Environmental Profile

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

Ecochain v3.5.80

Product:	3000394 - U3 Pipe GY KOMO 40x3 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	0.17	0.01	0.01	0.2	0	0.1	0	-0.06	0.25
ADPE	kg Sb-eq	4.24E-5	1.68E-6	2.40E-6	4.64E-5	1.02E-6	8.43E-6	1.06E-8	-9.67E-6	4.62E-5
ADPF	kg Sb-eq	1.77E-2	4.84E-4	6.44E-4	1.88E-2	2.86E-4	2.97E-3	1.49E-5	-7.08E-3	1.50E-2
GWP	kg CO2-eq	1.51E+0	6.59E-2	1.14E-1	1.69E+0	3.90E-2	9.88E-1	9.45E-3	-6.32E-1	2.10E+0
ODP	kg CFC-11-eq	7.65E-7	1.17E-8	1.08E-8	7.87E-7	7.23E-9	1.19E-7	3.59E-10	-2.52E-7	6.62E-7
POCP	kg ethene-eq	9.73E-4	3.97E-5	5.04E-5	1.06E-3	2.34E-5	2.34E-4	2.51E-6	-2.74E-4	1.05E-3
AP	kg SO2-eq	5.86E-3	2.90E-4	4.49E-4	6.60E-3	1.68E-4	1.70E-3	7.95E-6	-1.64E-3	6.84E-3
EP	kg PO4 3−-eq	7.98E-4	5.69E-5	7.09E-5	9.25E-4	3.35E-5	2.58E-4	3.09E-6	-2.09E-4	1.01E-3
HTP	kg 1,4-DB-eq	5.83E-1	2.77E-2	4.32E-2	6.54E-1	1.67E-2	4.61E-1	8.18E-4	-1.57E-1	9.76E-1
FAETP	kg 1,4-DB-eq	1.22E-1	8.10E-4	1.76E-3	1.24E-1	4.88E-4	6.79E-3	2.50E-4	-3.33E-3	1.29E-1
MAETP	kg 1,4-DB-eq	4.23E+1	2.91E+0	7.18E+0	5.24E+1	1.74E+0	2.23E+1	3.04E-1	-9.84E+0	6.69E+1
TETP	kg 1,4-DB-eq	5.22E-2	9.80E-5	2.68E-3	5.50E-2	5.91E-5	1.64E-3	2.69E-6	-1.10E-3	5.56E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.41E+0	6.65E-2	1.35E-1	1.61E+0	3.93E-2	1.18E+0	1.10E-2	-6.49E-1	2.19E+0
GWP-f	kg CO2 eq	1.54E+0	6.64E-2	1.06E-1	1.71E+0	3.93E-2	9.96E-1	1.10E-2	-6.45E-1	2.11E+0
GWP-b	kg CO2 eq	-1.42E-1	3.07E-5	2.28E-2	-1.20E-1	2.39E-5	1.85E-1	1.41E-5	-3.40E-3	6.24E-2
GWP-luluc	kg CO2 eq	1.40E-2	2.43E-5	6.44E-3	2.05E-2	1.39E-5	4.59E-4	2.97E-7	-3.37E-4	2.06E-2
ODP	kg CFC11 eq	7.56E-7	1.47E-8	1.28E-8	7.83E-7	9.05E-9	1.23E-7	4.46E-10	-2.51E-7	6.64E-7
AP	mol H+ eq	7.16E-3	3.85E-4	5.76E-4	8.12E-3	2.24E-4	2.14E-3	1.07E-5	-2.01E-3	8.48E-3
EP-fw	kg P eq	6.59E-5	6.70E-7	1.51E-6	6.81E-5	3.23E-7	1.52E-5	1.34E-8	-1.80E-5	6.57E-5
EP-m	kg N eq	1.42E-3	1.36E-4	1.70E-4	1.72E-3	8.01E-5	5.22E-4	6.53E-6	-3.75E-4	1.96E-3
EP-T	mol N eq	1.46E-2	1.50E-3	1.82E-3	1.79E-2	8.82E-4	5.75E-3	4.26E-5	-4.12E-3	2.05E-2
POCP	kg NMVOC eq	4.85E-3	4.27E-4	5.14E-4	5.79E-3	2.52E-4	1.73E-3	1.45E-5	-1.38E-3	6.40E-3
ADP-mm	kg Sb eq	4.23E-5	1.68E-6	2.40E-6	4.64E-5	1.02E-6	8.43E-6	1.06E-8	-9.67E-6	4.62E-5
ADP-f	MJ	3.74E+1	1.00E+0	1.22E+0	3.96E+1	6.03E-1	5.89E+0	3.23E-2	-1.45E+1	3.16E+1
WDP	m3 depriv.	2.31E+0	3.58E-3	8.27E-1	3.14E+0	1.85E-3	2.27E-1	1.81E-4	-6.91E-1	2.68E+0
PM	disease inc.	6.86E-8	5.96E-9	8.94E-9	8.35E-8	3.55E-9	2.69E-8	2.21E-10	-1.32E-8	1.01E-7
IR	kBq U-235 eq	7.76E-2	4.20E-3	2.21E-3	8.40E-2	2.64E-3	2.05E-2	1.48E-4	-2.31E-2	8.42E-2
ETP-fw	CTUe	2.60E+1	8.93E-1	2.04E+0	2.89E+1	4.90E-1	4.33E+1	4.76E-1	-7.60E+0	6.56E+1
HTP-c	CTUh	1.07E-9	2.90E-11	6.95E-11	1.17E-9	1.74E-11	6.47E-10	8.36E-13	-2.70E-10	1.56E-9
HTP-nc	CTUh	3.16E-8	9.77E-10	2.13E-9	3.47E-8	5.84E-10	1.54E-8	9.17E-11	-9.01E-9	4.17E-8
SQP	Pt	2.11E+1	8.69E-1	9.14E-2	2.21E+1	5.16E-1	3.70E+0	8.18E-2	-4.51E+0	2.19E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.17E+0	1.25E-2	3.69E+0	7.87E+0	8.65E-3	4.19E-1	1.16E-3	-1.15E+0	7.15E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.17E+0	1.25E-2	3.69E+0	7.87E+0	8.65E-3	4.19E-1	1.16E-3	-1.15E+0	7.15E+0
PENRE	MJ	4.01E+1	1.06E+0	1.32E+0	4.25E+1	6.40E-1	6.27E+0	3.42E-2	-1.57E+1	3.37E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.01E+1	1.06E+0	1.32E+0	4.25E+1	6.40E-1	6.27E+0	3.42E-2	-1.57E+1	3.37E+1
PET	MJ	4.43E+1	1.08E+0	5.01E+0	5.03E+1	6.49E-1	6.69E+0	3.54E-2	-1.68E+1	4.09E+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	2.65E-2	1.22E-4	1.95E-2	4.60E-2	6.82E-5	6.21E-3	3.95E-5	-7.43E-3	4.49E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.08E-5	2.54E-6	1.71E-6	3.50E-5	1.54E-6	9.48E-6	3.89E-8	-1.29E-5	3.32E-5
NHWD	kg	1.51E-1	6.35E-2	2.47E-3	2.17E-1	3.74E-2	2.20E-1	1.49E-1	-3.85E-2	5.85E-1
RWD	kg	7.01E-5	6.58E-6	3.07E-6	7.98E-5	4.10E-6	2.21E-5	2.11E-7	-2.08E-5	8.54E-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