Environmental Profile

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

Ecochain v3.5.80

Product:	3000421 - U3 Pipe GY KOMO 110 L=2 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	0.24	0.01	0.02	0.27	0.01	0.16	0	-0.07	0.38
ADPE	kg Sb-eq	5.91E-5	2.66E-6	3.75E-6	6.55E-5	1.59E-6	1.32E-5	1.64E-8	-9.91E-6	7.04E-5
ADPF	kg Sb-eq	2.43E-2	7.66E-4	1.00E-3	2.61E-2	4.47E-4	4.66E-3	2.33E-5	-8.53E-3	2.27E-2
GWP	kg CO2-eq	2.12E+0	1.04E-1	1.79E-1	2.40E+0	6.09E-2	1.54E+0	1.47E-2	-7.86E-1	3.24E+0
ODP	kg CFC-11-eq	1.02E-6	1.85E-8	1.68E-8	1.06E-6	1.13E-8	1.86E-7	5.59E-10	-2.67E-7	9.86E-7
POCP	kg ethene-eq	1.39E-3	6.28E-5	7.87E-5	1.53E-3	3.65E-5	3.70E-4	3.90E-6	-3.20E-4	1.62E-3
AP	kg SO2-eq	8.35E-3	4.58E-4	7.01E-4	9.50E-3	2.62E-4	2.68E-3	1.24E-5	-1.87E-3	1.06E-2
EP	kg PO4 3−-eq	1.13E-3	8.99E-5	1.11E-4	1.34E-3	5.23E-5	4.08E-4	4.82E-6	-2.61E-4	1.54E-3
HTP	kg 1,4-DB-eq	8.08E-1	4.38E-2	6.74E-2	9.19E-1	2.60E-2	7.22E-1	1.27E-3	-1.76E-1	1.49E+0
FAETP	kg 1,4-DB-eq	1.04E-1	1.28E-3	2.74E-3	1.08E-1	7.63E-4	1.06E-2	3.89E-4	-3.65E-3	1.16E-1
MAETP	kg 1,4-DB-eq	6.23E+1	4.60E+0	1.12E+1	7.81E+1	2.72E+0	3.49E+1	4.72E-1	-1.06E+1	1.06E+2
TETP	kg 1,4-DB-eq	4.32E-2	1.55E-4	4.19E-3	4.76E-2	9.22E-5	2.56E-3	4.18E-6	-1.19E-3	4.90E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.68E+0	1.05E-1	2.10E-1	2.00E+0	6.14E-2	2.12E+0	1.71E-2	-8.05E-1	3.39E+0
GWP-f	kg CO2 eq	2.16E+0	1.05E-1	1.65E-1	2.43E+0	6.13E-2	1.55E+0	1.71E-2	-8.01E-1	3.27E+0
GWP-b	kg CO2 eq	-4.94E-1	4.85E-5	3.56E-2	-4.58E-1	3.73E-5	5.66E-1	2.19E-5	-3.53E-3	1.05E-1
GWP-luluc	kg CO2 eq	1.18E-2	3.85E-5	1.00E-2	2.19E-2	2.17E-5	7.18E-4	4.58E-7	-4.04E-4	2.22E-2
ODP	kg CFC11 eq	1.01E-6	2.32E-8	1.99E-8	1.05E-6	1.41E-8	1.92E-7	6.94E-10	-2.68E-7	9.92E-7
AP	mol H+ eq	1.02E-2	6.09E-4	8.98E-4	1.17E-2	3.49E-4	3.37E-3	1.66E-5	-2.33E-3	1.31E-2
EP-fw	kg P eq	9.20E-5	1.06E-6	2.36E-6	9.54E-5	5.05E-7	2.38E-5	2.07E-8	-1.91E-5	1.01E-4
EP-m	kg N eq	2.05E-3	2.15E-4	2.65E-4	2.52E-3	1.25E-4	8.27E-4	1.02E-5	-4.66E-4	3.02E-3
EP-T	mol N eq	2.18E-2	2.37E-3	2.84E-3	2.70E-2	1.38E-3	9.12E-3	6.64E-5	-5.39E-3	3.22E-2
POCP	kg NMVOC eq	7.15E-3	6.75E-4	8.02E-4	8.63E-3	3.94E-4	2.74E-3	2.26E-5	-1.69E-3	1.01E-2
ADP-mm	kg Sb eq	5.91E-5	2.66E-6	3.75E-6	6.55E-5	1.59E-6	1.32E-5	1.64E-8	-9.91E-6	7.04E-5
ADP-f	MJ	5.13E+1	1.58E+0	1.91E+0	5.48E+1	9.42E-1	9.23E+0	5.03E-2	-1.72E+1	4.78E+1
WDP	m3 depriv.	3.08E+0	5.66E-3	1.29E+0	4.38E+0	2.89E-3	3.55E-1	2.69E-4	-7.10E-1	4.03E+0
PM	disease inc.	1.16E-7	9.43E-9	1.39E-8	1.39E-7	5.54E-9	4.24E-8	3.44E-10	-1.69E-8	1.71E-7
IR	kBq U-235 eq	1.08E-1	6.64E-3	3.44E-3	1.18E-1	4.12E-3	3.22E-2	2.31E-4	-2.47E-2	1.30E-1
ETP-fw	CTUe	3.64E+1	1.41E+0	3.18E+0	4.10E+1	7.65E-1	6.77E+1	7.44E-1	-9.57E+0	1.01E+2
HTP-c	CTUh	1.56E-9	4.58E-11	1.08E-10	1.72E-9	2.72E-11	1.02E-9	1.29E-12	-3.06E-10	2.46E-9
HTP-nc	CTUh	4.35E-8	1.54E-9	3.32E-9	4.83E-8	9.12E-10	2.41E-8	1.43E-10	-9.90E-9	6.36E-8
SQP	Pt	5.81E+1	1.37E+0	1.43E-1	5.97E+1	8.06E-1	5.80E+0	1.27E-1	-1.21E+1	5.43E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.00E+1	1.98E-2	5.75E+0	1.58E+1	1.35E-2	6.56E-1	1.81E-3	-2.68E+0	1.38E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.00E+1	1.98E-2	5.75E+0	1.58E+1	1.35E-2	6.56E-1	1.81E-3	-2.68E+0	1.38E+1
PENRE	MJ	5.51E+1	1.68E+0	2.07E+0	5.88E+1	1.00E+0	9.82E+0	5.33E-2	-1.87E+1	5.10E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.51E+1	1.68E+0	2.07E+0	5.88E+1	1.00E+0	9.82E+0	5.33E-2	-1.87E+1	5.10E+1
PET	MJ	6.51E+1	1.70E+0	7.82E+0	7.46E+1	1.01E+0	1.05E+1	5.52E-2	-2.14E+1	6.48E+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	3.57E-2	1.93E-4	3.04E-2	6.62E-2	1.07E-4	9.75E-3	6.16E-5	-7.83E-3	6.83E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.42E-5	4.01E-6	2.67E-6	5.09E-5	2.41E-6	1.49E-5	6.04E-8	-1.60E-5	5.22E-5
NHWD	kg	2.21E-1	1.00E-1	3.85E-3	3.25E-1	5.84E-2	3.49E-1	2.33E-1	-4.30E-2	9.23E-1
RWD	kg	9.92E-5	1.04E-5	4.80E-6	1.14E-4	6.40E-6	3.47E-5	3.29E-7	-2.26E-5	1.33E-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

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