

# Environmental Profile

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

Ecochain v3.5.80



Product: 3000539 - PVC Pipe GY BENOR 315x7.7 SN4 L=5 SC/CH  
Unit: 1 piece  
Manufacturer: Wavin - NL - Hardenberg - Verified  
Address: J.C. Kellerlaan 3  
7772 SG Hardenberg  
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                                                                |    |    |     |     | 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

This document and supporting material contain confidential and proprietary business information of Wavin - NL - Hardenberg - Verified. These materials may be printed or (photo) copied or otherwise used only with the written consent of Wavin - NL - Hardenberg - Verified.

# Results

| Environmental impact SBK set 1 | Unit         | A1       | A2      | A3      | A1-A3    | C2       | C3      | C4       | D        | Total   |
|--------------------------------|--------------|----------|---------|---------|----------|----------|---------|----------|----------|---------|
| ECI                            | euro         | 11.44    | 0.3     | 0.51    | 12.26    | 0.19     | 4.13    | 0.03     | -5.73    | 10.86   |
| ADPE                           | kg Sb-eq     | 3.14E-3  | 6.36E-5 | 9.36E-5 | 3.29E-3  | 4.00E-5  | 3.35E-4 | 4.20E-7  | -1.21E-3 | 2.46E-3 |
| ADPF                           | kg Sb-eq     | 1.28E+0  | 1.83E-2 | 2.51E-2 | 1.32E+0  | 1.13E-2  | 1.18E-1 | 5.92E-4  | -6.77E-1 | 7.72E-1 |
| GWP                            | kg CO2-eq    | 1.03E+2  | 2.49E+0 | 4.46E+0 | 1.10E+2  | 1.53E+0  | 3.98E+1 | 3.76E-1  | -5.71E+1 | 9.45E+1 |
| ODP                            | kg CFC-11-eq | 6.02E-5  | 4.41E-7 | 4.19E-7 | 6.10E-5  | 2.84E-7  | 4.77E-6 | 1.42E-8  | -2.98E-5 | 3.63E-5 |
| POCP                           | kg ethene-eq | 6.34E-2  | 1.50E-3 | 1.96E-3 | 6.68E-2  | 9.20E-4  | 9.25E-3 | 9.99E-5  | -2.90E-2 | 4.81E-2 |
| AP                             | kg SO2-eq    | 3.98E-1  | 1.09E-2 | 1.75E-2 | 4.27E-1  | 6.60E-3  | 6.77E-2 | 3.16E-4  | -1.86E-1 | 3.15E-1 |
| EP                             | kg PO4 3--eq | 4.75E-2  | 2.15E-3 | 2.76E-3 | 5.24E-2  | 1.32E-3  | 1.02E-2 | 1.23E-4  | -2.25E-2 | 4.16E-2 |
| HTP                            | kg 1,4-DB-eq | 4.05E+1  | 1.05E+0 | 1.68E+0 | 4.33E+1  | 6.56E-1  | 1.82E+1 | 3.24E-2  | -1.81E+1 | 4.40E+1 |
| FAETP                          | kg 1,4-DB-eq | 8.73E-1  | 3.06E-2 | 6.85E-2 | 9.73E-1  | 1.92E-2  | 2.68E-1 | 9.58E-3  | -3.96E-1 | 8.73E-1 |
| MAETP                          | kg 1,4-DB-eq | 2.55E+3  | 1.10E+2 | 2.80E+2 | 2.94E+3  | 6.86E+1  | 8.85E+2 | 1.18E+1  | -1.17E+3 | 2.74E+3 |
| TETP                           | kg 1,4-DB-eq | 2.79E-1  | 3.70E-3 | 1.05E-1 | 3.87E-1  | 2.32E-3  | 6.50E-2 | 1.08E-4  | -1.32E-1 | 3.23E-1 |
| Environmental impact           | Unit         | A1       | A2      | A3      | A1-A3    | C2       | C3      | C4       | D        | Total   |
| GWP-total                      | kg CO2 eq    | 1.01E+2  | 2.51E+0 | 5.25E+0 | 1.09E+2  | 1.55E+0  | 4.51E+1 | 4.38E-1  | -5.88E+1 | 9.75E+1 |
| GWP-f                          | kg CO2 eq    | 1.06E+2  | 2.51E+0 | 4.11E+0 | 1.12E+2  | 1.55E+0  | 4.01E+1 | 4.38E-1  | -5.84E+1 | 9.59E+1 |
| GWP-b                          | kg CO2 eq    | -4.21E+0 | 1.16E-3 | 8.90E-1 | -3.32E+0 | 9.39E-4  | 5.01E+0 | 5.63E-4  | -4.10E-1 | 1.29E+0 |
| GWP-luluc                      | kg CO2 eq    | 8.45E-2  | 9.19E-4 | 2.51E-1 | 3.36E-1  | 5.47E-4  | 1.83E-2 | 1.18E-5  | -3.88E-2 | 3.16E-1 |
| ODP                            | kg CFC11 eq  | 5.93E-5  | 5.54E-7 | 4.97E-7 | 6.04E-5  | 3.56E-7  | 4.92E-6 | 1.77E-8  | -2.95E-5 | 3.62E-5 |
| AP                             | mol H+ eq    | 4.80E-1  | 1.45E-2 | 2.24E-2 | 5.17E-1  | 8.81E-3  | 8.49E-2 | 4.23E-4  | -2.24E-1 | 3.86E-1 |
| EP-fw                          | kg P eq      | 4.67E-3  | 2.53E-5 | 5.88E-5 | 4.75E-3  | 1.27E-5  | 6.08E-4 | 5.34E-7  | -2.17E-3 | 3.20E-3 |
| EP-m                           | kg N eq      | 8.06E-2  | 5.13E-3 | 6.61E-3 | 9.23E-2  | 3.15E-3  | 2.07E-2 | 2.60E-4  | -3.91E-2 | 7.73E-2 |
| EP-T                           | mol N eq     | 8.73E-1  | 5.65E-2 | 7.09E-2 | 1.00E+0  | 3.47E-2  | 2.28E-1 | 1.69E-3  | -4.19E-1 | 8.46E-1 |
| POCP                           | kg NMVOC eq  | 3.02E-1  | 1.61E-2 | 2.00E-2 | 3.38E-1  | 9.93E-3  | 6.84E-2 | 5.76E-4  | -1.44E-1 | 2.74E-1 |
| ADP-mm                         | kg Sb eq     | 3.14E-3  | 6.36E-5 | 9.36E-5 | 3.29E-3  | 4.00E-5  | 3.35E-4 | 4.20E-7  | -1.21E-3 | 2.46E-3 |
| ADP-f                          | MJ           | 2.71E+3  | 3.78E+1 | 4.76E+1 | 2.80E+3  | 2.37E+1  | 2.34E+2 | 1.28E+0  | -1.42E+3 | 1.64E+3 |
| WDP                            | m3 depriv.   | 1.78E+2  | 1.35E-1 | 3.22E+1 | 2.10E+2  | 7.28E-2  | 9.09E+0 | 7.36E-3  | -8.47E+1 | 1.34E+2 |
| PM                             | disease inc. | 3.40E-6  | 2.25E-7 | 3.48E-7 | 3.98E-6  | 1.40E-7  | 1.06E-6 | 8.77E-9  | -1.45E-6 | 3.74E-6 |
| IR                             | kBq U-235 eq | 5.78E+0  | 1.59E-1 | 8.60E-2 | 6.02E+0  | 1.04E-1  | 8.16E-1 | 5.87E-3  | -2.74E+0 | 4.21E+0 |
| ETP-fw                         | CTUe         | 1.83E+3  | 3.37E+1 | 7.94E+1 | 1.94E+3  | 1.93E+1  | 1.74E+3 | 1.92E+1  | -8.41E+2 | 2.88E+3 |
| HTP-c                          | CTUh         | 7.23E-8  | 1.09E-9 | 2.71E-9 | 7.61E-8  | 6.86E-10 | 2.56E-8 | 3.35E-11 | -3.13E-8 | 7.10E-8 |
| HTP-nc                         | CTUh         | 2.29E-6  | 3.69E-8 | 8.29E-8 | 2.41E-6  | 2.30E-8  | 6.15E-7 | 3.69E-9  | -1.08E-6 | 1.97E-6 |
| SQP                            | Pt           | 7.91E+2  | 3.28E+1 | 3.56E+0 | 8.28E+2  | 2.03E+1  | 1.46E+2 | 3.25E+0  | -2.49E+2 | 7.48E+2 |

| Resource use                      | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|---------|---------|---------|---------|---------|----------|---------|
| PERE                              | MJ   | 1.99E+2 | 4.74E-1 | 1.44E+2 | 3.43E+2 | 3.40E-1 | 1.67E+1 | 4.62E-2 | -8.13E+1 | 2.79E+2 |
| PERM                              | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PERT                              | MJ   | 1.99E+2 | 4.74E-1 | 1.44E+2 | 3.43E+2 | 3.40E-1 | 1.67E+1 | 4.62E-2 | -8.13E+1 | 2.79E+2 |
| PENRE                             | MJ   | 2.91E+3 | 4.02E+1 | 5.16E+1 | 3.00E+3 | 2.52E+1 | 2.49E+2 | 1.36E+0 | -1.53E+3 | 1.75E+3 |
| PENRM                             | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PENRT                             | MJ   | 2.91E+3 | 4.02E+1 | 5.16E+1 | 3.00E+3 | 2.52E+1 | 2.49E+2 | 1.36E+0 | -1.53E+3 | 1.75E+3 |
| PET                               | MJ   | 3.11E+3 | 4.06E+1 | 1.95E+2 | 3.35E+3 | 2.55E+1 | 2.65E+2 | 1.40E+0 | -1.61E+3 | 2.03E+3 |
| 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   | 1.90E+0 | 4.61E-3 | 7.58E-1 | 2.66E+0 | 2.69E-3 | 2.49E-1 | 1.57E-3 | -8.86E-1 | 2.03E+0 |
| Output flows and waste categories | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
| HWD                               | kg   | 2.16E-3 | 9.59E-5 | 6.67E-5 | 2.32E-3 | 6.07E-5 | 3.76E-4 | 1.54E-6 | -1.18E-3 | 1.58E-3 |
| NHWD                              | kg   | 1.03E+1 | 2.40E+0 | 9.62E-2 | 1.28E+1 | 1.47E+0 | 8.66E+0 | 5.89E+0 | -4.55E+0 | 2.42E+1 |
| RWD                               | kg   | 5.09E-3 | 2.48E-4 | 1.20E-4 | 5.46E-3 | 1.61E-4 | 8.76E-4 | 8.36E-6 | -2.42E-3 | 4.09E-3 |
| 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       |



Ecochain Technologies BV  
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands  
<https://www.ecochain.com>  
+31 20 3035 777