Environmental Profile

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

Ecochain v3.5.80

Product:	3000400 - U3 Pipe GY KOMO 50x3 L=5
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

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Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	0.24	0.01	0.02	0.27	0.01	0.17	0	-0.07	0.38
ADPE	kg Sb-eq	5.96E-5	2.68E-6	3.84E-6	6.61E-5	1.63E-6	1.35E-5	1.68E-8	-1.01E-5	7.12E-5
ADPF	kg Sb-eq	2.46E-2	7.72E-4	1.03E-3	2.64E-2	4.58E-4	4.76E-3	2.38E-5	-8.70E-3	2.29E-2
GWP	kg CO2-eq	2.12E+0	1.05E-1	1.83E-1	2.41E+0	6.24E-2	1.58E+0	1.50E-2	-8.00E-1	3.27E+0
ODP	kg CFC-11-eq	1.04E-6	1.86E-8	1.72E-8	1.08E-6	1.16E-8	1.90E-7	5.73E-10	-2.72E-7	1.01E-6
POCP	kg ethene-eq	1.37E-3	6.33E-5	8.07E-5	1.52E-3	3.75E-5	3.75E-4	4.00E-6	-3.15E-4	1.62E-3
AP	kg SO2-eq	8.26E-3	4.62E-4	7.19E-4	9.44E-3	2.69E-4	2.73E-3	1.27E-5	-1.82E-3	1.06E-2
EP	kg PO4 3−-eq	1.10E-3	9.07E-5	1.13E-4	1.31E-3	5.36E-5	4.13E-4	4.94E-6	-2.38E-4	1.54E-3
HTP	kg 1,4-DB-eq	8.05E-1	4.42E-2	6.91E-2	9.18E-1	2.67E-2	7.38E-1	1.31E-3	-1.72E-1	1.51E+0
FAETP	kg 1,4-DB-eq	1.06E-1	1.29E-3	2.81E-3	1.10E-1	7.82E-4	1.09E-2	3.99E-4	-3.58E-3	1.18E-1
MAETP	kg 1,4-DB-eq	6.19E+1	4.64E+0	1.15E+1	7.81E+1	2.79E+0	3.57E+1	4.84E-1	-1.06E+1	1.06E+2
TETP	kg 1,4-DB-eq	4.42E-2	1.56E-4	4.29E-3	4.86E-2	9.46E-5	2.63E-3	4.29E-6	-1.18E-3	5.02E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.99E+0	1.06E-1	2.16E-1	2.31E+0	6.30E-2	1.86E+0	1.75E-2	-8.19E-1	3.43E+0
GWP-f	kg CO2 eq	2.17E+0	1.06E-1	1.69E-1	2.44E+0	6.29E-2	1.59E+0	1.75E-2	-8.15E-1	3.30E+0
GWP-b	kg CO2 eq	-1.90E-1	4.89E-5	3.65E-2	-1.54E-1	3.82E-5	2.65E-1	2.25E-5	-3.62E-3	1.08E-1
GWP-luluc	kg CO2 eq	1.19E-2	3.88E-5	1.03E-2	2.22E-2	2.23E-5	7.35E-4	4.70E-7	-3.69E-4	2.26E-2
ODP	kg CFC11 eq	1.03E-6	2.34E-8	2.04E-8	1.07E-6	1.45E-8	1.96E-7	7.12E-10	-2.74E-7	1.01E-6
AP	mol H+ eq	1.01E-2	6.14E-4	9.21E-4	1.16E-2	3.58E-4	3.42E-3	1.70E-5	-2.24E-3	1.32E-2
EP-fw	kg P eq	9.16E-5	1.07E-6	2.42E-6	9.51E-5	5.18E-7	2.44E-5	2.13E-8	-1.91E-5	1.01E-4
EP-m	kg N eq	1.99E-3	2.16E-4	2.72E-4	2.48E-3	1.28E-4	8.35E-4	1.05E-5	-4.36E-4	3.01E-3
EP-T	mol N eq	2.10E-2	2.39E-3	2.91E-3	2.63E-2	1.41E-3	9.20E-3	6.81E-5	-4.85E-3	3.21E-2
POCP	kg NMVOC eq	6.98E-3	6.81E-4	8.22E-4	8.48E-3	4.04E-4	2.77E-3	2.31E-5	-1.61E-3	1.01E-2
ADP-mm	kg Sb eq	5.96E-5	2.68E-6	3.84E-6	6.61E-5	1.63E-6	1.35E-5	1.68E-8	-1.01E-5	7.12E-5
ADP-f	MJ	5.19E+1	1.60E+0	1.96E+0	5.54E+1	9.66E-1	9.44E+0	5.16E-2	-1.76E+1	4.83E+1
WDP	m3 depriv.	3.14E+0	5.71E-3	1.32E+0	4.46E+0	2.96E-3	3.64E-1	2.76E-4	-7.27E-1	4.10E+0
PM	disease inc.	1.02E-7	9.51E-9	1.43E-8	1.26E-7	5.68E-9	4.31E-8	3.53E-10	-1.49E-8	1.61E-7
IR	kBq U-235 eq	1.07E-1	6.69E-3	3.53E-3	1.18E-1	4.22E-3	3.29E-2	2.37E-4	-2.49E-2	1.30E-1
ETP-fw	CTUe	3.57E+1	1.42E+0	3.26E+0	4.04E+1	7.84E-1	6.94E+1	7.63E-1	-8.51E+0	1.03E+2
HTP-c	CTUh	1.48E-9	4.62E-11	1.11E-10	1.64E-9	2.79E-11	1.03E-9	1.33E-12	-2.94E-10	2.40E-9
HTP-nc	CTUh	4.33E-8	1.56E-9	3.40E-9	4.82E-8	9.35E-10	2.46E-8	1.47E-10	-9.61E-9	6.43E-8
SQP	Pt	3.09E+1	1.39E+0	1.46E-1	3.24E+1	8.26E-1	5.93E+0	1.31E-1	-6.26E+0	3.31E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.96E+0	2.00E-2	5.90E+0	1.19E+1	1.39E-2	6.72E-1	1.86E-3	-1.51E+0	1.11E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.96E+0	2.00E-2	5.90E+0	1.19E+1	1.39E-2	6.72E-1	1.86E-3	-1.51E+0	1.11E+1
PENRE	MJ	5.57E+1	1.70E+0	2.12E+0	5.95E+1	1.03E+0	1.00E+1	5.47E-2	-1.91E+1	5.15E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.57E+1	1.70E+0	2.12E+0	5.95E+1	1.03E+0	1.00E+1	5.47E-2	-1.91E+1	5.15E+1
PET	MJ	6.16E+1	1.72E+0	8.02E+0	7.13E+1	1.04E+0	1.07E+1	5.66E-2	-2.06E+1	6.26E+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	3.58E-2	1.94E-4	3.11E-2	6.72E-2	1.09E-4	9.96E-3	6.32E-5	-7.98E-3	6.93E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.31E-5	4.05E-6	2.74E-6	4.98E-5	2.47E-6	1.52E-5	6.20E-8	-1.62E-5	5.14E-5
NHWD	kg	2.11E-1	1.01E-1	3.95E-3	3.16E-1	5.99E-2	3.52E-1	2.39E-1	-4.15E-2	9.26E-1
RWD	kg	9.78E-5	1.05E-5	4.92E-6	1.13E-4	6.57E-6	3.54E-5	3.37E-7	-2.28E-5	1.33E-4
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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