Environmental Profile

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

Ecochain v3.5.80

Product:	3000328 - PVC U3 Pipe GN 630 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	21.41	1.19	2.01	24.61	0.72	16.03	0.1	-5.44	36.02
ADPE	kg Sb-eq	7.21E-3	2.53E-4	3.66E-4	7.83E-3	1.56E-4	1.29E-3	1.62E-6	-7.65E-4	8.52E-3
ADPF	kg Sb-eq	2.21E+0	7.28E-2	9.82E-2	2.38E+0	4.40E-2	4.55E-1	2.30E-3	-7.24E-1	2.15E+0
GWP	kg CO2-eq	1.91E+2	9.91E+0	1.75E+1	2.18E+2	6.00E+0	1.55E+2	1.45E+0	-6.80E+1	3.13E+2
ODP	kg CFC-11-eq	9.07E-5	1.76E-6	1.64E-6	9.41E-5	1.11E-6	1.82E-5	5.53E-8	-2.01E-5	9.33E-5
POCP	kg ethene-eq	1.24E-1	5.98E-3	7.69E-3	1.38E-1	3.60E-3	3.56E-2	3.87E-4	-2.37E-2	1.54E-1
AP	kg SO2-eq	7.45E-1	4.36E-2	6.85E-2	8.57E-1	2.58E-2	2.60E-1	1.22E-3	-1.32E-1	1.01E+0
EP	kg PO4 3−-eq	9.75E-2	8.56E-3	1.08E-2	1.17E-1	5.15E-3	3.93E-2	4.84E-4	-1.64E-2	1.45E-1
HTP	kg 1,4-DB-eq	7.15E+1	4.17E+0	6.59E+0	8.23E+1	2.57E+0	7.04E+1	1.26E-1	-1.24E+1	1.43E+2
FAETP	kg 1,4-DB-eq	7.25E+0	1.22E-1	2.68E-1	7.64E+0	7.51E-2	1.04E+0	3.84E-2	-2.51E-1	8.54E+0
MAETP	kg 1,4-DB-eq	5.74E+3	4.38E+2	1.09E+3	7.27E+3	2.68E+2	3.41E+3	4.66E+1	-7.64E+2	1.02E+4
TETP	kg 1,4-DB-eq	2.94E+0	1.47E-2	4.09E-1	3.37E+0	9.09E-3	2.51E-1	4.14E-4	-8.24E-2	3.55E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.02E+2	1.00E+1	2.06E+1	2.33E+2	6.05E+0	1.57E+2	1.69E+0	-6.95E+1	3.29E+2
GWP-f	kg CO2 eq	1.95E+2	9.99E+0	1.61E+1	2.21E+2	6.04E+0	1.57E+2	1.69E+0	-6.92E+1	3.16E+2
GWP-b	kg CO2 eq	6.45E+0	4.61E-3	3.48E+0	9.94E+0	3.67E-3	8.98E-1	2.17E-3	-2.59E-1	1.06E+1
GWP-luluc	kg CO2 eq	7.85E-1	3.66E-3	9.82E-1	1.77E+0	2.14E-3	7.02E-2	4.54E-5	-2.41E-2	1.82E+0
ODP	kg CFC11 eq	8.99E-5	2.20E-6	1.95E-6	9.40E-5	1.39E-6	1.87E-5	6.87E-8	-2.03E-5	9.39E-5
AP	mol H+ eq	9.09E-1	5.79E-2	8.78E-2	1.05E+0	3.44E-2	3.25E-1	1.64E-3	-1.60E-1	1.26E+0
EP-fw	kg P eq	8.07E-3	1.01E-4	2.30E-4	8.40E-3	4.97E-5	2.33E-3	2.05E-6	-1.35E-3	9.44E-3
EP-m	kg N eq	1.75E-1	2.04E-2	2.59E-2	2.22E-1	1.23E-2	7.91E-2	1.03E-3	-3.15E-2	2.83E-1
EP-T	mol N eq	1.86E+0	2.25E-1	2.78E-1	2.37E+0	1.36E-1	8.72E-1	6.57E-3	-3.39E-1	3.04E+0
POCP	kg NMVOC eq	6.28E-1	6.43E-2	7.84E-2	7.71E-1	3.88E-2	2.62E-1	2.23E-3	-1.19E-1	9.55E-1
ADP-mm	kg Sb eq	7.21E-3	2.53E-4	3.66E-4	7.83E-3	1.56E-4	1.29E-3	1.62E-6	-7.65E-4	8.52E-3
ADP-f	MJ	4.64E+3	1.51E+2	1.86E+2	4.98E+3	9.28E+1	9.01E+2	4.97E+0	-1.44E+3	4.54E+3
WDP	m3 depriv.	2.74E+2	5.39E-1	1.26E+2	4.01E+2	2.85E-1	3.48E+1	2.68E-2	-5.19E+1	3.84E+2
PM	disease inc.	8.65E-6	8.97E-7	1.36E-6	1.09E-5	5.46E-7	4.11E-6	3.40E-8	-9.58E-7	1.46E-5
IR	kBq U-235 eq	9.61E+0	6.31E-1	3.36E-1	1.06E+1	4.06E-1	3.14E+0	2.28E-2	-1.82E+0	1.23E+1
ETP-fw	CTUe	3.16E+3	1.34E+2	3.11E+2	3.60E+3	7.54E+1	6.63E+3	7.29E+1	-5.54E+2	9.83E+3
HTP-c	CTUh	1.24E-7	4.36E-9	1.06E-8	1.39E-7	2.68E-9	9.67E-8	1.28E-10	-2.05E-8	2.18E-7
HTP-nc	CTUh	3.77E-6	1.47E-7	3.25E-7	4.24E-6	8.98E-8	2.35E-6	1.40E-8	-6.57E-7	6.04E-6
SQP	Pt	7.47E+2	1.31E+2	1.39E+1	8.92E+2	7.94E+1	5.66E+2	1.26E+1	-1.06E+2	1.44E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.26E+2	1.89E+0	5.62E+2	7.90E+2	1.33E+0	6.42E+1	1.79E-1	-3.88E+1	8.17E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.26E+2	1.89E+0	5.62E+2	7.90E+2	1.33E+0	6.42E+1	1.79E-1	-3.88E+1	8.17E+2
PENRE	MJ	4.98E+3	1.60E+2	2.02E+2	5.34E+3	9.85E+1	9.59E+2	5.27E+0	-1.57E+3	4.83E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.98E+3	1.60E+2	2.02E+2	5.34E+3	9.85E+1	9.59E+2	5.27E+0	-1.57E+3	4.83E+3
PET	MJ	5.21E+3	1.62E+2	7.64E+2	6.13E+3	9.99E+1	1.02E+3	5.45E+0	-1.61E+3	5.65E+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	3.16E+0	1.83E-2	2.97E+0	6.15E+0	1.05E-2	9.54E-1	6.10E-3	-5.81E-1	6.54E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.75E-3	3.82E-4	2.61E-4	4.39E-3	2.37E-4	1.45E-3	5.97E-6	-1.36E-3	4.72E-3
NHWD	kg	1.83E+1	9.56E+0	3.77E-1	2.82E+1	5.75E+0	3.33E+1	2.31E+1	-2.86E+0	8.75E+1
RWD	kg	8.93E-3	9.89E-4	4.69E-4	1.04E-2	6.31E-4	3.38E-3	3.25E-5	-1.69E-3	1.27E-2
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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