Environmental Profile

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

Ecochain v3.5.80

Product:	3000284 - U3 Pipe GY KOMO 315 SN8 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	5.43	0.28	0.46	6.17	0.16	3.64	0.02	-1.52	8.48
ADPE	kg Sb-eq	1.57E-3	5.86E-5	8.46E-5	1.72E-3	3.56E-5	2.94E-4	3.69E-7	-2.32E-4	1.81E-3
ADPF	kg Sb-eq	5.47E-1	1.69E-2	2.27E-2	5.86E-1	1.00E-2	1.04E-1	5.23E-4	-1.94E-1	5.07E-1
GWP	kg CO2-eq	4.73E+1	2.29E+0	4.03E+0	5.37E+1	1.36E+0	3.51E+1	3.30E-1	-1.78E+1	7.26E+1
ODP	kg CFC-11-eq	2.29E-5	4.07E-7	3.79E-7	2.36E-5	2.53E-7	4.15E-6	1.26E-8	-6.05E-6	2.20E-5
POCP	kg ethene-eq	3.10E-2	1.38E-3	1.77E-3	3.42E-2	8.18E-4	8.19E-3	8.79E-5	-7.01E-3	3.62E-2
AP	kg SO2-eq	1.85E-1	1.01E-2	1.58E-2	2.11E-1	5.87E-3	5.95E-2	2.78E-4	-4.07E-2	2.36E-1
EP	kg PO4 3−-eq	2.52E-2	1.98E-3	2.50E-3	2.97E-2	1.17E-3	9.04E-3	1.09E-4	-5.33E-3	3.47E-2
HTP	kg 1,4-DB-eq	1.80E+1	9.66E-1	1.52E+0	2.05E+1	5.83E-1	1.61E+1	2.86E-2	-3.84E+0	3.34E+1
FAETP	kg 1,4-DB-eq	3.27E+0	2.82E-2	6.19E-2	3.36E+0	1.71E-2	2.37E-1	8.74E-3	-7.96E-2	3.54E+0
MAETP	kg 1,4-DB-eq	1.38E+3	1.01E+2	2.53E+2	1.74E+3	6.10E+1	7.78E+2	1.06E+1	-2.36E+2	2.35E+3
TETP	kg 1,4-DB-eq	1.39E+0	3.41E-3	9.45E-2	1.49E+0	2.07E-3	5.73E-2	9.40E-5	-2.62E-2	1.52E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	4.37E+1	2.32E+0	4.75E+0	5.07E+1	1.38E+0	4.19E+1	3.85E-1	-1.83E+1	7.61E+1
GWP-f	kg CO2 eq	4.82E+1	2.31E+0	3.72E+0	5.42E+1	1.37E+0	3.54E+1	3.85E-1	-1.82E+1	7.32E+1
GWP-b	kg CO2 eq	-4.90E+0	1.07E-3	8.04E-1	-4.09E+0	8.35E-4	6.51E+0	4.93E-4	-7.97E-2	2.34E+0
GWP-luluc	kg CO2 eq	3.72E-1	8.48E-4	2.27E-1	6.00E-1	4.87E-4	1.60E-2	1.03E-5	-8.24E-3	6.08E-1
ODP	kg CFC11 eq	2.26E-5	5.11E-7	4.49E-7	2.36E-5	3.17E-7	4.28E-6	1.56E-8	-6.08E-6	2.21E-5
AP	mol H+ eq	2.26E-1	1.34E-2	2.03E-2	2.60E-1	7.83E-3	7.47E-2	3.73E-4	-4.99E-2	2.93E-1
EP-fw	kg P eq	2.04E-3	2.33E-5	5.32E-5	2.11E-3	1.13E-5	5.32E-4	4.66E-7	-4.24E-4	2.23E-3
EP-m	kg N eq	4.53E-2	4.73E-3	5.97E-3	5.60E-2	2.80E-3	1.83E-2	2.32E-4	-9.75E-3	6.75E-2
EP-T	mol N eq	4.71E-1	5.21E-2	6.41E-2	5.88E-1	3.09E-2	2.01E-1	1.49E-3	-1.09E-1	7.12E-1
POCP	kg NMVOC eq	1.57E-1	1.49E-2	1.81E-2	1.90E-1	8.83E-3	6.04E-2	5.07E-4	-3.60E-2	2.23E-1
ADP-mm	kg Sb eq	1.57E-3	5.86E-5	8.46E-5	1.72E-3	3.56E-5	2.94E-4	3.69E-7	-2.32E-4	1.81E-3
ADP-f	MJ	1.15E+3	3.49E+1	4.30E+1	1.23E+3	2.11E+1	2.06E+2	1.13E+0	-3.91E+2	1.07E+3
WDP	m3 depriv.	6.91E+1	1.25E-1	2.91E+1	9.84E+1	6.48E-2	7.93E+0	6.12E-3	-1.61E+1	9.03E+1
PM	disease inc.	2.33E-6	2.08E-7	3.15E-7	2.85E-6	1.24E-7	9.41E-7	7.73E-9	-3.34E-7	3.59E-6
IR	kBq U-235 eq	2.41E+0	1.46E-1	7.77E-2	2.64E+0	9.22E-2	7.17E-1	5.19E-3	-5.55E-1	2.90E+0
ETP-fw	CTUe	8.07E+2	3.11E+1	7.18E+1	9.10E+2	1.71E+1	1.51E+3	1.66E+1	-1.91E+2	2.26E+3
HTP-c	CTUh	3.31E-8	1.01E-9	2.45E-9	3.66E-8	6.10E-10	2.25E-8	2.91E-11	-6.56E-9	5.31E-8
HTP-nc	CTUh	9.62E-7	3.40E-8	7.49E-8	1.07E-6	2.04E-8	5.37E-7	3.20E-9	-2.14E-7	1.42E-6
SQP	Pt	7.36E+2	3.03E+1	3.22E+0	7.70E+2	1.81E+1	1.29E+2	2.86E+0	-1.48E+2	7.72E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.40E+2	4.37E-1	1.30E+2	2.70E+2	3.03E-1	1.46E+1	4.07E-2	-3.53E+1	2.50E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.40E+2	4.37E-1	1.30E+2	2.70E+2	3.03E-1	1.46E+1	4.07E-2	-3.53E+1	2.50E+2
PENRE	MJ	1.24E+3	3.71E+1	4.66E+1	1.32E+3	2.24E+1	2.19E+2	1.20E+0	-4.25E+2	1.14E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.24E+3	3.71E+1	4.66E+1	1.32E+3	2.24E+1	2.19E+2	1.20E+0	-4.25E+2	1.14E+3
PET	MJ	1.38E+3	3.75E+1	1.76E+2	1.59E+3	2.27E+1	2.34E+2	1.24E+0	-4.60E+2	1.39E+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	8.05E-1	4.25E-3	6.85E-1	1.49E+0	2.39E-3	2.18E-1	1.39E-3	-1.77E-1	1.54E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	9.58E-4	8.84E-5	6.02E-5	1.11E-3	5.40E-5	3.32E-4	1.36E-6	-3.61E-4	1.13E-3
NHWD	kg	4.73E+0	2.21E+0	8.69E-2	7.03E+0	1.31E+0	7.70E+0	5.24E+0	-9.24E-1	2.04E+1
RWD	kg	2.22E-3	2.29E-4	1.08E-4	2.56E-3	1.44E-4	7.72E-4	7.39E-6	-5.08E-4	2.98E-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