# Environmental Profile

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

Ecochain v3.5.80

**Ecochain**

| | |
|---|---|
| Product: | 3025691 - Gutter Bend 67°3 LGY 50 S/S |
| 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** An Orbia business.

**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**

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

# Results

| Environmental impact | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| GWP-total | kg CO2 eq | 1.60E-1 | 2.94E-3 | 1.45E-4 | 1.63E-1 | 1.95E-3 | 1.04E-1 | 6.16E-4 | -8.79E-2 | 1.81E-1 |
| GWP-f | kg CO2 eq | 1.91E-1 | 2.93E-3 | 1.46E-4 | 1.94E-1 | 1.95E-3 | 6.66E-2 | 6.16E-4 | -9.56E-2 | 1.68E-1 |
| GWP-b | kg CO2 eq | -3.15E-2 | 1.78E-6 | -1.54E-6 | -3.15E-2 | 1.18E-6 | 3.69E-2 | 7.43E-7 | 7.84E-3 | 1.33E-2 |
| GWP-luluc | kg CO2 eq | 2.25E-4 | 1.04E-6 | 1.49E-7 | 2.26E-4 | 6.89E-7 | 2.32E-5 | 1.74E-8 | -1.26E-4 | 1.23E-4 |
| ODP | kg CFC11 eq | 7.84E-8 | 6.76E-10 | 8.26E-12 | 7.91E-8 | 4.49E-10 | 6.27E-9 | 2.29E-11 | -4.21E-8 | 4.37E-8 |
| AP | mol H+ eq | 1.20E-3 | 1.67E-5 | 1.47E-6 | 1.21E-3 | 1.11E-5 | 1.13E-4 | 5.60E-7 | -3.77E-4 | 9.61E-4 |
| EP-fw | kg P eq | 9.06E-6 | 2.41E-8 | 8.24E-9 | 9.09E-6 | 1.60E-8 | 7.71E-7 | 7.65E-10 | -3.90E-6 | 5.98E-6 |
| EP-m | kg N eq | 1.78E-4 | 5.98E-6 | 1.55E-7 | 1.84E-4 | 3.97E-6 | 2.85E-5 | 3.29E-7 | -7.12E-5 | 1.46E-4 |
| EP-T | mol N eq | 1.93E-3 | 6.59E-5 | 1.85E-6 | 2.00E-3 | 4.38E-5 | 3.15E-4 | 2.22E-6 | -7.75E-4 | 1.59E-3 |
| POCP | kg NMVOC eq | 6.38E-4 | 1.88E-5 | 6.28E-7 | 6.58E-4 | 1.25E-5 | 9.42E-5 | 7.65E-7 | -2.60E-4 | 5.05E-4 |
| ADP-mm | kg Sb eq | 2.45E-4 | 7.59E-8 | 1.97E-8 | 2.45E-4 | 5.04E-8 | 4.42E-7 | 5.74E-10 | -1.77E-6 | 2.44E-4 |
| ADP-f | MJ | 4.32E+0 | 4.50E-2 | 1.36E-3 | 4.37E+0 | 2.99E-2 | 3.04E-1 | 1.67E-3 | -2.21E+0 | 2.49E+0 |
| WDP | m3 depriv. | 2.65E-1 | 1.38E-4 | 5.22E-5 | 2.65E-1 | 9.18E-5 | 1.14E-2 | 1.62E-5 | -1.29E-1 | 1.48E-1 |
| PM | disease inc. | 7.68E-9 | 2.65E-10 | 9.08E-12 | 7.96E-9 | 1.76E-10 | 1.43E-9 | 1.15E-11 | -3.33E-9 | 6.25E-9 |
| IR | kBq U-235 eq | 9.97E-3 | 1.97E-4 | 1.02E-6 | 1.02E-2 | 1.31E-4 | 1.07E-3 | 7.57E-6 | -4.49E-3 | 6.88E-3 |
| ETP-fw | CTUe | 6.55E+0 | 3.66E-2 | 1.21E-2 | 6.60E+0 | 2.43E-2 | 2.17E+0 | 2.38E-2 | -1.89E+0 | 6.94E+0 |
| HTP-c | CTUh | 2.24E-10 | 1.30E-12 | 6.17E-13 | 2.26E-10 | 8.64E-13 | 3.91E-11 | 4.93E-14 | -5.96E-11 | 2.06E-10 |
| HTP-nc | CTUh | 5.60E-9 | 4.36E-11 | 1.57E-11 | 5.66E-9 | 2.89E-11 | 8.06E-10 | 4.64E-12 | -1.74E-9 | 4.76E-9 |
| SQP | Pt | 3.86E+0 | 3.85E-2 | 2.24E-3 | 3.90E+0 | 2.56E-2 | 1.91E-1 | 4.24E-3 | -4.05E+0 | 6.85E-2 |

| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 1.15E+0 | 6.46E-4 | 2.40E-2 | 1.18E+0 | 4.29E-4 | 2.12E-2 | 5.85E-5 | -7.07E-1 | 4.91E-1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 1.15E+0 | 6.46E-4 | 2.40E-2 | 1.18E+0 | 4.29E-4 | 2.12E-2 | 5.85E-5 | -7.07E-1 | 4.91E-1 |
| PENRE | MJ | 4.64E+0 | 4.78E-2 | 1.44E-3 | 4.69E+0 | 3.17E-2 | 3.24E-1 | 1.77E-3 | -2.39E+0 | 2.66E+0 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 4.64E+0 | 4.78E-2 | 1.44E-3 | 4.69E+0 | 3.17E-2 | 3.24E-1 | 1.77E-3 | -2.39E+0 | 2.66E+0 |
| PET | MJ | 5.79E+0 | 4.85E-2 | 2.55E-2 | 5.86E+0 | 3.22E-2 | 3.45E-1 | 1.83E-3 | -3.09E+0 | 3.15E+0 |
| 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 | 3.58E-3 | 5.10E-6 | 1.46E-6 | 3.59E-3 | 3.38E-6 | 3.15E-4 | 2.02E-6 | -1.57E-3 | 2.34E-3 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 3.40E-5 | 1.15E-7 | 2.73E-13 | 3.41E-5 | 7.65E-8 | 5.07E-7 | 2.08E-9 | -2.03E-6 | 3.27E-5 |
| NHWD | kg | 3.18E-2 | 2.79E-3 | 1.05E-6 | 3.46E-2 | 1.85E-3 | 1.20E-2 | 7.41E-3 | -8.15E-3 | 4.77E-2 |
| RWD | kg | 8.90E-6 | 3.06E-7 | 1.10E-13 | 9.20E-6 | 2.03E-7 | 1.17E-6 | 1.08E-8 | -4.08E-6 | 6.51E-6 |
| 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 |