Environmental Profile

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

Ecochain v3.5.80

Product:	3000459 - U3 Pipe GY KOMO 500 SN4 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

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

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

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	10.93	0.61	1.02	12.56	0.36	8.05	0.05	-2.75	18.28
ADPE	kg Sb-eq	3.17E-3	1.30E-4	1.86E-4	3.49E-3	7.88E-5	6.53E-4	8.14E-7	-3.66E-4	3.85E-3
ADPF	kg Sb-eq	1.11E+0	3.73E-2	4.98E-2	1.20E+0	2.22E-2	2.30E-1	1.16E-3	-3.58E-1	1.09E+0
GWP	kg CO2-eq	9.69E+1	5.07E+0	8.85E+0	1.11E+2	3.02E+0	7.74E+1	7.29E-1	-3.38E+1	1.58E+2
ODP	kg CFC-11-eq	4.57E-5	9.00E-7	8.32E-7	4.75E-5	5.60E-7	9.20E-6	2.78E-8	-9.91E-6	4.73E-5
POCP	kg ethene-eq	6.35E-2	3.06E-3	3.90E-3	7.05E-2	1.81E-3	1.82E-2	1.94E-4	-1.22E-2	7.84E-2
AP	kg SO2-eq	3.79E-1	2.23E-2	3.47E-2	4.36E-1	1.30E-2	1.32E-1	6.15E-4	-6.86E-2	5.13E-1
EP	kg PO4 3−-eq	5.09E-2	4.38E-3	5.48E-3	6.08E-2	2.60E-3	2.00E-2	2.42E-4	-9.29E-3	7.44E-2
HTP	kg 1,4-DB-eq	3.64E+1	2.14E+0	3.34E+0	4.19E+1	1.29E+0	3.56E+1	6.32E-2	-6.40E+0	7.25E+1
FAETP	kg 1,4-DB-eq	4.37E+0	6.24E-2	1.36E-1	4.56E+0	3.79E-2	5.25E-1	1.93E-2	-1.30E-1	5.02E+0
MAETP	kg 1,4-DB-eq	2.90E+3	2.24E+2	5.55E+2	3.68E+3	1.35E+2	1.72E+3	2.34E+1	-3.86E+2	5.18E+3
TETP	kg 1,4-DB-eq	1.81E+0	7.55E-3	2.08E-1	2.02E+0	4.58E-3	1.27E-1	2.08E-4	-4.24E-2	2.11E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	8.90E+1	5.12E+0	1.04E+1	1.05E+2	3.05E+0	9.21E+1	8.49E-1	-3.45E+1	1.66E+2
GWP-f	kg CO2 eq	9.89E+1	5.12E+0	8.17E+0	1.12E+2	3.05E+0	7.80E+1	8.48E-1	-3.44E+1	1.60E+2
GWP-b	kg CO2 eq	-1.03E+1	2.36E-3	1.77E+0	-8.54E+0	1.85E-3	1.40E+1	1.09E-3	-1.28E-1	5.37E+0
GWP-luluc	kg CO2 eq	4.87E-1	1.88E-3	4.98E-1	9.87E-1	1.08E-3	3.55E-2	2.27E-5	-1.37E-2	1.01E+0
ODP	kg CFC11 eq	4.53E-5	1.13E-6	9.87E-7	4.75E-5	7.02E-7	9.49E-6	3.45E-8	-1.00E-5	4.76E-5
AP	mol H+ eq	4.64E-1	2.97E-2	4.45E-2	5.38E-1	1.73E-2	1.66E-1	8.24E-4	-8.49E-2	6.37E-1
EP-fw	kg P eq	4.14E-3	5.16E-5	1.17E-4	4.31E-3	2.51E-5	1.18E-3	1.03E-6	-6.81E-4	4.83E-3
EP-m	kg N eq	9.23E-2	1.05E-2	1.31E-2	1.16E-1	6.21E-3	4.05E-2	5.13E-4	-1.73E-2	1.46E-1
EP-T	mol N eq	9.79E-1	1.15E-1	1.41E-1	1.24E+0	6.84E-2	4.46E-1	3.30E-3	-1.95E-1	1.56E+0
POCP	kg NMVOC eq	3.25E-1	3.29E-2	3.98E-2	3.98E-1	1.96E-2	1.34E-1	1.12E-3	-6.37E-2	4.89E-1
ADP-mm	kg Sb eq	3.17E-3	1.30E-4	1.86E-4	3.49E-3	7.88E-5	6.52E-4	8.14E-7	-3.66E-4	3.85E-3
ADP-f	MJ	2.34E+3	7.72E+1	9.45E+1	2.51E+3	4.67E+1	4.56E+2	2.50E+0	-7.15E+2	2.30E+3
WDP	m3 depriv.	1.38E+2	2.76E-1	6.39E+1	2.02E+2	1.43E-1	1.76E+1	1.31E-2	-2.55E+1	1.95E+2
PM	disease inc.	4.97E-6	4.60E-7	6.91E-7	6.12E-6	2.75E-7	2.09E-6	1.71E-8	-5.75E-7	7.92E-6
IR	kBq U-235 eq	4.89E+0	3.23E-1	1.71E-1	5.38E+0	2.04E-1	1.59E+0	1.15E-2	-9.06E-1	6.28E+0
ETP-fw	CTUe	1.62E+3	6.88E+1	1.58E+2	1.85E+3	3.80E+1	3.35E+3	3.69E+1	-3.27E+2	4.95E+3
HTP-c	CTUh	6.70E-8	2.23E-9	5.38E-9	7.47E-8	1.35E-9	4.95E-8	6.40E-11	-1.09E-8	1.15E-7
HTP-nc	CTUh	1.93E-6	7.53E-8	1.65E-7	2.17E-6	4.53E-8	1.19E-6	7.09E-9	-3.46E-7	3.07E-6
SQP	Pt	1.60E+3	6.70E+1	7.07E+0	1.67E+3	4.00E+1	2.87E+2	6.33E+0	-3.13E+2	1.69E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.97E+2	9.66E-1	2.85E+2	5.83E+2	6.71E-1	3.25E+1	9.01E-2	-7.15E+1	5.45E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.97E+2	9.66E-1	2.85E+2	5.83E+2	6.71E-1	3.25E+1	9.01E-2	-7.15E+1	5.45E+2
PENRE	MJ	2.51E+3	8.19E+1	1.02E+2	2.70E+3	4.96E+1	4.85E+2	2.65E+0	-7.79E+2	2.45E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.51E+3	8.19E+1	1.02E+2	2.70E+3	4.96E+1	4.85E+2	2.65E+0	-7.79E+2	2.45E+3
PET	MJ	2.81E+3	8.29E+1	3.88E+2	3.28E+3	5.03E+1	5.18E+2	2.74E+0	-8.50E+2	3.00E+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	1.60E+0	9.40E-3	1.51E+0	3.12E+0	5.29E-3	4.83E-1	3.06E-3	-2.87E-1	3.32E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.96E-3	1.96E-4	1.32E-4	2.28E-3	1.20E-4	7.35E-4	3.00E-6	-6.82E-4	2.46E-3
NHWD	kg	9.66E+0	4.90E+0	1.91E-1	1.47E+1	2.90E+0	1.71E+1	1.16E+1	-1.51E+0	4.48E+1
RWD	kg	4.53E-3	5.07E-4	2.38E-4	5.27E-3	3.18E-4	1.71E-3	1.63E-5	-8.44E-4	6.47E-3
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