Environmental Profile

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

Ecochain v3.5.80

Product:	3001323 - Wafix PVC Branch 45° GY 110 SN8 S/S/S
Unit:	1 piece
Manufacturer:	Wavin - NL - Hardenberg - Verified
Address:	J.C. Kellerlaan 3 7772 SG Hardenberg Netherlands

Wavin carries a complete PVC range of outdoor sewers. With PVC as a material, a smooth-walled, flexible and completely watertight piping system is obtained. Moreover, PVC is absolutely resistant to all substances that occur in domestic waste water. By working with a light material, large pipe lengths and plug connections, a very fast installation is guaranteed.

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	0.16	0	0.01	0.18	0	0.05	0	-0.08	0.15
ADPE	kg Sb-eq	1.34E-3	5.41E-7	2.43E-6	1.34E-3	4.90E-7	4.20E-6	5.46E-9	-1.62E-5	1.33E-3
ADPF	kg Sb-eq	1.84E-2	1.56E-4	4.17E-4	1.90E-2	1.38E-4	1.46E-3	7.57E-6	-9.92E-3	1.07E-2
GWP	kg CO2-eq	1.47E+0	2.12E-2	7.91E-2	1.57E+0	1.88E-2	5.31E-1	5.44E-3	-8.28E-1	1.30E+0
ODP	kg CFC-11-eq	7.42E-7	3.76E-9	6.25E-9	7.52E-7	3.48E-9	5.80E-8	1.81E-10	-3.85E-7	4.28E-7
POCP	kg ethene-eq	9.27E-4	1.28E-5	3.44E-5	9.74E-4	1.13E-5	1.18E-4	1.38E-6	-4.41E-4	6.64E-4
AP	kg SO2-eq	5.87E-3	9.32E-5	3.40E-4	6.30E-3	8.08E-5	8.43E-4	4.07E-6	-2.77E-3	4.47E-3
EP	kg PO4 3−-eq	7.42E-4	1.83E-5	4.37E-5	8.04E-4	1.61E-5	1.30E-4	1.75E-6	-3.70E-4	5.82E-4
HTP	kg 1,4-DB-eq	5.54E-1	8.92E-3	3.68E-2	5.99E-1	8.03E-3	2.27E-1	4.42E-4	-2.56E-1	5.79E-1
FAETP	kg 1,4-DB-eq	1.66E-2	2.60E-4	1.26E-3	1.81E-2	2.35E-4	3.53E-3	1.74E-4	-7.21E-3	1.48E-2
MAETP	kg 1,4-DB-eq	3.92E+1	9.37E-1	4.95E+0	4.51E+1	8.40E-1	1.17E+1	2.01E-1	-1.65E+1	4.13E+1
TETP	kg 1,4-DB-eq	3.93E-3	3.15E-5	2.73E-3	6.69E-3	2.85E-5	7.99E-4	1.40E-6	-2.39E-3	5.13E-3
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.52E+0	2.14E-2	9.05E-2	1.64E+0	1.89E-2	5.66E-1	6.34E-3	-7.81E-1	1.45E+0
GWP-f	kg CO2 eq	1.51E+0	2.14E-2	6.96E-2	1.60E+0	1.89E-2	5.34E-1	6.34E-3	-8.47E-1	1.31E+0
GWP-b	kg CO2 eq	1.25E-2	9.86E-6	1.44E-2	2.68E-2	1.15E-5	3.11E-2	7.64E-6	6.71E-2	1.25E-1
GWP-luluc	kg CO2 eq	1.61E-3	7.83E-6	6.60E-3	8.22E-3	6.70E-6	2.23E-4	1.57E-7	-9.99E-4	7.45E-3
ODP	kg CFC11 eq	7.36E-7	4.72E-9	7.35E-9	7.48E-7	4.36E-9	5.99E-8	2.24E-10	-3.82E-7	4.31E-7
AP	mol H+ eq	7.14E-3	1.24E-4	4.24E-4	7.68E-3	1.08E-4	1.06E-3	5.45E-6	-3.35E-3	5.51E-3
EP-fw	kg P eq	6.86E-5	2.16E-7	1.22E-6	7.00E-5	1.56E-7	7.41E-6	7.13E-9	-3.45E-5	4.32E-5
EP-m	kg N eq	1.26E-3	4.37E-5	1.00E-4	1.41E-3	3.86E-5	2.63E-4	3.70E-6	-5.99E-4	1.11E-3
EP-T	mol N eq	1.37E-2	4.81E-4	1.10E-3	1.53E-2	4.25E-4	2.90E-3	2.18E-5	-6.46E-3	1.22E-2
POCP	kg NMVOC eq	4.60E-3	1.37E-4	3.14E-4	5.05E-3	1.22E-4	8.70E-4	7.56E-6	-2.20E-3	3.85E-3
ADP-mm	kg Sb eq	1.34E-3	5.41E-7	2.43E-6	1.34E-3	4.90E-7	4.20E-6	5.46E-9	-1.62E-5	1.33E-3
ADP-f	MJ	3.92E+1	3.22E-1	7.78E-1	4.03E+1	2.91E-1	2.89E+0	1.64E-2	-2.09E+1	2.27E+1
WDP	m3 depriv.	2.30E+0	1.15E-3	6.02E-1	2.90E+0	8.92E-4	1.10E-1	1.03E-4	-1.21E+0	1.80E+0
PM	disease inc.	5.15E-8	1.92E-9	5.24E-9	5.87E-8	1.71E-9	1.34E-8	1.13E-10	-2.63E-8	4.76E-8
IR	kBq U-235 eq	8.54E-2	1.35E-3	1.24E-3	8.80E-2	1.27E-3	1.01E-2	7.55E-5	-4.00E-2	5.94E-2
ETP-fw	CTUe	4.32E+1	2.87E-1	1.81E+0	4.53E+1	2.36E-1	2.10E+1	2.31E-1	-1.61E+1	5.08E+1
HTP-c	CTUh	1.16E-9	9.32E-12	6.25E-11	1.23E-9	8.39E-12	3.25E-10	4.47E-13	-4.46E-10	1.12E-9
HTP-nc	CTUh	3.77E-8	3.14E-10	1.95E-9	4.00E-8	2.81E-10	7.55E-9	4.52E-11	-1.54E-8	3.25E-8
SQP	Pt	7.78E+0	2.80E-1	5.81E-2	8.12E+0	2.49E-1	1.81E+0	4.19E-2	-1.50E+1	-4.74E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.40E+0	4.03E-3	3.78E+0	6.18E+0	4.17E-3	2.04E-1	6.20E-4	-3.16E+0	3.23E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.40E+0	4.03E-3	3.78E+0	6.18E+0	4.17E-3	2.04E-1	6.20E-4	-3.16E+0	3.23E+0
PENRE	MJ	4.21E+1	3.42E-1	8.41E-1	4.33E+1	3.08E-1	3.08E+0	1.74E-2	-2.25E+1	2.42E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.21E+1	3.42E-1	8.41E-1	4.33E+1	3.08E-1	3.08E+0	1.74E-2	-2.25E+1	2.42E+1
PET	MJ	4.45E+1	3.46E-1	4.62E+0	4.94E+1	3.13E-1	3.28E+0	1.80E-2	-2.56E+1	2.74E+1
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	2.70E-2	3.92E-5	1.42E-2	4.13E-2	3.29E-5	3.04E-3	2.01E-5	-1.45E-2	2.99E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.89E-4	8.17E-7	8.26E-7	1.91E-4	7.43E-7	4.74E-6	1.99E-8	-1.63E-5	1.80E-4
NHWD	kg	1.48E-1	2.04E-2	1.28E-3	1.70E-1	1.80E-2	1.08E-1	7.20E-2	-6.45E-2	3.03E-1
RWD	kg	7.77E-5	2.12E-6	1.53E-6	8.14E-5	1.98E-6	1.10E-5	1.07E-7	-3.56E-5	5.88E-5
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 Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777