

# Environmental Profile

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

Ecochain v3.5.80



Product: 3000294 - U3 Pipe GY KOMO 630 SN8 L=5 SC/CH  
Unit: 1 piece  
Manufacturer: Wavin - NL - Hardenberg - Verified  
Address: J.C. Kellerlaan 3  
7772 SG Hardenberg  
Netherlands

Multi-layer U3 PVC pipes from Wavin made with recycled PVC in the middle layer. The tubes contain at least 40% recycled material.

LCA standard: NMD Bepalingsmethode 1.1 (2022)  
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 - NL - Hardenberg - 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                                                                |    |    |     |     | 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

**ECI** = Environmental Costs Indicator [euro]; **ADPE** = Abiotic depletion potential for non-fossil resources [kg Sb-eq]; **ADPF** = Abiotic depletion potential for fossil resources [kg Sb-eq]; **GWP** = Global warming potential [kg CO2-eq]; **ODP** = Depletion potential of the stratospheric ozone layer [kg CFC-11-eq]; **POCP** = Formation potential of tropospheric ozone photochemical oxidants [kg ethene-eq]; **AP** = Acidification potential of land and water [kg SO2-eq]; **EP** = Eutrophication potential [kg PO4 3--eq]; **HTP** = Human toxicity potential [kg 1,4-DB-eq]; **FAETP** = Freshwater aquatic ecotoxicity potential [kg 1,4-DB-eq]; **MAETP** = Marine aquatic ecotoxicity potential [kg 1,4-DB-eq]; **TETP** = Terrestrial ecotoxicity potential [kg 1,4-DB-eq]; **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 SBK set 1 | Unit         | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4       | D        | Total   |
|--------------------------------|--------------|---------|---------|---------|---------|---------|---------|----------|----------|---------|
| ECI                            | euro         | 21.13   | 1.19    | 2.01    | 24.33   | 0.72    | 15.95   | 0.1      | -5.32    | 35.78   |
| ADPE                           | kg Sb-eq     | 6.98E-3 | 2.52E-4 | 3.66E-4 | 7.60E-3 | 1.56E-4 | 1.28E-3 | 1.61E-6  | -7.39E-4 | 8.30E-3 |
| ADPF                           | kg Sb-eq     | 2.19E+0 | 7.26E-2 | 9.82E-2 | 2.36E+0 | 4.38E-2 | 4.53E-1 | 2.29E-3  | -7.10E-1 | 2.15E+0 |
| GWP                            | kg CO2-eq    | 1.89E+2 | 9.87E+0 | 1.75E+1 | 2.16E+2 | 5.97E+0 | 1.54E+2 | 1.44E+0  | -6.68E+1 | 3.11E+2 |
| ODP                            | kg CFC-11-eq | 9.01E-5 | 1.75E-6 | 1.64E-6 | 9.35E-5 | 1.11E-6 | 1.81E-5 | 5.50E-8  | -1.95E-5 | 9.34E-5 |
| POCP                           | kg ethene-eq | 1.23E-1 | 5.96E-3 | 7.69E-3 | 1.37E-1 | 3.58E-3 | 3.55E-2 | 3.84E-4  | -2.31E-2 | 1.53E-1 |
| AP                             | kg SO2-eq    | 7.32E-1 | 4.34E-2 | 6.85E-2 | 8.44E-1 | 2.57E-2 | 2.59E-1 | 1.22E-3  | -1.28E-1 | 1.00E+0 |
| EP                             | kg PO4 3--eq | 9.58E-2 | 8.53E-3 | 1.08E-2 | 1.15E-1 | 5.13E-3 | 3.91E-2 | 4.82E-4  | -1.59E-2 | 1.44E-1 |
| HTP                            | kg 1,4-DB-eq | 7.06E+1 | 4.16E+0 | 6.59E+0 | 8.14E+1 | 2.55E+0 | 7.01E+1 | 1.25E-1  | -1.20E+1 | 1.42E+2 |
| FAETP                          | kg 1,4-DB-eq | 7.20E+0 | 1.21E-1 | 2.68E-1 | 7.59E+0 | 7.48E-2 | 1.03E+0 | 3.82E-2  | -2.42E-1 | 8.49E+0 |
| MAETP                          | kg 1,4-DB-eq | 5.64E+3 | 4.37E+2 | 1.09E+3 | 7.17E+3 | 2.67E+2 | 3.39E+3 | 4.63E+1  | -7.39E+2 | 1.01E+4 |
| TETP                           | kg 1,4-DB-eq | 2.94E+0 | 1.47E-2 | 4.09E-1 | 3.36E+0 | 9.04E-3 | 2.50E-1 | 4.11E-4  | -7.96E-2 | 3.54E+0 |
| Environmental impact           | Unit         | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4       | D        | Total   |
| GWP-total                      | kg CO2 eq    | 2.00E+2 | 9.96E+0 | 2.06E+1 | 2.30E+2 | 6.02E+0 | 1.57E+2 | 1.68E+0  | -6.83E+1 | 3.27E+2 |
| GWP-f                          | kg CO2 eq    | 1.93E+2 | 9.96E+0 | 1.61E+1 | 2.19E+2 | 6.01E+0 | 1.56E+2 | 1.68E+0  | -6.80E+1 | 3.14E+2 |
| GWP-b                          | kg CO2 eq    | 6.44E+0 | 4.60E-3 | 3.48E+0 | 9.93E+0 | 3.65E-3 | 8.99E-1 | 2.16E-3  | -2.51E-1 | 1.06E+1 |
| GWP-luluc                      | kg CO2 eq    | 7.83E-1 | 3.65E-3 | 9.82E-1 | 1.77E+0 | 2.13E-3 | 7.00E-2 | 4.49E-5  | -2.33E-2 | 1.82E+0 |
| ODP                            | kg CFC11 eq  | 8.94E-5 | 2.20E-6 | 1.95E-6 | 9.35E-5 | 1.39E-6 | 1.87E-5 | 6.83E-8  | -1.97E-5 | 9.39E-5 |
| AP                             | mol H+ eq    | 8.93E-1 | 5.77E-2 | 8.78E-2 | 1.04E+0 | 3.43E-2 | 3.24E-1 | 1.63E-3  | -1.56E-1 | 1.24E+0 |
| EP-fw                          | kg P eq      | 7.99E-3 | 1.00E-4 | 2.30E-4 | 8.32E-3 | 4.95E-5 | 2.32E-3 | 2.03E-6  | -1.30E-3 | 9.39E-3 |
| EP-m                           | kg N eq      | 1.73E-1 | 2.03E-2 | 2.59E-2 | 2.20E-1 | 1.23E-2 | 7.88E-2 | 1.02E-3  | -3.07E-2 | 2.81E-1 |
| EP-T                           | mol N eq     | 1.84E+0 | 2.24E-1 | 2.78E-1 | 2.34E+0 | 1.35E-1 | 8.68E-1 | 6.53E-3  | -3.31E-1 | 3.02E+0 |
| POCP                           | kg NMVOC eq  | 6.21E-1 | 6.41E-2 | 7.84E-2 | 7.64E-1 | 3.86E-2 | 2.61E-1 | 2.22E-3  | -1.16E-1 | 9.50E-1 |
| ADP-mm                         | kg Sb eq     | 6.98E-3 | 2.52E-4 | 3.66E-4 | 7.60E-3 | 1.56E-4 | 1.28E-3 | 1.61E-6  | -7.39E-4 | 8.30E-3 |
| ADP-f                          | MJ           | 4.61E+3 | 1.50E+2 | 1.86E+2 | 4.95E+3 | 9.23E+1 | 8.98E+2 | 4.94E+0  | -1.42E+3 | 4.53E+3 |
| WDP                            | m3 depriv.   | 2.72E+2 | 5.37E-1 | 1.26E+2 | 3.98E+2 | 2.83E-1 | 3.47E+1 | 2.59E-2  | -5.01E+1 | 3.83E+2 |
| PM                             | disease inc. | 8.53E-6 | 8.94E-7 | 1.36E-6 | 1.08E-5 | 5.43E-7 | 4.09E-6 | 3.38E-8  | -9.28E-7 | 1.45E-5 |
| IR                             | kBq U-235 eq | 9.53E+0 | 6.29E-1 | 3.36E-1 | 1.05E+1 | 4.04E-1 | 3.13E+0 | 2.27E-2  | -1.76E+0 | 1.23E+1 |
| ETP-fw                         | CTUe         | 3.10E+3 | 1.34E+2 | 3.11E+2 | 3.54E+3 | 7.50E+1 | 6.62E+3 | 7.28E+1  | -5.37E+2 | 9.77E+3 |
| HTP-c                          | CTUh         | 1.22E-7 | 4.34E-9 | 1.06E-8 | 1.37E-7 | 2.67E-9 | 9.58E-8 | 1.27E-10 | -1.98E-8 | 2.16E-7 |
| HTP-nc                         | CTUh         | 3.72E-6 | 1.46E-7 | 3.25E-7 | 4.19E-6 | 8.94E-8 | 2.34E-6 | 1.40E-8  | -6.34E-7 | 6.00E-6 |
| SQP                            | Pt           | 7.38E+2 | 1.30E+2 | 1.39E+1 | 8.82E+2 | 7.90E+1 | 5.64E+2 | 1.25E+1  | -1.03E+2 | 1.43E+3 |

| Resource use                      | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|---------|---------|---------|---------|---------|----------|---------|
| PERE                              | MJ   | 2.24E+2 | 1.88E+0 | 5.62E+2 | 7.88E+2 | 1.32E+0 | 6.40E+1 | 1.79E-1 | -3.75E+1 | 8.16E+2 |
| PERM                              | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PERT                              | MJ   | 2.24E+2 | 1.88E+0 | 5.62E+2 | 7.88E+2 | 1.32E+0 | 6.40E+1 | 1.79E-1 | -3.75E+1 | 8.16E+2 |
| PENRE                             | MJ   | 4.95E+3 | 1.59E+2 | 2.02E+2 | 5.31E+3 | 9.80E+1 | 9.55E+2 | 5.25E+0 | -1.54E+3 | 4.82E+3 |
| PENRM                             | MJ   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0       |
| PENRT                             | MJ   | 4.95E+3 | 1.59E+2 | 2.02E+2 | 5.31E+3 | 9.80E+1 | 9.55E+2 | 5.25E+0 | -1.54E+3 | 4.82E+3 |
| PET                               | MJ   | 5.17E+3 | 1.61E+2 | 7.64E+2 | 6.10E+3 | 9.94E+1 | 1.02E+3 | 5.42E+0 | -1.58E+3 | 5.64E+3 |
| 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   | 3.12E+0 | 1.83E-2 | 2.97E+0 | 6.11E+0 | 1.04E-2 | 9.51E-1 | 6.07E-3 | -5.62E-1 | 6.51E+0 |
| Output flows and waste categories | Unit | A1      | A2      | A3      | A1-A3   | C2      | C3      | C4      | D        | Total   |
| HWD                               | kg   | 3.70E-3 | 3.81E-4 | 2.61E-4 | 4.34E-3 | 2.36E-4 | 1.44E-3 | 5.94E-6 | -1.34E-3 | 4.69E-3 |
| NHWD                              | kg   | 1.80E+1 | 9.53E+0 | 3.77E-1 | 2.79E+1 | 5.72E+0 | 3.32E+1 | 2.30E+1 | -2.76E+0 | 8.69E+1 |
| RWD                               | kg   | 8.85E-3 | 9.86E-4 | 4.69E-4 | 1.03E-2 | 6.28E-4 | 3.36E-3 | 3.23E-5 | -1.64E-3 | 1.27E-2 |
| 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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