Environmental Profile

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

Ecochain v3.5.80

Product:	3000349 - PVC Pipe GY BENOR 315x9.2 SN8 L=5 SC/CH
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	13.62	0.36	0.61	14.59	0.22	4.93	0.03	-6.82	12.95
ADPE	kg Sb-eq	3.68E-3	7.54E-5	1.11E-4	3.86E-3	4.74E-5	3.97E-4	4.98E-7	-1.43E-3	2.87E-3
ADPF	kg Sb-eq	1.52E+0	2.17E-2	2.98E-2	1.57E+0	1.34E-2	1.40E-1	7.02E-4	-8.07E-1	9.21E-1
GWP	kg CO2-eq	1.23E+2	2.95E+0	5.29E+0	1.31E+2	1.82E+0	4.78E+1	4.46E-1	-6.81E+1	1.13E+2
ODP	kg CFC-11-eq	7.13E-5	5.23E-7	4.97E-7	7.24E-5	3.37E-7	5.66E-6	1.68E-8	-3.54E-5	4.30E-5
POCP	kg ethene-eq	7.57E-2	1.78E-3	2.33E-3	7.99E-2	1.09E-3	1.10E-2	1.18E-4	-3.45E-2	5.76E-2
AP	kg SO2-eq	4.74E-1	1.30E-2	2.08E-2	5.08E-1	7.83E-3	8.03E-2	3.75E-4	-2.21E-1	3.76E-1
EP	kg PO4 3−-eq	5.64E-2	2.55E-3	3.28E-3	6.22E-2	1.56E-3	1.22E-2	1.45E-4	-2.66E-2	4.95E-2
HTP	kg 1,4-DB-eq	4.82E+1	1.24E+0	2.00E+0	5.14E+1	7.78E-1	2.16E+1	3.84E-2	-2.15E+1	5.23E+1
FAETP	kg 1,4-DB-eq	1.04E+0	3.63E-2	8.13E-2	1.16E+0	2.28E-2	3.21E-1	1.14E-2	-4.70E-1	1.04E+0
MAETP	kg 1,4-DB-eq	3.03E+3	1.30E+2	3.32E+2	3.50E+3	8.14E+1	1.06E+3	1.39E+1	-1.38E+3	3.27E+3
TETP	kg 1,4-DB-eq	3.31E-1	4.39E-3	1.24E-1	4.59E-1	2.76E-3	7.71E-2	1.28E-4	-1.56E-1	3.83E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.22E+2	2.98E+0	6.23E+0	1.31E+2	1.83E+0	5.32E+1	5.19E-1	-7.02E+1	1.16E+2
GWP-f	kg CO2 eq	1.26E+2	2.98E+0	4.88E+0	1.34E+2	1.83E+0	4.81E+1	5.19E-1	-6.97E+1	1.14E+2
GWP-b	kg CO2 eq	-4.07E+0	1.37E-3	1.06E+0	-3.01E+0	1.11E-3	5.00E+0	6.67E-4	-4.86E-1	1.51E+0
GWP-luluc	kg CO2 eq	1.00E-1	1.09E-3	2.97E-1	3.99E-1	6.49E-4	2.17E-2	1.40E-5	-4.59E-2	3.75E-1
ODP	kg CFC11 eq	7.04E-5	6.57E-7	5.90E-7	7.16E-5	4.22E-7	5.83E-6	2.09E-8	-3.50E-5	4.28E-5
AP	mol H+ eq	5.71E-1	1.73E-2	2.66E-2	6.15E-1	1.04E-2	1.01E-1	5.02E-4	-2.66E-1	4.60E-1
EP-fw	kg P eq	5.55E-3	3.00E-5	6.98E-5	5.65E-3	1.51E-5	7.21E-4	6.34E-7	-2.58E-3	3.81E-3
EP-m	kg N eq	9.59E-2	6.08E-3	7.84E-3	1.10E-1	3.74E-3	2.45E-2	3.07E-4	-4.63E-2	9.21E-2
EP-T	mol N eq	1.04E+0	6.70E-2	8.41E-2	1.19E+0	4.12E-2	2.70E-1	2.01E-3	-4.96E-1	1.01E+0
POCP	kg NMVOC eq	3.60E-1	1.91E-2	2.38E-2	4.03E-1	1.18E-2	8.11E-2	6.82E-4	-1.70E-1	3.26E-1
ADP-mm	kg Sb eq	3.68E-3	7.54E-5	1.11E-4	3.86E-3	4.74E-5	3.97E-4	4.98E-7	-1.43E-3	2.87E-3
ADP-f	MJ	3.24E+3	4.49E+1	5.65E+1	3.34E+3	2.81E+1	2.77E+2	1.52E+0	-1.69E+3	1.95E+3
WDP	m3 depriv.	2.11E+2	1.60E-1	3.82E+1	2.49E+2	8.64E-2	1.08E+1	8.73E-3	-1.00E+2	1.60E+2
PM	disease inc.	4.01E-6	2.67E-7	4.13E-7	4.69E-6	1.65E-7	1.26E-6	1.04E-8	-1.71E-6	4.42E-6
IR	kBq U-235 eq	6.85E+0	1.88E-1	1.02E-1	7.14E+0	1.23E-1	9.68E-1	6.96E-3	-3.25E+0	4.99E+0
ETP-fw	CTUe	2.17E+3	4.00E+1	9.42E+1	2.30E+3	2.29E+1	2.07E+3	2.28E+1	-9.95E+2	3.42E+3
HTP-c	CTUh	8.55E-8	1.30E-9	3.21E-9	9.01E-8	8.13E-10	3.03E-8	3.97E-11	-3.71E-8	8.41E-8
HTP-nc	CTUh	2.72E-6	4.38E-8	9.84E-8	2.86E-6	2.72E-8	7.30E-7	4.38E-9	-1.28E-6	2.34E-6
SQP	Pt	8.56E+2	3.89E+1	4.23E+0	8.99E+2	2.41E+1	1.73E+2	3.85E+0	-2.77E+2	8.23E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.24E+2	5.62E-1	1.70E+2	3.95E+2	4.04E-1	1.98E+1	5.47E-2	-9.28E+1	3.22E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.24E+2	5.62E-1	1.70E+2	3.95E+2	4.04E-1	1.98E+1	5.47E-2	-9.28E+1	3.22E+2
PENRE	MJ	3.47E+3	4.76E+1	6.12E+1	3.58E+3	2.99E+1	2.95E+2	1.61E+0	-1.82E+3	2.08E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.47E+3	4.76E+1	6.12E+1	3.58E+3	2.99E+1	2.95E+2	1.61E+0	-1.82E+3	2.08E+3
PET	MJ	3.69E+3	4.82E+1	2.32E+2	3.97E+3	3.03E+1	3.15E+2	1.67E+0	-1.92E+3	2.41E+3
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	2.27E+0	5.46E-3	9.00E-1	3.17E+0	3.18E-3	2.96E-1	1.86E-3	-1.05E+0	2.42E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.55E-3	1.14E-4	7.91E-5	2.75E-3	7.20E-5	4.46E-4	1.83E-6	-1.41E-3	1.86E-3
NHWD	kg	1.22E+1	2.85E+0	1.14E-1	1.51E+1	1.74E+0	1.03E+1	6.98E+0	-5.39E+0	2.88E+1
RWD	kg	6.03E-3	2.95E-4	1.42E-4	6.47E-3	1.91E-4	1.04E-3	9.91E-6	-2.87E-3	4.84E-3
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