Environmental Profile

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

Ecochain v3.5.80

Product:	3000450 - U3 Pipe GY KOMO 250 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	3.06	0.15	0.26	3.47	0.09	2.04	0.01	-0.85	4.76
ADPE	kg Sb-eq	9.06E-4	3.28E-5	4.68E-5	9.86E-4	1.99E-5	1.64E-4	2.06E-7	-1.31E-4	1.04E-3
ADPF	kg Sb-eq	3.07E-1	9.44E-3	1.26E-2	3.29E-1	5.59E-3	5.80E-2	2.92E-4	-1.09E-1	2.84E-1
GWP	kg CO2-eq	2.66E+1	1.28E+0	2.23E+0	3.01E+1	7.62E-1	1.97E+1	1.85E-1	-1.00E+1	4.07E+1
ODP	kg CFC-11-eq	1.28E-5	2.28E-7	2.10E-7	1.32E-5	1.41E-7	2.32E-6	7.02E-9	-3.39E-6	1.23E-5
POCP	kg ethene-eq	1.75E-2	7.74E-4	9.83E-4	1.92E-2	4.57E-4	4.58E-3	4.92E-5	-3.94E-3	2.04E-2
AP	kg SO2-eq	1.04E-1	5.64E-3	8.75E-3	1.18E-1	3.28E-3	3.33E-2	1.56E-4	-2.28E-2	1.32E-1
EP	kg PO4 3−-eq	1.43E-2	1.11E-3	1.38E-3	1.68E-2	6.55E-4	5.05E-3	6.12E-5	-3.01E-3	1.95E-2
HTP	kg 1,4-DB-eq	1.01E+1	5.40E-1	8.42E-1	1.15E+1	3.26E-1	8.98E+0	1.60E-2	-2.16E+0	1.87E+1
FAETP	kg 1,4-DB-eq	2.00E+0	1.58E-2	3.43E-2	2.05E+0	9.55E-3	1.32E-1	4.89E-3	-4.47E-2	2.15E+0
MAETP	kg 1,4-DB-eq	7.76E+2	5.67E+1	1.40E+2	9.73E+2	3.41E+1	4.35E+2	5.93E+0	-1.32E+2	1.31E+3
TETP	kg 1,4-DB-eq	8.53E-1	1.91E-3	5.23E-2	9.07E-1	1.15E-3	3.20E-2	5.26E-5	-1.47E-2	9.26E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.42E+1	1.30E+0	2.63E+0	2.81E+1	7.69E-1	2.38E+1	2.15E-1	-1.02E+1	4.27E+1
GWP-f	kg CO2 eq	2.70E+1	1.29E+0	2.06E+0	3.04E+1	7.68E-1	1.98E+1	2.15E-1	-1.02E+1	4.10E+1
GWP-b	kg CO2 eq	-3.05E+0	5.97E-4	4.45E-1	-2.60E+0	4.66E-4	3.95E+0	2.76E-4	-4.46E-2	1.30E+0
GWP-luluc	kg CO2 eq	2.29E-1	4.74E-4	1.25E-1	3.55E-1	2.72E-4	8.95E-3	5.77E-6	-4.65E-3	3.59E-1
ODP	kg CFC11 eq	1.27E-5	2.86E-7	2.49E-7	1.32E-5	1.77E-7	2.39E-6	8.72E-9	-3.41E-6	1.24E-5
AP	mol H+ eq	1.27E-1	7.51E-3	1.12E-2	1.46E-1	4.38E-3	4.17E-2	2.08E-4	-2.81E-2	1.64E-1
EP-fw	kg P eq	1.14E-3	1.31E-5	2.94E-5	1.19E-3	6.32E-6	2.97E-4	2.61E-7	-2.38E-4	1.25E-3
EP-m	kg N eq	2.56E-2	2.64E-3	3.31E-3	3.16E-2	1.57E-3	1.02E-2	1.30E-4	-5.50E-3	3.80E-2
EP-T	mol N eq	2.66E-1	2.92E-2	3.55E-2	3.30E-1	1.73E-2	1.13E-1	8.34E-4	-6.16E-2	3.99E-1
POCP	kg NMVOC eq	8.82E-2	8.33E-3	1.00E-2	1.07E-1	4.93E-3	3.38E-2	2.84E-4	-2.03E-2	1.25E-1
ADP-mm	kg Sb eq	9.06E-4	3.28E-5	4.68E-5	9.85E-4	1.99E-5	1.64E-4	2.06E-7	-1.31E-4	1.04E-3
ADP-f	MJ	6.47E+2	1.95E+1	2.38E+1	6.90E+2	1.18E+1	1.15E+2	6.31E-1	-2.19E+2	5.98E+2
WDP	m3 depriv.	3.87E+1	6.98E-2	1.61E+1	5.49E+1	3.62E-2	4.43E+0	3.44E-3	-9.01E+0	5.03E+1
PM	disease inc.	1.32E-6	1.16E-7	1.74E-7	1.61E-6	6.93E-8	5.26E-7	4.32E-9	-1.89E-7	2.02E-6
IR	kBq U-235 eq	1.36E+0	8.18E-2	4.30E-2	1.48E+0	5.15E-2	4.00E-1	2.90E-3	-3.11E-1	1.63E+0
ETP-fw	CTUe	4.55E+2	1.74E+1	3.97E+1	5.12E+2	9.57E+0	8.44E+2	9.28E+0	-1.08E+2	1.27E+3
HTP-c	CTUh	1.87E-8	5.65E-10	1.36E-9	2.06E-8	3.41E-10	1.26E-8	1.63E-11	-3.69E-9	2.98E-8
HTP-nc	CTUh	5.40E-7	1.90E-8	4.15E-8	6.01E-7	1.14E-8	3.00E-7	1.79E-9	-1.20E-7	7.94E-7
SQP	Pt	4.38E+2	1.69E+1	1.78E+0	4.57E+2	1.01E+1	7.22E+1	1.60E+0	-8.80E+1	4.53E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	8.23E+1	2.44E-1	7.19E+1	1.54E+2	1.69E-1	8.18E+0	2.28E-2	-2.08E+1	1.42E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	8.23E+1	2.44E-1	7.19E+1	1.54E+2	1.69E-1	8.18E+0	2.28E-2	-2.08E+1	1.42E+2
PENRE	MJ	6.94E+2	2.07E+1	2.58E+1	7.41E+2	1.25E+1	1.22E+2	6.70E-1	-2.38E+2	6.38E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	6.94E+2	2.07E+1	2.58E+1	7.41E+2	1.25E+1	1.22E+2	6.70E-1	-2.38E+2	6.38E+2
PET	MJ	7.76E+2	2.10E+1	9.77E+1	8.95E+2	1.27E+1	1.30E+2	6.93E-1	-2.59E+2	7.80E+2
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	4.53E-1	2.38E-3	3.79E-1	8.35E-1	1.33E-3	1.22E-1	7.74E-4	-9.91E-2	8.59E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.38E-4	4.95E-5	3.34E-5	6.21E-4	3.02E-5	1.85E-4	7.59E-7	-2.03E-4	6.34E-4
NHWD	kg	2.66E+0	1.24E+0	4.81E-2	3.95E+0	7.31E-1	4.31E+0	2.93E+0	-5.20E-1	1.14E+1
RWD	kg	1.25E-3	1.28E-4	5.99E-5	1.44E-3	8.02E-5	4.31E-4	4.13E-6	-2.85E-4	1.67E-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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