Environmental Profile

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

Ecochain v3.5.80

Product:	3004134 - PVC Bend RWA 45° GY 70 S/SP
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	0.02	0	0	0.02	0	0.01	0	-0.01	0.02
ADPE	kg Sb-eq	1.64E-4	6.03E-8	2.51E-7	1.64E-4	5.38E-8	5.01E-7	6.01E-10	-1.91E-6	1.63E-4
ADPF	kg Sb-eq	1.96E-3	1.74E-5	4.31E-5	2.02E-3	1.51E-5	1.71E-4	8.32E-7	-1.08E-3	1.13E-3
GWP	kg CO2-eq	1.66E-1	2.36E-3	8.18E-3	1.77E-1	2.06E-3	5.82E-2	5.66E-4	-9.37E-2	1.44E-1
ODP	kg CFC-11-eq	9.13E-8	4.19E-10	6.47E-10	9.24E-8	3.83E-10	7.15E-9	1.98E-11	-4.62E-8	5.38E-8
POCP	kg ethene-eq	9.46E-5	1.42E-6	3.56E-6	9.96E-5	1.24E-6	1.38E-5	1.47E-7	-4.94E-5	6.53E-5
AP	kg SO2-eq	6.65E-4	1.04E-5	3.52E-5	7.11E-4	8.88E-6	1.01E-4	4.48E-7	-3.31E-4	4.90E-4
EP	kg PO4 3−-eq	8.92E-5	2.04E-6	4.52E-6	9.57E-5	1.77E-6	1.54E-5	1.77E-7	-4.81E-5	6.50E-5
HTP	kg 1,4-DB-eq	6.47E-2	9.94E-4	3.80E-3	6.95E-2	8.82E-4	2.60E-2	4.70E-5	-3.11E-2	6.53E-2
FAETP	kg 1,4-DB-eq	2.12E-3	2.90E-5	1.30E-4	2.28E-3	2.58E-5	4.00E-4	1.45E-5	-9.97E-4	1.73E-3
MAETP	kg 1,4-DB-eq	4.59E+0	1.04E-1	5.12E-1	5.21E+0	9.23E-2	1.40E+0	1.77E-2	-2.02E+0	4.70E+0
TETP	kg 1,4-DB-eq	4.89E-4	3.51E-6	2.83E-4	7.75E-4	3.13E-6	9.20E-5	1.58E-7	-3.34E-4	5.37E-4
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.72E-1	2.38E-3	9.37E-3	1.84E-1	2.08E-3	6.47E-2	6.60E-4	-8.23E-2	1.69E-1
GWP-f	kg CO2 eq	1.70E-1	2.38E-3	7.20E-3	1.80E-1	2.08E-3	5.86E-2	6.60E-4	-9.56E-2	1.45E-1
GWP-b	kg CO2 eq	1.73E-3	1.10E-6	1.49E-3	3.21E-3	1.26E-6	6.08E-3	8.34E-7	1.34E-2	2.27E-2
GWP-luluc	kg CO2 eq	2.19E-4	8.73E-7	6.83E-4	9.03E-4	7.36E-7	2.64E-5	1.73E-8	-1.55E-4	7.75E-4
ODP	kg CFC11 eq	9.02E-8	5.26E-10	7.61E-10	9.15E-8	4.79E-10	7.37E-9	2.46E-11	-4.57E-8	5.36E-8
AP	mol H+ eq	8.15E-4	1.38E-5	4.39E-5	8.72E-4	1.18E-5	1.26E-4	5.99E-7	-4.02E-4	6.10E-4
EP-fw	kg P eq	8.34E-6	2.40E-8	1.26E-7	8.49E-6	1.71E-8	8.87E-7	7.84E-10	-4.49E-6	4.90E-6
EP-m	kg N eq	1.51E-4	4.87E-6	1.04E-5	1.66E-4	4.24E-6	3.12E-5	3.71E-7	-7.32E-5	1.29E-4
EP-T	mol N eq	1.61E-3	5.37E-5	1.14E-4	1.78E-3	4.67E-5	3.44E-4	2.39E-6	-7.93E-4	1.38E-3
POCP	kg NMVOC eq	5.06E-4	1.53E-5	3.25E-5	5.54E-4	1.34E-5	1.03E-4	8.22E-7	-2.57E-4	4.14E-4
ADP-mm	kg Sb eq	1.64E-4	6.03E-8	2.51E-7	1.64E-4	5.38E-8	5.01E-7	6.01E-10	-1.91E-6	1.63E-4
ADP-f	MJ	4.17E+0	3.59E-2	8.05E-2	4.29E+0	3.19E-2	3.39E-1	1.80E-3	-2.27E+0	2.38E+0
WDP	m3 depriv.	2.73E-1	1.28E-4	6.23E-2	3.36E-1	9.80E-5	1.33E-2	1.17E-5	-1.48E-1	2.01E-1
PM	disease inc.	5.75E-9	2.14E-10	5.42E-10	6.51E-9	1.88E-10	1.57E-9	1.24E-11	-3.45E-9	4.83E-9
IR	kBq U-235 eq	9.62E-3	1.50E-4	1.28E-4	9.90E-3	1.40E-4	1.21E-3	8.27E-6	-5.00E-3	6.26E-3
ETP-fw	CTUe	5.77E+0	3.20E-2	1.87E-1	5.99E+0	2.59E-2	2.61E+0	2.87E-2	-2.29E+0	6.37E+0
HTP-c	CTUh	1.39E-10	1.04E-12	6.47E-12	1.47E-10	9.22E-13	3.79E-11	4.97E-14	-5.51E-11	1.31E-10
HTP-nc	CTUh	4.59E-9	3.50E-11	2.02E-10	4.83E-9	3.09E-11	9.08E-10	5.50E-12	-1.90E-9	3.87E-9
SQP	Pt	1.10E+0	3.12E-2	6.01E-3	1.13E+0	2.73E-2	2.06E-1	4.61E-3	-2.75E+0	-1.37E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.21E-1	4.50E-4	3.91E-1	7.13E-1	4.58E-4	2.43E-2	6.72E-5	-5.50E-1	1.88E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.21E-1	4.50E-4	3.91E-1	7.13E-1	4.58E-4	2.43E-2	6.72E-5	-5.50E-1	1.88E-1
PENRE	MJ	4.47E+0	3.81E-2	8.70E-2	4.60E+0	3.39E-2	3.60E-1	1.91E-3	-2.45E+0	2.55E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.47E+0	3.81E-2	8.70E-2	4.60E+0	3.39E-2	3.60E-1	1.91E-3	-2.45E+0	2.55E+0
PET	MJ	4.79E+0	3.86E-2	4.78E-1	5.31E+0	3.43E-2	3.85E-1	1.98E-3	-3.00E+0	2.74E+0
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	3.12E-3	4.37E-6	1.47E-3	4.59E-3	3.61E-6	3.64E-4	2.20E-6	-1.86E-3	3.10E-3
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.37E-5	9.10E-8	8.54E-8	2.38E-5	8.16E-8	5.60E-7	2.19E-9	-1.95E-6	2.25E-5
NHWD	kg	1.81E-2	2.28E-3	1.32E-4	2.06E-2	1.98E-3	1.22E-2	7.91E-3	-7.93E-3	3.48E-2
RWD	kg	8.40E-6	2.36E-7	1.58E-7	8.80E-6	2.17E-7	1.30E-6	1.17E-8	-4.46E-6	5.86E-6
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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