# Environmental Profile

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

Ecochain v3.5.64

| | |
|---|---|
| Product: | 3011091 - X-Stream Coupler BK 250x250PVC S/PL |
| Unit: | 1 Piece |
| Manufacturer: | Wavin Poland Buk |
| Address: | Dobieżyńska 43<br>64-320 Buk<br>Poland |
| Contact: | https://www.wavin.com/en-en |

The Wavin X-Stream system is a new generation of profiled pipe system with ring stiffness of SN 8, outside black and inside bright for drainage of foul water and storm water. The Wavin X-Stream structured wall polypropylene (PP) pipes systems incorporate a unique new design for fast, secure assembly.

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|---|---|
| LCA standard: | EN15804+A2 (2019) |
| Standard database: | Worldwide - Ecoinvent v 3.6 Cut-Off |
| Externally verified: | Yes |
| Issue date: | 19-09-2022 |
| End of validity: | 19-09-2027 |
| 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 Poland Buk (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 | 3.13E+0 | 8.32E-2 | 1.58E-1 | 3.37E+0 | 4.10E-2 | 1.19E+0 | 1.93E-2 | -1.90E+0 | 2.72E+0 |
| GWP-f | kg CO2 eq | 3.11E+0 | 8.31E-2 | 1.52E-1 | 3.35E+0 | 4.10E-2 | 1.19E+0 | 1.93E-2 | -1.89E+0 | 2.71E+0 |
| GWP-b | kg CO2 eq | 1.41E-2 | 3.84E-5 | 5.80E-3 | 1.99E-2 | 2.49E-5 | -1.64E-3 | 1.68E-5 | -6.77E-3 | 1.16E-2 |
| GWP-luluc | kg CO2 eq | 8.21E-4 | 3.05E-5 | 8.12E-5 | 9.33E-4 | 1.45E-5 | 2.30E-4 | 3.33E-7 | -3.83E-4 | 7.94E-4 |
| ODP | kg CFC11 eq | 5.79E-8 | 1.83E-8 | 1.65E-8 | 9.27E-8 | 9.44E-9 | 2.99E-8 | 4.85E-10 | -8.67E-8 | 4.57E-8 |
| AP | mol H+ eq | 1.12E-2 | 4.82E-4 | 8.54E-4 | 1.25E-2 | 2.33E-4 | 1.26E-3 | 1.16E-5 | -5.36E-3 | 8.66E-3 |
| EP-fw | kg P eq | 4.59E-5 | 8.38E-7 | 4.45E-6 | 5.11E-5 | 3.37E-7 | 6.63E-6 | 1.52E-8 | -2.18E-5 | 3.63E-5 |
| EP-m | kg N eq | 1.84E-3 | 1.70E-4 | 1.10E-4 | 2.12E-3 | 8.35E-5 | 3.65E-4 | 7.49E-6 | -9.46E-4 | 1.63E-3 |
| EP-T | mol N eq | 2.09E-2 | 1.87E-3 | 1.25E-3 | 2.40E-2 | 9.20E-4 | 4.02E-3 | 4.70E-5 | -1.05E-2 | 1.85E-2 |
| POCP | kg NMVOC eq | 9.58E-3 | 5.35E-4 | 4.21E-4 | 1.05E-2 | 2.63E-4 | 1.27E-3 | 1.76E-5 | -4.81E-3 | 7.28E-3 |
| ADP-mm | kg Sb eq | 4.71E-5 | 2.11E-6 | 9.76E-6 | 5.90E-5 | 1.06E-6 | 4.98E-6 | 1.17E-8 | -1.31E-5 | 5.20E-5 |
| ADP-f | MJ | 1.10E+2 | 1.25E+0 | 1.78E+0 | 1.14E+2 | 6.29E-1 | 3.99E+0 | 3.54E-2 | -5.96E+1 | 5.86E+1 |
| WDP | m3 depriv. | 2.20E+0 | 4.48E-3 | 2.83E-2 | 2.23E+0 | 1.93E-3 | 7.82E-2 | 1.93E-4 | -1.07E+0 | 1.24E+0 |
| PM | disease inc. | 9.74E-8 | 7.46E-9 | 5.80E-9 | 1.11E-7 | 3.70E-9 | 2.07E-8 | 2.43E-10 | -4.46E-8 | 9.07E-8 |
| IR | kBq U-235 eq | 5.66E-2 | 5.25E-3 | 2.49E-3 | 6.43E-2 | 2.75E-3 | 1.20E-2 | 1.64E-4 | -2.89E-2 | 5.04E-2 |
| ETP-fw | CTUe | 1.69E+1 | 1.12E+0 | 6.38E+0 | 2.44E+1 | 5.11E-1 | 4.50E+0 | 2.96E-2 | -7.74E+0 | 2.17E+1 |
| HTP-c | CTUh | 7.28E-10 | 3.63E-11 | 3.22E-10 | 1.09E-9 | 1.82E-11 | 5.51E-10 | 8.75E-13 | -3.29E-10 | 1.33E-9 |
| HTP-nc | CTUh | 2.03E-8 | 1.22E-9 | 7.97E-9 | 2.95E-8 | 6.09E-10 | 6.72E-9 | 1.91E-11 | -9.44E-9 | 2.74E-8 |
| SQP | Pt | 3.93E+0 | 1.09E+0 | 1.21E+0 | 6.23E+0 | 5.38E-1 | 3.19E+0 | 9.07E-2 | -1.67E+0 | 8.38E+0 |
| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| PERE | MJ | 1.59E+0 | 1.57E-2 | 1.18E+1 | 1.34E+1 | 9.02E-3 | 1.97E-1 | 1.36E-3 | -7.66E-1 | 1.28E+1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 1.59E+0 | 1.57E-2 | 1.18E+1 | 1.34E+1 | 9.02E-3 | 1.97E-1 | 1.36E-3 | -7.66E-1 | 1.28E+1 |
| PENRE | MJ | 1.19E+2 | 1.33E+0 | 1.93E+0 | 1.22E+2 | 6.67E-1 | 4.25E+0 | 3.75E-2 | -6.42E+1 | 6.26E+1 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 1.19E+2 | 1.33E+0 | 1.93E+0 | 1.22E+2 | 6.67E-1 | 4.25E+0 | 3.75E-2 | -6.42E+1 | 6.26E+1 |
| PET | MJ | 1.20E+2 | 1.35E+0 | 1.37E+1 | 1.35E+2 | 6.77E-1 | 4.45E+0 | 3.89E-2 | -6.50E+1 | 7.54E+1 |
| 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 | 3.31E-2 | 1.53E-4 | 8.00E-4 | 3.41E-2 | 7.11E-5 | 2.30E-3 | 4.36E-5 | -1.58E-2 | 2.08E-2 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 1.37E-5 | 3.18E-6 | 1.70E-6 | 1.86E-5 | 1.61E-6 | 6.49E-6 | 4.28E-8 | -1.42E-5 | 1.25E-5 |
| NHWD | kg | 1.23E-1 | 7.95E-2 | 4.72E-3 | 2.07E-1 | 3.90E-2 | 1.96E-1 | 1.56E-1 | -4.79E-2 | 5.50E-1 |
| RWD | kg | 4.90E-5 | 8.23E-6 | 3.13E-6 | 6.04E-5 | 4.28E-6 | 1.52E-5 | 2.31E-7 | -2.60E-5 | 5.41E-5 |
| 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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