

# Environmental Profile

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

Ecochain v3.5.80



Product: 3010952 - X-Stream PP Plug BK 400  
Unit: 1 piece  
Manufacturer: Wavin - PL -Buk - Extra products

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



Wavin X-Stream is a new generation of double-walled pipes and fittings made of polypropylene. The system is



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]

### Statement of Confidentiality

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# Results

| Environmental impact | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3      | C4       | D        | Total   |
|----------------------|--------------|----------|----------|----------|----------|----------|---------|----------|----------|---------|
| GWP-total            | kg CO2 eq    | 1.06E+1  | 2.82E-1  | 2.14E-2  | 1.09E+1  | 1.97E-1  | 1.20E+1 | 9.29E-2  | -9.84E+0 | 1.33E+1 |
| GWP-f                | kg CO2 eq    | 1.67E+1  | 2.82E-1  | 2.16E-2  | 1.70E+1  | 1.97E-1  | 5.79E+0 | 9.29E-2  | -9.80E+0 | 1.32E+1 |
| GWP-b                | kg CO2 eq    | -6.10E+0 | 1.71E-4  | -2.28E-4 | -6.10E+0 | 1.20E-4  | 6.20E+0 | 8.10E-5  | -3.21E-2 | 7.57E-2 |
| GWP-luluc            | kg CO2 eq    | 7.29E-3  | 9.99E-5  | 2.21E-5  | 7.41E-3  | 6.97E-5  | 1.12E-3 | 1.56E-6  | -4.27E-3 | 4.33E-3 |
| ODP                  | kg CFC11 eq  | 4.85E-7  | 6.50E-8  | 1.22E-9  | 5.52E-7  | 4.54E-8  | 1.51E-7 | 2.33E-9  | -4.37E-7 | 3.14E-7 |
| AP                   | mol H+ eq    | 6.06E-2  | 1.61E-3  | 2.18E-4  | 6.25E-2  | 1.12E-3  | 6.38E-3 | 5.55E-5  | -3.06E-2 | 3.94E-2 |
| EP-fw                | kg P eq      | 2.68E-4  | 2.32E-6  | 1.22E-6  | 2.72E-4  | 1.62E-6  | 3.25E-5 | 7.20E-8  | -1.34E-4 | 1.72E-4 |
| EP-m                 | kg N eq      | 1.08E-2  | 5.75E-4  | 2.29E-5  | 1.14E-2  | 4.02E-4  | 1.89E-3 | 3.63E-5  | -5.89E-3 | 7.87E-3 |
| EP-T                 | mol N eq     | 1.21E-1  | 6.34E-3  | 2.74E-4  | 1.28E-1  | 4.43E-3  | 2.09E-2 | 2.25E-4  | -6.69E-2 | 8.66E-2 |
| POCP                 | kg NMVOC eq  | 5.44E-2  | 1.81E-3  | 9.27E-5  | 5.63E-2  | 1.27E-3  | 6.54E-3 | 8.46E-5  | -2.87E-2 | 3.56E-2 |
| ADP-mm               | kg Sb eq     | 1.86E-4  | 7.30E-6  | 2.90E-6  | 1.96E-4  | 5.10E-6  | 2.47E-5 | 5.58E-8  | -7.24E-5 | 1.53E-4 |
| ADP-f                | MJ           | 5.65E+2  | 4.33E+0  | 2.00E-1  | 5.70E+2  | 3.02E+0  | 1.97E+1 | 1.70E-1  | -3.00E+2 | 2.93E+2 |
| WDP                  | m3 depriv.   | 1.09E+1  | 1.33E-2  | 7.71E-3  | 1.09E+1  | 9.28E-3  | 3.80E-1 | 8.00E-4  | -5.20E+0 | 6.10E+0 |
| PM                   | disease inc. | 6.47E-7  | 2.55E-8  | 1.34E-9  | 6.73E-7  | 1.78E-8  | 1.04E-7 | 1.17E-9  | -3.12E-7 | 4.84E-7 |
| IR                   | kBq U-235 eq | 3.41E-1  | 1.89E-2  | 1.50E-4  | 3.60E-1  | 1.32E-2  | 6.02E-2 | 7.89E-4  | -1.67E-1 | 2.67E-1 |
| ETP-fw               | CTUe         | 1.10E+2  | 3.52E+0  | 1.78E+0  | 1.15E+2  | 2.46E+0  | 2.22E+1 | 1.42E-1  | -6.03E+1 | 7.93E+1 |
| HTP-c                | CTUh         | 6.32E-9  | 1.25E-10 | 9.11E-11 | 6.54E-9  | 8.74E-11 | 2.75E-9 | 4.11E-12 | -3.36E-9 | 6.02E-9 |
| HTP-nc               | CTUh         | 1.24E-7  | 4.19E-9  | 2.31E-9  | 1.31E-7  | 2.93E-9  | 3.31E-8 | 9.13E-11 | -6.05E-8 | 1.06E-7 |
| SQP                  | Pt           | 5.48E+2  | 3.71E+0  | 3.31E-1  | 5.52E+2  | 2.59E+0  | 1.57E+1 | 4.36E-1  | -3.74E+2 | 1.96E+2 |
| Resource use         | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3      | C4       | D        | Total   |
| PERE                 | MJ           | 9.91E+1  | 6.22E-2  | 3.55E+0  | 1.03E+2  | 4.34E-2  | 9.63E-1 | 6.61E-3  | -5.98E+1 | 4.39E+1 |
| PERM                 | MJ           | 0        | 0        | 0        | 0        | 0        | 0       | 0        | 0        | 0       |
| PERT                 | MJ           | 9.91E+1  | 6.22E-2  | 3.55E+0  | 1.03E+2  | 4.34E-2  | 9.63E-1 | 6.61E-3  | -5.98E+1 | 4.39E+1 |
| PENRE                | MJ           | 6.07E+2  | 4.60E+0  | 2.13E-1  | 6.12E+2  | 3.21E+0  | 2.10E+1 | 1.80E-1  | -3.23E+2 | 3.13E+2 |
| PENRM                | MJ           | 0        | 0        | 0        | 0        | 0        | 0       | 0        | 0        | 0       |
| PENRT                | MJ           | 6.07E+2  | 4.60E+0  | 2.13E-1  | 6.12E+2  | 3.21E+0  | 2.10E+1 | 1.80E-1  | -3.23E+2 | 3.13E+2 |
| PET                  | MJ           | 7.06E+2  | 4.66E+0  | 3.76E+0  | 7.14E+2  | 3.25E+0  | 2.20E+1 | 1.87E-1  | -3.83E+2 | 3.57E+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           | 1.68E-1  | 4.90E-4  | 2.16E-4  | 1.68E-1  | 3.42E-4  | 1.14E-2 | 2.10E-4  | -8.06E-2 | 9.96E-2 |

| Output flows and waste categories | Unit | A1      | A2      | A3       | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|----------|---------|---------|---------|---------|----------|---------|
| HWD                               | kg   | 1.10E-4 | 1.11E-5 | 4.03E-11 | 1.21E-4 | 7.74E-6 | 3.24E-5 | 2.04E-7 | -9.45E-5 | 6.68E-5 |
| NHWD                              | kg   | 8.21E-1 | 2.68E-1 | 1.56E-4  | 1.09E+0 | 1.87E-1 | 9.92E-1 | 7.49E-1 | -4.23E-1 | 2.60E+0 |
| RWD                               | kg   | 3.23E-4 | 2.95E-5 | 1.62E-11 | 3.53E-4 | 2.06E-5 | 7.66E-5 | 1.11E-6 | -1.60E-4 | 2.91E-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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