Environmental Profile

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

Ecochain v3.5.80

Product:	3000321 - PVC U3 Pipe GN 125 SN8 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	0.95	0.05	0.07	1.07	0.03	0.59	0	-0.31	1.38
ADPE	kg Sb-eq	2.39E-4	9.55E-6	1.36E-5	2.62E-4	5.79E-6	4.80E-5	6.01E-8	-5.20E-5	2.64E-4
ADPF	kg Sb-eq	9.85E-2	2.75E-3	3.65E-3	1.05E-1	1.63E-3	1.69E-2	8.50E-5	-3.89E-2	8.46E-2
GWP	kg CO2-eq	8.39E+0	3.74E-1	6.49E-1	9.41E+0	2.22E-1	5.62E+0	5.38E-2	-3.48E+0	1.18E+1
ODP	kg CFC-11-eq	4.25E-6	6.63E-8	6.10E-8	4.38E-6	4.12E-8	6.77E-7	2.04E-9	-1.36E-6	3.74E-6
POCP	kg ethene-eq	5.38E-3	2.25E-4	2.86E-4	5.89E-3	1.33E-4	1.33E-3	1.43E-5	-1.48E-3	5.89E-3
AP	kg SO2-eq	3.26E-2	1.64E-3	2.54E-3	3.68E-2	9.55E-4	9.69E-3	4.53E-5	-8.85E-3	3.86E-2
EP	kg PO4 3−-eq	4.27E-3	3.23E-4	4.02E-4	5.00E-3	1.91E-4	1.47E-3	1.76E-5	-1.11E-3	5.56E-3
HTP	kg 1,4-DB-eq	3.21E+0	1.57E-1	2.45E-1	3.62E+0	9.49E-2	2.62E+0	4.65E-3	-8.44E-1	5.49E+0
FAETP	kg 1,4-DB-eq	3.82E-1	4.59E-3	9.97E-3	3.97E-1	2.78E-3	3.86E-2	1.42E-3	-1.79E-2	4.22E-1
MAETP	kg 1,4-DB-eq	2.37E+2	1.65E+1	4.07E+1	2.95E+2	9.93E+0	1.27E+2	1.73E+0	-5.30E+1	3.80E+2
TETP	kg 1,4-DB-eq	1.59E-1	5.56E-4	1.52E-2	1.74E-1	3.36E-4	9.34E-3	1.53E-5	-5.91E-3	1.78E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	8.11E+0	3.77E-1	7.64E-1	9.25E+0	2.24E-1	6.42E+0	6.26E-2	-3.57E+0	1.24E+1
GWP-f	kg CO2 eq	8.57E+0	3.77E-1	5.98E-1	9.54E+0	2.24E-1	5.67E+0	6.26E-2	-3.55E+0	1.20E+1
GWP-b	kg CO2 eq	-5.03E-1	1.74E-4	1.29E-1	-3.73E-1	1.36E-4	7.51E-1	8.02E-5	-1.84E-2	3.59E-1
GWP-luluc	kg CO2 eq	4.27E-2	1.38E-4	3.65E-2	7.93E-2	7.92E-5	2.61E-3	1.69E-6	-1.79E-3	8.02E-2
ODP	kg CFC11 eq	4.20E-6	8.32E-8	7.23E-8	4.36E-6	5.16E-8	6.98E-7	2.54E-9	-1.36E-6	3.75E-6
AP	mol H+ eq	3.97E-2	2.18E-3	3.26E-3	4.52E-2	1.27E-3	1.21E-2	6.06E-5	-1.08E-2	4.79E-2
EP-fw	kg P eq	3.64E-4	3.80E-6	8.56E-6	3.77E-4	1.84E-6	8.67E-5	7.61E-8	-9.67E-5	3.69E-4
EP-m	kg N eq	7.59E-3	7.70E-4	9.62E-4	9.32E-3	4.56E-4	2.96E-3	3.72E-5	-2.01E-3	1.08E-2
EP-T	mol N eq	8.02E-2	8.49E-3	1.03E-2	9.90E-2	5.03E-3	3.26E-2	2.43E-4	-2.20E-2	1.15E-1
POCP	kg NMVOC eq	2.69E-2	2.42E-3	2.91E-3	3.22E-2	1.44E-3	9.81E-3	8.25E-5	-7.45E-3	3.61E-2
ADP-mm	kg Sb eq	2.39E-4	9.55E-6	1.36E-5	2.62E-4	5.79E-6	4.80E-5	6.01E-8	-5.20E-5	2.64E-4
ADP-f	MJ	2.08E+2	5.68E+0	6.93E+0	2.21E+2	3.43E+0	3.35E+1	1.84E-1	-7.93E+1	1.79E+2
WDP	m3 depriv.	1.28E+1	2.03E-2	4.68E+0	1.75E+1	1.05E-2	1.29E+0	1.02E-3	-3.72E+0	1.51E+1
PM	disease inc.	3.72E-7	3.38E-8	5.06E-8	4.56E-7	2.02E-8	1.53E-7	1.26E-9	-7.00E-8	5.61E-7
IR	kBq U-235 eq	4.31E-1	2.38E-2	1.25E-2	4.67E-1	1.50E-2	1.17E-1	8.43E-4	-1.25E-1	4.75E-1
ETP-fw	CTUe	1.42E+2	5.07E+0	1.16E+1	1.59E+2	2.79E+0	2.47E+2	2.71E+0	-4.03E+1	3.71E+2
HTP-c	CTUh	5.83E-9	1.64E-10	3.94E-10	6.39E-9	9.92E-11	3.66E-9	4.75E-12	-1.45E-9	8.71E-9
HTP-nc	CTUh	1.74E-7	5.54E-9	1.21E-8	1.91E-7	3.32E-9	8.76E-8	5.22E-10	-4.82E-8	2.35E-7
SQP	Pt	9.50E+1	4.93E+0	5.18E-1	1.00E+2	2.94E+0	2.11E+1	4.66E-1	-2.05E+1	1.04E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.97E+1	7.11E-2	2.09E+1	4.07E+1	4.93E-2	2.39E+0	6.60E-3	-5.46E+0	3.77E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.97E+1	7.11E-2	2.09E+1	4.07E+1	4.93E-2	2.39E+0	6.60E-3	-5.46E+0	3.77E+1
PENRE	MJ	2.23E+2	6.03E+0	7.50E+0	2.37E+2	3.65E+0	3.57E+1	1.95E-1	-8.60E+1	1.90E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.23E+2	6.03E+0	7.50E+0	2.37E+2	3.65E+0	3.57E+1	1.95E-1	-8.60E+1	1.90E+2
PET	MJ	2.43E+2	6.10E+0	2.84E+1	2.78E+2	3.70E+0	3.81E+1	2.02E-1	-9.14E+1	2.28E+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	1.45E-1	6.92E-4	1.10E-1	2.56E-1	3.89E-4	3.54E-2	2.25E-4	-4.01E-2	2.52E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.70E-4	1.44E-5	9.70E-6	1.94E-4	8.78E-6	5.40E-5	2.21E-7	-7.07E-5	1.87E-4
NHWD	kg	8.31E-1	3.60E-1	1.40E-2	1.21E+0	2.13E-1	1.25E+0	8.51E-1	-2.06E-1	3.31E+0
RWD	kg	3.89E-4	3.73E-5	1.74E-5	4.44E-4	2.34E-5	1.26E-4	1.20E-6	-1.12E-4	4.82E-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

Ecochain

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777