# Environmental Profile

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

Ecochain v3.5.64

| | |
|---|---|
| Product: | 3062847 - X-Stream PP Drain Pipe BK 100 L=6 FULL S |
| Unit: | 1 Piece |
| Manufacturer: | Wavin - SE - Eskilstuna |

Wavin X-Stream is a new generation of double-walled pipes and fittings made of polypropylene. The system is suitable for pressureless transport of rainwater and wastewater.

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|---|---|
| LCA standard: | EN15804+A2 (2019) |
| Standard database: | Worldwide - Ecoinvent v 3.6 Cut-Off |
| Externally verified: | Yes |
| Issue date: | 20-06-2022 |
| End of validity: | 20-06-2027 |
| Verifier: | Harry van Ewijk - 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 - SE - Eskilstuna (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

**GWP-total** = EF Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF 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

# Results

| Environmental impact | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| GWP-total | kg CO2 eq | 7.93E+0 | 7.87E-1 | 2.77E-1 | 8.99E+0 | 1.07E-1 | 3.45E+0 | 5.02E-2 | -4.95E+0 | 7.66E+0 |
| GWP-f | kg CO2 eq | 8.13E+0 | 7.86E-1 | 2.01E-1 | 9.12E+0 | 1.06E-1 | 3.21E+0 | 5.02E-2 | -4.93E+0 | 7.56E+0 |
| GWP-b | kg CO2 eq | -2.04E-1 | 3.57E-4 | 5.28E-2 | -1.51E-1 | 6.47E-5 | 2.38E-1 | 4.37E-5 | -1.73E-2 | 7.06E-2 |
| GWP-luluc | kg CO2 eq | 2.93E-3 | 2.90E-4 | 2.33E-2 | 2.65E-2 | 3.77E-5 | 6.92E-4 | 8.53E-7 | -9.56E-4 | 2.63E-2 |
| ODP | kg CFC11 eq | 1.47E-7 | 1.73E-7 | 2.27E-8 | 3.43E-7 | 2.45E-8 | 1.48E-7 | 1.26E-9 | -1.82E-7 | 3.35E-7 |
| AP | mol H+ eq | 2.89E-2 | 4.78E-3 | 1.70E-3 | 3.54E-2 | 6.07E-4 | 3.88E-3 | 3.00E-5 | -1.39E-2 | 2.60E-2 |
| EP-fw | kg P eq | 1.19E-4 | 7.88E-6 | 3.70E-6 | 1.30E-4 | 8.76E-7 | 2.27E-5 | 3.91E-8 | -5.44E-5 | 9.97E-5 |
| EP-m | kg N eq | 4.82E-3 | 1.66E-3 | 5.04E-4 | 6.99E-3 | 2.17E-4 | 1.03E-3 | 1.96E-5 | -2.45E-3 | 5.80E-3 |
| EP-T | mol N eq | 5.44E-2 | 1.83E-2 | 5.52E-3 | 7.82E-2 | 2.39E-3 | 1.16E-2 | 1.22E-4 | -2.71E-2 | 6.52E-2 |
| POCP | kg NMVOC eq | 2.52E-2 | 5.20E-3 | 1.53E-3 | 3.19E-2 | 6.84E-4 | 3.62E-3 | 4.58E-5 | -1.25E-2 | 2.38E-2 |
| ADP-mm | kg Sb eq | 1.09E-4 | 1.98E-5 | 6.04E-6 | 1.35E-4 | 2.75E-6 | 1.56E-5 | 3.02E-8 | -3.27E-5 | 1.20E-4 |
| ADP-f | MJ | 2.90E+2 | 1.18E+1 | 1.99E+0 | 3.04E+2 | 1.63E+0 | 1.36E+1 | 9.19E-2 | -1.56E+2 | 1.63E+2 |
| WDP | m3 depriv. | 5.77E+0 | 4.21E-2 | 1.28E+0 | 7.10E+0 | 5.02E-3 | 4.38E-1 | 4.59E-4 | -2.70E+0 | 4.84E+0 |
| PM | disease inc. | 2.56E-7 | 7.01E-8 | 2.87E-8 | 3.54E-7 | 9.61E-9 | 5.71E-8 | 6.32E-10 | -1.16E-7 | 3.06E-7 |
| IR | kBq U-235 eq | 1.48E-1 | 4.96E-2 | 5.93E-3 | 2.03E-1 | 7.14E-3 | 3.85E-2 | 4.26E-4 | -7.23E-2 | 1.77E-1 |
| ETP-fw | CTUe | 4.27E+1 | 1.05E+1 | 5.56E+0 | 5.88E+1 | 1.33E+0 | 1.36E+1 | 7.69E-2 | -1.92E+1 | 5.45E+1 |
| HTP-c | CTUh | 1.92E-9 | 3.44E-10 | 2.19E-10 | 2.48E-9 | 4.72E-11 | 1.51E-9 | 2.24E-12 | -8.22E-10 | 3.22E-9 |
| HTP-nc | CTUh | 5.20E-8 | 1.15E-8 | 5.98E-9 | 6.95E-8 | 1.58E-9 | 1.98E-8 | 4.95E-11 | -2.33E-8 | 6.77E-8 |
| SQP | Pt | 3.00E+1 | 1.02E+1 | 2.62E-1 | 4.04E+1 | 1.40E+0 | 8.52E+0 | 2.36E-1 | -4.18E+0 | 4.64E+1 |
| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| PERE | MJ | 7.45E+0 | 1.48E-1 | 1.26E+1 | 2.02E+1 | 2.35E-2 | 6.76E-1 | 3.56E-3 | -1.93E+0 | 1.89E+1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 7.45E+0 | 1.48E-1 | 1.26E+1 | 2.02E+1 | 2.35E-2 | 6.76E-1 | 3.56E-3 | -1.93E+0 | 1.89E+1 |
| PENRE | MJ | 3.11E+2 | 1.26E+1 | 2.12E+0 | 3.26E+2 | 1.74E+0 | 1.45E+1 | 9.75E-2 | -1.68E+2 | 1.74E+2 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 3.11E+2 | 1.26E+1 | 2.12E+0 | 3.26E+2 | 1.74E+0 | 1.45E+1 | 9.75E-2 | -1.68E+2 | 1.74E+2 |
| PET | MJ | 3.19E+2 | 1.27E+1 | 1.47E+1 | 3.46E+2 | 1.76E+0 | 1.52E+1 | 1.01E-1 | -1.70E+2 | 1.93E+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 | 8.70E-2 | 1.43E-3 | 3.05E-2 | 1.19E-1 | 1.85E-4 | 8.55E-3 | 1.13E-4 | -4.04E-2 | 8.74E-2 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 3.50E-5 | 2.98E-5 | 3.04E-6 | 6.79E-5 | 4.18E-6 | 1.93E-5 | 1.11E-7 | -3.58E-5 | 5.56E-5 |
| NHWD | kg | 3.17E-1 | 7.44E-1 | 9.30E-3 | 1.07E+0 | 1.01E-1 | 5.10E-1 | 4.05E-1 | -1.20E-1 | 1.97E+0 |
| RWD | kg | 1.29E-4 | 7.78E-5 | 8.43E-6 | 2.15E-4 | 1.11E-5 | 4.58E-5 | 6.00E-7 | -6.50E-5 | 2.07E-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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