Environmental Profile

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

Ecochain v3.5.80

Product:	3000408 - U3 Pipe GY KOMO 75x3 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	0.14	0.01	0.01	0.16	0	0.1	0	-0.04	0.22
ADPE	kg Sb-eq	3.54E-5	1.59E-6	2.24E-6	3.92E-5	9.49E-7	7.90E-6	9.80E-9	-5.92E-6	4.21E-5
ADPF	kg Sb-eq	1.46E-2	4.59E-4	6.01E-4	1.56E-2	2.67E-4	2.79E-3	1.39E-5	-5.09E-3	1.36E-2
GWP	kg CO2-eq	1.27E+0	6.24E-2	1.07E-1	1.44E+0	3.64E-2	9.22E-1	8.76E-3	-4.70E-1	1.94E+0
ODP	kg CFC-11-eq	6.11E-7	1.11E-8	1.00E-8	6.32E-7	6.75E-9	1.11E-7	3.34E-10	-1.59E-7	5.91E-7
POCP	kg ethene-eq	8.36E-4	3.77E-5	4.71E-5	9.21E-4	2.18E-5	2.21E-4	2.33E-6	-1.92E-4	9.74E-4
AP	kg SO2-eq	5.01E-3	2.74E-4	4.19E-4	5.70E-3	1.57E-4	1.60E-3	7.40E-6	-1.12E-3	6.34E-3
EP	kg PO4 3−-eq	6.77E-4	5.39E-5	6.62E-5	7.97E-4	3.13E-5	2.45E-4	2.88E-6	-1.58E-4	9.18E-4
HTP	kg 1,4-DB-eq	4.84E-1	2.63E-2	4.03E-2	5.50E-1	1.56E-2	4.32E-1	7.61E-4	-1.05E-1	8.93E-1
FAETP	kg 1,4-DB-eq	5.36E-2	7.67E-4	1.64E-3	5.60E-2	4.56E-4	6.35E-3	2.33E-4	-2.19E-3	6.09E-2
MAETP	kg 1,4-DB-eq	3.74E+1	2.76E+0	6.70E+0	4.68E+1	1.63E+0	2.09E+1	2.82E-1	-6.35E+0	6.32E+1
TETP	kg 1,4-DB-eq	2.21E-2	9.29E-5	2.51E-3	2.47E-2	5.52E-5	1.53E-3	2.50E-6	-7.16E-4	2.56E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	9.85E-1	6.30E-2	1.26E-1	1.17E+0	3.67E-2	1.29E+0	1.02E-2	-4.81E-1	2.03E+0
GWP-f	kg CO2 eq	1.30E+0	6.29E-2	9.85E-2	1.46E+0	3.67E-2	9.29E-1	1.02E-2	-4.79E-1	1.96E+0
GWP-b	kg CO2 eq	-3.18E-1	2.91E-5	2.13E-2	-2.97E-1	2.23E-5	3.61E-1	1.31E-5	-2.11E-3	6.26E-2
GWP-luluc	kg CO2 eq	6.06E-3	2.31E-5	6.01E-3	1.21E-2	1.30E-5	4.29E-4	2.74E-7	-2.44E-4	1.23E-2
ODP	kg CFC11 eq	6.05E-7	1.39E-8	1.19E-8	6.31E-7	8.45E-9	1.15E-7	4.15E-10	-1.60E-7	5.94E-7
AP	mol H+ eq	6.14E-3	3.65E-4	5.38E-4	7.04E-3	2.09E-4	2.02E-3	9.91E-6	-1.40E-3	7.88E-3
EP-fw	kg P eq	5.51E-5	6.35E-7	1.41E-6	5.72E-5	3.02E-7	1.43E-5	1.24E-8	-1.14E-5	6.03E-5
EP-m	kg N eq	1.22E-3	1.29E-4	1.58E-4	1.51E-3	7.48E-5	4.96E-4	6.11E-6	-2.82E-4	1.80E-3
EP-T	mol N eq	1.31E-2	1.42E-3	1.70E-3	1.62E-2	8.24E-4	5.47E-3	3.97E-5	-3.27E-3	1.93E-2
POCP	kg NMVOC eq	4.30E-3	4.05E-4	4.80E-4	5.18E-3	2.36E-4	1.64E-3	1.35E-5	-1.02E-3	6.05E-3
ADP-mm	kg Sb eq	3.54E-5	1.59E-6	2.24E-6	3.92E-5	9.49E-7	7.90E-6	9.80E-9	-5.92E-6	4.21E-5
ADP-f	MJ	3.08E+1	9.49E-1	1.14E+0	3.28E+1	5.63E-1	5.52E+0	3.01E-2	-1.03E+1	2.87E+1
WDP	m3 depriv.	1.84E+0	3.40E-3	7.71E-1	2.62E+0	1.73E-3	2.12E-1	1.60E-4	-4.24E-1	2.41E+0
PM	disease inc.	7.05E-8	5.65E-9	8.34E-9	8.45E-8	3.31E-9	2.54E-8	2.06E-10	-1.03E-8	1.03E-7
IR	kBq U-235 eq	6.50E-2	3.98E-3	2.06E-3	7.10E-2	2.46E-3	1.93E-2	1.38E-4	-1.47E-2	7.82E-2
ETP-fw	CTUe	2.18E+1	8.47E-1	1.90E+0	2.45E+1	4.57E-1	4.05E+1	4.45E-1	-5.81E+0	6.01E+1
HTP-c	CTUh	9.42E-10	2.75E-11	6.49E-11	1.03E-9	1.63E-11	6.12E-10	7.72E-13	-1.84E-10	1.48E-9
HTP-nc	CTUh	2.61E-8	9.26E-10	1.99E-9	2.90E-8	5.45E-10	1.44E-8	8.56E-11	-5.95E-9	3.81E-8
SQP	Pt	3.69E+1	8.24E-1	8.53E-2	3.78E+1	4.82E-1	3.47E+0	7.62E-2	-7.69E+0	3.42E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.31E+0	1.19E-2	3.44E+0	9.76E+0	8.08E-3	3.93E-1	1.08E-3	-1.70E+0	8.47E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.31E+0	1.19E-2	3.44E+0	9.76E+0	8.08E-3	3.93E-1	1.08E-3	-1.70E+0	8.47E+0
PENRE	MJ	3.30E+1	1.01E+0	1.24E+0	3.52E+1	5.98E-1	5.88E+0	3.19E-2	-1.12E+1	3.06E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.30E+1	1.01E+0	1.24E+0	3.52E+1	5.98E-1	5.88E+0	3.19E-2	-1.12E+1	3.06E+1
PET	MJ	3.93E+1	1.02E+0	4.68E+0	4.50E+1	6.06E-1	6.27E+0	3.30E-2	-1.29E+1	3.90E+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	2.13E-2	1.16E-4	1.82E-2	3.96E-2	6.37E-5	5.83E-3	3.69E-5	-4.67E-3	4.08E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.66E-5	2.41E-6	1.60E-6	3.06E-5	1.44E-6	8.90E-6	3.61E-8	-9.60E-6	3.14E-5
NHWD	kg	1.33E-1	6.02E-2	2.30E-3	1.95E-1	3.49E-2	2.09E-1	1.39E-1	-2.59E-2	5.53E-1
RWD	kg	5.96E-5	6.23E-6	2.87E-6	6.87E-5	3.83E-6	2.08E-5	1.97E-7	-1.35E-5	7.99E-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