Environmental Profile

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

Ecochain v3.5.80

Product:	3000452 - U3 Pipe GY KOMO 315 SN4 L=5 SC/CH
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	4.84	0.25	0.41	5.5	0.15	3.24	0.02	-1.35	7.55
ADPE	kg Sb-eq	1.43E-3	5.22E-5	7.50E-5	1.55E-3	3.16E-5	2.61E-4	3.28E-7	-2.07E-4	1.64E-3
ADPF	kg Sb-eq	4.87E-1	1.50E-2	2.01E-2	5.22E-1	8.89E-3	9.22E-2	4.64E-4	-1.72E-1	4.52E-1
GWP	kg CO2-eq	4.22E+1	2.04E+0	3.57E+0	4.78E+1	1.21E+0	3.12E+1	2.94E-1	-1.59E+1	6.47E+1
ODP	kg CFC-11-eq	2.03E-5	3.62E-7	3.36E-7	2.10E-5	2.25E-7	3.68E-6	1.12E-8	-5.37E-6	1.96E-5
POCP	kg ethene-eq	2.77E-2	1.23E-3	1.57E-3	3.05E-2	7.27E-4	7.28E-3	7.81E-5	-6.25E-3	3.24E-2
AP	kg SO2-eq	1.65E-1	8.98E-3	1.40E-2	1.88E-1	5.21E-3	5.29E-2	2.47E-4	-3.63E-2	2.10E-1
EP	kg PO4 3−-eq	2.25E-2	1.76E-3	2.21E-3	2.65E-2	1.04E-3	8.04E-3	9.73E-5	-4.79E-3	3.09E-2
HTP	kg 1,4-DB-eq	1.61E+1	8.60E-1	1.35E+0	1.83E+1	5.18E-1	1.43E+1	2.54E-2	-3.42E+0	2.97E+1
FAETP	kg 1,4-DB-eq	2.90E+0	2.51E-2	5.49E-2	2.98E+0	1.52E-2	2.10E-1	7.77E-3	-7.10E-2	3.14E+0
MAETP	kg 1,4-DB-eq	1.23E+3	9.03E+1	2.24E+2	1.55E+3	5.42E+1	6.91E+2	9.43E+0	-2.10E+2	2.09E+3
TETP	kg 1,4-DB-eq	1.23E+0	3.04E-3	8.38E-2	1.32E+0	1.84E-3	5.09E-2	8.35E-5	-2.33E-2	1.35E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.83E+1	2.06E+0	4.21E+0	4.45E+1	1.22E+0	3.79E+1	3.42E-1	-1.62E+1	6.78E+1
GWP-f	kg CO2 eq	4.30E+1	2.06E+0	3.29E+0	4.83E+1	1.22E+0	3.15E+1	3.42E-1	-1.62E+1	6.52E+1
GWP-b	kg CO2 eq	-5.02E+0	9.50E-4	7.12E-1	-4.31E+0	7.41E-4	6.45E+0	4.38E-4	-7.06E-2	2.07E+0
GWP-luluc	kg CO2 eq	3.31E-1	7.54E-4	2.01E-1	5.32E-1	4.32E-4	1.42E-2	9.17E-6	-7.41E-3	5.40E-1
ODP	kg CFC11 eq	2.01E-5	4.54E-7	3.98E-7	2.10E-5	2.81E-7	3.80E-6	1.39E-8	-5.40E-6	1.97E-5
AP	mol H+ eq	2.02E-1	1.19E-2	1.80E-2	2.32E-1	6.95E-3	6.64E-2	3.31E-4	-4.46E-2	2.61E-1
EP-fw	kg P eq	1.82E-3	2.08E-5	4.71E-5	1.88E-3	1.00E-5	4.72E-4	4.14E-7	-3.77E-4	1.99E-3
EP-m	kg N eq	4.05E-2	4.21E-3	5.30E-3	5.00E-2	2.49E-3	1.62E-2	2.06E-4	-8.75E-3	6.02E-2
EP-T	mol N eq	4.22E-1	4.64E-2	5.68E-2	5.25E-1	2.74E-2	1.79E-1	1.33E-3	-9.81E-2	6.35E-1
POCP	kg NMVOC eq	1.40E-1	1.32E-2	1.60E-2	1.69E-1	7.84E-3	5.38E-2	4.51E-4	-3.22E-2	1.99E-1
ADP-mm	kg Sb eq	1.43E-3	5.22E-5	7.49E-5	1.55E-3	3.16E-5	2.61E-4	3.28E-7	-2.07E-4	1.64E-3
ADP-f	MJ	1.03E+3	3.11E+1	3.81E+1	1.10E+3	1.87E+1	1.83E+2	1.00E+0	-3.48E+2	9.52E+2
WDP	m3 depriv.	6.15E+1	1.11E-1	2.58E+1	8.74E+1	5.75E-2	7.04E+0	5.44E-3	-1.43E+1	8.02E+1
PM	disease inc.	2.11E-6	1.85E-7	2.79E-7	2.57E-6	1.10E-7	8.36E-7	6.87E-9	-3.02E-7	3.22E-6
IR	kBq U-235 eq	2.16E+0	1.30E-1	6.88E-2	2.36E+0	8.19E-2	6.37E-1	4.61E-3	-4.93E-1	2.59E+0
ETP-fw	CTUe	7.21E+2	2.77E+1	6.36E+1	8.12E+2	1.52E+1	1.34E+3	1.48E+1	-1.72E+2	2.01E+3
HTP-c	CTUh	2.97E-8	8.98E-10	2.17E-9	3.28E-8	5.42E-10	2.00E-8	2.58E-11	-5.86E-9	4.74E-8
HTP-nc	CTUh	8.57E-7	3.03E-8	6.64E-8	9.54E-7	1.81E-8	4.77E-7	2.84E-9	-1.91E-7	1.26E-6
SQP	Pt	7.15E+2	2.69E+1	2.85E+0	7.45E+2	1.60E+1	1.15E+2	2.54E+0	-1.44E+2	7.34E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.33E+2	3.89E-1	1.15E+2	2.49E+2	2.69E-1	1.30E+1	3.62E-2	-3.40E+1	2.28E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.33E+2	3.89E-1	1.15E+2	2.49E+2	2.69E-1	1.30E+1	3.62E-2	-3.40E+1	2.28E+2
PENRE	MJ	1.10E+3	3.30E+1	4.13E+1	1.18E+3	1.99E+1	1.94E+2	1.06E+0	-3.78E+2	1.01E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.10E+3	3.30E+1	4.13E+1	1.18E+3	1.99E+1	1.94E+2	1.06E+0	-3.78E+2	1.01E+3
PET	MJ	1.24E+3	3.34E+1	1.56E+2	1.43E+3	2.02E+1	2.07E+2	1.10E+0	-4.12E+2	1.24E+3
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	7.17E-1	3.78E-3	6.07E-1	1.33E+0	2.12E-3	1.93E-1	1.23E-3	-1.57E-1	1.37E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	8.56E-4	7.87E-5	5.34E-5	9.88E-4	4.79E-5	2.95E-4	1.21E-6	-3.22E-4	1.01E-3
NHWD	kg	4.24E+0	1.97E+0	7.71E-2	6.28E+0	1.16E+0	6.85E+0	4.65E+0	-8.25E-1	1.81E+1
RWD	kg	1.99E-3	2.04E-4	9.59E-5	2.29E-3	1.27E-4	6.86E-4	6.56E-6	-4.52E-4	2.66E-3
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

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777