Environmental Profile

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

Ecochain v3.5.80

Product:	3000399 - U3 Pipe GY KOMO 50x3 L=4
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	0.19	0.01	0.02	0.22	0.01	0.13	0	-0.05	0.3
ADPE	kg Sb-eq	4.78E-5	2.15E-6	3.07E-6	5.31E-5	1.30E-6	1.08E-5	1.35E-8	-8.07E-6	5.71E-5
ADPF	kg Sb-eq	1.97E-2	6.20E-4	8.24E-4	2.12E-2	3.67E-4	3.81E-3	1.91E-5	-6.97E-3	1.84E-2
GWP	kg CO2-eq	1.71E+0	8.43E-2	1.47E-1	1.94E+0	4.99E-2	1.26E+0	1.20E-2	-6.41E-1	2.62E+0
ODP	kg CFC-11-eq	8.33E-7	1.50E-8	1.38E-8	8.62E-7	9.26E-9	1.52E-7	4.59E-10	-2.18E-7	8.06E-7
POCP	kg ethene-eq	1.11E-3	5.09E-5	6.45E-5	1.22E-3	3.00E-5	3.01E-4	3.20E-6	-2.54E-4	1.30E-3
AP	kg SO2-eq	6.66E-3	3.71E-4	5.75E-4	7.60E-3	2.15E-4	2.19E-3	1.02E-5	-1.47E-3	8.54E-3
EP	kg PO4 3−-eq	8.93E-4	7.28E-5	9.08E-5	1.06E-3	4.29E-5	3.32E-4	3.96E-6	-1.95E-4	1.24E-3
HTP	kg 1,4-DB-eq	6.47E-1	3.55E-2	5.53E-2	7.38E-1	2.14E-2	5.90E-1	1.04E-3	-1.39E-1	1.21E+0
FAETP	kg 1,4-DB-eq	8.47E-2	1.04E-3	2.25E-3	8.80E-2	6.26E-4	8.69E-3	3.19E-4	-2.89E-3	9.47E-2
MAETP	kg 1,4-DB-eq	4.99E+1	3.73E+0	9.19E+0	6.28E+1	2.23E+0	2.86E+1	3.87E-1	-8.53E+0	8.54E+1
TETP	kg 1,4-DB-eq	3.54E-2	1.25E-4	3.44E-3	3.89E-2	7.57E-5	2.10E-3	3.43E-6	-9.49E-4	4.01E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.55E+0	8.51E-2	1.73E-1	1.81E+0	5.04E-2	1.54E+0	1.40E-2	-6.56E-1	2.75E+0
GWP-f	kg CO2 eq	1.74E+0	8.50E-2	1.35E-1	1.96E+0	5.03E-2	1.27E+0	1.40E-2	-6.53E-1	2.65E+0
GWP-b	kg CO2 eq	-2.02E-1	3.92E-5	2.92E-2	-1.73E-1	3.06E-5	2.62E-1	1.80E-5	-2.90E-3	8.61E-2
GWP-luluc	kg CO2 eq	9.53E-3	3.11E-5	8.24E-3	1.78E-2	1.78E-5	5.88E-4	3.76E-7	-3.02E-4	1.81E-2
ODP	kg CFC11 eq	8.24E-7	1.88E-8	1.63E-8	8.59E-7	1.16E-8	1.57E-7	5.70E-10	-2.19E-7	8.10E-7
AP	mol H+ eq	8.14E-3	4.93E-4	7.37E-4	9.37E-3	2.87E-4	2.74E-3	1.36E-5	-1.81E-3	1.06E-2
EP-fw	kg P eq	7.37E-5	8.57E-7	1.93E-6	7.65E-5	4.14E-7	1.95E-5	1.70E-8	-1.54E-5	8.11E-5
EP-m	kg N eq	1.61E-3	1.74E-4	2.17E-4	2.00E-3	1.03E-4	6.70E-4	8.38E-6	-3.55E-4	2.42E-3
EP-T	mol N eq	1.70E-2	1.92E-3	2.33E-3	2.12E-2	1.13E-3	7.39E-3	5.45E-5	-3.99E-3	2.58E-2
POCP	kg NMVOC eq	5.64E-3	5.47E-4	6.58E-4	6.84E-3	3.23E-4	2.22E-3	1.85E-5	-1.31E-3	8.10E-3
ADP-mm	kg Sb eq	4.78E-5	2.15E-6	3.07E-6	5.30E-5	1.30E-6	1.08E-5	1.35E-8	-8.07E-6	5.71E-5
ADP-f	MJ	4.16E+1	1.28E+0	1.56E+0	4.45E+1	7.73E-1	7.55E+0	4.12E-2	-1.41E+1	3.88E+1
WDP	m3 depriv.	2.51E+0	4.59E-3	1.06E+0	3.57E+0	2.37E-3	2.91E-1	2.21E-4	-5.82E-1	3.29E+0
PM	disease inc.	8.46E-8	7.63E-9	1.14E-8	1.04E-7	4.54E-9	3.46E-8	2.82E-10	-1.23E-8	1.31E-7
IR	kBq U-235 eq	8.65E-2	5.37E-3	2.82E-3	9.47E-2	3.38E-3	2.63E-2	1.89E-4	-2.00E-2	1.05E-1
ETP-fw	CTUe	2.88E+1	1.14E+0	2.61E+0	3.26E+1	6.27E-1	5.55E+1	6.11E-1	-7.02E+0	8.23E+1
HTP-c	CTUh	1.20E-9	3.71E-11	8.90E-11	1.33E-9	2.23E-11	8.25E-10	1.06E-12	-2.39E-10	1.94E-9
HTP-nc	CTUh	3.48E-8	1.25E-9	2.72E-9	3.88E-8	7.48E-10	1.97E-8	1.17E-10	-7.77E-9	5.16E-8
SQP	Pt	2.93E+1	1.11E+0	1.17E-1	3.05E+1	6.61E-1	4.75E+0	1.05E-1	-5.98E+0	3.00E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.45E+0	1.60E-2	4.72E+0	1.02E+1	1.11E-2	5.38E-1	1.49E-3	-1.41E+0	9.33E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.45E+0	1.60E-2	4.72E+0	1.02E+1	1.11E-2	5.38E-1	1.49E-3	-1.41E+0	9.33E+0
PENRE	MJ	4.47E+1	1.36E+0	1.70E+0	4.77E+1	8.20E-1	8.04E+0	4.38E-2	-1.53E+1	4.13E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.47E+1	1.36E+0	1.70E+0	4.77E+1	8.20E-1	8.04E+0	4.38E-2	-1.53E+1	4.13E+1
PET	MJ	5.01E+1	1.38E+0	6.41E+0	5.79E+1	8.31E-1	8.58E+0	4.53E-2	-1.67E+1	5.07E+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	2.88E-2	1.56E-4	2.49E-2	5.38E-2	8.74E-5	7.97E-3	5.06E-5	-6.39E-3	5.56E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.48E-5	3.25E-6	2.19E-6	4.02E-5	1.98E-6	1.22E-5	4.96E-8	-1.30E-5	4.14E-5
NHWD	kg	1.71E-1	8.13E-2	3.16E-3	2.56E-1	4.79E-2	2.83E-1	1.91E-1	-3.36E-2	7.44E-1
RWD	kg	7.89E-5	8.42E-6	3.94E-6	9.12E-5	5.25E-6	2.84E-5	2.70E-7	-1.83E-5	1.07E-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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