Environmental Profile

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

Ecochain v3.5.80

Product:	3000327 - PVC U3 Pipe GN 500 SN8 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	13.01	0.72	1.21	14.94	0.43	9.56	0.06	-3.3	21.69
ADPE	kg Sb-eq	3.79E-3	1.53E-4	2.20E-4	4.17E-3	9.36E-5	7.74E-4	9.69E-7	-4.45E-4	4.59E-3
ADPF	kg Sb-eq	1.32E+0	4.42E-2	5.89E-2	1.42E+0	2.64E-2	2.73E-1	1.37E-3	-4.31E-1	1.29E+0
GWP	kg CO2-eq	1.15E+2	6.01E+0	1.05E+1	1.32E+2	3.59E+0	9.18E+1	8.67E-1	-4.05E+1	1.87E+2
ODP	kg CFC-11-eq	5.43E-5	1.07E-6	9.84E-7	5.64E-5	6.66E-7	1.09E-5	3.30E-8	-1.21E-5	5.59E-5
POCP	kg ethene-eq	7.51E-2	3.62E-3	4.61E-3	8.34E-2	2.15E-3	2.15E-2	2.31E-4	-1.47E-2	9.26E-2
AP	kg SO2-eq	4.53E-1	2.64E-2	4.11E-2	5.20E-1	1.55E-2	1.56E-1	7.31E-4	-8.26E-2	6.10E-1
EP	kg PO4 3−-eq	6.06E-2	5.19E-3	6.49E-3	7.23E-2	3.09E-3	2.37E-2	2.87E-4	-1.10E-2	8.84E-2
HTP	kg 1,4-DB-eq	4.33E+1	2.53E+0	3.95E+0	4.98E+1	1.54E+0	4.23E+1	7.52E-2	-7.73E+0	8.60E+1
FAETP	kg 1,4-DB-eq	5.19E+0	7.38E-2	1.61E-1	5.43E+0	4.50E-2	6.23E-1	2.30E-2	-1.57E-1	5.96E+0
MAETP	kg 1,4-DB-eq	3.47E+3	2.66E+2	6.57E+2	4.39E+3	1.61E+2	2.05E+3	2.79E+1	-4.68E+2	6.16E+3
TETP	kg 1,4-DB-eq	2.14E+0	8.94E-3	2.46E-1	2.39E+0	5.44E-3	1.51E-1	2.47E-4	-5.15E-2	2.50E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.09E+2	6.06E+0	1.23E+1	1.27E+2	3.62E+0	1.07E+2	1.01E+0	-4.14E+1	1.97E+2
GWP-f	kg CO2 eq	1.18E+2	6.06E+0	9.66E+0	1.33E+2	3.62E+0	9.25E+1	1.01E+0	-4.12E+1	1.89E+2
GWP-b	kg CO2 eq	-9.72E+0	2.80E-3	2.09E+0	-7.63E+0	2.20E-3	1.41E+1	1.30E-3	-1.57E-1	6.36E+0
GWP-luluc	kg CO2 eq	5.76E-1	2.22E-3	5.89E-1	1.17E+0	1.28E-3	4.22E-2	2.71E-5	-1.64E-2	1.19E+0
ODP	kg CFC11 eq	5.38E-5	1.34E-6	1.17E-6	5.64E-5	8.34E-7	1.12E-5	4.10E-8	-1.22E-5	5.63E-5
AP	mol H+ eq	5.54E-1	3.51E-2	5.27E-2	6.42E-1	2.06E-2	1.96E-1	9.80E-4	-1.02E-1	7.58E-1
EP-fw	kg P eq	4.92E-3	6.11E-5	1.38E-4	5.12E-3	2.98E-5	1.40E-3	1.23E-6	-8.29E-4	5.72E-3
EP-m	kg N eq	1.09E-1	1.24E-2	1.55E-2	1.37E-1	7.38E-3	4.79E-2	6.08E-4	-2.06E-2	1.73E-1
EP-T	mol N eq	1.16E+0	1.36E-1	1.67E-1	1.47E+0	8.13E-2	5.28E-1	3.92E-3	-2.31E-1	1.85E+0
POCP	kg NMVOC eq	3.85E-1	3.90E-2	4.70E-2	4.71E-1	2.32E-2	1.59E-1	1.33E-3	-7.61E-2	5.78E-1
ADP-mm	kg Sb eq	3.79E-3	1.53E-4	2.20E-4	4.17E-3	9.36E-5	7.74E-4	9.69E-7	-4.45E-4	4.59E-3
ADP-f	MJ	2.78E+3	9.14E+1	1.12E+2	2.98E+3	5.56E+1	5.41E+2	2.97E+0	-8.61E+2	2.72E+3
WDP	m3 depriv.	1.65E+2	3.27E-1	7.56E+1	2.41E+2	1.71E-1	2.08E+1	1.61E-2	-3.13E+1	2.30E+2
PM	disease inc.	5.80E-6	5.44E-7	8.18E-7	7.16E-6	3.27E-7	2.48E-6	2.03E-8	-6.78E-7	9.31E-6
IR	kBq U-235 eq	5.79E+0	3.83E-1	2.02E-1	6.37E+0	2.43E-1	1.89E+0	1.36E-2	-1.10E+0	7.41E+0
ETP-fw	CTUe	1.94E+3	8.15E+1	1.87E+2	2.21E+3	4.51E+1	3.97E+3	4.37E+1	-3.87E+2	5.88E+3
HTP-c	CTUh	7.94E-8	2.64E-9	6.36E-9	8.84E-8	1.61E-9	5.89E-8	7.64E-11	-1.31E-8	1.36E-7
HTP-nc	CTUh	2.31E-6	8.91E-8	1.95E-7	2.59E-6	5.38E-8	1.41E-6	8.41E-9	-4.18E-7	3.65E-6
SQP	Pt	1.67E+3	7.93E+1	8.37E+0	1.76E+3	4.75E+1	3.40E+2	7.53E+0	-3.24E+2	1.83E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.19E+2	1.14E+0	3.37E+2	6.57E+2	7.97E-1	3.85E+1	1.07E-1	-7.58E+1	6.21E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.19E+2	1.14E+0	3.37E+2	6.57E+2	7.97E-1	3.85E+1	1.07E-1	-7.58E+1	6.21E+2
PENRE	MJ	2.98E+3	9.70E+1	1.21E+2	3.20E+3	5.90E+1	5.76E+2	3.15E+0	-9.37E+2	2.90E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.98E+3	9.70E+1	1.21E+2	3.20E+3	5.90E+1	5.76E+2	3.15E+0	-9.37E+2	2.90E+3
PET	MJ	3.30E+3	9.81E+1	4.59E+2	3.85E+3	5.98E+1	6.15E+2	3.26E+0	-1.01E+3	3.52E+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	1.91E+0	1.11E-2	1.78E+0	3.71E+0	6.29E-3	5.72E-1	3.64E-3	-3.50E-1	3.94E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.32E-3	2.32E-4	1.57E-4	2.71E-3	1.42E-4	8.72E-4	3.57E-6	-8.17E-4	2.91E-3
NHWD	kg	1.15E+1	5.80E+0	2.26E-1	1.75E+1	3.44E+0	2.02E+1	1.38E+1	-1.83E+0	5.31E+1
RWD	kg	5.34E-3	6.00E-4	2.81E-4	6.23E-3	3.78E-4	2.03E-3	1.94E-5	-1.02E-3	7.63E-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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