Environmental Profile

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

Ecochain v3.5.80

Product:	3000320 - PVC U3 Pipe GN 110 L=5 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	0.59	0.03	0.05	0.67	0.02	0.4	0	-0.17	0.93
ADPE	kg Sb-eq	1.49E-4	6.55E-6	9.37E-6	1.65E-4	3.98E-6	3.30E-5	4.12E-8	-2.50E-5	1.77E-4
ADPF	kg Sb-eq	6.02E-2	1.88E-3	2.51E-3	6.46E-2	1.12E-3	1.16E-2	5.84E-5	-2.15E-2	5.60E-2
GWP	kg CO2-eq	5.22E+0	2.56E-1	4.46E-1	5.92E+0	1.53E-1	3.86E+0	3.69E-2	-1.97E+0	8.00E+0
ODP	kg CFC-11-eq	2.55E-6	4.55E-8	4.19E-8	2.64E-6	2.83E-8	4.65E-7	1.40E-9	-6.77E-7	2.45E-6
POCP	kg ethene-eq	3.36E-3	1.55E-4	1.97E-4	3.71E-3	9.17E-5	9.17E-4	9.81E-6	-7.76E-4	3.95E-3
AP	kg SO2-eq	2.03E-2	1.13E-3	1.75E-3	2.32E-2	6.57E-4	6.66E-3	3.11E-5	-4.51E-3	2.61E-2
EP	kg PO4 3−-eq	2.72E-3	2.21E-4	2.77E-4	3.21E-3	1.31E-4	1.01E-3	1.21E-5	-5.85E-4	3.78E-3
HTP	kg 1,4-DB-eq	1.98E+0	1.08E-1	1.69E-1	2.25E+0	6.53E-2	1.80E+0	3.20E-3	-4.26E-1	3.70E+0
FAETP	kg 1,4-DB-eq	2.59E-1	3.15E-3	6.86E-3	2.69E-1	1.91E-3	2.66E-2	9.77E-4	-8.86E-3	2.89E-1
MAETP	kg 1,4-DB-eq	1.53E+2	1.13E+1	2.80E+1	1.92E+2	6.84E+0	8.73E+1	1.19E+0	-2.63E+1	2.61E+2
TETP	kg 1,4-DB-eq	1.08E-1	3.81E-4	1.05E-2	1.19E-1	2.32E-4	6.42E-3	1.05E-5	-2.92E-3	1.22E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	4.95E+0	2.59E-1	5.26E-1	5.73E+0	1.54E-1	4.48E+0	4.29E-2	-2.02E+0	8.39E+0
GWP-f	kg CO2 eq	5.32E+0	2.58E-1	4.12E-1	5.99E+0	1.54E-1	3.90E+0	4.29E-2	-2.01E+0	8.08E+0
GWP-b	kg CO2 eq	-4.06E-1	1.19E-4	8.90E-2	-3.17E-1	9.35E-5	5.88E-1	5.51E-5	-9.00E-3	2.63E-1
GWP-luluc	kg CO2 eq	2.90E-2	9.47E-5	2.51E-2	5.42E-2	5.45E-5	1.80E-3	1.15E-6	-9.07E-4	5.51E-2
ODP	kg CFC11 eq	2.52E-6	5.71E-8	4.97E-8	2.63E-6	3.55E-8	4.80E-7	1.74E-9	-6.80E-7	2.46E-6
AP	mol H+ eq	2.49E-2	1.50E-3	2.25E-3	2.86E-2	8.77E-4	8.36E-3	4.16E-5	-5.53E-3	3.24E-2
EP-fw	kg P eq	2.25E-4	2.61E-6	5.89E-6	2.33E-4	1.27E-6	5.96E-5	5.21E-8	-4.74E-5	2.47E-4
EP-m	kg N eq	4.87E-3	5.28E-4	6.62E-4	6.06E-3	3.14E-4	2.04E-3	2.56E-5	-1.07E-3	7.37E-3
EP-T	mol N eq	5.15E-2	5.82E-3	7.10E-3	6.44E-2	3.46E-3	2.25E-2	1.67E-4	-1.19E-2	7.86E-2
POCP	kg NMVOC eq	1.71E-2	1.66E-3	2.00E-3	2.08E-2	9.89E-4	6.76E-3	5.67E-5	-3.96E-3	2.46E-2
ADP-mm	kg Sb eq	1.49E-4	6.55E-6	9.37E-6	1.65E-4	3.98E-6	3.30E-5	4.12E-8	-2.50E-5	1.77E-4
ADP-f	MJ	1.27E+2	3.90E+0	4.77E+0	1.36E+2	2.36E+0	2.31E+1	1.26E-1	-4.34E+1	1.18E+2
WDP	m3 depriv.	7.70E+0	1.39E-2	3.22E+0	1.09E+1	7.25E-3	8.89E-1	6.89E-4	-1.81E+0	1.00E+1
PM	disease inc.	2.49E-7	2.32E-8	3.49E-8	3.07E-7	1.39E-8	1.05E-7	8.64E-10	-3.64E-8	3.91E-7
IR	kBq U-235 eq	2.63E-1	1.63E-2	8.60E-3	2.88E-1	1.03E-2	8.04E-2	5.79E-4	-6.19E-2	3.17E-1
ETP-fw	CTUe	8.79E+1	3.48E+0	7.95E+0	9.93E+1	1.92E+0	1.70E+2	1.86E+0	-2.09E+1	2.52E+2
HTP-c	CTUh	3.62E-9	1.13E-10	2.71E-10	4.00E-9	6.83E-11	2.51E-9	3.25E-12	-7.27E-10	5.86E-9
HTP-nc	CTUh	1.06E-7	3.80E-9	8.30E-9	1.18E-7	2.29E-9	6.02E-8	3.59E-10	-2.38E-8	1.57E-7
SQP	Pt	7.02E+1	3.38E+0	3.57E-1	7.40E+1	2.02E+0	1.45E+1	3.20E-1	-1.42E+1	7.66E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.38E+1	4.88E-2	1.44E+1	2.82E+1	3.39E-2	1.64E+0	4.54E-3	-3.49E+0	2.64E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.38E+1	4.88E-2	1.44E+1	2.82E+1	3.39E-2	1.64E+0	4.54E-3	-3.49E+0	2.64E+1
PENRE	MJ	1.36E+2	4.14E+0	5.17E+0	1.46E+2	2.51E+0	2.46E+1	1.34E-1	-4.71E+1	1.26E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.36E+2	4.14E+0	5.17E+0	1.46E+2	2.51E+0	2.46E+1	1.34E-1	-4.71E+1	1.26E+2
PET	MJ	1.50E+2	4.19E+0	1.95E+1	1.74E+2	2.54E+0	2.62E+1	1.38E-1	-5.06E+1	1.52E+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	8.82E-2	4.75E-4	7.59E-2	1.65E-1	2.67E-4	2.43E-2	1.55E-4	-1.98E-2	1.69E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.06E-4	9.88E-6	6.67E-6	1.22E-4	6.04E-6	3.71E-5	1.52E-7	-3.99E-5	1.25E-4
NHWD	kg	5.19E-1	2.47E-1	9.63E-3	7.76E-1	1.47E-1	8.60E-1	5.86E-1	-1.03E-1	2.26E+0
RWD	kg	2.39E-4	2.56E-5	1.20E-5	2.77E-4	1.61E-5	8.66E-5	8.25E-7	-5.65E-5	3.24E-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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