# Environmental Profile

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

Ecochain v3.5.80

| | |
|---|---|
| Product: | 3025594 - PVC Dble Elbow 87°3 GY 40 S/SP BC |
| 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 |

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 | 2.51E-1 | 2.16E-2 | 1.45E-4 | 2.73E-1 | 3.21E-3 | 1.39E-1 | 9.99E-4 | -1.47E-1 | 2.69E-1 |
| GWP-f | kg CO2 eq | 2.82E-1 | 2.15E-2 | 1.46E-4 | 3.04E-1 | 3.21E-3 | 1.02E-1 | 9.98E-4 | -1.53E-1 | 2.57E-1 |
| GWP-b | kg CO2 eq | -3.10E-2 | 1.31E-5 | -1.54E-6 | -3.10E-2 | 1.95E-6 | 3.64E-2 | 1.30E-6 | 6.39E-3 | 1.19E-2 |
| GWP-luluc | kg CO2 eq | 2.65E-4 | 7.62E-6 | 1.49E-7 | 2.73E-4 | 1.14E-6 | 4.17E-5 | 2.52E-8 | -1.56E-4 | 1.60E-4 |
| ODP | kg CFC11 eq | 1.46E-7 | 4.96E-9 | 8.26E-12 | 1.51E-7 | 7.40E-10 | 1.17E-8 | 3.79E-11 | -7.10E-8 | 9.20E-8 |
| AP | mol H+ eq | 1.28E-3 | 1.23E-4 | 1.47E-6 | 1.40E-3 | 1.83E-5 | 1.96E-4 | 9.17E-7 | -5.90E-4 | 1.03E-3 |
| EP-fw | kg P eq | 1.23E-5 | 1.77E-7 | 8.24E-9 | 1.25E-5 | 2.64E-8 | 1.40E-6 | 1.16E-9 | -5.93E-6 | 7.96E-6 |
| EP-m | kg N eq | 2.23E-4 | 4.39E-5 | 1.55E-7 | 2.67E-4 | 6.55E-6 | 4.79E-5 | 5.83E-7 | -1.08E-4 | 2.15E-4 |
| EP-T | mol N eq | 2.39E-3 | 4.84E-4 | 1.85E-6 | 2.87E-3 | 7.21E-5 | 5.28E-4 | 3.67E-6 | -1.16E-3 | 2.31E-3 |
| POCP | kg NMVOC eq | 8.27E-4 | 1.38E-4 | 6.28E-7 | 9.66E-4 | 2.06E-5 | 1.57E-4 | 1.26E-6 | -3.96E-4 | 7.49E-4 |
| ADP-mm | kg Sb eq | 7.60E-6 | 5.57E-7 | 1.97E-8 | 8.18E-6 | 8.31E-8 | 7.67E-7 | 9.06E-10 | -2.94E-6 | 6.09E-6 |
| ADP-f | MJ | 7.03E+0 | 3.31E-1 | 1.36E-3 | 7.36E+0 | 4.93E-2 | 5.25E-1 | 2.77E-3 | -3.61E+0 | 4.33E+0 |
| WDP | m3 depriv. | 4.38E-1 | 1.01E-3 | 5.22E-5 | 4.39E-1 | 1.51E-4 | 2.11E-2 | 1.26E-5 | -2.10E-1 | 2.50E-1 |
| PM | disease inc. | 9.24E-9 | 1.94E-9 | 9.08E-12 | 1.12E-8 | 2.90E-10 | 2.39E-9 | 1.90E-11 | -4.60E-9 | 9.30E-9 |
| IR | kBq U-235 eq | 1.46E-2 | 1.45E-3 | 1.02E-6 | 1.61E-2 | 2.15E-4 | 1.87E-3 | 1.28E-5 | -7.10E-3 | 1.11E-2 |
| ETP-fw | CTUe | 5.66E+0 | 2.69E-1 | 1.21E-2 | 5.94E+0 | 4.00E-2 | 4.19E+0 | 4.63E-2 | -2.60E+0 | 7.61E+0 |
| HTP-c | CTUh | 1.97E-10 | 9.56E-12 | 6.17E-13 | 2.07E-10 | 1.42E-12 | 5.62E-11 | 7.28E-14 | -8.94E-11 | 1.76E-10 |
| HTP-nc | CTUh | 6.17E-9 | 3.20E-10 | 1.57E-11 | 6.50E-9 | 4.77E-11 | 1.43E-9 | 8.80E-12 | -2.77E-9 | 5.22E-9 |
| SQP | Pt | 3.99E+0 | 2.83E-1 | 2.24E-3 | 4.27E+0 | 4.22E-2 | 3.18E-1 | 7.11E-3 | -4.01E+0 | 6.28E-1 |
| Resource use | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
| PERE | MJ | 1.44E+0 | 4.74E-3 | 2.40E-2 | 1.47E+0 | 7.07E-4 | 3.83E-2 | 1.06E-4 | -7.33E-1 | 7.73E-1 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 1.44E+0 | 4.74E-3 | 2.40E-2 | 1.47E+0 | 7.07E-4 | 3.83E-2 | 1.06E-4 | -7.33E-1 | 7.73E-1 |
| PENRE | MJ | 7.54E+0 | 3.51E-1 | 1.44E-3 | 7.90E+0 | 5.23E-2 | 5.58E-1 | 2.93E-3 | -3.89E+0 | 4.62E+0 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 7.54E+0 | 3.51E-1 | 1.44E-3 | 7.90E+0 | 5.23E-2 | 5.58E-1 | 2.93E-3 | -3.89E+0 | 4.62E+0 |
| PET | MJ | 8.98E+0 | 3.56E-1 | 2.55E-2 | 9.36E+0 | 5.30E-2 | 5.96E-1 | 3.04E-3 | -4.62E+0 | 5.39E+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 | 4.83E-3 | 3.74E-5 | 1.46E-6 | 4.87E-3 | 5.58E-6 | 5.80E-4 | 3.41E-6 | -2.39E-3 | 3.07E-3 |

| Output flows and waste categories | Unit | A1 | A2 | A3 | A1-A3 | C2 | C3 | C4 | D | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 5.61E-6 | 8.46E-7 | 2.73E-13 | 6.46E-6 | 1.26E-7 | 8.54E-7 | 3.32E-9 | -3.19E-6 | 4.25E-6 |
| NHWD | kg | 2.79E-2 | 2.05E-2 | 1.05E-6 | 4.84E-2 | 3.06E-3 | 1.93E-2 | 1.22E-2 | -1.25E-2 | 7.05E-2 |
| RWD | kg | 1.30E-5 | 2.25E-6 | 1.10E-13 | 1.53E-5 | 3.35E-7 | 1.99E-6 | 1.81E-8 | -6.37E-6 | 1.12E-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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