Environmental Profile

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

Ecochain v3.5.80

Product:	3000313 - U3 Pipe BR KOMO 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	21.13	1.19	2.01	24.33	0.72	15.95	0.1	-5.32	35.78
ADPE	kg Sb-eq	6.97E-3	2.52E-4	3.66E-4	7.59E-3	1.56E-4	1.28E-3	1.61E-6	-7.39E-4	8.29E-3
ADPF	kg Sb-eq	2.19E+0	7.26E-2	9.82E-2	2.36E+0	4.38E-2	4.53E-1	2.29E-3	-7.10E-1	2.15E+0
GWP	kg CO2-eq	1.89E+2	9.88E+0	1.75E+1	2.16E+2	5.97E+0	1.54E+2	1.44E+0	-6.68E+1	3.11E+2
ODP	kg CFC-11-eq	9.02E-5	1.75E-6	1.64E-6	9.36E-5	1.11E-6	1.81E-5	5.50E-8	-1.95E-5	9.34E-5
POCP	kg ethene-eq	1.23E-1	5.96E-3	7.69E-3	1.37E-1	3.58E-3	3.55E-2	3.84E-4	-2.31E-2	1.53E-1
AP	kg SO2-eq	7.32E-1	4.34E-2	6.85E-2	8.44E-1	2.57E-2	2.59E-1	1.22E-3	-1.28E-1	1.00E+0
EP	kg PO4 3−-eq	9.58E-2	8.53E-3	1.08E-2	1.15E-1	5.13E-3	3.91E-2	4.82E-4	-1.59E-2	1.44E-1
HTP	kg 1,4-DB-eq	7.06E+1	4.16E+0	6.59E+0	8.14E+1	2.55E+0	7.01E+1	1.25E-1	-1.20E+1	1.42E+2
FAETP	kg 1,4-DB-eq	7.19E+0	1.21E-1	2.68E-1	7.58E+0	7.48E-2	1.03E+0	3.82E-2	-2.42E-1	8.49E+0
MAETP	kg 1,4-DB-eq	5.63E+3	4.37E+2	1.09E+3	7.16E+3	2.67E+2	3.39E+3	4.63E+1	-7.39E+2	1.01E+4
TETP	kg 1,4-DB-eq	2.94E+0	1.47E-2	4.09E-1	3.36E+0	9.04E-3	2.50E-1	4.11E-4	-7.96E-2	3.54E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.00E+2	9.97E+0	2.06E+1	2.30E+2	6.02E+0	1.57E+2	1.68E+0	-6.83E+1	3.27E+2
GWP-f	kg CO2 eq	1.93E+2	9.96E+0	1.61E+1	2.19E+2	6.01E+0	1.56E+2	1.68E+0	-6.80E+1	3.14E+2
GWP-b	kg CO2 eq	6.44E+0	4.60E-3	3.48E+0	9.93E+0	3.65E-3	8.99E-1	2.16E-3	-2.50E-1	1.06E+1
GWP-luluc	kg CO2 eq	7.83E-1	3.65E-3	9.82E-1	1.77E+0	2.13E-3	7.00E-2	4.49E-5	-2.33E-2	1.82E+0
ODP	kg CFC11 eq	8.94E-5	2.20E-6	1.95E-6	9.36E-5	1.39E-6	1.87E-5	6.83E-8	-1.97E-5	9.40E-5
AP	mol H+ eq	8.92E-1	5.78E-2	8.78E-2	1.04E+0	3.43E-2	3.24E-1	1.63E-3	-1.56E-1	1.24E+0
EP-fw	kg P eq	7.99E-3	1.00E-4	2.30E-4	8.32E-3	4.95E-5	2.32E-3	2.03E-6	-1.30E-3	9.40E-3
EP-m	kg N eq	1.73E-1	2.04E-2	2.59E-2	2.19E-1	1.23E-2	7.88E-2	1.02E-3	-3.07E-2	2.81E-1
EP-T	mol N eq	1.83E+0	2.24E-1	2.78E-1	2.34E+0	1.35E-1	8.68E-1	6.53E-3	-3.31E-1	3.02E+0
POCP	kg NMVOC eq	6.21E-1	6.41E-2	7.84E-2	7.64E-1	3.86E-2	2.61E-1	2.22E-3	-1.16E-1	9.50E-1
ADP-mm	kg Sb eq	6.97E-3	2.52E-4	3.66E-4	7.59E-3	1.56E-4	1.28E-3	1.61E-6	-7.39E-4	8.29E-3
ADP-f	MJ	4.61E+3	1.50E+2	1.86E+2	4.95E+3	9.23E+1	8.98E+2	4.94E+0	-1.42E+3	4.53E+3
WDP	m3 depriv.	2.72E+2	5.37E-1	1.26E+2	3.98E+2	2.83E-1	3.47E+1	2.58E-2	-5.01E+1	3.83E+2
PM	disease inc.	8.53E-6	8.94E-7	1.36E-6	1.08E-5	5.43E-7	4.09E-6	3.38E-8	-9.28E-7	1.45E-5
IR	kBq U-235 eq	9.53E+0	6.29E-1	3.36E-1	1.05E+1	4.04E-1	3.13E+0	2.27E-2	-1.76E+0	1.23E+1
ETP-fw	CTUe	3.10E+3	1.34E+2	3.11E+2	3.54E+3	7.50E+1	6.62E+3	7.28E+1	-5.37E+2	9.77E+3
HTP-c	CTUh	1.22E-7	4.34E-9	1.06E-8	1.37E-7	2.67E-9	9.58E-8	1.27E-10	-1.98E-8	2.16E-7
HTP-nc	CTUh	3.72E-6	1.46E-7	3.25E-7	4.19E-6	8.94E-8	2.34E-6	1.40E-8	-6.34E-7	6.00E-6
SQP	Pt	7.37E+2	1.30E+2	1.39E+1	8.82E+2	7.90E+1	5.64E+2	1.25E+1	-1.03E+2	1.43E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.24E+2	1.88E+0	5.62E+2	7.88E+2	1.32E+0	6.40E+1	1.79E-1	-3.75E+1	8.16E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.24E+2	1.88E+0	5.62E+2	7.88E+2	1.32E+0	6.40E+1	1.79E-1	-3.75E+1	8.16E+2
PENRE	MJ	4.95E+3	1.59E+2	2.02E+2	5.31E+3	9.80E+1	9.55E+2	5.25E+0	-1.54E+3	4.83E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.95E+3	1.59E+2	2.02E+2	5.31E+3	9.80E+1	9.55E+2	5.25E+0	-1.54E+3	4.83E+3
PET	MJ	5.17E+3	1.61E+2	7.64E+2	6.10E+3	9.94E+1	1.02E+3	5.42E+0	-1.58E+3	5.64E+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	3.12E+0	1.83E-2	2.97E+0	6.11E+0	1.04E-2	9.51E-1	6.07E-3	-5.62E-1	6.51E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.70E-3	3.81E-4	2.61E-4	4.34E-3	2.36E-4	1.44E-3	5.93E-6	-1.34E-3	4.69E-3
NHWD	kg	1.79E+1	9.53E+0	3.77E-1	2.79E+1	5.72E+0	3.32E+1	2.30E+1	-2.76E+0	8.69E+1
RWD	kg	8.85E-3	9.86E-4	4.69E-4	1.03E-2	6.28E-4	3.36E-3	3.23E-5	-1.64E-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