Environmental Profile

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

Ecochain v3.5.80

Product:	3004146 - PVC Bend RWA 45° GY 100 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	0.04	0	0	0.04	0	0.01	0	-0.02	0.04
ADPE	kg Sb-eq	3.63E-4	1.32E-7	5.53E-7	3.64E-4	1.19E-7	1.10E-6	1.33E-9	-4.22E-6	3.61E-4
ADPF	kg Sb-eq	4.31E-3	3.80E-5	9.50E-5	4.45E-3	3.35E-5	3.78E-4	1.84E-6	-2.37E-3	2.49E-3
GWP	kg CO2-eq	3.65E-1	5.17E-3	1.80E-2	3.88E-1	4.57E-3	1.28E-1	1.25E-3	-2.06E-1	3.17E-1
ODP	kg CFC-11-eq	2.02E-7	9.17E-10	1.42E-9	2.04E-7	8.47E-10	1.58E-8	4.39E-11	-1.02E-7	1.19E-7
POCP	kg ethene-eq	2.08E-4	3.12E-6	7.83E-6	2.19E-4	2.74E-6	3.03E-5	3.25E-7	-1.08E-4	1.44E-4
AP	kg SO2-eq	1.46E-3	2.27E-5	7.75E-5	1.56E-3	1.97E-5	2.22E-4	9.92E-7	-7.21E-4	1.08E-3
EP	kg PO4 3−-eq	1.94E-4	4.47E-6	9.96E-6	2.09E-4	3.93E-6	3.38E-5	3.91E-7	-1.03E-4	1.44E-4
HTP	kg 1,4-DB-eq	1.42E-1	2.18E-3	8.37E-3	1.53E-1	1.95E-3	5.75E-2	1.04E-4	-6.81E-2	1.44E-1
FAETP	kg 1,4-DB-eq	4.59E-3	6.36E-5	2.86E-4	4.94E-3	5.73E-5	8.80E-4	3.21E-5	-2.12E-3	3.79E-3
MAETP	kg 1,4-DB-eq	1.01E+1	2.29E-1	1.13E+0	1.14E+1	2.05E-1	3.08E+0	3.92E-2	-4.41E+0	1.04E+1
TETP	kg 1,4-DB-eq	1.07E-3	7.69E-6	6.23E-4	1.70E-3	6.93E-6	2.03E-4	3.51E-7	-7.10E-4	1.20E-3
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.78E-1	5.22E-3	2.06E-2	4.03E-1	4.61E-3	1.41E-1	1.46E-3	-1.84E-1	3.67E-1
GWP-f	kg CO2 eq	3.73E-1	5.21E-3	1.59E-2	3.94E-1	4.61E-3	1.29E-1	1.46E-3	-2.10E-1	3.20E-1
GWP-b	kg CO2 eq	3.79E-3	2.41E-6	3.27E-3	7.06E-3	2.80E-6	1.21E-2	1.85E-6	2.67E-2	4.59E-2
GWP-luluc	kg CO2 eq	4.68E-4	1.91E-6	1.50E-3	1.97E-3	1.63E-6	5.85E-5	3.84E-8	-3.23E-4	1.71E-3
ODP	kg CFC11 eq	1.99E-7	1.15E-9	1.67E-9	2.02E-7	1.06E-9	1.63E-8	5.45E-11	-1.01E-7	1.19E-7
AP	mol H+ eq	1.79E-3	3.02E-5	9.66E-5	1.92E-3	2.62E-5	2.78E-4	1.33E-6	-8.75E-4	1.35E-3
EP-fw	kg P eq	1.83E-5	5.26E-8	2.78E-7	1.86E-5	3.79E-8	1.96E-6	1.74E-9	-9.69E-6	1.09E-5
EP-m	kg N eq	3.29E-4	1.07E-5	2.28E-5	3.62E-4	9.39E-6	6.86E-5	8.23E-7	-1.59E-4	2.82E-4
EP-T	mol N eq	3.52E-3	1.17E-4	2.52E-4	3.89E-3	1.03E-4	7.56E-4	5.29E-6	-1.72E-3	3.03E-3
POCP	kg NMVOC eq	1.11E-3	3.35E-5	7.16E-5	1.21E-3	2.96E-5	2.26E-4	1.82E-6	-5.61E-4	9.11E-4
ADP-mm	kg Sb eq	3.63E-4	1.32E-7	5.53E-7	3.64E-4	1.19E-7	1.10E-6	1.33E-9	-4.22E-6	3.61E-4
ADP-f	MJ	9.19E+0	7.86E-2	1.77E-1	9.44E+0	7.07E-2	7.48E-1	3.99E-3	-5.01E+0	5.26E+0
WDP	m3 depriv.	6.04E-1	2.81E-4	1.37E-1	7.41E-1	2.17E-4	2.94E-2	2.58E-5	-3.24E-1	4.47E-1
PM	disease inc.	1.25E-8	4.68E-10	1.19E-9	1.42E-8	4.16E-10	3.45E-9	2.74E-11	-7.35E-9	1.07E-8
IR	kBq U-235 eq	2.12E-2	3.30E-4	2.82E-4	2.18E-2	3.09E-4	2.66E-3	1.83E-5	-1.09E-2	1.39E-2
ETP-fw	CTUe	1.24E+1	7.01E-2	4.12E-1	1.29E+1	5.74E-2	5.78E+0	6.36E-2	-4.85E+0	1.39E+1
HTP-c	CTUh	3.07E-10	2.27E-12	1.42E-11	3.23E-10	2.04E-12	8.35E-11	1.10E-13	-1.20E-10	2.89E-10
HTP-nc	CTUh	1.01E-8	7.67E-11	4.45E-10	1.06E-8	6.84E-11	2.01E-9	1.22E-11	-4.16E-9	8.58E-9
SQP	Pt	2.30E+0	6.82E-2	1.32E-2	2.39E+0	6.05E-2	4.55E-1	1.02E-2	-5.54E+0	-2.63E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.86E-1	9.85E-4	8.61E-1	1.55E+0	1.01E-3	5.38E-2	1.49E-4	-1.12E+0	4.84E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.86E-1	9.85E-4	8.61E-1	1.55E+0	1.01E-3	5.38E-2	1.49E-4	-1.12E+0	4.84E-1
PENRE	MJ	9.86E+0	8.35E-2	1.92E-1	1.01E+1	7.51E-2	7.95E-1	4.23E-3	-5.39E+0	5.62E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.86E+0	8.35E-2	1.92E-1	1.01E+1	7.51E-2	7.95E-1	4.23E-3	-5.39E+0	5.62E+0
PET	MJ	1.05E+1	8.45E-2	1.05E+0	1.17E+1	7.61E-2	8.49E-1	4.38E-3	-6.51E+0	6.10E+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	6.86E-3	9.58E-6	3.24E-3	1.01E-2	8.00E-6	8.06E-4	4.88E-6	-4.01E-3	6.92E-3
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.23E-5	1.99E-7	1.88E-7	5.27E-5	1.81E-7	1.23E-6	4.85E-9	-4.29E-6	4.99E-5
NHWD	kg	3.97E-2	4.99E-3	2.90E-4	4.49E-2	4.38E-3	2.70E-2	1.75E-2	-1.73E-2	7.65E-2
RWD	kg	1.85E-5	5.16E-7	3.49E-7	1.93E-5	4.81E-7	2.86E-6	2.59E-8	-9.71E-6	1.30E-5
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

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777