Environmental Profile

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

Ecochain v3.5.80

Product:	3001341 - Wafix PVC Branch 45° 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	0.47	0.01	0.03	0.5	0.01	0.15	0	-0.24	0.42
ADPE	kg Sb-eq	3.93E-3	1.54E-6	6.54E-6	3.94E-3	1.41E-6	1.22E-5	1.57E-8	-4.69E-5	3.91E-3
ADPF	kg Sb-eq	5.23E-2	4.43E-4	1.12E-3	5.38E-2	3.96E-4	4.23E-3	2.17E-5	-2.82E-2	3.03E-2
GWP	kg CO2-eq	4.22E+0	6.02E-2	2.13E-1	4.49E+0	5.39E-2	1.52E+0	1.54E-2	-2.37E+0	3.71E+0
ODP	kg CFC-11-eq	2.18E-6	1.07E-8	1.69E-8	2.21E-6	9.99E-9	1.70E-7	5.18E-10	-1.12E-6	1.26E-6
POCP	kg ethene-eq	2.60E-3	3.63E-5	9.27E-5	2.73E-3	3.23E-5	3.39E-4	3.94E-6	-1.25E-3	1.85E-3
AP	kg SO2-eq	1.68E-2	2.65E-4	9.17E-4	1.80E-2	2.32E-4	2.45E-3	1.17E-5	-7.94E-3	1.28E-2
EP	kg PO4 3−-eq	2.13E-3	5.20E-5	1.18E-4	2.30E-3	4.63E-5	3.75E-4	4.95E-6	-1.06E-3	1.67E-3
HTP	kg 1,4-DB-eq	1.60E+0	2.54E-2	9.91E-2	1.72E+0	2.31E-2	6.55E-1	1.26E-3	-7.40E-1	1.66E+0
FAETP	kg 1,4-DB-eq	4.77E-2	7.40E-4	3.38E-3	5.18E-2	6.75E-4	1.01E-2	4.75E-4	-2.07E-2	4.24E-2
MAETP	kg 1,4-DB-eq	1.13E+2	2.66E+0	1.33E+1	1.29E+2	2.41E+0	3.39E+1	5.52E-1	-4.78E+1	1.18E+2
TETP	kg 1,4-DB-eq	1.14E-2	8.96E-5	7.37E-3	1.89E-2	8.17E-5	2.31E-3	4.05E-6	-6.86E-3	1.44E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	4.36E+0	6.08E-2	2.44E-1	4.66E+0	5.44E-2	1.62E+0	1.80E-2	-2.24E+0	4.11E+0
GWP-f	kg CO2 eq	4.32E+0	6.07E-2	1.88E-1	4.57E+0	5.43E-2	1.53E+0	1.80E-2	-2.42E+0	3.74E+0
GWP-b	kg CO2 eq	3.72E-2	2.80E-5	3.87E-2	7.59E-2	3.30E-5	8.64E-2	2.19E-5	1.86E-1	3.48E-1
GWP-luluc	kg CO2 eq	4.63E-3	2.23E-5	1.78E-2	2.25E-2	1.92E-5	6.49E-4	4.52E-7	-2.84E-3	2.03E-2
ODP	kg CFC11 eq	2.16E-6	1.34E-8	1.98E-8	2.19E-6	1.25E-8	1.76E-7	6.43E-10	-1.11E-6	1.27E-6
AP	mol H+ eq	2.04E-2	3.52E-4	1.14E-3	2.19E-2	3.09E-4	3.08E-3	1.56E-5	-9.61E-3	1.57E-2
EP-fw	kg P eq	1.99E-4	6.13E-7	3.29E-6	2.03E-4	4.47E-7	2.16E-5	2.05E-8	-9.93E-5	1.25E-4
EP-m	kg N eq	3.62E-3	1.24E-4	2.70E-4	4.02E-3	1.11E-4	7.60E-4	1.04E-5	-1.72E-3	3.18E-3
EP-T	mol N eq	3.92E-2	1.37E-3	2.98E-3	4.35E-2	1.22E-3	8.38E-3	6.25E-5	-1.85E-2	3.47E-2
POCP	kg NMVOC eq	1.31E-2	3.91E-4	8.48E-4	1.43E-2	3.49E-4	2.51E-3	2.17E-5	-6.27E-3	1.09E-2
ADP-mm	kg Sb eq	3.93E-3	1.54E-6	6.54E-6	3.94E-3	1.41E-6	1.22E-5	1.57E-8	-4.69E-5	3.91E-3
ADP-f	MJ	1.11E+2	9.16E-1	2.10E+0	1.14E+2	8.34E-1	8.39E+0	4.70E-2	-5.94E+1	6.42E+1
WDP	m3 depriv.	6.69E+0	3.28E-3	1.62E+0	8.32E+0	2.56E-3	3.22E-1	2.96E-4	-3.51E+0	5.14E+0
PM	disease inc.	1.45E-7	5.45E-9	1.41E-8	1.65E-7	4.90E-9	3.87E-8	3.23E-10	-7.47E-8	1.34E-7
IR	kBq U-235 eq	2.45E-1	3.84E-3	3.33E-3	2.52E-1	3.65E-3	2.94E-2	2.17E-4	-1.16E-1	1.69E-1
ETP-fw	CTUe	1.25E+2	8.17E-1	4.87E+0	1.30E+2	6.77E-1	6.19E+1	6.82E-1	-4.60E+1	1.48E+2
HTP-c	CTUh	3.37E-9	2.65E-11	1.69E-10	3.56E-9	2.41E-11	9.39E-10	1.29E-12	-1.29E-9	3.24E-9
HTP-nc	CTUh	1.10E-7	8.93E-10	5.27E-9	1.16E-7	8.07E-10	2.21E-8	1.33E-10	-4.45E-8	9.48E-8
SQP	Pt	2.20E+1	7.95E-1	1.57E-1	2.30E+1	7.13E-1	5.21E+0	1.20E-1	-4.18E+1	-1.28E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.86E+0	1.15E-2	1.02E+1	1.71E+1	1.20E-2	5.95E-1	1.77E-3	-8.88E+0	8.79E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.86E+0	1.15E-2	1.02E+1	1.71E+1	1.20E-2	5.95E-1	1.77E-3	-8.88E+0	8.79E+0
PENRE	MJ	1.19E+2	9.72E-1	2.27E+0	1.23E+2	8.85E-1	8.92E+0	4.99E-2	-6.40E+1	6.85E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.19E+2	9.72E-1	2.27E+0	1.23E+2	8.85E-1	8.92E+0	4.99E-2	-6.40E+1	6.85E+1
PET	MJ	1.26E+2	9.84E-1	1.25E+1	1.40E+2	8.97E-1	9.52E+0	5.17E-2	-7.28E+1	7.73E+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	7.78E-2	1.12E-4	3.84E-2	1.16E-1	9.44E-5	8.88E-3	5.76E-5	-4.15E-2	8.38E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.59E-4	2.32E-6	2.23E-6	5.63E-4	2.13E-6	1.37E-5	5.72E-8	-4.72E-5	5.32E-4
NHWD	kg	4.28E-1	5.81E-2	3.44E-3	4.90E-1	5.17E-2	3.10E-1	2.07E-1	-1.87E-1	8.71E-1
RWD	kg	2.20E-4	6.01E-6	4.13E-6	2.31E-4	5.67E-6	3.19E-5	3.06E-7	-1.03E-4	1.66E-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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