

# Environmental Profile

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

Ecochain v3.5.80



Product: 3000737 - PVC Pipe GY 110x2.2 SN2 L=4 CH  
Unit: 1 piece  
Manufacturer: Wavin - NL - Hardenberg - Verified  
Address: J.C. Kellerlaan 3  
7772 SG Hardenberg  
Netherlands

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



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.

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         | 0.95     | 0.02     | 0.04     | 1.01     | 0.01     | 0.33    | 0        | -0.48    | 0.89    |
| ADPE                           | kg Sb-eq     | 5.43E-3  | 4.40E-6  | 7.47E-6  | 5.44E-3  | 3.18E-6  | 2.71E-5 | 3.42E-8  | -9.99E-5 | 5.37E-3 |
| ADPF                           | kg Sb-eq     | 1.04E-1  | 1.27E-3  | 2.00E-3  | 1.07E-1  | 8.95E-4  | 9.52E-3 | 4.78E-5  | -5.62E-2 | 6.15E-2 |
| GWP                            | kg CO2-eq    | 8.49E+0  | 1.72E-1  | 3.56E-1  | 9.02E+0  | 1.22E-1  | 3.21E+0 | 3.12E-2  | -4.73E+0 | 7.65E+0 |
| ODP                            | kg CFC-11-eq | 4.95E-6  | 3.06E-8  | 3.35E-8  | 5.02E-6  | 2.26E-8  | 3.91E-7 | 1.14E-9  | -2.48E-6 | 2.95E-6 |
| POCP                           | kg ethene-eq | 5.06E-3  | 1.04E-4  | 1.57E-4  | 5.32E-3  | 7.31E-5  | 7.44E-4 | 8.21E-6  | -2.42E-3 | 3.72E-3 |
| AP                             | kg SO2-eq    | 3.37E-2  | 7.58E-4  | 1.40E-3  | 3.58E-2  | 5.25E-4  | 5.49E-3 | 2.56E-5  | -1.55E-2 | 2.64E-2 |
| EP                             | kg PO4 3--eq | 4.08E-3  | 1.49E-4  | 2.21E-4  | 4.45E-3  | 1.05E-4  | 8.29E-4 | 9.93E-6  | -1.88E-3 | 3.51E-3 |
| HTP                            | kg 1,4-DB-eq | 3.34E+0  | 7.26E-2  | 1.34E-1  | 3.54E+0  | 5.21E-2  | 1.46E+0 | 2.65E-3  | -1.51E+0 | 3.55E+0 |
| FAETP                          | kg 1,4-DB-eq | 8.24E-2  | 2.12E-3  | 5.47E-3  | 9.00E-2  | 1.53E-3  | 2.17E-2 | 8.01E-4  | -3.30E-2 | 8.10E-2 |
| MAETP                          | kg 1,4-DB-eq | 2.25E+2  | 7.62E+0  | 2.23E+1  | 2.55E+2  | 5.46E+0  | 7.21E+1 | 9.81E-1  | -9.69E+1 | 2.37E+2 |
| TETP                           | kg 1,4-DB-eq | 2.37E-2  | 2.56E-4  | 8.35E-3  | 3.23E-2  | 1.85E-4  | 5.23E-3 | 8.83E-6  | -1.10E-2 | 2.67E-2 |
| Environmental impact           | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3      | C4       | D        | Total   |
| GWP-total                      | kg CO2 eq    | 8.26E+0  | 1.74E-1  | 4.20E-1  | 8.86E+0  | 1.23E-1  | 3.75E+0 | 3.63E-2  | -4.88E+0 | 7.89E+0 |
| GWP-f                          | kg CO2 eq    | 8.71E+0  | 1.74E-1  | 3.29E-1  | 9.21E+0  | 1.23E-1  | 3.23E+0 | 3.63E-2  | -4.84E+0 | 7.76E+0 |
| GWP-b                          | kg CO2 eq    | -4.47E-1 | 8.02E-5  | 7.10E-2  | -3.76E-1 | 7.46E-5  | 5.22E-1 | 4.63E-5  | -3.41E-2 | 1.12E-1 |
| GWP-luluc                      | kg CO2 eq    | 7.60E-3  | 6.37E-5  | 2.00E-2  | 2.77E-2  | 4.35E-5  | 1.48E-3 | 9.74E-7  | -3.24E-3 | 2.60E-2 |
| ODP                            | kg CFC11 eq  | 4.88E-6  | 3.84E-8  | 3.97E-8  | 4.96E-6  | 2.83E-8  | 4.02E-7 | 1.42E-9  | -2.45E-6 | 2.94E-6 |
| AP                             | mol H+ eq    | 4.07E-2  | 1.01E-3  | 1.79E-3  | 4.35E-2  | 7.00E-4  | 6.88E-3 | 3.42E-5  | -1.87E-2 | 3.24E-2 |
| EP-fw                          | kg P eq      | 4.02E-4  | 1.75E-6  | 4.70E-6  | 4.08E-4  | 1.01E-6  | 4.94E-5 | 4.39E-8  | -1.81E-4 | 2.78E-4 |
| EP-m                           | kg N eq      | 6.95E-3  | 3.55E-4  | 5.28E-4  | 7.83E-3  | 2.50E-4  | 1.67E-3 | 2.09E-5  | -3.26E-3 | 6.51E-3 |
| EP-T                           | mol N eq     | 7.58E-2  | 3.92E-3  | 5.66E-3  | 8.53E-2  | 2.76E-3  | 1.84E-2 | 1.37E-4  | -3.50E-2 | 7.17E-2 |
| POCP                           | kg NMVOC eq  | 2.53E-2  | 1.12E-3  | 1.60E-3  | 2.81E-2  | 7.89E-4  | 5.52E-3 | 4.67E-5  | -1.20E-2 | 2.24E-2 |
| ADP-mm                         | kg Sb eq     | 5.43E-3  | 4.40E-6  | 7.47E-6  | 5.44E-3  | 3.18E-6  | 2.71E-5 | 3.42E-8  | -9.99E-5 | 5.37E-3 |
| ADP-f                          | MJ           | 2.22E+2  | 2.62E+0  | 3.80E+0  | 2.28E+2  | 1.89E+0  | 1.88E+1 | 1.03E-1  | -1.18E+2 | 1.31E+2 |
| WDP                            | m3 depriv.   | 1.47E+1  | 9.38E-3  | 2.57E+0  | 1.73E+1  | 5.79E-3  | 7.41E-1 | 6.36E-4  | -7.04E+0 | 1.10E+1 |
| PM                             | disease inc. | 2.84E-7  | 1.56E-8  | 2.78E-8  | 3.28E-7  | 1.11E-8  | 8.56E-8 | 7.09E-10 | -1.21E-7 | 3.04E-7 |
| IR                             | kBq U-235 eq | 4.90E-1  | 1.10E-2  | 6.87E-3  | 5.08E-1  | 8.24E-3  | 6.60E-2 | 4.74E-4  | -2.28E-1 | 3.55E-1 |
| ETP-fw                         | CTUe         | 1.93E+2  | 2.34E+0  | 6.34E+0  | 2.02E+2  | 1.53E+0  | 1.43E+2 | 1.58E+0  | -7.01E+1 | 2.78E+2 |
| HTP-c                          | CTUh         | 6.86E-9  | 7.58E-11 | 2.16E-10 | 7.15E-9  | 5.45E-11 | 2.09E-9 | 2.77E-12 | -2.61E-9 | 6.69E-9 |
| HTP-nc                         | CTUh         | 2.22E-7  | 2.56E-9  | 6.62E-9  | 2.31E-7  | 1.83E-9  | 5.01E-8 | 3.04E-10 | -9.02E-8 | 1.93E-7 |
| SQP                            | Pt           | 7.62E+1  | 2.27E+0  | 2.84E-1  | 7.88E+1  | 1.61E+0  | 1.17E+1 | 2.63E-1  | -2.27E+1 | 6.96E+1 |

| Resource use                      | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|---------|---------|---------|---------|---------|----------|---------|
| PERE                              | MJ   | 1.82E+1 | 3.28E-2 | 1.15E+1 | 2.97E+1 | 2.71E-2 | 1.36E+0 | 3.77E-3 | -7.16E+0 | 2.39E+1 |
| PERM                              | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PERT                              | MJ   | 1.82E+1 | 3.28E-2 | 1.15E+1 | 2.97E+1 | 2.71E-2 | 1.36E+0 | 3.77E-3 | -7.16E+0 | 2.39E+1 |
| PENRE                             | MJ   | 2.38E+2 | 2.78E+0 | 4.12E+0 | 2.44E+2 | 2.00E+0 | 2.00E+1 | 1.10E-1 | -1.27E+2 | 1.40E+2 |
| PENRM                             | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PENRT                             | MJ   | 2.38E+2 | 2.78E+0 | 4.12E+0 | 2.44E+2 | 2.00E+0 | 2.00E+1 | 1.10E-1 | -1.27E+2 | 1.40E+2 |
| PET                               | MJ   | 2.56E+2 | 2.82E+0 | 1.56E+1 | 2.74E+2 | 2.03E+0 | 2.14E+1 | 1.13E-1 | -1.34E+2 | 1.63E+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   | 1.60E-1 | 3.19E-4 | 6.06E-2 | 2.21E-1 | 2.13E-4 | 2.03E-2 | 1.26E-4 | -7.36E-2 | 1.68E-1 |
| Output flows and waste categories | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
| HWD                               | kg   | 8.36E-4 | 6.64E-6 | 5.33E-6 | 8.48E-4 | 4.82E-6 | 3.03E-5 | 1.25E-7 | -9.79E-5 | 7.85E-4 |
| NHWD                              | kg   | 8.75E-1 | 1.66E-1 | 7.68E-3 | 1.05E+0 | 1.17E-1 | 6.94E-1 | 4.67E-1 | -3.79E-1 | 1.95E+0 |
| RWD                               | kg   | 4.26E-4 | 1.72E-5 | 9.57E-6 | 4.53E-4 | 1.28E-5 | 7.06E-5 | 6.73E-7 | -2.01E-4 | 3.36E-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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