Environmental Profile

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

Ecochain v3.5.80

Product:	3001342 - Wafix PVC Branch 88° GY 160 SN4 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	0.35	0.01	0.02	0.37	0	0.11	0	-0.18	0.31
ADPE	kg Sb-eq	2.83E-3	1.15E-6	4.88E-6	2.84E-3	1.04E-6	8.91E-6	1.16E-8	-3.43E-5	2.82E-3
ADPF	kg Sb-eq	3.94E-2	3.32E-4	8.39E-4	4.06E-2	2.94E-4	3.10E-3	1.61E-5	-2.12E-2	2.28E-2
GWP	kg CO2-eq	3.14E+0	4.51E-2	1.59E-1	3.34E+0	4.01E-2	1.13E+0	1.16E-2	-1.76E+0	2.76E+0
ODP	kg CFC-11-eq	1.57E-6	8.01E-9	1.26E-8	1.59E-6	7.43E-9	1.23E-7	3.85E-10	-8.17E-7	9.05E-7
POCP	kg ethene-eq	1.99E-3	2.72E-5	6.92E-5	2.08E-3	2.40E-5	2.50E-4	2.96E-6	-9.38E-4	1.42E-3
AP	kg SO2-eq	1.25E-2	1.98E-4	6.85E-4	1.34E-2	1.72E-4	1.79E-3	8.68E-6	-5.86E-3	9.48E-3
EP	kg PO4 3−-eq	1.57E-3	3.90E-5	8.80E-5	1.70E-3	3.44E-5	2.75E-4	3.76E-6	-7.78E-4	1.23E-3
HTP	kg 1,4-DB-eq	1.18E+0	1.90E-2	7.40E-2	1.27E+0	1.71E-2	4.83E-1	9.45E-4	-5.42E-1	1.23E+0
FAETP	kg 1,4-DB-eq	3.49E-2	5.55E-4	2.53E-3	3.80E-2	5.02E-4	7.51E-3	3.78E-4	-1.51E-2	3.13E-2
MAETP	kg 1,4-DB-eq	8.32E+1	2.00E+0	9.96E+0	9.52E+1	1.79E+0	2.49E+1	4.33E-1	-3.50E+1	8.72E+1
TETP	kg 1,4-DB-eq	8.29E-3	6.72E-5	5.50E-3	1.39E-2	6.07E-5	1.70E-3	2.99E-6	-5.00E-3	1.06E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.24E+0	4.56E-2	1.82E-1	3.47E+0	4.04E-2	1.20E+0	1.36E-2	-1.67E+0	3.06E+0
GWP-f	kg CO2 eq	3.21E+0	4.55E-2	1.40E-1	3.40E+0	4.04E-2	1.14E+0	1.36E-2	-1.80E+0	2.79E+0
GWP-b	kg CO2 eq	2.61E-2	2.10E-5	2.89E-2	5.51E-2	2.45E-5	6.26E-2	1.63E-5	1.34E-1	2.52E-1
GWP-luluc	kg CO2 eq	3.38E-3	1.67E-5	1.33E-2	1.67E-2	1.43E-5	4.73E-4	3.35E-7	-2.07E-3	1.51E-2
ODP	kg CFC11 eq	1.56E-6	1.00E-8	1.48E-8	1.58E-6	9.31E-9	1.27E-7	4.78E-10	-8.09E-7	9.10E-7
AP	mol H+ eq	1.52E-2	2.64E-4	8.54E-4	1.63E-2	2.30E-4	2.25E-3	1.16E-5	-7.10E-3	1.17E-2
EP-fw	kg P eq	1.45E-4	4.59E-7	2.45E-6	1.48E-4	3.32E-7	1.57E-5	1.52E-8	-7.25E-5	9.17E-5
EP-m	kg N eq	2.68E-3	9.30E-5	2.02E-4	2.97E-3	8.23E-5	5.58E-4	7.93E-6	-1.27E-3	2.35E-3
EP-T	mol N eq	2.90E-2	1.03E-3	2.22E-3	3.23E-2	9.07E-4	6.14E-3	4.64E-5	-1.37E-2	2.57E-2
POCP	kg NMVOC eq	9.80E-3	2.93E-4	6.33E-4	1.07E-2	2.59E-4	1.85E-3	1.61E-5	-4.66E-3	8.19E-3
ADP-mm	kg Sb eq	2.83E-3	1.15E-6	4.88E-6	2.84E-3	1.04E-6	8.91E-6	1.16E-8	-3.43E-5	2.82E-3
ADP-f	MJ	8.39E+1	6.86E-1	1.57E+0	8.61E+1	6.20E-1	6.15E+0	3.49E-2	-4.45E+1	4.84E+1
WDP	m3 depriv.	4.88E+0	2.46E-3	1.21E+0	6.09E+0	1.90E-3	2.34E-1	2.18E-4	-2.57E+0	3.75E+0
PM	disease inc.	1.10E-7	4.09E-9	1.05E-8	1.24E-7	3.64E-9	2.85E-8	2.40E-10	-5.52E-8	1.01E-7
IR	kBq U-235 eq	1.82E-1	2.88E-3	2.49E-3	1.87E-1	2.71E-3	2.15E-2	1.61E-4	-8.46E-2	1.27E-1
ETP-fw	CTUe	9.08E+1	6.12E-1	3.64E+0	9.50E+1	5.03E-1	4.45E+1	4.90E-1	-3.35E+1	1.07E+2
HTP-c	CTUh	2.45E-9	1.99E-11	1.26E-10	2.60E-9	1.79E-11	6.91E-10	9.53E-13	-9.44E-10	2.37E-9
HTP-nc	CTUh	7.99E-8	6.70E-10	3.93E-9	8.45E-8	6.00E-10	1.60E-8	9.57E-11	-3.25E-8	6.87E-8
SQP	Pt	1.62E+1	5.96E-1	1.17E-1	1.69E+1	5.30E-1	3.85E+0	8.95E-2	-3.03E+1	-8.92E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.03E+0	8.59E-3	7.61E+0	1.27E+1	8.89E-3	4.33E-1	1.32E-3	-6.46E+0	6.64E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.03E+0	8.59E-3	7.61E+0	1.27E+1	8.89E-3	4.33E-1	1.32E-3	-6.46E+0	6.64E+0
PENRE	MJ	9.00E+1	7.29E-1	1.69E+0	9.24E+1	6.58E-1	6.54E+0	3.71E-2	-4.79E+1	5.17E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.00E+1	7.29E-1	1.69E+0	9.24E+1	6.58E-1	6.54E+0	3.71E-2	-4.79E+1	5.17E+1
PET	MJ	9.50E+1	7.37E-1	9.31E+0	1.05E+2	6.67E-1	6.98E+0	3.84E-2	-5.44E+1	5.83E+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	5.74E-2	8.36E-5	2.86E-2	8.61E-2	7.01E-5	6.45E-3	4.29E-5	-3.05E-2	6.22E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.01E-4	1.74E-6	1.66E-6	4.04E-4	1.59E-6	1.01E-5	4.25E-8	-3.46E-5	3.81E-4
NHWD	kg	3.13E-1	4.35E-2	2.57E-3	3.59E-1	3.84E-2	2.29E-1	1.54E-1	-1.36E-1	6.44E-1
RWD	kg	1.66E-4	4.51E-6	3.08E-6	1.73E-4	4.22E-6	2.34E-5	2.27E-7	-7.52E-5	1.26E-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

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