Environmental Profile

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

Ecochain v3.5.80

Product:	3000456 - U3 Pipe GY KOMO 400 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	7.23	0.4	0.66	8.29	0.24	5.22	0.03	-1.82	11.96
ADPE	kg Sb-eq	2.10E-3	8.47E-5	1.19E-4	2.31E-3	5.09E-5	4.22E-4	5.26E-7	-2.40E-4	2.54E-3
ADPF	kg Sb-eq	7.26E-1	2.44E-2	3.20E-2	7.82E-1	1.43E-2	1.49E-1	7.47E-4	-2.33E-1	7.13E-1
GWP	kg CO2-eq	6.37E+1	3.31E+0	5.69E+0	7.27E+1	1.95E+0	5.01E+1	4.71E-1	-2.20E+1	1.03E+2
ODP	kg CFC-11-eq	2.97E-5	5.88E-7	5.35E-7	3.08E-5	3.62E-7	5.95E-6	1.80E-8	-6.45E-6	3.07E-5
POCP	kg ethene-eq	4.23E-2	2.00E-3	2.51E-3	4.68E-2	1.17E-3	1.18E-2	1.25E-4	-8.20E-3	5.17E-2
AP	kg SO2-eq	2.51E-1	1.46E-2	2.23E-2	2.88E-1	8.40E-3	8.57E-2	3.98E-4	-4.63E-2	3.36E-1
EP	kg PO4 3−-eq	3.43E-2	2.86E-3	3.53E-3	4.07E-2	1.68E-3	1.30E-2	1.56E-4	-6.59E-3	4.90E-2
HTP	kg 1,4-DB-eq	2.41E+1	1.40E+0	2.15E+0	2.76E+1	8.35E-1	2.31E+1	4.09E-2	-4.31E+0	4.73E+1
FAETP	kg 1,4-DB-eq	3.23E+0	4.07E-2	8.75E-2	3.35E+0	2.45E-2	3.40E-1	1.25E-2	-8.74E-2	3.64E+0
MAETP	kg 1,4-DB-eq	1.92E+3	1.47E+2	3.57E+2	2.42E+3	8.74E+1	1.12E+3	1.51E+1	-2.55E+2	3.38E+3
TETP	kg 1,4-DB-eq	1.34E+0	4.93E-3	1.34E-1	1.48E+0	2.96E-3	8.21E-2	1.34E-4	-2.85E-2	1.54E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	5.23E+1	3.35E+0	6.71E+0	6.24E+1	1.97E+0	6.59E+1	5.49E-1	-2.25E+1	1.08E+2
GWP-f	kg CO2 eq	6.49E+1	3.34E+0	5.25E+0	7.35E+1	1.97E+0	5.05E+1	5.49E-1	-2.24E+1	1.04E+2
GWP-b	kg CO2 eq	-1.30E+1	1.54E-3	1.14E+0	-1.19E+1	1.20E-3	1.54E+1	7.05E-4	-8.28E-2	3.46E+0
GWP-luluc	kg CO2 eq	3.65E-1	1.22E-3	3.20E-1	6.86E-1	6.97E-4	2.30E-2	1.47E-5	-9.80E-3	7.00E-1
ODP	kg CFC11 eq	2.94E-5	7.38E-7	6.34E-7	3.08E-5	4.54E-7	6.14E-6	2.23E-8	-6.53E-6	3.09E-5
AP	mol H+ eq	3.08E-1	1.94E-2	2.86E-2	3.56E-1	1.12E-2	1.08E-1	5.33E-4	-5.79E-2	4.18E-1
EP-fw	kg P eq	2.73E-3	3.37E-5	7.51E-5	2.84E-3	1.62E-5	7.62E-4	6.65E-7	-4.51E-4	3.17E-3
EP-m	kg N eq	6.21E-2	6.83E-3	8.44E-3	7.74E-2	4.01E-3	2.64E-2	3.32E-4	-1.20E-2	9.61E-2
EP-T	mol N eq	6.61E-1	7.53E-2	9.05E-2	8.27E-1	4.42E-2	2.91E-1	2.13E-3	-1.40E-1	1.02E+0
POCP	kg NMVOC eq	2.18E-1	2.15E-2	2.56E-2	2.65E-1	1.26E-2	8.74E-2	7.25E-4	-4.37E-2	3.22E-1
ADP-mm	kg Sb eq	2.10E-3	8.47E-5	1.19E-4	2.31E-3	5.09E-5	4.22E-4	5.26E-7	-2.40E-4	2.54E-3
ADP-f	MJ	1.53E+3	5.04E+1	6.08E+1	1.64E+3	3.02E+1	2.95E+2	1.62E+0	-4.65E+2	1.50E+3
WDP	m3 depriv.	8.98E+1	1.80E-1	4.11E+1	1.31E+2	9.27E-2	1.14E+1	8.53E-3	-1.66E+1	1.26E+2
PM	disease inc.	3.54E-6	3.00E-7	4.45E-7	4.29E-6	1.78E-7	1.35E-6	1.11E-8	-4.22E-7	5.41E-6
IR	kBq U-235 eq	3.24E+0	2.11E-1	1.10E-1	3.56E+0	1.32E-1	1.03E+0	7.42E-3	-5.94E-1	4.13E+0
ETP-fw	CTUe	1.09E+3	4.50E+1	1.01E+2	1.23E+3	2.45E+1	2.17E+3	2.38E+1	-2.37E+2	3.21E+3
HTP-c	CTUh	4.59E-8	1.46E-9	3.46E-9	5.08E-8	8.73E-10	3.25E-8	4.14E-11	-7.44E-9	7.68E-8
HTP-nc	CTUh	1.28E-6	4.92E-8	1.06E-7	1.43E-6	2.92E-8	7.71E-7	4.58E-9	-2.35E-7	2.00E-6
SQP	Pt	1.61E+3	4.37E+1	4.55E+0	1.65E+3	2.59E+1	1.86E+2	4.10E+0	-3.23E+2	1.55E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.78E+2	6.31E-1	1.83E+2	4.62E+2	4.33E-1	2.10E+1	5.83E-2	-7.07E+1	4.13E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.78E+2	6.31E-1	1.83E+2	4.62E+2	4.33E-1	2.10E+1	5.83E-2	-7.07E+1	4.13E+2
PENRE	MJ	1.64E+3	5.35E+1	6.59E+1	1.76E+3	3.21E+1	3.14E+2	1.71E+0	-5.06E+2	1.60E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.64E+3	5.35E+1	6.59E+1	1.76E+3	3.21E+1	3.14E+2	1.71E+0	-5.06E+2	1.60E+3
PET	MJ	1.92E+3	5.42E+1	2.49E+2	2.22E+3	3.25E+1	3.35E+2	1.77E+0	-5.77E+2	2.01E+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	1.05E+0	6.14E-3	9.68E-1	2.03E+0	3.42E-3	3.13E-1	1.98E-3	-1.87E-1	2.16E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.31E-3	1.28E-4	8.51E-5	1.52E-3	7.73E-5	4.76E-4	1.94E-6	-4.46E-4	1.63E-3
NHWD	kg	6.55E+0	3.20E+0	1.23E-1	9.87E+0	1.87E+0	1.11E+1	7.50E+0	-1.03E+0	2.94E+1
RWD	kg	3.01E-3	3.31E-4	1.53E-4	3.49E-3	2.05E-4	1.11E-3	1.06E-5	-5.56E-4	4.26E-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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