Environmental Profile

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

Ecochain v3.5.80

Product:	3000439 - U3 Pipe GY KOMO 160 SN4 L=4 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	0.91	0.05	0.08	1.04	0.03	0.62	0	-0.26	1.43
ADPE	kg Sb-eq	2.25E-4	1.02E-5	1.44E-5	2.50E-4	6.10E-6	5.07E-5	6.30E-8	-3.78E-5	2.69E-4
ADPF	kg Sb-eq	9.29E-2	2.92E-3	3.86E-3	9.97E-2	1.72E-3	1.79E-2	8.94E-5	-3.27E-2	8.67E-2
GWP	kg CO2-eq	8.06E+0	3.98E-1	6.87E-1	9.15E+0	2.34E-1	5.92E+0	5.64E-2	-3.01E+0	1.24E+1
ODP	kg CFC-11-eq	3.91E-6	7.05E-8	6.45E-8	4.05E-6	4.34E-8	7.15E-7	2.15E-9	-1.02E-6	3.79E-6
POCP	kg ethene-eq	5.26E-3	2.40E-4	3.03E-4	5.80E-3	1.40E-4	1.42E-3	1.50E-5	-1.21E-3	6.17E-3
AP	kg SO2-eq	3.16E-2	1.75E-3	2.69E-3	3.60E-2	1.01E-3	1.03E-2	4.76E-5	-7.02E-3	4.03E-2
EP	kg PO4 3−-eq	4.23E-3	3.43E-4	4.25E-4	5.00E-3	2.01E-4	1.56E-3	1.85E-5	-9.53E-4	5.83E-3
HTP	kg 1,4-DB-eq	3.06E+0	1.67E-1	2.59E-1	3.49E+0	1.00E-1	2.77E+0	4.90E-3	-6.61E-1	5.70E+0
FAETP	kg 1,4-DB-eq	3.43E-1	4.89E-3	1.06E-2	3.59E-1	2.93E-3	4.08E-2	1.50E-3	-1.37E-2	3.90E-1
MAETP	kg 1,4-DB-eq	2.36E+2	1.76E+1	4.31E+1	2.97E+2	1.05E+1	1.34E+2	1.81E+0	-4.02E+1	4.03E+2
TETP	kg 1,4-DB-eq	1.42E-1	5.92E-4	1.61E-2	1.58E-1	3.55E-4	9.85E-3	1.61E-5	-4.50E-3	1.64E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	6.89E+0	4.01E-1	8.09E-1	8.10E+0	2.36E-1	7.63E+0	6.57E-2	-3.08E+0	1.30E+1
GWP-f	kg CO2 eq	8.23E+0	4.01E-1	6.33E-1	9.27E+0	2.36E-1	5.97E+0	6.56E-2	-3.06E+0	1.25E+1
GWP-b	kg CO2 eq	-1.38E+0	1.85E-4	1.37E-1	-1.24E+0	1.43E-4	1.66E+0	8.44E-5	-1.35E-2	4.03E-1
GWP-luluc	kg CO2 eq	3.85E-2	1.47E-4	3.86E-2	7.73E-2	8.35E-5	2.76E-3	1.76E-6	-1.47E-3	7.87E-2
ODP	kg CFC11 eq	3.87E-6	8.85E-8	7.65E-8	4.04E-6	5.44E-8	7.38E-7	2.67E-9	-1.03E-6	3.81E-6
AP	mol H+ eq	3.86E-2	2.33E-3	3.46E-3	4.44E-2	1.34E-3	1.29E-2	6.38E-5	-8.69E-3	5.00E-2
EP-fw	kg P eq	3.49E-4	4.05E-6	9.06E-6	3.62E-4	1.94E-6	9.16E-5	7.96E-8	-7.24E-5	3.83E-4
EP-m	kg N eq	7.63E-3	8.20E-4	1.02E-3	9.46E-3	4.81E-4	3.16E-3	3.93E-5	-1.72E-3	1.14E-2
EP-T	mol N eq	8.13E-2	9.04E-3	1.09E-2	1.01E-1	5.30E-3	3.48E-2	2.55E-4	-1.96E-2	1.22E-1
POCP	kg NMVOC eq	2.69E-2	2.58E-3	3.08E-3	3.26E-2	1.52E-3	1.05E-2	8.68E-5	-6.28E-3	3.83E-2
ADP-mm	kg Sb eq	2.25E-4	1.02E-5	1.44E-5	2.50E-4	6.10E-6	5.07E-5	6.30E-8	-3.78E-5	2.69E-4
ADP-f	MJ	1.96E+2	6.05E+0	7.33E+0	2.09E+2	3.62E+0	3.55E+1	1.93E-1	-6.59E+1	1.83E+2
WDP	m3 depriv.	1.18E+1	2.16E-2	4.96E+0	1.68E+1	1.11E-2	1.37E+0	1.03E-3	-2.72E+0	1.54E+1
PM	disease inc.	4.18E-7	3.60E-8	5.36E-8	5.08E-7	2.13E-8	1.62E-7	1.32E-9	-6.09E-8	6.32E-7
IR	kBq U-235 eq	4.10E-1	2.53E-2	1.32E-2	4.49E-1	1.58E-2	1.24E-1	8.88E-4	-9.39E-2	4.95E-1
ETP-fw	CTUe	1.37E+2	5.39E+0	1.22E+1	1.54E+2	2.94E+0	2.60E+2	2.86E+0	-3.46E+1	3.86E+2
HTP-c	CTUh	5.79E-9	1.75E-10	4.17E-10	6.38E-9	1.05E-10	3.89E-9	4.97E-12	-1.14E-9	9.25E-9
HTP-nc	CTUh	1.65E-7	5.90E-9	1.28E-8	1.83E-7	3.51E-9	9.26E-8	5.51E-10	-3.71E-8	2.43E-7
SQP	Pt	1.77E+2	5.25E+0	5.49E-1	1.82E+2	3.10E+0	2.23E+1	4.90E-1	-3.65E+1	1.72E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.14E+1	7.57E-2	2.21E+1	5.36E+1	5.20E-2	2.52E+0	6.96E-3	-8.29E+0	4.79E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.14E+1	7.57E-2	2.21E+1	5.36E+1	5.20E-2	2.52E+0	6.96E-3	-8.29E+0	4.79E+1
PENRE	MJ	2.10E+2	6.42E+0	7.95E+0	2.25E+2	3.85E+0	3.77E+1	2.05E-1	-7.16E+1	1.95E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.10E+2	6.42E+0	7.95E+0	2.25E+2	3.85E+0	3.77E+1	2.05E-1	-7.16E+1	1.95E+2
PET	MJ	2.42E+2	6.50E+0	3.01E+1	2.78E+2	3.90E+0	4.03E+1	2.12E-1	-7.99E+1	2.43E+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	1.35E-1	7.37E-4	1.17E-1	2.53E-1	4.10E-4	3.74E-2	2.37E-4	-2.99E-2	2.61E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.66E-4	1.53E-5	1.03E-5	1.92E-4	9.26E-6	5.71E-5	2.32E-7	-6.12E-5	1.97E-4
NHWD	kg	8.22E-1	3.84E-1	1.48E-2	1.22E+0	2.24E-1	1.33E+0	8.97E-1	-1.61E-1	3.51E+0
RWD	kg	3.75E-4	3.97E-5	1.84E-5	4.33E-4	2.46E-5	1.33E-4	1.26E-6	-8.61E-5	5.06E-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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