Environmental Profile

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

Ecochain v3.5.80

Product:	3000389 - U3 Pipe GY 32x3 L=2
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	0.07	0	0.01	0.08	0	0.04	0	-0.02	0.1
ADPE	kg Sb-eq	1.75E-5	6.95E-7	9.93E-7	1.92E-5	4.20E-7	3.48E-6	4.36E-9	-4.00E-6	1.91E-5
ADPF	kg Sb-eq	7.30E-3	2.00E-4	2.66E-4	7.77E-3	1.18E-4	1.23E-3	6.17E-6	-2.93E-3	6.19E-3
GWP	kg CO2-eq	6.24E-1	2.72E-2	4.73E-2	6.99E-1	1.61E-2	4.09E-1	3.91E-3	-2.61E-1	8.66E-1
ODP	kg CFC-11-eq	3.16E-7	4.83E-9	4.45E-9	3.25E-7	2.99E-9	4.91E-8	1.48E-10	-1.04E-7	2.74E-7
POCP	kg ethene-eq	4.02E-4	1.64E-5	2.08E-5	4.39E-4	9.67E-6	9.69E-5	1.04E-6	-1.13E-4	4.34E-4
AP	kg SO2-eq	2.42E-3	1.20E-4	1.86E-4	2.73E-3	6.93E-5	7.04E-4	3.29E-6	-6.80E-4	2.82E-3
EP	kg PO4 3−-eq	3.29E-4	2.35E-5	2.93E-5	3.82E-4	1.38E-5	1.07E-4	1.28E-6	-8.62E-5	4.18E-4
HTP	kg 1,4-DB-eq	2.41E-1	1.15E-2	1.79E-2	2.70E-1	6.89E-3	1.90E-1	3.38E-4	-6.48E-2	4.03E-1
FAETP	kg 1,4-DB-eq	5.04E-2	3.34E-4	7.27E-4	5.14E-2	2.02E-4	2.81E-3	1.03E-4	-1.38E-3	5.32E-2
MAETP	kg 1,4-DB-eq	1.75E+1	1.20E+0	2.97E+0	2.16E+1	7.21E-1	9.22E+0	1.26E-1	-4.06E+0	2.76E+1
TETP	kg 1,4-DB-eq	2.16E-2	4.05E-5	1.11E-3	2.27E-2	2.44E-5	6.78E-4	1.11E-6	-4.54E-4	2.30E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	5.83E-1	2.75E-2	5.57E-2	6.66E-1	1.63E-2	4.87E-1	4.55E-3	-2.68E-1	9.06E-1
GWP-f	kg CO2 eq	6.35E-1	2.74E-2	4.36E-2	7.06E-1	1.62E-2	4.12E-1	4.55E-3	-2.67E-1	8.72E-1
GWP-b	kg CO2 eq	-5.73E-2	1.27E-5	9.44E-3	-4.78E-2	9.86E-6	7.50E-2	5.82E-6	-1.41E-3	2.58E-2
GWP-luluc	kg CO2 eq	5.79E-3	1.01E-5	2.66E-3	8.46E-3	5.75E-6	1.90E-4	1.23E-7	-1.39E-4	8.52E-3
ODP	kg CFC11 eq	3.12E-7	6.06E-9	5.27E-9	3.24E-7	3.74E-9	5.07E-8	1.84E-10	-1.04E-7	2.74E-7
AP	mol H+ eq	2.96E-3	1.59E-4	2.38E-4	3.35E-3	9.25E-5	8.83E-4	4.40E-6	-8.29E-4	3.51E-3
EP-fw	kg P eq	2.72E-5	2.77E-7	6.24E-7	2.81E-5	1.34E-7	6.29E-6	5.53E-9	-7.44E-6	2.71E-5
EP-m	kg N eq	5.86E-4	5.61E-5	7.01E-5	7.12E-4	3.31E-5	2.16E-4	2.70E-6	-1.55E-4	8.09E-4
EP-T	mol N eq	6.03E-3	6.18E-4	7.52E-4	7.40E-3	3.65E-4	2.38E-3	1.76E-5	-1.70E-3	8.45E-3
POCP	kg NMVOC eq	2.00E-3	1.77E-4	2.12E-4	2.39E-3	1.04E-4	7.14E-4	5.99E-6	-5.71E-4	2.65E-3
ADP-mm	kg Sb eq	1.75E-5	6.95E-7	9.93E-7	1.92E-5	4.20E-7	3.48E-6	4.36E-9	-4.00E-6	1.91E-5
ADP-f	MJ	1.54E+1	4.14E-1	5.05E-1	1.64E+1	2.49E-1	2.44E+0	1.33E-2	-5.99E+0	1.31E+1
WDP	m3 depriv.	9.54E-1	1.48E-3	3.42E-1	1.30E+0	7.65E-4	9.38E-2	7.50E-5	-2.86E-1	1.11E+0
PM	disease inc.	2.83E-8	2.46E-9	3.69E-9	3.44E-8	1.47E-9	1.11E-8	9.13E-11	-5.46E-9	4.17E-8
IR	kBq U-235 eq	3.21E-2	1.73E-3	9.12E-4	3.47E-2	1.09E-3	8.48E-3	6.12E-5	-9.56E-3	3.48E-2
ETP-fw	CTUe	1.07E+1	3.69E-1	8.43E-1	1.20E+1	2.02E-1	1.79E+1	1.97E-1	-3.14E+0	2.71E+1
HTP-c	CTUh	4.42E-10	1.20E-11	2.87E-11	4.83E-10	7.20E-12	2.67E-10	3.46E-13	-1.11E-10	6.46E-10
HTP-nc	CTUh	1.30E-8	4.04E-10	8.80E-10	1.43E-8	2.41E-10	6.36E-9	3.79E-11	-3.72E-9	1.72E-8
SQP	Pt	8.59E+0	3.59E-1	3.78E-2	8.98E+0	2.13E-1	1.53E+0	3.38E-2	-1.83E+0	8.93E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.70E+0	5.18E-3	1.52E+0	3.23E+0	3.58E-3	1.73E-1	4.79E-4	-4.71E-1	2.94E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.70E+0	5.18E-3	1.52E+0	3.23E+0	3.58E-3	1.73E-1	4.79E-4	-4.71E-1	2.94E+0
PENRE	MJ	1.66E+1	4.39E-1	5.47E-1	1.76E+1	2.65E-1	2.59E+0	1.42E-2	-6.49E+0	1.39E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.66E+1	4.39E-1	5.47E-1	1.76E+1	2.65E-1	2.59E+0	1.42E-2	-6.49E+0	1.39E+1
PET	MJ	1.83E+1	4.45E-1	2.07E+0	2.08E+1	2.68E-1	2.76E+0	1.46E-2	-6.96E+0	1.69E+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	1.09E-2	5.04E-5	8.04E-3	1.90E-2	2.82E-5	2.57E-3	1.63E-5	-3.07E-3	1.86E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.27E-5	1.05E-6	7.07E-7	1.45E-5	6.37E-7	3.92E-6	1.61E-8	-5.32E-6	1.37E-5
NHWD	kg	6.23E-2	2.63E-2	1.02E-3	8.96E-2	1.54E-2	9.09E-2	6.17E-2	-1.59E-2	2.42E-1
RWD	kg	2.90E-5	2.72E-6	1.27E-6	3.29E-5	1.70E-6	9.14E-6	8.72E-8	-8.61E-6	3.53E-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

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