Environmental Profile

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

Ecochain v3.5.80

Product:	3000391 - U3 Pipe GY 32x3 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

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	0.18	0.01	0.01	0.2	0	0.11	0	-0.06	0.25
ADPE	kg Sb-eq	4.35E-5	1.73E-6	2.48E-6	4.77E-5	1.05E-6	8.70E-6	1.09E-8	-9.97E-6	4.75E-5
ADPF	kg Sb-eq	1.82E-2	4.97E-4	6.65E-4	1.93E-2	2.96E-4	3.07E-3	1.54E-5	-7.31E-3	1.54E-2
GWP	kg CO2-eq	1.55E+0	6.77E-2	1.18E-1	1.74E+0	4.03E-2	1.02E+0	9.77E-3	-6.52E-1	2.15E+0
ODP	kg CFC-11-eq	7.89E-7	1.20E-8	1.11E-8	8.12E-7	7.47E-9	1.23E-7	3.70E-10	-2.60E-7	6.83E-7
POCP	kg ethene-eq	9.93E-4	4.08E-5	5.21E-5	1.09E-3	2.42E-5	2.41E-4	2.60E-6	-2.80E-4	1.07E-3
AP	kg SO2-eq	5.99E-3	2.97E-4	4.64E-4	6.75E-3	1.73E-4	1.76E-3	8.22E-6	-1.68E-3	7.01E-3
EP	kg PO4 3−-eq	8.11E-4	5.84E-5	7.33E-5	9.43E-4	3.46E-5	2.66E-4	3.19E-6	-2.09E-4	1.04E-3
HTP	kg 1,4-DB-eq	5.98E-1	2.85E-2	4.47E-2	6.71E-1	1.72E-2	4.75E-1	8.45E-4	-1.60E-1	1.00E+0
FAETP	kg 1,4-DB-eq	1.26E-1	8.32E-4	1.82E-3	1.28E-1	5.05E-4	7.01E-3	2.59E-4	-3.40E-3	1.33E-1
MAETP	kg 1,4-DB-eq	4.33E+1	2.99E+0	7.42E+0	5.37E+1	1.80E+0	2.30E+1	3.14E-1	-1.01E+1	6.87E+1
TETP	kg 1,4-DB-eq	5.39E-2	1.01E-4	2.77E-3	5.68E-2	6.10E-5	1.69E-3	2.78E-6	-1.13E-3	5.75E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.51E+0	6.83E-2	1.39E-1	1.72E+0	4.06E-2	1.15E+0	1.14E-2	-6.69E-1	2.25E+0
GWP-f	kg CO2 eq	1.58E+0	6.82E-2	1.09E-1	1.75E+0	4.06E-2	1.03E+0	1.14E-2	-6.65E-1	2.17E+0
GWP-b	kg CO2 eq	-7.63E-2	3.15E-5	2.36E-2	-5.27E-2	2.47E-5	1.21E-1	1.46E-5	-3.52E-3	6.46E-2
GWP-luluc	kg CO2 eq	1.44E-2	2.50E-5	6.65E-3	2.11E-2	1.44E-5	4.74E-4	3.07E-7	-3.39E-4	2.13E-2
ODP	kg CFC11 eq	7.80E-7	1.51E-8	1.32E-8	8.08E-7	9.36E-9	1.27E-7	4.60E-10	-2.59E-7	6.85E-7
AP	mol H+ eq	7.31E-3	3.96E-4	5.95E-4	8.30E-3	2.31E-4	2.20E-3	1.10E-5	-2.04E-3	8.70E-3
EP-fw	kg P eq	6.75E-5	6.88E-7	1.56E-6	6.98E-5	3.34E-7	1.57E-5	1.38E-8	-1.85E-5	6.74E-5
EP-m	kg N eq	1.44E-3	1.39E-4	1.75E-4	1.76E-3	8.27E-5	5.36E-4	6.75E-6	-3.78E-4	2.01E-3
EP-T	mol N eq	1.48E-2	1.54E-3	1.88E-3	1.82E-2	9.12E-4	5.91E-3	4.41E-5	-4.11E-3	2.10E-2
POCP	kg NMVOC eq	4.93E-3	4.39E-4	5.31E-4	5.90E-3	2.61E-4	1.78E-3	1.50E-5	-1.40E-3	6.55E-3
ADP-mm	kg Sb eq	4.35E-5	1.73E-6	2.48E-6	4.77E-5	1.05E-6	8.70E-6	1.09E-8	-9.97E-6	4.75E-5
ADP-f	MJ	3.84E+1	1.03E+0	1.26E+0	4.07E+1	6.23E-1	6.08E+0	3.33E-2	-1.50E+1	3.25E+1
WDP	m3 depriv.	2.38E+0	3.68E-3	8.54E-1	3.24E+0	1.91E-3	2.34E-1	1.88E-4	-7.14E-1	2.76E+0
PM	disease inc.	6.72E-8	6.13E-9	9.24E-9	8.26E-8	3.66E-9	2.78E-8	2.28E-10	-1.31E-8	1.01E-7
IR	kBq U-235 eq	7.94E-2	4.31E-3	2.28E-3	8.60E-2	2.72E-3	2.12E-2	1.53E-4	-2.38E-2	8.63E-2
ETP-fw	CTUe	2.65E+1	9.18E-1	2.11E+0	2.95E+1	5.06E-1	4.47E+1	4.92E-1	-7.57E+0	6.77E+1
HTP-c	CTUh	1.08E-9	2.98E-11	7.19E-11	1.18E-9	1.80E-11	6.63E-10	8.64E-13	-2.74E-10	1.59E-9
HTP-nc	CTUh	3.23E-8	1.00E-9	2.20E-9	3.55E-8	6.03E-10	1.59E-8	9.47E-11	-9.19E-9	4.29E-8
SQP	Pt	1.54E+1	8.93E-1	9.45E-2	1.64E+1	5.33E-1	3.82E+0	8.45E-2	-3.28E+0	1.75E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.34E+0	1.29E-2	3.81E+0	7.17E+0	8.94E-3	4.33E-1	1.20E-3	-9.15E-1	6.70E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.34E+0	1.29E-2	3.81E+0	7.17E+0	8.94E-3	4.33E-1	1.20E-3	-9.15E-1	6.70E+0
PENRE	MJ	4.12E+1	1.09E+0	1.37E+0	4.37E+1	6.62E-1	6.47E+0	3.54E-2	-1.62E+1	3.47E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.12E+1	1.09E+0	1.37E+0	4.37E+1	6.62E-1	6.47E+0	3.54E-2	-1.62E+1	3.47E+1
PET	MJ	4.46E+1	1.11E+0	5.18E+0	5.09E+1	6.71E-1	6.90E+0	3.66E-2	-1.71E+1	4.14E+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	2.72E-2	1.25E-4	2.01E-2	4.74E-2	7.05E-5	6.41E-3	4.08E-5	-7.67E-3	4.63E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.13E-5	2.61E-6	1.77E-6	3.56E-5	1.59E-6	9.78E-6	4.02E-8	-1.32E-5	3.38E-5
NHWD	kg	1.53E-1	6.53E-2	2.55E-3	2.20E-1	3.86E-2	2.26E-1	1.54E-1	-3.92E-2	6.00E-1
RWD	kg	7.16E-5	6.76E-6	3.18E-6	8.15E-5	4.24E-6	2.28E-5	2.18E-7	-2.14E-5	8.74E-5
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