Environmental Profile

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

Ecochain v3.5.80

Product:	3004226 - PVC RWA Bend 45° WT 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	0.05	0	0.01	0	-0.02	0.04
ADPE	kg Sb-eq	4.75E-4	1.30E-7	5.76E-7	4.76E-4	1.19E-7	1.09E-6	1.35E-9	-4.22E-6	4.73E-4
ADPF	kg Sb-eq	4.40E-3	3.73E-5	9.90E-5	4.54E-3	3.35E-5	3.73E-4	1.85E-6	-2.36E-3	2.58E-3
GWP	kg CO2-eq	3.86E-1	5.08E-3	1.88E-2	4.10E-1	4.57E-3	1.28E-1	1.27E-3	-2.05E-1	3.39E-1
ODP	kg CFC-11-eq	1.91E-7	9.01E-10	1.49E-9	1.94E-7	8.47E-10	1.54E-8	4.40E-11	-1.02E-7	1.08E-7
POCP	kg ethene-eq	2.34E-4	3.06E-6	8.16E-6	2.45E-4	2.74E-6	3.00E-5	3.29E-7	-1.08E-4	1.70E-4
AP	kg SO2-eq	1.61E-3	2.23E-5	8.08E-5	1.71E-3	1.97E-5	2.18E-4	9.99E-7	-7.21E-4	1.23E-3
EP	kg PO4 3−-eq	2.10E-4	4.39E-6	1.04E-5	2.24E-4	3.93E-6	3.34E-5	3.88E-7	-1.03E-4	1.59E-4
HTP	kg 1,4-DB-eq	1.45E-1	2.14E-3	8.73E-3	1.56E-1	1.95E-3	5.71E-2	1.04E-4	-6.81E-2	1.47E-1
FAETP	kg 1,4-DB-eq	4.89E-3	6.24E-5	2.98E-4	5.25E-3	5.73E-5	8.77E-4	3.24E-5	-2.12E-3	4.09E-3
MAETP	kg 1,4-DB-eq	1.05E+1	2.25E-1	1.17E+0	1.19E+1	2.05E-1	3.05E+0	3.98E-2	-4.41E+0	1.08E+1
TETP	kg 1,4-DB-eq	1.05E-3	7.56E-6	6.49E-4	1.71E-3	6.93E-6	2.02E-4	3.51E-7	-7.10E-4	1.21E-3
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.99E-1	5.13E-3	2.15E-2	4.26E-1	4.61E-3	1.41E-1	1.48E-3	-1.83E-1	3.90E-1
GWP-f	kg CO2 eq	3.95E-1	5.12E-3	1.65E-2	4.17E-1	4.61E-3	1.29E-1	1.48E-3	-2.09E-1	3.43E-1
GWP-b	kg CO2 eq	3.90E-3	2.36E-6	3.41E-3	7.32E-3	2.80E-6	1.21E-2	1.84E-6	2.67E-2	4.62E-2
GWP-luluc	kg CO2 eq	4.74E-4	1.88E-6	1.57E-3	2.04E-3	1.63E-6	5.74E-5	4.00E-8	-3.23E-4	1.78E-3
ODP	kg CFC11 eq	1.89E-7	1.13E-9	1.75E-9	1.92E-7	1.06E-9	1.59E-8	5.46E-11	-1.01E-7	1.08E-7
AP	mol H+ eq	1.96E-3	2.97E-5	1.01E-4	2.09E-3	2.62E-5	2.74E-4	1.34E-6	-8.75E-4	1.52E-3
EP-fw	kg P eq	1.91E-5	5.17E-8	2.89E-7	1.94E-5	3.79E-8	1.92E-6	1.79E-9	-9.69E-6	1.17E-5
EP-m	kg N eq	3.60E-4	1.05E-5	2.38E-5	3.94E-4	9.39E-6	6.78E-5	8.13E-7	-1.59E-4	3.13E-4
EP-T	mol N eq	3.79E-3	1.15E-4	2.62E-4	4.17E-3	1.03E-4	7.47E-4	5.31E-6	-1.72E-3	3.31E-3
POCP	kg NMVOC eq	1.22E-3	3.29E-5	7.47E-5	1.33E-3	2.96E-5	2.24E-4	1.83E-6	-5.60E-4	1.02E-3
ADP-mm	kg Sb eq	4.75E-4	1.30E-7	5.76E-7	4.76E-4	1.19E-7	1.09E-6	1.35E-9	-4.22E-6	4.73E-4
ADP-f	MJ	9.34E+0	7.72E-2	1.85E-1	9.60E+0	7.07E-2	7.38E-1	4.00E-3	-5.00E+0	5.42E+0
WDP	m3 depriv.	5.86E-1	2.76E-4	1.43E-1	7.29E-1	2.17E-4	2.87E-2	3.14E-5	-3.24E-1	4.34E-1
PM	disease inc.	1.38E-8	4.60E-10	1.24E-9	1.55E-8	4.16E-10	3.42E-9	2.75E-11	-7.35E-9	1.20E-8
IR	kBq U-235 eq	2.08E-2	3.24E-4	2.94E-4	2.14E-2	3.09E-4	2.62E-3	1.83E-5	-1.09E-2	1.35E-2
ETP-fw	CTUe	1.34E+1	6.89E-2	4.29E-1	1.39E+1	5.74E-2	5.60E+0	6.16E-2	-4.85E+0	1.47E+1
HTP-c	CTUh	3.32E-10	2.23E-12	1.48E-11	3.49E-10	2.04E-12	8.61E-11	1.14E-13	-1.20E-10	3.17E-10
HTP-nc	CTUh	1.06E-8	7.53E-11	4.64E-10	1.12E-8	6.85E-11	1.97E-9	1.19E-11	-4.16E-9	9.07E-9
SQP	Pt	2.31E+0	6.70E-2	1.38E-2	2.39E+0	6.05E-2	4.53E-1	1.02E-2	-5.54E+0	-2.62E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.79E-1	9.67E-4	8.98E-1	1.58E+0	1.01E-3	5.27E-2	1.46E-4	-1.12E+0	5.13E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.79E-1	9.67E-4	8.98E-1	1.58E+0	1.01E-3	5.27E-2	1.46E-4	-1.12E+0	5.13E-1
PENRE	MJ	1.00E+1	8.20E-2	2.00E-1	1.03E+1	7.51E-2	7.86E-1	4.24E-3	-5.38E+0	5.79E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.00E+1	8.20E-2	2.00E-1	1.03E+1	7.51E-2	7.86E-1	4.24E-3	-5.38E+0	5.79E+0
PET	MJ	1.07E+1	8.30E-2	1.10E+0	1.19E+1	7.61E-2	8.38E-1	4.39E-3	-6.49E+0	6.30E+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	6.91E-3	9.41E-6	3.38E-3	1.03E-2	8.00E-6	7.87E-4	4.87E-6	-4.01E-3	7.09E-3
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.63E-5	1.96E-7	1.96E-7	6.67E-5	1.81E-7	1.22E-6	4.92E-9	-4.28E-6	6.38E-5
NHWD	kg	4.00E-2	4.90E-3	3.03E-4	4.52E-2	4.38E-3	2.69E-2	1.75E-2	-1.73E-2	7.67E-2
RWD	kg	1.81E-5	5.07E-7	3.64E-7	1.89E-5	4.81E-7	2.83E-6	2.59E-8	-9.71E-6	1.26E-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