Environmental Profile

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

Ecochain v3.5.80

Product:	3000274 - U3 Pipe GY KOMO 160 SN8 L=10 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	2.58	0.14	0.23	2.95	0.08	1.79	0.01	-0.73	4.1
ADPE	kg Sb-eq	6.43E-4	2.90E-5	4.16E-5	7.13E-4	1.76E-5	1.46E-4	1.82E-7	-1.09E-4	7.69E-4
ADPF	kg Sb-eq	2.66E-1	8.34E-3	1.12E-2	2.85E-1	4.96E-3	5.16E-2	2.58E-4	-9.41E-2	2.48E-1
GWP	kg CO2-eq	2.29E+1	1.13E+0	1.98E+0	2.60E+1	6.76E-1	1.71E+1	1.63E-1	-8.64E+0	3.53E+1
ODP	kg CFC-11-eq	1.13E-5	2.01E-7	1.86E-7	1.16E-5	1.25E-7	2.06E-6	6.21E-9	-2.94E-6	1.09E-5
POCP	kg ethene-eq	1.48E-2	6.85E-4	8.74E-4	1.63E-2	4.06E-4	4.06E-3	4.34E-5	-3.37E-3	1.75E-2
AP	kg SO2-eq	8.89E-2	4.99E-3	7.78E-3	1.02E-1	2.91E-3	2.95E-2	1.38E-4	-1.95E-2	1.15E-1
EP	kg PO4 3−-eq	1.18E-2	9.80E-4	1.23E-3	1.40E-2	5.81E-4	4.47E-3	5.36E-5	-2.52E-3	1.66E-2
HTP	kg 1,4-DB-eq	8.66E+0	4.78E-1	7.49E-1	9.88E+0	2.89E-1	7.99E+0	1.41E-2	-1.85E+0	1.63E+1
FAETP	kg 1,4-DB-eq	9.87E-1	1.39E-2	3.05E-2	1.03E+0	8.47E-3	1.18E-1	4.32E-3	-3.83E-2	1.12E+0
MAETP	kg 1,4-DB-eq	6.67E+2	5.02E+1	1.24E+2	8.42E+2	3.03E+1	3.86E+2	5.24E+0	-1.14E+2	1.15E+3
TETP	kg 1,4-DB-eq	4.08E-1	1.69E-3	4.65E-2	4.57E-1	1.02E-3	2.84E-2	4.65E-5	-1.26E-2	4.73E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.20E+1	1.15E+0	2.34E+0	2.55E+1	6.82E-1	1.95E+1	1.90E-1	-8.85E+0	3.71E+1
GWP-f	kg CO2 eq	2.34E+1	1.14E+0	1.83E+0	2.64E+1	6.82E-1	1.72E+1	1.90E-1	-8.80E+0	3.57E+1
GWP-b	kg CO2 eq	-1.48E+0	5.28E-4	3.96E-1	-1.08E+0	4.14E-4	2.29E+0	2.44E-4	-3.91E-2	1.17E+0
GWP-luluc	kg CO2 eq	1.10E-1	4.19E-4	1.12E-1	2.22E-1	2.41E-4	7.97E-3	5.09E-6	-3.90E-3	2.26E-1
ODP	kg CFC11 eq	1.11E-5	2.53E-7	2.21E-7	1.16E-5	1.57E-7	2.13E-6	7.72E-9	-2.95E-6	1.09E-5
AP	mol H+ eq	1.09E-1	6.64E-3	9.98E-3	1.25E-1	3.88E-3	3.70E-2	1.84E-4	-2.39E-2	1.42E-1
EP-fw	kg P eq	9.87E-4	1.15E-5	2.62E-5	1.02E-3	5.61E-6	2.64E-4	2.30E-7	-2.05E-4	1.09E-3
EP-m	kg N eq	2.12E-2	2.34E-3	2.94E-3	2.65E-2	1.39E-3	9.02E-3	1.13E-4	-4.64E-3	3.24E-2
EP-T	mol N eq	2.25E-1	2.58E-2	3.15E-2	2.82E-1	1.53E-2	9.95E-2	7.38E-4	-5.13E-2	3.46E-1
POCP	kg NMVOC eq	7.50E-2	7.36E-3	8.91E-3	9.12E-2	4.38E-3	2.99E-2	2.51E-4	-1.72E-2	1.09E-1
ADP-mm	kg Sb eq	6.43E-4	2.90E-5	4.16E-5	7.13E-4	1.76E-5	1.46E-4	1.82E-7	-1.09E-4	7.69E-4
ADP-f	MJ	5.61E+2	1.73E+1	2.12E+1	5.99E+2	1.05E+1	1.02E+2	5.58E-1	-1.90E+2	5.23E+2
WDP	m3 depriv.	3.39E+1	6.17E-2	1.43E+1	4.83E+1	3.21E-2	3.94E+0	2.98E-3	-7.84E+0	4.44E+1
PM	disease inc.	1.08E-6	1.03E-7	1.55E-7	1.34E-6	6.15E-8	4.67E-7	3.82E-9	-1.56E-7	1.71E-6
IR	kBq U-235 eq	1.16E+0	7.23E-2	3.82E-2	1.27E+0	4.57E-2	3.56E-1	2.56E-3	-2.69E-1	1.40E+0
ETP-fw	CTUe	3.82E+2	1.54E+1	3.53E+1	4.33E+2	8.50E+0	7.52E+2	8.27E+0	-8.97E+1	1.11E+3
HTP-c	CTUh	1.57E-8	4.99E-10	1.21E-9	1.75E-8	3.02E-10	1.11E-8	1.43E-11	-3.14E-9	2.57E-8
HTP-nc	CTUh	4.65E-7	1.68E-8	3.69E-8	5.19E-7	1.01E-8	2.67E-7	1.59E-9	-1.03E-7	6.95E-7
SQP	Pt	2.83E+2	1.50E+1	1.58E+0	3.00E+2	8.95E+0	6.42E+1	1.42E+0	-5.71E+1	3.17E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.67E+1	2.16E-1	6.39E+1	1.21E+2	1.50E-1	7.28E+0	2.01E-2	-1.42E+1	1.14E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.67E+1	2.16E-1	6.39E+1	1.21E+2	1.50E-1	7.28E+0	2.01E-2	-1.42E+1	1.14E+2
PENRE	MJ	6.02E+2	1.83E+1	2.30E+1	6.43E+2	1.11E+1	1.09E+2	5.93E-1	-2.06E+2	5.57E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	6.02E+2	1.83E+1	2.30E+1	6.43E+2	1.11E+1	1.09E+2	5.93E-1	-2.06E+2	5.57E+2
PET	MJ	6.58E+2	1.85E+1	8.69E+1	7.64E+2	1.13E+1	1.16E+2	6.13E-1	-2.20E+2	6.71E+2
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	3.86E-1	2.10E-3	3.37E-1	7.25E-1	1.18E-3	1.08E-1	6.85E-4	-8.61E-2	7.49E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.62E-4	4.37E-5	2.97E-5	5.35E-4	2.68E-5	1.64E-4	6.71E-7	-1.75E-4	5.53E-4
NHWD	kg	2.26E+0	1.09E+0	4.28E-2	3.40E+0	6.49E-1	3.80E+0	2.59E+0	-4.43E-1	9.99E+0
RWD	kg	1.05E-3	1.13E-4	5.33E-5	1.22E-3	7.12E-5	3.83E-4	3.65E-6	-2.45E-4	1.43E-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

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