# Environmental Profile

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

Ecochain v3.5.71

| | |
|---|---|
| Product: | 3039684 - Wavin UR Rock-Pipe BN 225 SN8 L=0.6 S/S |
| Unit: | 1 piece |
| Manufacturer: | Wavin - UK - Chippenham - Verified |

Wavin Osma UltraRib Corrugated pipe systems are designed for use in gravity drainage and sewerage installations at depths of up to 10 metres. Osma UltraRib is a fully socketed system of pipe and fittings which combines secure jointing with ease of installation.

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|---|---|
| LCA standard: | EN15804+A2 (2019) |
| Standard database: | Worldwide - Ecoinvent v 3.6 Cut-Off |
| Externally verified: | Yes |
| Issue date: | 09-02-2023 |
| End of validity: | 09-02-2028 |
| 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 - UK - Chippenham - Verified (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 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 | 7.59E+0 | 3.37E-1 | 4.42E-1 | 8.37E+0 | 1.08E-1 | 2.81E+0 | 3.19E-2 | -4.22E+0 | 7.10E+0 |
| GWP-f | kg CO2 eq | 7.51E+0 | 3.37E-1 | 4.21E-1 | 8.27E+0 | 1.08E-1 | 2.81E+0 | 3.19E-2 | -4.19E+0 | 7.03E+0 |
| GWP-b | kg CO2 eq | 7.62E-2 | -6.23E-5 | 2.11E-2 | 9.72E-2 | 6.53E-5 | -2.92E-3 | 4.01E-5 | -2.97E-2 | 6.48E-2 |
| GWP-luluc | kg CO2 eq | 7.01E-3 | 2.18E-4 | 1.99E-4 | 7.43E-3 | 3.81E-5 | 1.28E-3 | 8.71E-7 | -2.75E-3 | 6.00E-3 |
| ODP | kg CFC11 eq | 4.16E-6 | 6.88E-8 | 5.40E-8 | 4.28E-6 | 2.48E-8 | 3.44E-7 | 1.24E-9 | -2.13E-6 | 2.52E-6 |
| AP | mol H+ eq | 3.64E-2 | 9.78E-3 | 1.90E-3 | 4.81E-2 | 6.13E-4 | 5.90E-3 | 3.00E-5 | -1.60E-2 | 3.86E-2 |
| EP-fw | kg P eq | 3.65E-4 | 1.56E-6 | 5.31E-6 | 3.72E-4 | 8.85E-7 | 4.25E-5 | 3.90E-8 | -1.57E-4 | 2.58E-4 |
| EP-m | kg N eq | 6.23E-3 | 2.43E-3 | 5.03E-4 | 9.17E-3 | 2.19E-4 | 1.43E-3 | 1.81E-5 | -2.77E-3 | 8.07E-3 |
| EP-T | mol N eq | 6.86E-2 | 2.70E-2 | 5.18E-3 | 1.01E-1 | 2.42E-3 | 1.57E-2 | 1.20E-4 | -2.94E-2 | 8.96E-2 |
| POCP | kg NMVOC eq | 2.22E-2 | 7.02E-3 | 2.81E-3 | 3.20E-2 | 6.91E-4 | 4.73E-3 | 4.09E-5 | -1.02E-2 | 2.73E-2 |
| ADP-mm | kg Sb eq | 1.04E-2 | 3.31E-6 | 5.58E-6 | 1.04E-2 | 2.78E-6 | 2.34E-5 | 3.01E-8 | -8.68E-5 | 1.04E-2 |
| ADP-f | MJ | 1.89E+2 | 4.41E+0 | 4.62E+0 | 1.98E+2 | 1.65E+0 | 1.63E+1 | 9.04E-2 | -1.02E+2 | 1.13E+2 |
| WDP | m3 depriv. | 1.27E+1 | 7.52E-3 | 1.72E-1 | 1.29E+1 | 5.07E-3 | 6.36E-1 | 6.30E-4 | -6.12E+0 | 7.44E+0 |
| PM | disease inc. | 2.27E-7 | 1.29E-8 | 1.18E-8 | 2.52E-7 | 9.71E-9 | 7.40E-8 | 6.20E-10 | -1.02E-7 | 2.34E-7 |
| IR | kBq U-235 eq | 4.36E-1 | 1.90E-2 | 1.53E-2 | 4.70E-1 | 7.22E-3 | 5.69E-2 | 4.13E-4 | -1.97E-1 | 3.38E-1 |
| ETP-fw | CTUe | 2.17E+2 | 2.95E+0 | 8.36E+0 | 2.28E+2 | 1.34E+0 | 1.22E+2 | 1.35E+0 | -5.91E+1 | 2.94E+2 |
| HTP-c | CTUh | 6.87E-9 | 1.85E-10 | 3.30E-10 | 7.38E-9 | 4.77E-11 | 1.83E-9 | 2.47E-12 | -2.24E-9 | 7.02E-9 |
| HTP-nc | CTUh | 2.25E-7 | 2.57E-9 | 3.59E-8 | 2.64E-7 | 1.60E-9 | 4.32E-8 | 2.61E-10 | -7.77E-8 | 2.31E-7 |
| SQP | Pt | 2.63E+1 | 1.08E+0 | 1.20E+0 | 2.85E+1 | 1.41E+0 | 1.02E+1 | 2.30E-1 | -1.09E+1 | 2.94E+1 |
| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| PERE | MJ | 9.85E+0 | 3.48E-2 | 1.26E+1 | 2.24E+1 | 2.37E-2 | 1.17E+0 | 3.24E-3 | -4.45E+0 | 1.92E+1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 9.85E+0 | 3.48E-2 | 1.26E+1 | 2.24E+1 | 2.37E-2 | 1.17E+0 | 3.24E-3 | -4.45E+0 | 1.92E+1 |
| PENRE | MJ | 2.02E+2 | 4.69E+0 | 4.91E+0 | 2.12E+2 | 1.75E+0 | 1.73E+1 | 9.59E-2 | -1.10E+2 | 1.21E+2 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 2.02E+2 | 4.69E+0 | 4.91E+0 | 2.12E+2 | 1.75E+0 | 1.73E+1 | 9.59E-2 | -1.10E+2 | 1.21E+2 |
| PET | MJ | 2.12E+2 | 4.72E+0 | 1.75E+1 | 2.34E+2 | 1.78E+0 | 1.85E+1 | 9.91E-2 | -1.14E+2 | 1.40E+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 | 1.42E-1 | 2.71E-4 | 4.47E-3 | 1.47E-1 | 1.87E-4 | 1.74E-2 | 1.10E-4 | -6.39E-2 | 1.01E-1 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 1.45E-3 | 5.13E-6 | 7.92E-5 | 1.53E-3 | 4.22E-6 | 2.63E-5 | 1.10E-7 | -8.46E-5 | 1.48E-3 |
| NHWD | kg | 7.69E-1 | 5.01E-2 | 1.55E-2 | 8.34E-1 | 1.02E-1 | 5.97E-1 | 4.09E-1 | -3.26E-1 | 1.62E+0 |
| RWD | kg | 3.74E-4 | 3.06E-5 | 2.10E-5 | 4.26E-4 | 1.12E-5 | 6.10E-5 | 5.88E-7 | -1.74E-4 | 3.25E-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

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