Environmental Profile

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

Ecochain v3.5.80

Product:	3000395 - U3 Pipe GY KOMO 40x3 L=5
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	0.22	0.01	0.02	0.24	0.01	0.13	0	-0.07	0.31
ADPE	kg Sb-eq	5.28E-5	2.10E-6	3.00E-6	5.79E-5	1.27E-6	1.05E-5	1.32E-8	-1.21E-5	5.77E-5
ADPF	kg Sb-eq	2.20E-2	6.04E-4	8.05E-4	2.35E-2	3.58E-4	3.71E-3	1.87E-5	-8.85E-3	1.87E-2
GWP	kg CO2-eq	1.88E+0	8.21E-2	1.43E-1	2.11E+0	4.87E-2	1.24E+0	1.18E-2	-7.89E-1	2.61E+0
ODP	kg CFC-11-eq	9.55E-7	1.46E-8	1.34E-8	9.83E-7	9.03E-9	1.48E-7	4.48E-10	-3.15E-7	8.27E-7
POCP	kg ethene-eq	1.21E-3	4.95E-5	6.30E-5	1.32E-3	2.92E-5	2.92E-4	3.14E-6	-3.41E-4	1.31E-3
AP	kg SO2-eq	7.29E-3	3.61E-4	5.61E-4	8.21E-3	2.10E-4	2.13E-3	9.94E-6	-2.04E-3	8.51E-3
EP	kg PO4 3−-eq	9.89E-4	7.09E-5	8.86E-5	1.15E-3	4.19E-5	3.22E-4	3.86E-6	-2.57E-4	1.26E-3
HTP	kg 1,4-DB-eq	7.26E-1	3.46E-2	5.40E-2	8.15E-1	2.08E-2	5.75E-1	1.02E-3	-1.95E-1	1.22E+0
FAETP	kg 1,4-DB-eq	1.52E-1	1.01E-3	2.20E-3	1.55E-1	6.10E-4	8.48E-3	3.13E-4	-4.14E-3	1.61E-1
MAETP	kg 1,4-DB-eq	5.26E+1	3.63E+0	8.97E+0	6.52E+1	2.18E+0	2.79E+1	3.80E-1	-1.23E+1	8.34E+1
TETP	kg 1,4-DB-eq	6.53E-2	1.22E-4	3.36E-3	6.87E-2	7.38E-5	2.05E-3	3.36E-6	-1.37E-3	6.95E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.79E+0	8.29E-2	1.69E-1	2.05E+0	4.92E-2	1.44E+0	1.38E-2	-8.10E-1	2.73E+0
GWP-f	kg CO2 eq	1.91E+0	8.28E-2	1.32E-1	2.13E+0	4.91E-2	1.25E+0	1.38E-2	-8.05E-1	2.63E+0
GWP-b	kg CO2 eq	-1.37E-1	3.82E-5	2.85E-2	-1.08E-1	2.98E-5	1.90E-1	1.76E-5	-4.25E-3	7.81E-2
GWP-luluc	kg CO2 eq	1.75E-2	3.03E-5	8.04E-3	2.56E-2	1.74E-5	5.74E-4	3.71E-7	-4.16E-4	2.57E-2
ODP	kg CFC11 eq	9.44E-7	1.83E-8	1.59E-8	9.78E-7	1.13E-8	1.53E-7	5.57E-10	-3.14E-7	8.29E-7
AP	mol H+ eq	8.90E-3	4.80E-4	7.20E-4	1.01E-2	2.80E-4	2.67E-3	1.33E-5	-2.49E-3	1.06E-2
EP-fw	kg P eq	8.21E-5	8.35E-7	1.89E-6	8.48E-5	4.04E-7	1.90E-5	1.67E-8	-2.24E-5	8.18E-5
EP-m	kg N eq	1.76E-3	1.69E-4	2.12E-4	2.14E-3	1.00E-4	6.50E-4	8.16E-6	-4.63E-4	2.44E-3
EP-T	mol N eq	1.81E-2	1.87E-3	2.27E-3	2.22E-2	1.10E-3	7.17E-3	5.33E-5	-5.07E-3	2.55E-2
POCP	kg NMVOC eq	6.02E-3	5.33E-4	6.42E-4	7.19E-3	3.15E-4	2.15E-3	1.81E-5	-1.71E-3	7.97E-3
ADP-mm	kg Sb eq	5.28E-5	2.10E-6	3.00E-6	5.79E-5	1.27E-6	1.05E-5	1.32E-8	-1.21E-5	5.76E-5
ADP-f	MJ	4.66E+1	1.25E+0	1.53E+0	4.94E+1	7.54E-1	7.36E+0	4.03E-2	-1.81E+1	3.94E+1
WDP	m3 depriv.	2.88E+0	4.47E-3	1.03E+0	3.92E+0	2.31E-3	2.84E-1	2.27E-4	-8.64E-1	3.34E+0
PM	disease inc.	8.36E-8	7.43E-9	1.12E-8	1.02E-7	4.43E-9	3.36E-8	2.76E-10	-1.62E-8	1.24E-7
IR	kBq U-235 eq	9.66E-2	5.23E-3	2.76E-3	1.05E-1	3.29E-3	2.56E-2	1.85E-4	-2.89E-2	1.05E-1
ETP-fw	CTUe	3.23E+1	1.11E+0	2.55E+0	3.60E+1	6.12E-1	5.41E+1	5.95E-1	-9.34E+0	8.20E+1
HTP-c	CTUh	1.32E-9	3.61E-11	8.69E-11	1.44E-9	2.18E-11	8.05E-10	1.05E-12	-3.35E-10	1.94E-9
HTP-nc	CTUh	3.93E-8	1.22E-9	2.66E-9	4.31E-8	7.30E-10	1.92E-8	1.15E-10	-1.12E-8	5.20E-8
SQP	Pt	2.26E+1	1.08E+0	1.14E-1	2.38E+1	6.45E-1	4.62E+0	1.02E-1	-4.83E+0	2.44E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.65E+0	1.56E-2	4.61E+0	9.27E+0	1.08E-2	5.24E-1	1.45E-3	-1.28E+0	8.53E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.65E+0	1.56E-2	4.61E+0	9.27E+0	1.08E-2	5.24E-1	1.45E-3	-1.28E+0	8.53E+0
PENRE	MJ	5.00E+1	1.33E+0	1.66E+0	5.30E+1	8.00E-1	7.83E+0	4.28E-2	-1.96E+1	4.20E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.00E+1	1.33E+0	1.66E+0	5.30E+1	8.00E-1	7.83E+0	4.28E-2	-1.96E+1	4.20E+1
PET	MJ	5.47E+1	1.34E+0	6.26E+0	6.23E+1	8.11E-1	8.36E+0	4.42E-2	-2.09E+1	5.06E+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	3.30E-2	1.52E-4	2.43E-2	5.75E-2	8.53E-5	7.76E-3	4.94E-5	-9.29E-3	5.61E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.81E-5	3.16E-6	2.14E-6	4.35E-5	1.93E-6	1.18E-5	4.86E-8	-1.61E-5	4.12E-5
NHWD	kg	1.87E-1	7.92E-2	3.09E-3	2.69E-1	4.67E-2	2.74E-1	1.87E-1	-4.78E-2	7.29E-1
RWD	kg	8.71E-5	8.20E-6	3.84E-6	9.92E-5	5.13E-6	2.76E-5	2.64E-7	-2.60E-5	1.06E-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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