Environmental Profile

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

Ecochain v3.5.80

Product:	3000273 - U3 Pipe GY KOMO 160 SN8 L=5 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	1.29	0.07	0.11	1.47	0.04	0.9	0.01	-0.37	2.05
ADPE	kg Sb-eq	3.21E-4	1.45E-5	2.08E-5	3.57E-4	8.82E-6	7.31E-5	9.11E-8	-5.43E-5	3.84E-4
ADPF	kg Sb-eq	1.33E-1	4.17E-3	5.58E-3	1.43E-1	2.48E-3	2.58E-2	1.29E-4	-4.70E-2	1.24E-1
GWP	kg CO2-eq	1.15E+1	5.67E-1	9.92E-1	1.30E+1	3.38E-1	8.55E+0	8.14E-2	-4.32E+0	1.77E+1
ODP	kg CFC-11-eq	5.63E-6	1.01E-7	9.32E-8	5.82E-6	6.27E-8	1.03E-6	3.10E-9	-1.47E-6	5.45E-6
POCP	kg ethene-eq	7.38E-3	3.42E-4	4.37E-4	8.16E-3	2.03E-4	2.03E-3	2.17E-5	-1.69E-3	8.73E-3
AP	kg SO2-eq	4.45E-2	2.49E-3	3.89E-3	5.09E-2	1.45E-3	1.48E-2	6.88E-5	-9.77E-3	5.74E-2
EP	kg PO4 3−-eq	5.89E-3	4.90E-4	6.15E-4	6.99E-3	2.91E-4	2.24E-3	2.68E-5	-1.26E-3	8.29E-3
HTP	kg 1,4-DB-eq	4.33E+0	2.39E-1	3.75E-1	4.94E+0	1.45E-1	3.99E+0	7.07E-3	-9.23E-1	8.16E+0
FAETP	kg 1,4-DB-eq	4.94E-1	6.97E-3	1.52E-2	5.16E-1	4.24E-3	5.88E-2	2.16E-3	-1.92E-2	5.62E-1
MAETP	kg 1,4-DB-eq	3.34E+2	2.51E+1	6.22E+1	4.21E+2	1.51E+1	1.93E+2	2.62E+0	-5.70E+1	5.75E+2
TETP	kg 1,4-DB-eq	2.04E-1	8.44E-4	2.33E-2	2.28E-1	5.12E-4	1.42E-2	2.32E-5	-6.31E-3	2.37E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.10E+1	5.73E-1	1.17E+0	1.28E+1	3.41E-1	9.77E+0	9.48E-2	-4.42E+0	1.85E+1
GWP-f	kg CO2 eq	1.17E+1	5.72E-1	9.15E-1	1.32E+1	3.41E-1	8.62E+0	9.48E-2	-4.40E+0	1.78E+1
GWP-b	kg CO2 eq	-7.39E-1	2.64E-4	1.98E-1	-5.41E-1	2.07E-4	1.14E+0	1.22E-4	-1.95E-2	5.84E-1
GWP-luluc	kg CO2 eq	5.49E-2	2.10E-4	5.58E-2	1.11E-1	1.21E-4	3.98E-3	2.54E-6	-1.95E-3	1.13E-1
ODP	kg CFC11 eq	5.57E-6	1.26E-7	1.11E-7	5.80E-6	7.85E-8	1.06E-6	3.86E-9	-1.48E-6	5.47E-6
AP	mol H+ eq	5.43E-2	3.32E-3	4.99E-3	6.26E-2	1.94E-3	1.85E-2	9.21E-5	-1.20E-2	7.12E-2
EP-fw	kg P eq	4.93E-4	5.77E-6	1.31E-5	5.12E-4	2.80E-6	1.32E-4	1.15E-7	-1.03E-4	5.45E-4
EP-m	kg N eq	1.06E-2	1.17E-3	1.47E-3	1.32E-2	6.95E-4	4.51E-3	5.67E-5	-2.32E-3	1.62E-2
EP-T	mol N eq	1.12E-1	1.29E-2	1.58E-2	1.41E-1	7.66E-3	4.97E-2	3.69E-4	-2.57E-2	1.73E-1
POCP	kg NMVOC eq	3.75E-2	3.68E-3	4.45E-3	4.56E-2	2.19E-3	1.49E-2	1.25E-4	-8.60E-3	5.43E-2
ADP-mm	kg Sb eq	3.21E-4	1.45E-5	2.08E-5	3.57E-4	8.82E-6	7.31E-5	9.11E-8	-5.43E-5	3.84E-4
ADP-f	MJ	2.80E+2	8.63E+0	1.06E+1	3.00E+2	5.23E+0	5.11E+1	2.79E-1	-9.49E+1	2.61E+2
WDP	m3 depriv.	1.70E+1	3.09E-2	7.16E+0	2.41E+1	1.61E-2	1.97E+0	1.49E-3	-3.92E+0	2.22E+1
PM	disease inc.	5.40E-7	5.14E-8	7.75E-8	6.68E-7	3.08E-8	2.33E-7	1.91E-9	-7.81E-8	8.56E-7
IR	kBq U-235 eq	5.79E-1	3.61E-2	1.91E-2	6.34E-1	2.29E-2	1.78E-1	1.28E-3	-1.34E-1	7.02E-1
ETP-fw	CTUe	1.91E+2	7.69E+0	1.77E+1	2.17E+2	4.25E+0	3.76E+2	4.14E+0	-4.49E+1	5.56E+2
HTP-c	CTUh	7.87E-9	2.50E-10	6.03E-10	8.73E-9	1.51E-10	5.54E-9	7.17E-12	-1.57E-9	1.29E-8
HTP-nc	CTUh	2.33E-7	8.42E-9	1.84E-8	2.59E-7	5.06E-9	1.33E-7	7.96E-10	-5.14E-8	3.47E-7
SQP	Pt	1.41E+2	7.48E+0	7.92E-1	1.50E+2	4.48E+0	3.21E+1	7.08E-1	-2.85E+1	1.59E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.84E+1	1.08E-1	3.19E+1	6.04E+1	7.51E-2	3.64E+0	1.01E-2	-7.11E+0	5.70E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.84E+1	1.08E-1	3.19E+1	6.04E+1	7.51E-2	3.64E+0	1.01E-2	-7.11E+0	5.70E+1
PENRE	MJ	3.01E+2	9.16E+0	1.15E+1	3.21E+2	5.55E+0	5.44E+1	2.96E-1	-1.03E+2	2.79E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.01E+2	9.16E+0	1.15E+1	3.21E+2	5.55E+0	5.44E+1	2.96E-1	-1.03E+2	2.79E+2
PET	MJ	3.29E+2	9.27E+0	4.34E+1	3.82E+2	5.63E+0	5.80E+1	3.06E-1	-1.10E+2	3.36E+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	1.93E-1	1.05E-3	1.69E-1	3.63E-1	5.92E-4	5.39E-2	3.42E-4	-4.30E-2	3.74E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.31E-4	2.19E-5	1.48E-5	2.68E-4	1.34E-5	8.22E-5	3.36E-7	-8.74E-5	2.76E-4
NHWD	kg	1.13E+0	5.47E-1	2.14E-2	1.70E+0	3.24E-1	1.90E+0	1.30E+0	-2.22E-1	5.00E+0
RWD	kg	5.26E-4	5.67E-5	2.66E-5	6.10E-4	3.56E-5	1.92E-4	1.83E-6	-1.23E-4	7.16E-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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