Environmental Profile

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

Ecochain v3.5.80

Product:	3001326 - Wafix PVC Branch 88° GY 110x40 SN4S/S/SG
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	0.08	0	0	0.09	0	0.03	0	-0.04	0.08
ADPE	kg Sb-eq	6.53E-4	2.82E-7	1.13E-6	6.54E-4	2.48E-7	2.11E-6	2.76E-9	-8.11E-6	6.49E-4
ADPF	kg Sb-eq	9.56E-3	8.12E-5	1.94E-4	9.84E-3	6.98E-5	7.31E-4	3.83E-6	-5.12E-3	5.53E-3
GWP	kg CO2-eq	7.57E-1	1.10E-2	3.69E-2	8.05E-1	9.50E-3	2.71E-1	2.80E-3	-4.26E-1	6.63E-1
ODP	kg CFC-11-eq	3.63E-7	1.96E-9	2.92E-9	3.68E-7	1.76E-9	2.84E-8	9.14E-11	-1.91E-7	2.08E-7
POCP	kg ethene-eq	4.88E-4	6.66E-6	1.60E-5	5.11E-4	5.70E-6	5.97E-5	7.07E-7	-2.29E-4	3.47E-4
AP	kg SO2-eq	3.01E-3	4.85E-5	1.59E-4	3.21E-3	4.09E-5	4.22E-4	2.06E-6	-1.43E-3	2.25E-3
EP	kg PO4 3−-eq	3.84E-4	9.54E-6	2.04E-5	4.14E-4	8.17E-6	6.54E-5	9.12E-7	-1.96E-4	2.93E-4
HTP	kg 1,4-DB-eq	2.80E-1	4.65E-3	1.71E-2	3.02E-1	4.07E-3	1.15E-1	2.26E-4	-1.30E-1	2.91E-1
FAETP	kg 1,4-DB-eq	8.63E-3	1.36E-4	5.85E-4	9.35E-3	1.19E-4	1.80E-3	9.51E-5	-3.89E-3	7.48E-3
MAETP	kg 1,4-DB-eq	1.99E+1	4.88E-1	2.31E+0	2.27E+1	4.25E-1	5.95E+0	1.08E-1	-8.42E+0	2.07E+1
TETP	kg 1,4-DB-eq	1.97E-3	1.64E-5	1.27E-3	3.26E-3	1.44E-5	4.01E-4	7.05E-7	-1.29E-3	2.39E-3
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	7.82E-1	1.11E-2	4.22E-2	8.36E-1	9.59E-3	2.93E-1	3.26E-3	-3.92E-1	7.49E-1
GWP-f	kg CO2 eq	7.76E-1	1.11E-2	3.24E-2	8.19E-1	9.58E-3	2.73E-1	3.26E-3	-4.36E-1	6.69E-1
GWP-b	kg CO2 eq	6.05E-3	5.14E-6	6.69E-3	1.27E-2	5.82E-6	2.01E-2	3.87E-6	4.39E-2	7.68E-2
GWP-luluc	kg CO2 eq	8.60E-4	4.08E-6	3.08E-3	3.94E-3	3.39E-6	1.10E-4	7.95E-8	-5.70E-4	3.49E-3
ODP	kg CFC11 eq	3.61E-7	2.46E-9	3.43E-9	3.67E-7	2.21E-9	2.94E-8	1.13E-10	-1.89E-7	2.10E-7
AP	mol H+ eq	3.66E-3	6.46E-5	1.98E-4	3.92E-3	5.46E-5	5.32E-4	2.76E-6	-1.73E-3	2.78E-3
EP-fw	kg P eq	3.47E-5	1.12E-7	5.68E-7	3.54E-5	7.88E-8	3.66E-6	3.61E-9	-1.80E-5	2.11E-5
EP-m	kg N eq	6.54E-4	2.28E-5	4.67E-5	7.24E-4	1.95E-5	1.33E-4	1.92E-6	-3.13E-4	5.65E-4
EP-T	mol N eq	7.07E-3	2.51E-4	5.15E-4	7.84E-3	2.15E-4	1.47E-3	1.10E-5	-3.38E-3	6.14E-3
POCP	kg NMVOC eq	2.39E-3	7.16E-5	1.47E-4	2.61E-3	6.15E-5	4.41E-4	3.84E-6	-1.15E-3	1.97E-3
ADP-mm	kg Sb eq	6.53E-4	2.82E-7	1.13E-6	6.54E-4	2.48E-7	2.11E-6	2.76E-9	-8.10E-6	6.49E-4
ADP-f	MJ	2.03E+1	1.68E-1	3.63E-1	2.09E+1	1.47E-1	1.45E+0	8.29E-3	-1.08E+1	1.17E+1
WDP	m3 depriv.	1.14E+0	6.01E-4	2.81E-1	1.42E+0	4.51E-4	5.42E-2	5.13E-5	-6.20E-1	8.55E-1
PM	disease inc.	2.74E-8	1.00E-9	2.44E-9	3.08E-8	8.65E-10	6.78E-9	5.70E-11	-1.43E-8	2.43E-8
IR	kBq U-235 eq	4.37E-2	7.04E-4	5.76E-4	4.50E-2	6.43E-4	5.07E-3	3.83E-5	-2.06E-2	3.02E-2
ETP-fw	CTUe	2.27E+1	1.50E-1	8.42E-1	2.37E+1	1.19E-1	1.02E+1	1.12E-1	-8.78E+0	2.54E+1
HTP-c	CTUh	5.77E-10	4.86E-12	2.92E-11	6.11E-10	4.25E-12	1.64E-10	2.25E-13	-2.28E-10	5.52E-10
HTP-nc	CTUh	1.87E-8	1.64E-10	9.10E-10	1.98E-8	1.42E-10	3.74E-9	2.21E-11	-7.84E-9	1.58E-8
SQP	Pt	4.33E+0	1.46E-1	2.71E-2	4.51E+0	1.26E-1	9.13E-1	2.12E-2	-9.34E+0	-3.77E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.29E+0	2.10E-3	1.76E+0	3.05E+0	2.11E-3	1.01E-1	3.15E-4	-1.92E+0	1.24E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.29E+0	2.10E-3	1.76E+0	3.05E+0	2.11E-3	1.01E-1	3.15E-4	-1.92E+0	1.24E+0
PENRE	MJ	2.18E+1	1.78E-1	3.92E-1	2.24E+1	1.56E-1	1.55E+0	8.80E-3	-1.16E+1	1.25E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.18E+1	1.78E-1	3.92E-1	2.24E+1	1.56E-1	1.55E+0	8.80E-3	-1.16E+1	1.25E+1
PET	MJ	2.31E+1	1.80E-1	2.15E+0	2.54E+1	1.58E-1	1.65E+0	9.11E-3	-1.35E+1	1.37E+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	1.37E-2	2.05E-5	6.63E-3	2.03E-2	1.66E-5	1.50E-3	1.02E-5	-7.63E-3	1.42E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	9.21E-5	4.26E-7	3.85E-7	9.29E-5	3.76E-7	2.39E-6	1.01E-8	-8.26E-6	8.74E-5
NHWD	kg	7.53E-2	1.07E-2	5.94E-4	8.66E-2	9.12E-3	5.46E-2	3.64E-2	-3.29E-2	1.54E-1
RWD	kg	4.04E-5	1.10E-6	7.14E-7	4.22E-5	1.00E-6	5.55E-6	5.40E-8	-1.83E-5	3.05E-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

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777