Environmental Profile

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

Ecochain v3.5.80

Product:	3000410 - U3 Pipe GY KOMO 75x3 L=4
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	0.28	0.01	0.02	0.32	0.01	0.19	0	-0.08	0.44
ADPE	kg Sb-eq	6.96E-5	3.14E-6	4.48E-6	7.72E-5	1.90E-6	1.58E-5	1.96E-8	-1.17E-5	8.32E-5
ADPF	kg Sb-eq	2.87E-2	9.03E-4	1.20E-3	3.08E-2	5.34E-4	5.56E-3	2.78E-5	-1.01E-2	2.68E-2
GWP	kg CO2-eq	2.48E+0	1.23E-1	2.14E-1	2.82E+0	7.28E-2	1.84E+0	1.75E-2	-9.33E-1	3.82E+0
ODP	kg CFC-11-eq	1.21E-6	2.18E-8	2.01E-8	1.26E-6	1.35E-8	2.22E-7	6.68E-10	-3.17E-7	1.18E-6
POCP	kg ethene-eq	1.61E-3	7.41E-5	9.41E-5	1.78E-3	4.37E-5	4.38E-4	4.67E-6	-3.69E-4	1.90E-3
AP	kg SO2-eq	9.68E-3	5.40E-4	8.38E-4	1.11E-2	3.13E-4	3.19E-3	1.48E-5	-2.14E-3	1.24E-2
EP	kg PO4 3−-eq	1.29E-3	1.06E-4	1.32E-4	1.53E-3	6.26E-5	4.83E-4	5.77E-6	-2.83E-4	1.80E-3
HTP	kg 1,4-DB-eq	9.41E-1	5.17E-2	8.07E-2	1.07E+0	3.11E-2	8.61E-1	1.52E-3	-2.02E-1	1.76E+0
FAETP	kg 1,4-DB-eq	1.07E-1	1.51E-3	3.28E-3	1.11E-1	9.12E-4	1.27E-2	4.65E-4	-4.20E-3	1.21E-1
MAETP	kg 1,4-DB-eq	7.26E+1	5.43E+0	1.34E+1	9.14E+1	3.26E+0	4.16E+1	5.64E-1	-1.24E+1	1.24E+2
TETP	kg 1,4-DB-eq	4.40E-2	1.83E-4	5.01E-3	4.92E-2	1.10E-4	3.06E-3	5.00E-6	-1.38E-3	5.10E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.27E+0	1.24E-1	2.52E-1	2.64E+0	7.34E-2	2.22E+0	2.04E-2	-9.55E-1	4.01E+0
GWP-f	kg CO2 eq	2.54E+0	1.24E-1	1.97E-1	2.86E+0	7.34E-2	1.86E+0	2.04E-2	-9.50E-1	3.86E+0
GWP-b	kg CO2 eq	-2.81E-1	5.72E-5	4.26E-2	-2.39E-1	4.46E-5	3.68E-1	2.62E-5	-4.21E-3	1.26E-1
GWP-luluc	kg CO2 eq	1.19E-2	4.54E-5	1.20E-2	2.40E-2	2.60E-5	8.58E-4	5.48E-7	-4.38E-4	2.44E-2
ODP	kg CFC11 eq	1.20E-6	2.73E-8	2.38E-8	1.25E-6	1.69E-8	2.29E-7	8.31E-10	-3.19E-7	1.18E-6
AP	mol H+ eq	1.18E-2	7.18E-4	1.08E-3	1.36E-2	4.18E-4	4.00E-3	1.98E-5	-2.64E-3	1.54E-2
EP-fw	kg P eq	1.07E-4	1.25E-6	2.82E-6	1.11E-4	6.04E-7	2.85E-5	2.48E-8	-2.23E-5	1.18E-4
EP-m	kg N eq	2.32E-3	2.53E-4	3.17E-4	2.89E-3	1.50E-4	9.76E-4	1.22E-5	-5.16E-4	3.51E-3
EP-T	mol N eq	2.47E-2	2.79E-3	3.40E-3	3.09E-2	1.65E-3	1.08E-2	7.94E-5	-5.79E-3	3.76E-2
POCP	kg NMVOC eq	8.20E-3	7.97E-4	9.59E-4	9.96E-3	4.71E-4	3.23E-3	2.70E-5	-1.90E-3	1.18E-2
ADP-mm	kg Sb eq	6.96E-5	3.14E-6	4.48E-6	7.72E-5	1.90E-6	1.58E-5	1.96E-8	-1.17E-5	8.32E-5
ADP-f	MJ	6.06E+1	1.87E+0	2.28E+0	6.48E+1	1.13E+0	1.10E+1	6.01E-2	-2.05E+1	5.65E+1
WDP	m3 depriv.	3.66E+0	6.68E-3	1.54E+0	5.21E+0	3.46E-3	4.24E-1	3.21E-4	-8.46E-1	4.79E+0
PM	disease inc.	1.22E-7	1.11E-8	1.67E-8	1.50E-7	6.62E-9	5.04E-8	4.12E-10	-1.78E-8	1.90E-7
IR	kBq U-235 eq	1.26E-1	7.83E-3	4.12E-3	1.38E-1	4.92E-3	3.84E-2	2.76E-4	-2.91E-2	1.52E-1
ETP-fw	CTUe	4.18E+1	1.67E+0	3.80E+0	4.73E+1	9.15E-1	8.10E+1	8.91E-1	-1.02E+1	1.20E+2
HTP-c	CTUh	1.74E-9	5.40E-11	1.30E-10	1.93E-9	3.25E-11	1.20E-9	1.54E-12	-3.46E-10	2.82E-9
HTP-nc	CTUh	5.06E-8	1.82E-9	3.97E-9	5.64E-8	1.09E-9	2.88E-8	1.71E-10	-1.13E-8	7.51E-8
SQP	Pt	4.16E+1	1.62E+0	1.71E-1	4.34E+1	9.64E-1	6.92E+0	1.52E-1	-8.51E+0	4.29E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	7.78E+0	2.34E-2	6.88E+0	1.47E+1	1.62E-2	7.84E-1	2.17E-3	-2.01E+0	1.35E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	7.78E+0	2.34E-2	6.88E+0	1.47E+1	1.62E-2	7.84E-1	2.17E-3	-2.01E+0	1.35E+1
PENRE	MJ	6.51E+1	1.98E+0	2.47E+0	6.95E+1	1.20E+0	1.17E+1	6.38E-2	-2.22E+1	6.03E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	6.51E+1	1.98E+0	2.47E+0	6.95E+1	1.20E+0	1.17E+1	6.38E-2	-2.22E+1	6.03E+1
PET	MJ	7.28E+1	2.01E+0	9.35E+0	8.42E+1	1.21E+0	1.25E+1	6.60E-2	-2.42E+1	7.37E+1
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	4.18E-2	2.28E-4	3.63E-2	7.83E-2	1.27E-4	1.16E-2	7.37E-5	-9.29E-3	8.09E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.06E-5	4.73E-6	3.19E-6	5.86E-5	2.88E-6	1.77E-5	7.22E-8	-1.89E-5	6.03E-5
NHWD	kg	2.49E-1	1.18E-1	4.61E-3	3.72E-1	6.98E-2	4.12E-1	2.79E-1	-4.88E-2	1.08E+0
RWD	kg	1.15E-4	1.23E-5	5.74E-6	1.33E-4	7.66E-6	4.13E-5	3.93E-7	-2.66E-5	1.56E-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