 1.93E-1 | 3.79E-4 | 6.82E-2 | 2.61E-1 | 2.40E-4 | 2.30E-2 | 1.42E-4 | -8.36E-2 | 2.01E-1 |
| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| HWD | kg | 9.50E-4 | 7.88E-6 | 6.00E-6 | 9.64E-4 | 5.43E-6 | 3.47E-5 | 1.41E-7 | -1.17E-4 | 8.87E-4 |
| NHWD | kg | 1.09E+0 | 1.97E-1 | 8.66E-3 | 1.30E+0 | 1.32E-1 | 8.30E-1 | 5.26E-1 | -4.40E-1 | 2.35E+0 |
| RWD | kg | 5.07E-4 | 2.04E-5 | 1.08E-5 | 5.38E-4 | 1.44E-5 | 8.05E-5 | 7.59E-7 | -2.30E-4 | 4.03E-4 |
| 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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