Environmental Profile

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

Ecochain v3.5.80

Product:	3001343 - Wafix PVC Branch 45° GY 160x110 SN4S/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	0.29	0	0.02	0.32	0	0.09	0	-0.15	0.27
ADPE	kg Sb-eq	2.37E-3	9.70E-7	4.94E-6	2.37E-3	8.69E-7	7.47E-6	9.68E-9	-2.87E-5	2.35E-3
ADPF	kg Sb-eq	3.29E-2	2.79E-4	8.48E-4	3.40E-2	2.45E-4	2.59E-3	1.34E-5	-1.77E-2	1.92E-2
GWP	kg CO2-eq	2.63E+0	3.80E-2	1.61E-1	2.83E+0	3.33E-2	9.44E-1	9.67E-3	-1.48E+0	2.34E+0
ODP	kg CFC-11-eq	1.31E-6	6.74E-9	1.27E-8	1.33E-6	6.18E-9	1.03E-7	3.20E-10	-6.83E-7	7.59E-7
POCP	kg ethene-eq	1.66E-3	2.29E-5	6.99E-5	1.75E-3	2.00E-5	2.10E-4	2.46E-6	-7.90E-4	1.19E-3
AP	kg SO2-eq	1.05E-2	1.67E-4	6.92E-4	1.13E-2	1.43E-4	1.50E-3	7.22E-6	-4.97E-3	8.03E-3
EP	kg PO4 3−-eq	1.34E-3	3.28E-5	8.90E-5	1.46E-3	2.86E-5	2.31E-4	3.12E-6	-6.73E-4	1.05E-3
HTP	kg 1,4-DB-eq	9.89E-1	1.60E-2	7.48E-2	1.08E+0	1.43E-2	4.04E-1	7.85E-4	-4.58E-1	1.04E+0
FAETP	kg 1,4-DB-eq	3.00E-2	4.67E-4	2.55E-3	3.30E-2	4.17E-4	6.29E-3	3.12E-4	-1.33E-2	2.68E-2
MAETP	kg 1,4-DB-eq	6.99E+1	1.68E+0	1.01E+1	8.17E+1	1.49E+0	2.09E+1	3.59E-1	-2.96E+1	7.49E+1
TETP	kg 1,4-DB-eq	7.02E-3	5.65E-5	5.56E-3	1.26E-2	5.05E-5	1.42E-3	2.49E-6	-4.40E-3	9.71E-3
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.72E+0	3.83E-2	1.84E-1	2.94E+0	3.36E-2	1.01E+0	1.13E-2	-1.38E+0	2.62E+0
GWP-f	kg CO2 eq	2.70E+0	3.83E-2	1.42E-1	2.88E+0	3.36E-2	9.50E-1	1.13E-2	-1.51E+0	2.36E+0
GWP-b	kg CO2 eq	2.22E-2	1.77E-5	2.92E-2	5.15E-2	2.04E-5	6.28E-2	1.36E-5	1.36E-1	2.51E-1
GWP-luluc	kg CO2 eq	2.95E-3	1.40E-5	1.34E-2	1.64E-2	1.19E-5	3.95E-4	2.79E-7	-1.89E-3	1.49E-2
ODP	kg CFC11 eq	1.30E-6	8.45E-9	1.50E-8	1.33E-6	7.74E-9	1.06E-7	3.98E-10	-6.76E-7	7.64E-7
AP	mol H+ eq	1.28E-2	2.22E-4	8.63E-4	1.38E-2	1.91E-4	1.89E-3	9.67E-6	-6.02E-3	9.92E-3
EP-fw	kg P eq	1.23E-4	3.86E-7	2.48E-6	1.25E-4	2.76E-7	1.31E-5	1.26E-8	-6.25E-5	7.64E-5
EP-m	kg N eq	2.27E-3	7.83E-5	2.04E-4	2.56E-3	6.85E-5	4.69E-4	6.58E-6	-1.08E-3	2.02E-3
EP-T	mol N eq	2.46E-2	8.63E-4	2.25E-3	2.77E-2	7.54E-4	5.16E-3	3.86E-5	-1.17E-2	2.20E-2
POCP	kg NMVOC eq	8.24E-3	2.46E-4	6.40E-4	9.13E-3	2.16E-4	1.55E-3	1.34E-5	-3.95E-3	6.96E-3
ADP-mm	kg Sb eq	2.37E-3	9.70E-7	4.94E-6	2.37E-3	8.69E-7	7.47E-6	9.68E-9	-2.87E-5	2.35E-3
ADP-f	MJ	7.01E+1	5.78E-1	1.58E+0	7.22E+1	5.16E-1	5.14E+0	2.91E-2	-3.72E+1	4.07E+1
WDP	m3 depriv.	4.07E+0	2.07E-3	1.22E+0	5.30E+0	1.58E-3	1.95E-1	1.82E-4	-2.18E+0	3.32E+0
PM	disease inc.	9.31E-8	3.44E-9	1.07E-8	1.07E-7	3.03E-9	2.39E-8	2.00E-10	-4.83E-8	8.61E-8
IR	kBq U-235 eq	1.52E-1	2.42E-3	2.52E-3	1.57E-1	2.25E-3	1.80E-2	1.34E-4	-7.20E-2	1.06E-1
ETP-fw	CTUe	7.87E+1	5.15E-1	3.68E+0	8.29E+1	4.19E-1	3.71E+1	4.08E-1	-2.98E+1	9.11E+1
HTP-c	CTUh	2.06E-9	1.67E-11	1.27E-10	2.21E-9	1.49E-11	5.78E-10	7.93E-13	-8.01E-10	2.00E-9
HTP-nc	CTUh	6.71E-8	5.63E-10	3.97E-9	7.16E-8	4.99E-10	1.34E-8	7.98E-11	-2.76E-8	5.80E-8
SQP	Pt	1.46E+1	5.01E-1	1.18E-1	1.52E+1	4.41E-1	3.21E+0	7.44E-2	-2.96E+1	-1.07E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.39E+0	7.23E-3	7.69E+0	1.21E+1	7.40E-3	3.61E-1	1.10E-3	-6.17E+0	6.29E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.39E+0	7.23E-3	7.69E+0	1.21E+1	7.40E-3	3.61E-1	1.10E-3	-6.17E+0	6.29E+0
PENRE	MJ	7.51E+1	6.13E-1	1.71E+0	7.74E+1	5.47E-1	5.47E+0	3.08E-2	-4.01E+1	4.34E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	7.51E+1	6.13E-1	1.71E+0	7.74E+1	5.47E-1	5.47E+0	3.08E-2	-4.01E+1	4.34E+1
PET	MJ	7.95E+1	6.21E-1	9.40E+0	8.95E+1	5.55E-1	5.83E+0	3.19E-2	-4.62E+1	4.97E+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	4.81E-2	7.04E-5	2.89E-2	7.71E-2	5.83E-5	5.39E-3	3.57E-5	-2.63E-2	5.63E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.35E-4	1.46E-6	1.68E-6	3.38E-4	1.32E-6	8.45E-6	3.53E-8	-2.91E-5	3.19E-4
NHWD	kg	2.67E-1	3.66E-2	2.59E-3	3.07E-1	3.20E-2	1.92E-1	1.28E-1	-1.16E-1	5.42E-1
RWD	kg	1.39E-4	3.79E-6	3.11E-6	1.46E-4	3.51E-6	1.96E-5	1.89E-7	-6.41E-5	1.05E-4
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