Environmental Profile

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

Ecochain v3.5.80

Product:	3000393 - U3 Pipe GY KOMO 40x3 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	0.09	0	0.01	0.1	0	0.05	0	-0.03	0.12
ADPE	kg Sb-eq	2.13E-5	8.45E-7	1.20E-6	2.33E-5	5.08E-7	4.22E-6	5.28E-9	-4.84E-6	2.32E-5
ADPF	kg Sb-eq	8.87E-3	2.43E-4	3.22E-4	9.43E-3	1.43E-4	1.49E-3	7.46E-6	-3.55E-3	7.53E-3
GWP	kg CO2-eq	7.60E-1	3.31E-2	5.72E-2	8.50E-1	1.95E-2	4.94E-1	4.73E-3	-3.17E-1	1.05E+0
ODP	kg CFC-11-eq	3.83E-7	5.87E-9	5.38E-9	3.94E-7	3.61E-9	5.94E-8	1.79E-10	-1.26E-7	3.31E-7
POCP	kg ethene-eq	4.91E-4	2.00E-5	2.52E-5	5.37E-4	1.17E-5	1.18E-4	1.26E-6	-1.38E-4	5.29E-4
AP	kg SO2-eq	2.96E-3	1.45E-4	2.25E-4	3.33E-3	8.39E-5	8.53E-4	3.98E-6	-8.31E-4	3.44E-3
EP	kg PO4 3−-eq	4.04E-4	2.86E-5	3.55E-5	4.68E-4	1.67E-5	1.30E-4	1.54E-6	-1.07E-4	5.09E-4
HTP	kg 1,4-DB-eq	2.94E-1	1.39E-2	2.16E-2	3.29E-1	8.34E-3	2.31E-1	4.09E-4	-7.91E-2	4.89E-1
FAETP	kg 1,4-DB-eq	6.10E-2	4.07E-4	8.80E-4	6.23E-2	2.44E-4	3.40E-3	1.25E-4	-1.68E-3	6.43E-2
MAETP	kg 1,4-DB-eq	2.13E+1	1.46E+0	3.59E+0	2.64E+1	8.72E-1	1.12E+1	1.52E-1	-4.94E+0	3.36E+1
TETP	kg 1,4-DB-eq	2.61E-2	4.92E-5	1.34E-3	2.75E-2	2.95E-5	8.20E-4	1.34E-6	-5.54E-4	2.78E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	6.80E-1	3.34E-2	6.74E-2	7.81E-1	1.97E-2	6.19E-1	5.51E-3	-3.25E-1	1.10E+0
GWP-f	kg CO2 eq	7.72E-1	3.34E-2	5.28E-2	8.59E-1	1.96E-2	4.98E-1	5.50E-3	-3.23E-1	1.06E+0
GWP-b	kg CO2 eq	-9.88E-2	1.54E-5	1.14E-2	-8.74E-2	1.19E-5	1.20E-1	7.04E-6	-1.70E-3	3.12E-2
GWP-luluc	kg CO2 eq	7.02E-3	1.22E-5	3.22E-3	1.03E-2	6.95E-6	2.30E-4	1.48E-7	-1.73E-4	1.03E-2
ODP	kg CFC11 eq	3.79E-7	7.37E-9	6.38E-9	3.92E-7	4.53E-9	6.13E-8	2.23E-10	-1.26E-7	3.33E-7
AP	mol H+ eq	3.61E-3	1.94E-4	2.88E-4	4.10E-3	1.12E-4	1.07E-3	5.33E-6	-1.02E-3	4.27E-3
EP-fw	kg P eq	3.32E-5	3.37E-7	7.55E-7	3.43E-5	1.62E-7	7.62E-6	6.69E-9	-9.04E-6	3.30E-5
EP-m	kg N eq	7.19E-4	6.82E-5	8.48E-5	8.72E-4	4.00E-5	2.62E-4	3.27E-6	-1.91E-4	9.86E-4
EP-T	mol N eq	7.41E-3	7.52E-4	9.10E-4	9.08E-3	4.41E-4	2.89E-3	2.13E-5	-2.12E-3	1.03E-2
POCP	kg NMVOC eq	2.46E-3	2.15E-4	2.57E-4	2.93E-3	1.26E-4	8.67E-4	7.25E-6	-7.02E-4	3.23E-3
ADP-mm	kg Sb eq	2.13E-5	8.45E-7	1.20E-6	2.33E-5	5.08E-7	4.22E-6	5.28E-9	-4.84E-6	2.32E-5
ADP-f	MJ	1.87E+1	5.03E-1	6.11E-1	1.99E+1	3.02E-1	2.95E+0	1.61E-2	-7.25E+0	1.59E+1
WDP	m3 depriv.	1.16E+0	1.80E-3	4.13E-1	1.57E+0	9.25E-4	1.14E-1	9.07E-5	-3.46E-1	1.34E+0
PM	disease inc.	3.57E-8	3.00E-9	4.47E-9	4.32E-8	1.77E-9	1.35E-8	1.10E-10	-6.84E-9	5.17E-8
IR	kBq U-235 eq	3.91E-2	2.11E-3	1.10E-3	4.23E-2	1.32E-3	1.03E-2	7.40E-5	-1.16E-2	4.24E-2
ETP-fw	CTUe	1.31E+1	4.49E-1	1.02E+0	1.46E+1	2.45E-1	2.17E+1	2.38E-1	-3.92E+0	3.28E+1
HTP-c	CTUh	5.46E-10	1.46E-11	3.48E-11	5.96E-10	8.71E-12	3.25E-10	4.18E-13	-1.37E-10	7.93E-10
HTP-nc	CTUh	1.59E-8	4.91E-10	1.06E-9	1.75E-8	2.92E-10	7.70E-9	4.58E-11	-4.55E-9	2.09E-8
SQP	Pt	1.31E+1	4.37E-1	4.57E-2	1.36E+1	2.58E-1	1.85E+0	4.09E-2	-2.79E+0	1.29E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.46E+0	6.30E-3	1.84E+0	4.31E+0	4.33E-3	2.10E-1	5.80E-4	-6.84E-1	3.84E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.46E+0	6.30E-3	1.84E+0	4.31E+0	4.33E-3	2.10E-1	5.80E-4	-6.84E-1	3.84E+0
PENRE	MJ	2.01E+1	5.34E-1	6.62E-1	2.13E+1	3.20E-1	3.14E+0	1.71E-2	-7.85E+0	1.69E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.01E+1	5.34E-1	6.62E-1	2.13E+1	3.20E-1	3.14E+0	1.71E-2	-7.85E+0	1.69E+1
PET	MJ	2.26E+1	5.41E-1	2.51E+0	2.56E+1	3.24E-1	3.35E+0	1.77E-2	-8.54E+0	2.08E+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	1.33E-2	6.13E-5	9.73E-3	2.31E-2	3.41E-5	3.11E-3	1.98E-5	-3.72E-3	2.25E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.56E-5	1.28E-6	8.56E-7	1.77E-5	7.71E-7	4.75E-6	1.94E-8	-6.46E-6	1.68E-5
NHWD	kg	7.68E-2	3.19E-2	1.23E-3	1.10E-1	1.87E-2	1.11E-1	7.47E-2	-1.95E-2	2.94E-1
RWD	kg	3.54E-5	3.30E-6	1.54E-6	4.02E-5	2.05E-6	1.11E-5	1.05E-7	-1.04E-5	4.30E-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