Environmental Profile

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

Ecochain v3.5.80

Product:	3000324 - PVC U3 Pipe GN 250 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	3.48	0.17	0.29	3.94	0.1	2.31	0.01	-0.98	5.39
ADPE	kg Sb-eq	1.03E-3	3.71E-5	5.33E-5	1.12E-3	2.25E-5	1.86E-4	2.34E-7	-1.50E-4	1.18E-3
ADPF	kg Sb-eq	3.47E-1	1.07E-2	1.43E-2	3.72E-1	6.34E-3	6.57E-2	3.31E-4	-1.24E-1	3.20E-1
GWP	kg CO2-eq	3.02E+1	1.45E+0	2.54E+0	3.42E+1	8.64E-1	2.23E+1	2.10E-1	-1.14E+1	4.61E+1
ODP	kg CFC-11-eq	1.45E-5	2.57E-7	2.39E-7	1.50E-5	1.60E-7	2.62E-6	7.96E-9	-3.91E-6	1.39E-5
POCP	kg ethene-eq	1.97E-2	8.75E-4	1.12E-3	2.17E-2	5.19E-4	5.18E-3	5.58E-5	-4.51E-3	2.30E-2
AP	kg SO2-eq	1.18E-1	6.38E-3	9.96E-3	1.35E-1	3.72E-3	3.76E-2	1.77E-4	-2.62E-2	1.50E-1
EP	kg PO4 3−-eq	1.62E-2	1.25E-3	1.57E-3	1.90E-2	7.43E-4	5.72E-3	6.93E-5	-3.42E-3	2.22E-2
HTP	kg 1,4-DB-eq	1.15E+1	6.11E-1	9.59E-1	1.31E+1	3.70E-1	1.02E+1	1.81E-2	-2.47E+0	2.12E+1
FAETP	kg 1,4-DB-eq	2.26E+0	1.78E-2	3.90E-2	2.32E+0	1.08E-2	1.50E-1	5.55E-3	-5.14E-2	2.44E+0
MAETP	kg 1,4-DB-eq	8.85E+2	6.41E+1	1.59E+2	1.11E+3	3.87E+1	4.93E+2	6.74E+0	-1.52E+2	1.49E+3
TETP	kg 1,4-DB-eq	9.63E-1	2.16E-3	5.95E-2	1.02E+0	1.31E-3	3.63E-2	5.96E-5	-1.69E-2	1.05E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.80E+1	1.46E+0	2.99E+0	3.24E+1	8.72E-1	2.64E+1	2.45E-1	-1.17E+1	4.83E+1
GWP-f	kg CO2 eq	3.07E+1	1.46E+0	2.34E+0	3.45E+1	8.71E-1	2.24E+1	2.45E-1	-1.16E+1	4.64E+1
GWP-b	kg CO2 eq	-2.97E+0	6.75E-4	5.06E-1	-2.47E+0	5.29E-4	3.99E+0	3.13E-4	-5.16E-2	1.47E+0
GWP-luluc	kg CO2 eq	2.58E-1	5.36E-4	1.43E-1	4.02E-1	3.08E-4	1.01E-2	6.58E-6	-5.30E-3	4.07E-1
ODP	kg CFC11 eq	1.44E-5	3.23E-7	2.83E-7	1.50E-5	2.01E-7	2.70E-6	9.89E-9	-3.93E-6	1.39E-5
AP	mol H+ eq	1.45E-1	8.48E-3	1.28E-2	1.66E-1	4.96E-3	4.72E-2	2.36E-4	-3.22E-2	1.87E-1
EP-fw	kg P eq	1.30E-3	1.48E-5	3.35E-5	1.35E-3	7.17E-6	3.36E-4	2.97E-7	-2.74E-4	1.42E-3
EP-m	kg N eq	2.90E-2	2.99E-3	3.76E-3	3.58E-2	1.78E-3	1.15E-2	1.47E-4	-6.25E-3	4.30E-2
EP-T	mol N eq	3.01E-1	3.30E-2	4.04E-2	3.75E-1	1.96E-2	1.27E-1	9.47E-4	-6.96E-2	4.53E-1
POCP	kg NMVOC eq	9.97E-2	9.41E-3	1.14E-2	1.21E-1	5.59E-3	3.82E-2	3.22E-4	-2.31E-2	1.42E-1
ADP-mm	kg Sb eq	1.03E-3	3.71E-5	5.33E-5	1.12E-3	2.25E-5	1.86E-4	2.34E-7	-1.50E-4	1.18E-3
ADP-f	MJ	7.32E+2	2.21E+1	2.71E+1	7.82E+2	1.34E+1	1.30E+2	7.16E-1	-2.51E+2	6.75E+2
WDP	m3 depriv.	4.40E+1	7.89E-2	1.83E+1	6.24E+1	4.10E-2	5.01E+0	4.00E-3	-1.04E+1	5.70E+1
PM	disease inc.	1.48E-6	1.31E-7	1.98E-7	1.81E-6	7.86E-8	5.96E-7	4.91E-9	-2.14E-7	2.28E-6
IR	kBq U-235 eq	1.53E+0	9.24E-2	4.89E-2	1.68E+0	5.85E-2	4.53E-1	3.29E-3	-3.59E-1	1.83E+0
ETP-fw	CTUe	5.19E+2	1.97E+1	4.52E+1	5.83E+2	1.09E+1	9.55E+2	1.05E+1	-1.22E+2	1.44E+3
HTP-c	CTUh	2.11E-8	6.38E-10	1.54E-9	2.33E-8	3.86E-10	1.43E-8	1.85E-11	-4.23E-9	3.38E-8
HTP-nc	CTUh	6.14E-7	2.15E-8	4.72E-8	6.83E-7	1.29E-8	3.40E-7	2.02E-9	-1.38E-7	9.00E-7
SQP	Pt	4.53E+2	1.91E+1	2.03E+0	4.75E+2	1.14E+1	8.19E+1	1.82E+0	-9.07E+1	4.79E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	8.67E+1	2.76E-1	8.18E+1	1.69E+2	1.92E-1	9.26E+0	2.58E-2	-2.19E+1	1.56E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	8.67E+1	2.76E-1	8.18E+1	1.69E+2	1.92E-1	9.26E+0	2.58E-2	-2.19E+1	1.56E+2
PENRE	MJ	7.86E+2	2.34E+1	2.94E+1	8.39E+2	1.42E+1	1.39E+2	7.60E-1	-2.73E+2	7.19E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	7.86E+2	2.34E+1	2.94E+1	8.39E+2	1.42E+1	1.39E+2	7.60E-1	-2.73E+2	7.19E+2
PET	MJ	8.73E+2	2.37E+1	1.11E+2	1.01E+3	1.44E+1	1.48E+2	7.86E-1	-2.95E+2	8.76E+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	5.16E-1	2.69E-3	4.32E-1	9.50E-1	1.51E-3	1.38E-1	8.78E-4	-1.14E-1	9.76E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.10E-4	5.59E-5	3.80E-5	7.04E-4	3.42E-5	2.10E-4	8.62E-7	-2.32E-4	7.18E-4
NHWD	kg	3.03E+0	1.40E+0	5.48E-2	4.48E+0	8.29E-1	4.87E+0	3.32E+0	-5.96E-1	1.29E+1
RWD	kg	1.41E-3	1.45E-4	6.82E-5	1.63E-3	9.09E-5	4.89E-4	4.68E-6	-3.28E-4	1.88E-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