

# Environmental Profile

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

Ecochain v3.5.80



Product: 4001060 - PVCU Branch 87° BR 315x200 SN4 UD  
Unit: 1 piece  
Manufacturer: Wavin - PL -Buk - Extra products

PVC external sewage pipes with a solid wall are produced in two classes of circumferential stiffness (SN8, SN4), which enables optimal selection depending on the load conditions. A wide portfolio of system fittings facilitates the construction of many schemes of sewage networks, as well as connections with systems made of other materials. Diameter range DN/OD 110-500mm. The pipes meet the requirements of the PN-EN 1401-1 standard.

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<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]

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# Results

| Environmental impact | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3      | C4       | D        | Total   |
|----------------------|--------------|----------|----------|----------|----------|----------|---------|----------|----------|---------|
| GWP-total            | kg CO2 eq    | 2.06E+1  | 1.70E-1  | 6.98E-2  | 2.08E+1  | 3.04E-1  | 1.03E+1 | 8.60E-2  | -1.17E+1 | 1.98E+1 |
| GWP-f                | kg CO2 eq    | 2.18E+1  | 1.70E-1  | 7.05E-2  | 2.21E+1  | 3.04E-1  | 8.81E+0 | 8.60E-2  | -1.16E+1 | 1.97E+1 |
| GWP-b                | kg CO2 eq    | -1.27E+0 | 1.03E-4  | -7.44E-4 | -1.27E+0 | 1.85E-4  | 1.44E+0 | 1.10E-4  | -7.72E-2 | 9.53E-2 |
| GWP-luluc            | kg CO2 eq    | 1.72E-2  | 6.01E-5  | 7.20E-5  | 1.73E-2  | 1.08E-4  | 3.51E-3 | 2.33E-6  | -7.43E-3 | 1.35E-2 |
| ODP                  | kg CFC11 eq  | 1.16E-5  | 3.91E-8  | 3.98E-9  | 1.16E-5  | 7.01E-8  | 9.37E-7 | 3.49E-9  | -5.63E-6 | 6.99E-6 |
| AP                   | mol H+ eq    | 9.88E-2  | 9.67E-4  | 7.11E-4  | 1.00E-1  | 1.73E-3  | 1.65E-2 | 8.34E-5  | -4.31E-2 | 7.57E-2 |
| EP-fw                | kg P eq      | 9.26E-4  | 1.40E-6  | 3.97E-6  | 9.31E-4  | 2.50E-6  | 1.16E-4 | 1.05E-7  | -4.13E-4 | 6.37E-4 |
| EP-m                 | kg N eq      | 1.67E-2  | 3.46E-4  | 7.48E-5  | 1.71E-2  | 6.20E-4  | 4.06E-3 | 5.36E-5  | -7.59E-3 | 1.43E-2 |
| EP-T                 | mol N eq     | 1.81E-1  | 3.81E-3  | 8.94E-4  | 1.86E-1  | 6.83E-3  | 4.48E-2 | 3.34E-4  | -8.18E-2 | 1.56E-1 |
| POCP                 | kg NMVOC eq  | 6.42E-2  | 1.09E-3  | 3.02E-4  | 6.56E-2  | 1.95E-3  | 1.34E-2 | 1.13E-4  | -2.79E-2 | 5.32E-2 |
| ADP-mm               | kg Sb eq     | 9.04E-4  | 4.39E-6  | 9.48E-6  | 9.18E-4  | 7.87E-6  | 6.46E-5 | 8.26E-8  | -2.38E-4 | 7.52E-4 |
| ADP-f                | MJ           | 5.58E+2  | 2.61E+0  | 6.54E-1  | 5.61E+2  | 4.67E+0  | 4.52E+1 | 2.52E-1  | -2.78E+2 | 3.33E+2 |
| WDP                  | m3 depriv.   | 3.43E+1  | 8.00E-3  | 2.52E-2  | 3.43E+1  | 1.43E-2  | 1.74E+0 | 1.44E-3  | -1.60E+1 | 2.00E+1 |
| PM                   | disease inc. | 7.49E-7  | 1.53E-8  | 4.38E-9  | 7.68E-7  | 2.75E-8  | 2.07E-7 | 1.73E-9  | -2.80E-7 | 7.25E-7 |
| IR                   | kBq U-235 eq | 1.20E+0  | 1.14E-2  | 4.91E-4  | 1.21E+0  | 2.04E-2  | 1.57E-1 | 1.16E-3  | -5.23E-1 | 8.71E-1 |
| ETP-fw               | CTUe         | 3.76E+2  | 2.12E+0  | 5.83E+0  | 3.84E+2  | 3.79E+0  | 3.31E+2 | 3.64E+0  | -1.62E+2 | 5.60E+2 |
| HTP-c                | CTUh         | 1.48E-8  | 7.53E-11 | 2.97E-10 | 1.52E-8  | 1.35E-10 | 5.02E-9 | 6.55E-12 | -5.99E-9 | 1.43E-8 |
| HTP-nc               | CTUh         | 4.61E-7  | 2.52E-9  | 7.54E-9  | 4.71E-7  | 4.52E-9  | 1.18E-7 | 7.03E-10 | -2.06E-7 | 3.89E-7 |
| SQP                  | Pt           | 2.04E+2  | 2.23E+0  | 1.08E+0  | 2.07E+2  | 3.99E+0  | 2.84E+1 | 6.39E-1  | -5.70E+1 | 1.83E+2 |
| Resource use         | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3      | C4       | D        | Total   |
| PERE                 | MJ           | 6.53E+1  | 3.74E-2  | 1.16E+1  | 7.69E+1  | 6.70E-2  | 3.21E+0 | 9.07E-3  | -1.73E+1 | 6.29E+1 |
| PERM                 | MJ           | 0        | 0        | 0        | 0        | 0        | 0       | 0        | 0        | 0       |
| PERT                 | MJ           | 6.53E+1  | 3.74E-2  | 1.16E+1  | 7.69E+1  | 6.70E-2  | 3.21E+0 | 9.07E-3  | -1.73E+1 | 6.29E+1 |
| PENRE                | MJ           | 5.98E+2  | 2.77E+0  | 6.96E-1  | 6.02E+2  | 4.96E+0  | 4.81E+1 | 2.68E-1  | -3.00E+2 | 3.55E+2 |
| PENRM                | MJ           | 0        | 0        | 0        | 0        | 0        | 0       | 0        | 0        | 0       |
| PENRT                | MJ           | 5.98E+2  | 2.77E+0  | 6.96E-1  | 6.02E+2  | 4.96E+0  | 4.81E+1 | 2.68E-1  | -3.00E+2 | 3.55E+2 |
| PET                  | MJ           | 6.64E+2  | 2.80E+0  | 1.23E+1  | 6.79E+2  | 5.02E+0  | 5.13E+1 | 2.77E-1  | -3.17E+2 | 4.18E+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           | 3.79E-1  | 2.95E-4  | 7.03E-4  | 3.80E-1  | 5.28E-4  | 4.86E-2 | 3.09E-4  | -1.68E-1 | 2.61E-1 |

| Output flows and waste categories | Unit | A1      | A2      | A3       | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|----------|---------|---------|---------|---------|----------|---------|
| HWD                               | kg   | 4.47E-4 | 6.67E-6 | 1.32E-10 | 4.53E-4 | 1.19E-5 | 7.34E-5 | 3.04E-7 | -2.34E-4 | 3.05E-4 |
| NHWD                              | kg   | 2.09E+0 | 1.62E-1 | 5.08E-4  | 2.25E+0 | 2.89E-1 | 1.73E+0 | 1.17E+0 | -8.67E-1 | 4.57E+0 |
| RWD                               | kg   | 1.12E-3 | 1.77E-5 | 5.28E-11 | 1.14E-3 | 3.18E-5 | 1.70E-4 | 1.65E-6 | -4.64E-4 | 8.75E-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       |



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