

# Environmental Profile

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

Ecochain v3.5.80



Product: 3044082 - PVCU SemiReducer BR 315x110 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 B6 Operational energy use B7 Operational water use |     |     |     |     |     |     | C1 De-construction demolition C2 Transport C3 Waste processing C4 Disposal |    |    |    |   |
| Construction process stage                                                |    |    |     |     |                                                                                                                    |     |     |     |     |     |     | Benefits and loads beyond the system boundaries                            |    |    |    |   |
| A4 Transport gate to site 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    | 1.11E+1  | 1.19E-1  | 2.23E-2  | 1.13E+1  | 1.55E-1  | 4.82E+0 | 4.54E-2  | -6.24E+0 | 1.01E+1 |
| GWP-f                | kg CO2 eq    | 1.15E+1  | 1.19E-1  | 2.25E-2  | 1.16E+1  | 1.54E-1  | 4.37E+0 | 4.54E-2  | -6.20E+0 | 9.99E+0 |
| GWP-b                | kg CO2 eq    | -3.43E-1 | 7.22E-5  | -2.38E-4 | -3.44E-1 | 9.38E-5  | 4.46E-1 | 5.76E-5  | -4.24E-2 | 6.02E-2 |
| GWP-luluc            | kg CO2 eq    | 9.37E-3  | 4.21E-5  | 2.30E-5  | 9.43E-3  | 5.47E-5  | 1.84E-3 | 1.23E-6  | -4.00E-3 | 7.33E-3 |
| ODP                  | kg CFC11 eq  | 6.16E-6  | 2.74E-8  | 1.27E-9  | 6.19E-6  | 3.56E-8  | 4.97E-7 | 1.78E-9  | -3.06E-6 | 3.66E-6 |
| AP                   | mol H+ eq    | 5.28E-2  | 6.77E-4  | 2.27E-4  | 5.37E-2  | 8.80E-4  | 8.58E-3 | 4.30E-5  | -2.33E-2 | 4.00E-2 |
| EP-fw                | kg P eq      | 5.04E-4  | 9.78E-7  | 1.27E-6  | 5.06E-4  | 1.27E-6  | 6.13E-5 | 5.53E-8  | -2.25E-4 | 3.44E-4 |
| EP-m                 | kg N eq      | 8.93E-3  | 2.42E-4  | 2.39E-5  | 9.20E-3  | 3.15E-4  | 2.09E-3 | 2.63E-5  | -4.06E-3 | 7.57E-3 |
| EP-T                 | mol N eq     | 9.71E-2  | 2.67E-3  | 2.86E-4  | 1.00E-1  | 3.47E-3  | 2.31E-2 | 1.72E-4  | -4.35E-2 | 8.32E-2 |
| POCP                 | kg NMVOC eq  | 3.36E-2  | 7.63E-4  | 9.67E-5  | 3.45E-2  | 9.92E-4  | 6.92E-3 | 5.86E-5  | -1.50E-2 | 2.75E-2 |
| ADP-mm               | kg Sb eq     | 4.51E-3  | 3.07E-6  | 3.03E-6  | 4.51E-3  | 4.00E-6  | 3.37E-5 | 4.30E-8  | -1.25E-4 | 4.42E-3 |
| ADP-f                | MJ           | 2.92E+2  | 1.82E+0  | 2.09E-1  | 2.94E+2  | 2.37E+0  | 2.35E+1 | 1.30E-1  | -1.50E+2 | 1.70E+2 |
| WDP                  | m3 depriv.   | 1.84E+1  | 5.60E-3  | 8.04E-3  | 1.84E+1  | 7.28E-3  | 9.18E-1 | 8.44E-4  | -8.75E+0 | 1.06E+1 |
| PM                   | disease inc. | 3.66E-7  | 1.07E-8  | 1.40E-9  | 3.78E-7  | 1.39E-8  | 1.07E-7 | 8.89E-10 | -1.49E-7 | 3.51E-7 |
| IR                   | kBq U-235 eq | 6.34E-1  | 7.97E-3  | 1.57E-4  | 6.42E-1  | 1.04E-2  | 8.22E-2 | 5.93E-4  | -2.83E-1 | 4.52E-1 |
| ETP-fw               | CTUe         | 2.35E+2  | 1.48E+0  | 1.86E+0  | 2.39E+2  | 1.93E+0  | 1.77E+2 | 1.95E+0  | -8.65E+1 | 3.33E+2 |
| HTP-c                | CTUh         | 8.59E-9  | 5.27E-11 | 9.51E-11 | 8.74E-9  | 6.85E-11 | 2.66E-9 | 3.49E-12 | -3.24E-9 | 8.24E-9 |
| HTP-nc               | CTUh         | 2.74E-7  | 1.77E-9  | 2.41E-9  | 2.78E-7  | 2.30E-9  | 6.25E-8 | 3.75E-10 | -1.12E-7 | 2.32E-7 |
| SQP                  | Pt           | 7.96E+1  | 1.56E+0  | 3.45E-1  | 8.15E+1  | 2.03E+0  | 1.47E+1 | 3.29E-1  | -2.44E+1 | 7.41E+1 |
| Resource use         | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3      | C4       | D        | Total   |
| PERE                 | MJ           | 3.80E+1  | 2.62E-2  | 3.71E+0  | 4.17E+1  | 3.40E-2  | 1.69E+0 | 4.68E-3  | -8.12E+0 | 3.53E+1 |
| PERM                 | MJ           | 0        | 0        | 0        | 0        | 0        | 0       | 0        | 0        | 0       |
| PERT                 | MJ           | 3.80E+1  | 2.62E-2  | 3.71E+0  | 4.17E+1  | 3.40E-2  | 1.69E+0 | 4.68E-3  | -8.12E+0 | 3.53E+1 |
| PENRE                | MJ           | 3.13E+2  | 1.94E+0  | 2.23E-1  | 3.15E+2  | 2.52E+0  | 2.50E+1 | 1.37E-1  | -1.61E+2 | 1.82E+2 |
| PENRM                | MJ           | 0        | 0        | 0        | 0        | 0        | 0       | 0        | 0        | 0       |
| PENRT                | MJ           | 3.13E+2  | 1.94E+0  | 2.23E-1  | 3.15E+2  | 2.52E+0  | 2.50E+1 | 1.37E-1  | -1.61E+2 | 1.82E+2 |
| PET                  | MJ           | 3.51E+2  | 1.96E+0  | 3.93E+0  | 3.57E+2  | 2.55E+0  | 2.67E+1 | 1.42E-1  | -1.69E+2 | 2.17E+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           | 2.03E-1  | 2.06E-4  | 2.25E-4  | 2.03E-1  | 2.68E-4  | 2.52E-2 | 1.58E-4  | -9.16E-2 | 1.37E-1 |

| Output flows and waste categories | Unit | A1      | A2      | A3       | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|----------|---------|---------|---------|---------|----------|---------|
| HWD                               | kg   | 7.66E-4 | 4.67E-6 | 4.21E-11 | 7.71E-4 | 6.06E-6 | 3.80E-5 | 1.57E-7 | -1.25E-4 | 6.90E-4 |
| NHWD                              | kg   | 1.10E+0 | 1.13E-1 | 1.63E-4  | 1.21E+0 | 1.47E-1 | 8.82E-1 | 5.88E-1 | -4.70E-1 | 2.36E+0 |
| RWD                               | kg   | 5.76E-4 | 1.24E-5 | 1.69E-11 | 5.88E-4 | 1.61E-5 | 8.81E-5 | 8.44E-7 | -2.50E-4 | 4.43E-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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