Environmental Profile

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

Ecochain v3.5.80

Product:	3000322 - PVC U3 Pipe GN 160 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	1.3	0.07	0.11	1.48	0.04	0.9	0.01	-0.37	2.06
ADPE	kg Sb-eq	3.30E-4	1.45E-5	2.08E-5	3.66E-4	8.85E-6	7.33E-5	9.16E-8	-5.54E-5	3.93E-4
ADPF	kg Sb-eq	1.34E-1	4.18E-3	5.58E-3	1.43E-1	2.49E-3	2.59E-2	1.30E-4	-4.76E-2	1.24E-1
GWP	kg CO2-eq	1.16E+1	5.69E-1	9.92E-1	1.31E+1	3.39E-1	8.58E+0	8.19E-2	-4.37E+0	1.77E+1
ODP	kg CFC-11-eq	5.66E-6	1.01E-7	9.32E-8	5.85E-6	6.30E-8	1.03E-6	3.12E-9	-1.50E-6	5.45E-6
POCP	kg ethene-eq	7.43E-3	3.43E-4	4.37E-4	8.21E-3	2.04E-4	2.04E-3	2.18E-5	-1.71E-3	8.76E-3
AP	kg SO2-eq	4.50E-2	2.50E-3	3.89E-3	5.14E-2	1.46E-3	1.48E-2	6.91E-5	-9.95E-3	5.78E-2
EP	kg PO4 3−-eq	5.96E-3	4.91E-4	6.15E-4	7.06E-3	2.92E-4	2.24E-3	2.69E-5	-1.28E-3	8.34E-3
HTP	kg 1,4-DB-eq	4.37E+0	2.40E-1	3.75E-1	4.98E+0	1.45E-1	4.01E+0	7.10E-3	-9.40E-1	8.20E+0
FAETP	kg 1,4-DB-eq	4.96E-1	6.99E-3	1.52E-2	5.18E-1	4.25E-3	5.90E-2	2.17E-3	-1.95E-2	5.64E-1
MAETP	kg 1,4-DB-eq	3.38E+2	2.52E+1	6.22E+1	4.25E+2	1.52E+1	1.94E+2	2.64E+0	-5.81E+1	5.79E+2
TETP	kg 1,4-DB-eq	2.04E-1	8.47E-4	2.33E-2	2.29E-1	5.14E-4	1.43E-2	2.33E-5	-6.44E-3	2.37E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.11E+1	5.74E-1	1.17E+0	1.29E+1	3.42E-1	9.80E+0	9.54E-2	-4.48E+0	1.86E+1
GWP-f	kg CO2 eq	1.18E+1	5.74E-1	9.15E-1	1.33E+1	3.42E-1	8.65E+0	9.53E-2	-4.45E+0	1.79E+1
GWP-b	kg CO2 eq	-7.38E-1	2.65E-4	1.98E-1	-5.40E-1	2.08E-4	1.14E+0	1.22E-4	-1.99E-2	5.84E-1
GWP-luluc	kg CO2 eq	5.50E-2	2.10E-4	5.58E-2	1.11E-1	1.21E-4	3.99E-3	2.56E-6	-1.99E-3	1.13E-1
ODP	kg CFC11 eq	5.60E-6	1.27E-7	1.11E-7	5.83E-6	7.89E-8	1.07E-6	3.87E-9	-1.51E-6	5.48E-6
AP	mol H+ eq	5.50E-2	3.33E-3	4.99E-3	6.33E-2	1.95E-3	1.86E-2	9.25E-5	-1.22E-2	7.17E-2
EP-fw	kg P eq	4.97E-4	5.79E-6	1.31E-5	5.16E-4	2.82E-6	1.33E-4	1.16E-7	-1.05E-4	5.47E-4
EP-m	kg N eq	1.07E-2	1.17E-3	1.47E-3	1.33E-2	6.97E-4	4.53E-3	5.69E-5	-2.36E-3	1.63E-2
EP-T	mol N eq	1.13E-1	1.29E-2	1.58E-2	1.42E-1	7.69E-3	4.99E-2	3.71E-4	-2.60E-2	1.74E-1
POCP	kg NMVOC eq	3.78E-2	3.69E-3	4.45E-3	4.59E-2	2.20E-3	1.50E-2	1.26E-4	-8.73E-3	5.45E-2
ADP-mm	kg Sb eq	3.30E-4	1.45E-5	2.08E-5	3.66E-4	8.85E-6	7.33E-5	9.16E-8	-5.54E-5	3.93E-4
ADP-f	MJ	2.82E+2	8.65E+0	1.06E+1	3.01E+2	5.25E+0	5.13E+1	2.80E-1	-9.62E+1	2.62E+2
WDP	m3 depriv.	1.71E+1	3.09E-2	7.16E+0	2.43E+1	1.61E-2	1.98E+0	1.52E-3	-4.00E+0	2.23E+1
PM	disease inc.	5.45E-7	5.15E-8	7.75E-8	6.73E-7	3.09E-8	2.34E-7	1.92E-9	-7.95E-8	8.61E-7
IR	kBq U-235 eq	5.83E-1	3.63E-2	1.91E-2	6.38E-1	2.30E-2	1.79E-1	1.29E-3	-1.37E-1	7.04E-1
ETP-fw	CTUe	1.94E+2	7.72E+0	1.77E+1	2.19E+2	4.27E+0	3.77E+2	4.15E+0	-4.56E+1	5.59E+2
HTP-c	CTUh	7.96E-9	2.50E-10	6.03E-10	8.81E-9	1.52E-10	5.57E-9	7.22E-12	-1.60E-9	1.29E-8
HTP-nc	CTUh	2.35E-7	8.44E-9	1.84E-8	2.62E-7	5.08E-9	1.34E-7	7.98E-10	-5.24E-8	3.49E-7
SQP	Pt	1.42E+2	7.51E+0	7.92E-1	1.50E+2	4.49E+0	3.22E+1	7.11E-1	-2.87E+1	1.59E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.85E+1	1.08E-1	3.19E+1	6.05E+1	7.54E-2	3.65E+0	1.01E-2	-7.16E+0	5.71E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.85E+1	1.08E-1	3.19E+1	6.05E+1	7.54E-2	3.65E+0	1.01E-2	-7.16E+0	5.71E+1
PENRE	MJ	3.03E+2	9.19E+0	1.15E+1	3.23E+2	5.58E+0	5.46E+1	2.98E-1	-1.04E+2	2.79E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.03E+2	9.19E+0	1.15E+1	3.23E+2	5.58E+0	5.46E+1	2.98E-1	-1.04E+2	2.79E+2
PET	MJ	3.31E+2	9.29E+0	4.34E+1	3.84E+2	5.65E+0	5.82E+1	3.08E-1	-1.12E+2	3.36E+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	1.95E-1	1.05E-3	1.69E-1	3.65E-1	5.94E-4	5.41E-2	3.44E-4	-4.39E-2	3.76E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.33E-4	2.19E-5	1.48E-5	2.70E-4	1.34E-5	8.25E-5	3.37E-7	-8.84E-5	2.78E-4
NHWD	kg	1.14E+0	5.49E-1	2.14E-2	1.71E+0	3.26E-1	1.91E+0	1.30E+0	-2.26E-1	5.02E+0
RWD	kg	5.30E-4	5.68E-5	2.66E-5	6.14E-4	3.57E-5	1.92E-4	1.83E-6	-1.25E-4	7.19E-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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