Environmental Profile

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

Ecochain v3.5.80

Product:	3000289 - U3 Pipe GY KOMO 400 SN8 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	8.07	0.45	0.74	9.25	0.26	5.84	0.04	-2.02	13.38
ADPE	kg Sb-eq	2.31E-3	9.47E-5	1.35E-4	2.54E-3	5.71E-5	4.73E-4	5.90E-7	-2.68E-4	2.80E-3
ADPF	kg Sb-eq	8.10E-1	2.73E-2	3.61E-2	8.74E-1	1.61E-2	1.67E-1	8.37E-4	-2.61E-1	7.97E-1
GWP	kg CO2-eq	7.10E+1	3.71E+0	6.42E+0	8.12E+1	2.19E+0	5.61E+1	5.28E-1	-2.46E+1	1.15E+2
ODP	kg CFC-11-eq	3.32E-5	6.58E-7	6.03E-7	3.45E-5	4.06E-7	6.67E-6	2.01E-8	-7.22E-6	3.44E-5
POCP	kg ethene-eq	4.70E-2	2.24E-3	2.83E-3	5.20E-2	1.31E-3	1.32E-2	1.41E-4	-9.11E-3	5.76E-2
AP	kg SO2-eq	2.80E-1	1.63E-2	2.52E-2	3.21E-1	9.42E-3	9.60E-2	4.46E-4	-5.14E-2	3.75E-1
EP	kg PO4 3−-eq	3.81E-2	3.20E-3	3.98E-3	4.53E-2	1.88E-3	1.46E-2	1.75E-4	-7.22E-3	5.47E-2
HTP	kg 1,4-DB-eq	2.68E+1	1.56E+0	2.42E+0	3.08E+1	9.37E-1	2.59E+1	4.58E-2	-4.78E+0	5.29E+1
FAETP	kg 1,4-DB-eq	3.68E+0	4.56E-2	9.86E-2	3.83E+0	2.74E-2	3.81E-1	1.40E-2	-9.71E-2	4.15E+0
MAETP	kg 1,4-DB-eq	2.13E+3	1.64E+2	4.03E+2	2.70E+3	9.80E+1	1.25E+3	1.70E+1	-2.85E+2	3.78E+3
TETP	kg 1,4-DB-eq	1.54E+0	5.52E-3	1.51E-1	1.69E+0	3.32E-3	9.20E-2	1.51E-4	-3.16E-2	1.76E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	6.01E+1	3.74E+0	7.56E+0	7.14E+1	2.21E+0	7.20E+1	6.15E-1	-2.51E+1	1.21E+2
GWP-f	kg CO2 eq	7.24E+1	3.74E+0	5.92E+0	8.21E+1	2.21E+0	5.66E+1	6.15E-1	-2.50E+1	1.16E+2
GWP-b	kg CO2 eq	-1.28E+1	1.73E-3	1.28E+0	-1.15E+1	1.34E-3	1.55E+1	7.90E-4	-9.30E-2	3.89E+0
GWP-luluc	kg CO2 eq	4.16E-1	1.37E-3	3.61E-1	7.79E-1	7.81E-4	2.58E-2	1.65E-5	-1.07E-2	7.94E-1
ODP	kg CFC11 eq	3.30E-5	8.25E-7	7.15E-7	3.45E-5	5.09E-7	6.88E-6	2.50E-8	-7.31E-6	3.46E-5
AP	mol H+ eq	3.43E-1	2.17E-2	3.23E-2	3.97E-1	1.26E-2	1.20E-1	5.97E-4	-6.40E-2	4.66E-1
EP-fw	kg P eq	3.04E-3	3.77E-5	8.47E-5	3.17E-3	1.82E-5	8.55E-4	7.45E-7	-5.03E-4	3.54E-3
EP-m	kg N eq	6.91E-2	7.64E-3	9.52E-3	8.62E-2	4.50E-3	2.95E-2	3.71E-4	-1.32E-2	1.07E-1
EP-T	mol N eq	7.33E-1	8.42E-2	1.02E-1	9.19E-1	4.96E-2	3.26E-1	2.39E-3	-1.53E-1	1.14E+0
POCP	kg NMVOC eq	2.42E-1	2.40E-2	2.88E-2	2.95E-1	1.42E-2	9.77E-2	8.13E-4	-4.83E-2	3.59E-1
ADP-mm	kg Sb eq	2.31E-3	9.47E-5	1.35E-4	2.54E-3	5.71E-5	4.73E-4	5.90E-7	-2.68E-4	2.80E-3
ADP-f	MJ	1.71E+3	5.64E+1	6.85E+1	1.83E+3	3.39E+1	3.31E+2	1.81E+0	-5.20E+2	1.68E+3
WDP	m3 depriv.	1.01E+2	2.02E-1	4.63E+1	1.47E+2	1.04E-1	1.27E+1	9.57E-3	-1.86E+1	1.41E+2
PM	disease inc.	3.87E-6	3.36E-7	5.01E-7	4.71E-6	1.99E-7	1.52E-6	1.24E-8	-4.59E-7	5.98E-6
IR	kBq U-235 eq	3.60E+0	2.36E-1	1.24E-1	3.96E+0	1.48E-1	1.15E+0	8.32E-3	-6.64E-1	4.60E+0
ETP-fw	CTUe	1.21E+3	5.03E+1	1.14E+2	1.37E+3	2.75E+1	2.43E+3	2.67E+1	-2.59E+2	3.60E+3
HTP-c	CTUh	5.08E-8	1.63E-9	3.90E-9	5.63E-8	9.79E-10	3.63E-8	4.64E-11	-8.23E-9	8.54E-8
HTP-nc	CTUh	1.43E-6	5.50E-8	1.19E-7	1.60E-6	3.28E-8	8.64E-7	5.14E-9	-2.60E-7	2.24E-6
SQP	Pt	1.63E+3	4.89E+1	5.13E+0	1.69E+3	2.90E+1	2.08E+2	4.59E+0	-3.27E+2	1.60E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.87E+2	7.06E-1	2.07E+2	4.94E+2	4.86E-1	2.35E+1	6.53E-2	-7.22E+1	4.46E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.87E+2	7.06E-1	2.07E+2	4.94E+2	4.86E-1	2.35E+1	6.53E-2	-7.22E+1	4.46E+2
PENRE	MJ	1.83E+3	5.99E+1	7.43E+1	1.97E+3	3.60E+1	3.52E+2	1.92E+0	-5.66E+2	1.79E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.83E+3	5.99E+1	7.43E+1	1.97E+3	3.60E+1	3.52E+2	1.92E+0	-5.66E+2	1.79E+3
PET	MJ	2.12E+3	6.06E+1	2.81E+2	2.46E+3	3.65E+1	3.76E+2	1.99E+0	-6.39E+2	2.24E+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	1.18E+0	6.87E-3	1.09E+0	2.28E+0	3.83E-3	3.50E-1	2.22E-3	-2.10E-1	2.42E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.46E-3	1.43E-4	9.59E-5	1.69E-3	8.67E-5	5.34E-4	2.17E-6	-4.99E-4	1.82E-3
NHWD	kg	7.26E+0	3.58E+0	1.38E-1	1.10E+1	2.10E+0	1.25E+1	8.41E+0	-1.14E+0	3.28E+1
RWD	kg	3.34E-3	3.70E-4	1.72E-4	3.88E-3	2.30E-4	1.24E-3	1.18E-5	-6.20E-4	4.75E-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

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