Environmental Profile

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

Ecochain v3.5.80

Product:	3004142 - PVC Bend RWA 45° GY 70 S/rSP
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	1.80E-4	6.57E-8	2.72E-7	1.81E-4	5.92E-8	5.49E-7	6.62E-10	-2.10E-6	1.79E-4
ADPF	kg Sb-eq	2.15E-3	1.89E-5	4.67E-5	2.21E-3	1.67E-5	1.88E-4	9.16E-7	-1.18E-3	1.24E-3
GWP	kg CO2-eq	1.82E-1	2.57E-3	8.86E-3	1.93E-1	2.27E-3	6.39E-2	6.24E-4	-1.02E-1	1.58E-1
ODP	kg CFC-11-eq	1.00E-7	4.56E-10	7.01E-10	1.02E-7	4.21E-10	7.86E-9	2.18E-11	-5.08E-8	5.91E-8
POCP	kg ethene-eq	1.03E-4	1.55E-6	3.85E-6	1.09E-4	1.36E-6	1.51E-5	1.62E-7	-5.38E-5	7.17E-5
AP	kg SO2-eq	7.28E-4	1.13E-5	3.81E-5	7.77E-4	9.78E-6	1.10E-4	4.93E-7	-3.59E-4	5.39E-4
EP	kg PO4 3−-eq	9.67E-5	2.22E-6	4.90E-6	1.04E-4	1.95E-6	1.68E-5	1.94E-7	-5.14E-5	7.13E-5
HTP	kg 1,4-DB-eq	7.08E-2	1.08E-3	4.12E-3	7.60E-2	9.72E-4	2.86E-2	5.18E-5	-3.39E-2	7.17E-2
FAETP	kg 1,4-DB-eq	2.28E-3	3.16E-5	1.41E-4	2.46E-3	2.85E-5	4.38E-4	1.60E-5	-1.06E-3	1.88E-3
MAETP	kg 1,4-DB-eq	5.02E+0	1.14E-1	5.54E-1	5.69E+0	1.02E-1	1.53E+0	1.95E-2	-2.19E+0	5.14E+0
TETP	kg 1,4-DB-eq	5.33E-4	3.83E-6	3.06E-4	8.43E-4	3.44E-6	1.01E-4	1.74E-7	-3.54E-4	5.94E-4
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.88E-1	2.60E-3	1.01E-2	2.01E-1	2.29E-3	7.04E-2	7.27E-4	-9.13E-2	1.83E-1
GWP-f	kg CO2 eq	1.86E-1	2.59E-3	7.80E-3	1.96E-1	2.29E-3	6.43E-2	7.27E-4	-1.04E-1	1.59E-1
GWP-b	kg CO2 eq	1.88E-3	1.20E-6	1.61E-3	3.49E-3	1.39E-6	6.07E-3	9.19E-7	1.34E-2	2.29E-2
GWP-luluc	kg CO2 eq	2.33E-4	9.51E-7	7.40E-4	9.74E-4	8.11E-7	2.91E-5	1.91E-8	-1.61E-4	8.43E-4
ODP	kg CFC11 eq	9.91E-8	5.73E-10	8.24E-10	1.01E-7	5.28E-10	8.10E-9	2.71E-11	-5.02E-8	5.89E-8
AP	mol H+ eq	8.90E-4	1.50E-5	4.75E-5	9.52E-4	1.30E-5	1.38E-4	6.60E-7	-4.36E-4	6.69E-4
EP-fw	kg P eq	9.09E-6	2.62E-8	1.37E-7	9.25E-6	1.88E-8	9.75E-7	8.63E-10	-4.82E-6	5.42E-6
EP-m	kg N eq	1.64E-4	5.30E-6	1.12E-5	1.80E-4	4.67E-6	3.41E-5	4.09E-7	-7.90E-5	1.40E-4
EP-T	mol N eq	1.75E-3	5.85E-5	1.24E-4	1.93E-3	5.14E-5	3.76E-4	2.63E-6	-8.55E-4	1.51E-3
POCP	kg NMVOC eq	5.52E-4	1.67E-5	3.52E-5	6.04E-4	1.47E-5	1.13E-4	9.06E-7	-2.79E-4	4.53E-4
ADP-mm	kg Sb eq	1.80E-4	6.57E-8	2.72E-7	1.81E-4	5.92E-8	5.49E-7	6.62E-10	-2.10E-6	1.79E-4
ADP-f	MJ	4.57E+0	3.91E-2	8.71E-2	4.70E+0	3.52E-2	3.72E-1	1.98E-3	-2.49E+0	2.62E+0
WDP	m3 depriv.	3.00E-1	1.40E-4	6.74E-2	3.68E-1	1.08E-4	1.46E-2	1.28E-5	-1.61E-1	2.21E-1
PM	disease inc.	6.22E-9	2.33E-10	5.87E-10	7.04E-9	2.07E-10	1.72E-9	1.36E-11	-3.66E-9	5.32E-9
IR	kBq U-235 eq	1.05E-2	1.64E-4	1.39E-4	1.08E-2	1.54E-4	1.32E-3	9.11E-6	-5.41E-3	6.90E-3
ETP-fw	CTUe	6.18E+0	3.49E-2	2.02E-1	6.42E+0	2.85E-2	2.87E+0	3.16E-2	-2.42E+0	6.93E+0
HTP-c	CTUh	1.53E-10	1.13E-12	7.01E-12	1.61E-10	1.02E-12	4.15E-11	5.47E-14	-5.99E-11	1.44E-10
HTP-nc	CTUh	5.04E-9	3.82E-11	2.19E-10	5.29E-9	3.40E-11	9.98E-10	6.06E-12	-2.07E-9	4.26E-9
SQP	Pt	1.15E+0	3.39E-2	6.52E-3	1.19E+0	3.01E-2	2.26E-1	5.08E-3	-2.77E+0	-1.32E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.42E-1	4.90E-4	4.24E-1	7.66E-1	5.04E-4	2.67E-2	7.40E-5	-5.59E-1	2.34E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.42E-1	4.90E-4	4.24E-1	7.66E-1	5.04E-4	2.67E-2	7.40E-5	-5.59E-1	2.34E-1
PENRE	MJ	4.90E+0	4.15E-2	9.42E-2	5.04E+0	3.73E-2	3.96E-1	2.10E-3	-2.68E+0	2.79E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.90E+0	4.15E-2	9.42E-2	5.04E+0	3.73E-2	3.96E-1	2.10E-3	-2.68E+0	2.79E+0
PET	MJ	5.24E+0	4.20E-2	5.18E-1	5.80E+0	3.78E-2	4.22E-1	2.18E-3	-3.24E+0	3.03E+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	3.41E-3	4.77E-6	1.59E-3	5.01E-3	3.98E-6	4.01E-4	2.43E-6	-2.00E-3	3.42E-3
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.60E-5	9.92E-8	9.25E-8	2.62E-5	8.99E-8	6.13E-7	2.41E-9	-2.13E-6	2.48E-5
NHWD	kg	1.97E-2	2.48E-3	1.43E-4	2.24E-2	2.18E-3	1.34E-2	8.71E-3	-8.62E-3	3.81E-2
RWD	kg	9.19E-6	2.57E-7	1.72E-7	9.62E-6	2.39E-7	1.42E-6	1.29E-8	-4.83E-6	6.46E-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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