Environmental Profile

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

Ecochain v3.5.80

Product:	3000398 - U3 Pipe GY KOMO 50x3 L=2
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	0.1	0.01	0.01	0.11	0	0.07	0	-0.03	0.15
ADPE	kg Sb-eq	2.40E-5	1.08E-6	1.54E-6	2.67E-5	6.52E-7	5.41E-6	6.73E-9	-4.04E-6	2.87E-5
ADPF	kg Sb-eq	9.91E-3	3.12E-4	4.12E-4	1.06E-2	1.83E-4	1.91E-3	9.55E-6	-3.49E-3	9.25E-3
GWP	kg CO2-eq	8.60E-1	4.24E-2	7.33E-2	9.76E-1	2.50E-2	6.32E-1	6.02E-3	-3.21E-1	1.32E+0
ODP	kg CFC-11-eq	4.17E-7	7.52E-9	6.88E-9	4.32E-7	4.63E-9	7.63E-8	2.29E-10	-1.09E-7	4.04E-7
POCP	kg ethene-eq	5.61E-4	2.56E-5	3.23E-5	6.19E-4	1.50E-5	1.51E-4	1.60E-6	-1.29E-4	6.58E-4
AP	kg SO2-eq	3.37E-3	1.86E-4	2.87E-4	3.84E-3	1.08E-4	1.10E-3	5.08E-6	-7.49E-4	4.30E-3
EP	kg PO4 3−-eq	4.54E-4	3.66E-5	4.54E-5	5.36E-4	2.15E-5	1.67E-4	1.98E-6	-1.01E-4	6.25E-4
HTP	kg 1,4-DB-eq	3.27E-1	1.79E-2	2.77E-2	3.72E-1	1.07E-2	2.96E-1	5.23E-4	-7.05E-2	6.09E-1
FAETP	kg 1,4-DB-eq	4.24E-2	5.21E-4	1.13E-3	4.40E-2	3.13E-4	4.35E-3	1.60E-4	-1.46E-3	4.74E-2
MAETP	kg 1,4-DB-eq	2.52E+1	1.88E+0	4.59E+0	3.17E+1	1.12E+0	1.43E+1	1.94E-1	-4.29E+0	4.30E+1
TETP	kg 1,4-DB-eq	1.77E-2	6.31E-5	1.72E-3	1.95E-2	3.79E-5	1.05E-3	1.72E-6	-4.80E-4	2.01E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	7.40E-1	4.28E-2	8.63E-2	8.69E-1	2.52E-2	8.10E-1	7.01E-3	-3.29E-1	1.38E+0
GWP-f	kg CO2 eq	8.78E-1	4.28E-2	6.76E-2	9.88E-1	2.52E-2	6.37E-1	7.01E-3	-3.27E-1	1.33E+0
GWP-b	kg CO2 eq	-1.43E-1	1.97E-5	1.46E-2	-1.28E-1	1.53E-5	1.73E-1	9.01E-6	-1.45E-3	4.30E-2
GWP-luluc	kg CO2 eq	4.79E-3	1.57E-5	4.12E-3	8.92E-3	8.92E-6	2.95E-4	1.88E-7	-1.57E-4	9.07E-3
ODP	kg CFC11 eq	4.13E-7	9.44E-9	8.16E-9	4.31E-7	5.80E-9	7.87E-8	2.85E-10	-1.10E-7	4.06E-7
AP	mol H+ eq	4.12E-3	2.48E-4	3.69E-4	4.74E-3	1.43E-4	1.38E-3	6.81E-6	-9.26E-4	5.34E-3
EP-fw	kg P eq	3.72E-5	4.31E-7	9.66E-7	3.86E-5	2.07E-7	9.78E-6	8.51E-9	-7.73E-6	4.09E-5
EP-m	kg N eq	8.18E-4	8.74E-5	1.09E-4	1.01E-3	5.13E-5	3.37E-4	4.19E-6	-1.83E-4	1.22E-3
EP-T	mol N eq	8.68E-3	9.64E-4	1.16E-3	1.08E-2	5.66E-4	3.72E-3	2.73E-5	-2.08E-3	1.30E-2
POCP	kg NMVOC eq	2.87E-3	2.75E-4	3.29E-4	3.47E-3	1.62E-4	1.12E-3	9.26E-6	-6.69E-4	4.09E-3
ADP-mm	kg Sb eq	2.40E-5	1.08E-6	1.54E-6	2.67E-5	6.52E-7	5.41E-6	6.73E-9	-4.04E-6	2.87E-5
ADP-f	MJ	2.09E+1	6.45E-1	7.82E-1	2.23E+1	3.87E-1	3.78E+0	2.06E-2	-7.04E+0	1.95E+1
WDP	m3 depriv.	1.26E+0	2.31E-3	5.29E-1	1.79E+0	1.19E-3	1.46E-1	1.11E-4	-2.91E-1	1.65E+0
PM	disease inc.	4.45E-8	3.84E-9	5.72E-9	5.40E-8	2.27E-9	1.73E-8	1.41E-10	-6.47E-9	6.73E-8
IR	kBq U-235 eq	4.37E-2	2.70E-3	1.41E-3	4.79E-2	1.69E-3	1.32E-2	9.48E-5	-1.00E-2	5.28E-2
ETP-fw	CTUe	1.46E+1	5.75E-1	1.30E+0	1.65E+1	3.14E-1	2.78E+1	3.06E-1	-3.68E+0	4.12E+1
HTP-c	CTUh	6.18E-10	1.87E-11	4.45E-11	6.81E-10	1.12E-11	4.15E-10	5.30E-13	-1.22E-10	9.86E-10
HTP-nc	CTUh	1.76E-8	6.29E-10	1.36E-9	1.96E-8	3.74E-10	9.88E-9	5.88E-11	-3.95E-9	2.59E-8
SQP	Pt	1.84E+1	5.60E-1	5.85E-2	1.91E+1	3.31E-1	2.38E+0	5.23E-2	-3.80E+0	1.80E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.30E+0	8.08E-3	2.36E+0	5.66E+0	5.55E-3	2.69E-1	7.43E-4	-8.66E-1	5.07E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.30E+0	8.08E-3	2.36E+0	5.66E+0	5.55E-3	2.69E-1	7.43E-4	-8.66E-1	5.07E+0
PENRE	MJ	2.24E+1	6.85E-1	8.48E-1	2.40E+1	4.11E-1	4.03E+0	2.19E-2	-7.65E+0	2.08E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.24E+1	6.85E-1	8.48E-1	2.40E+1	4.11E-1	4.03E+0	2.19E-2	-7.65E+0	2.08E+1
PET	MJ	2.57E+1	6.93E-1	3.21E+0	2.96E+1	4.16E-1	4.30E+0	2.26E-2	-8.51E+0	2.59E+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	1.45E-2	7.86E-5	1.25E-2	2.70E-2	4.38E-5	3.99E-3	2.53E-5	-3.20E-3	2.79E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.77E-5	1.63E-6	1.10E-6	2.04E-5	9.89E-7	6.09E-6	2.48E-8	-6.53E-6	2.10E-5
NHWD	kg	8.77E-2	4.09E-2	1.58E-3	1.30E-1	2.40E-2	1.42E-1	9.58E-2	-1.71E-2	3.75E-1
RWD	kg	4.00E-5	4.24E-6	1.97E-6	4.62E-5	2.63E-6	1.42E-5	1.35E-7	-9.20E-6	5.39E-5
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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