Environmental Profile

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

Ecochain v3.5.80

Product:	3000309 - U3 Pipe BN KOMO 400 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	8.24	0.46	0.74	9.43	0.27	5.98	0.04	-2.07	13.65
ADPE	kg Sb-eq	2.34E-3	9.69E-5	1.35E-4	2.57E-3	5.84E-5	4.85E-4	6.04E-7	-2.73E-4	2.84E-3
ADPF	kg Sb-eq	8.29E-1	2.79E-2	3.61E-2	8.93E-1	1.65E-2	1.71E-1	8.57E-4	-2.67E-1	8.14E-1
GWP	kg CO2-eq	7.26E+1	3.79E+0	6.42E+0	8.28E+1	2.24E+0	5.74E+1	5.40E-1	-2.52E+1	1.18E+2
ODP	kg CFC-11-eq	3.40E-5	6.73E-7	6.03E-7	3.53E-5	4.16E-7	6.83E-6	2.06E-8	-7.39E-6	3.52E-5
POCP	kg ethene-eq	4.80E-2	2.29E-3	2.83E-3	5.31E-2	1.34E-3	1.35E-2	1.44E-4	-9.31E-3	5.88E-2
AP	kg SO2-eq	2.85E-1	1.67E-2	2.52E-2	3.27E-1	9.64E-3	9.82E-2	4.56E-4	-5.24E-2	3.83E-1
EP	kg PO4 3−-eq	3.89E-2	3.28E-3	3.98E-3	4.61E-2	1.93E-3	1.49E-2	1.79E-4	-7.35E-3	5.58E-2
HTP	kg 1,4-DB-eq	2.74E+1	1.60E+0	2.42E+0	3.14E+1	9.58E-1	2.65E+1	4.69E-2	-4.88E+0	5.40E+1
FAETP	kg 1,4-DB-eq	3.70E+0	4.66E-2	9.86E-2	3.84E+0	2.81E-2	3.90E-1	1.43E-2	-9.91E-2	4.17E+0
MAETP	kg 1,4-DB-eq	2.18E+3	1.68E+2	4.03E+2	2.75E+3	1.00E+2	1.28E+3	1.74E+1	-2.91E+2	3.86E+3
TETP	kg 1,4-DB-eq	1.54E+0	5.64E-3	1.51E-1	1.70E+0	3.40E-3	9.42E-2	1.54E-4	-3.23E-2	1.76E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	6.17E+1	3.83E+0	7.56E+0	7.31E+1	2.26E+0	7.33E+1	6.29E-1	-2.57E+1	1.24E+2
GWP-f	kg CO2 eq	7.40E+1	3.82E+0	5.92E+0	8.38E+1	2.26E+0	5.79E+1	6.29E-1	-2.56E+1	1.19E+2
GWP-b	kg CO2 eq	-1.27E+1	1.77E-3	1.28E+0	-1.14E+1	1.37E-3	1.55E+1	8.09E-4	-9.51E-2	3.95E+0
GWP-luluc	kg CO2 eq	4.17E-1	1.40E-3	3.61E-1	7.80E-1	7.99E-4	2.64E-2	1.68E-5	-1.09E-2	7.96E-1
ODP	kg CFC11 eq	3.37E-5	8.44E-7	7.15E-7	3.53E-5	5.21E-7	7.04E-6	2.56E-8	-7.47E-6	3.54E-5
AP	mol H+ eq	3.50E-1	2.22E-2	3.23E-2	4.04E-1	1.29E-2	1.23E-1	6.11E-4	-6.53E-2	4.76E-1
EP-fw	kg P eq	3.11E-3	3.86E-5	8.47E-5	3.23E-3	1.86E-5	8.75E-4	7.62E-7	-5.14E-4	3.61E-3
EP-m	kg N eq	7.04E-2	7.82E-3	9.52E-3	8.78E-2	4.60E-3	3.02E-2	3.80E-4	-1.35E-2	1.09E-1
EP-T	mol N eq	7.47E-1	8.62E-2	1.02E-1	9.35E-1	5.07E-2	3.33E-1	2.45E-3	-1.56E-1	1.17E+0
POCP	kg NMVOC eq	2.47E-1	2.46E-2	2.88E-2	3.00E-1	1.45E-2	1.00E-1	8.31E-4	-4.92E-2	3.66E-1
ADP-mm	kg Sb eq	2.34E-3	9.69E-5	1.35E-4	2.57E-3	5.84E-5	4.85E-4	6.04E-7	-2.73E-4	2.84E-3
ADP-f	MJ	1.75E+3	5.77E+1	6.85E+1	1.87E+3	3.47E+1	3.39E+2	1.85E+0	-5.32E+2	1.72E+3
WDP	m3 depriv.	1.03E+2	2.06E-1	4.63E+1	1.49E+2	1.06E-1	1.30E+1	9.76E-3	-1.90E+1	1.44E+2
PM	disease inc.	3.94E-6	3.43E-7	5.01E-7	4.79E-6	2.04E-7	1.55E-6	1.27E-8	-4.67E-7	6.09E-6
IR	kBq U-235 eq	3.68E+0	2.42E-1	1.24E-1	4.04E+0	1.52E-1	1.18E+0	8.51E-3	-6.79E-1	4.71E+0
ETP-fw	CTUe	1.23E+3	5.14E+1	1.14E+2	1.40E+3	2.82E+1	2.49E+3	2.73E+1	-2.63E+2	3.68E+3
HTP-c	CTUh	5.17E-8	1.67E-9	3.90E-9	5.73E-8	1.00E-9	3.71E-8	4.75E-11	-8.40E-9	8.70E-8
HTP-nc	CTUh	1.46E-6	5.63E-8	1.19E-7	1.63E-6	3.36E-8	8.85E-7	5.26E-9	-2.66E-7	2.29E-6
SQP	Pt	1.64E+3	5.00E+1	5.13E+0	1.70E+3	2.97E+1	2.13E+2	4.70E+0	-3.28E+2	1.61E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.89E+2	7.22E-1	2.07E+2	4.96E+2	4.97E-1	2.41E+1	6.68E-2	-7.25E+1	4.48E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.89E+2	7.22E-1	2.07E+2	4.96E+2	4.97E-1	2.41E+1	6.68E-2	-7.25E+1	4.48E+2
PENRE	MJ	1.87E+3	6.12E+1	7.43E+1	2.01E+3	3.68E+1	3.60E+2	1.97E+0	-5.79E+2	1.83E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.87E+3	6.12E+1	7.43E+1	2.01E+3	3.68E+1	3.60E+2	1.97E+0	-5.79E+2	1.83E+3
PET	MJ	2.16E+3	6.20E+1	2.81E+2	2.51E+3	3.73E+1	3.85E+2	2.03E+0	-6.52E+2	2.28E+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	1.20E+0	7.02E-3	1.09E+0	2.30E+0	3.92E-3	3.58E-1	2.27E-3	-2.14E-1	2.45E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.48E-3	1.46E-4	9.59E-5	1.73E-3	8.87E-5	5.46E-4	2.23E-6	-5.10E-4	1.85E-3
NHWD	kg	7.38E+0	3.66E+0	1.38E-1	1.12E+1	2.15E+0	1.27E+1	8.60E+0	-1.17E+0	3.35E+1
RWD	kg	3.41E-3	3.79E-4	1.72E-4	3.96E-3	2.36E-4	1.27E-3	1.21E-5	-6.34E-4	4.85E-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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