Environmental Profile

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

Ecochain v3.5.80

Product:	3000350 - PVC Pipe GY BENOR 400x11.7 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	21.92	0.57	0.98	23.48	0.35	7.91	0.05	-10.96	20.83
ADPE	kg Sb-eq	5.84E-3	1.21E-4	1.79E-4	6.14E-3	7.61E-5	6.38E-4	7.98E-7	-2.30E-3	4.56E-3
ADPF	kg Sb-eq	2.45E+0	3.49E-2	4.79E-2	2.53E+0	2.14E-2	2.25E-1	1.13E-3	-1.30E+0	1.48E+0
GWP	kg CO2-eq	1.97E+2	4.75E+0	8.52E+0	2.11E+2	2.92E+0	7.67E+1	7.15E-1	-1.09E+2	1.82E+2
ODP	kg CFC-11-eq	1.14E-4	8.43E-7	8.01E-7	1.16E-4	5.41E-7	9.08E-6	2.70E-8	-5.68E-5	6.90E-5
POCP	kg ethene-eq	1.22E-1	2.87E-3	3.75E-3	1.29E-1	1.75E-3	1.76E-2	1.90E-4	-5.55E-2	9.29E-2
AP	kg SO2-eq	7.63E-1	2.09E-2	3.34E-2	8.18E-1	1.26E-2	1.29E-1	6.01E-4	-3.55E-1	6.05E-1
EP	kg PO4 3−-eq	9.10E-2	4.10E-3	5.28E-3	1.00E-1	2.51E-3	1.96E-2	2.33E-4	-4.30E-2	7.97E-2
HTP	kg 1,4-DB-eq	7.75E+1	2.00E+0	3.22E+0	8.27E+1	1.25E+0	3.47E+1	6.16E-2	-3.45E+1	8.42E+1
FAETP	kg 1,4-DB-eq	1.67E+0	5.84E-2	1.31E-1	1.86E+0	3.65E-2	5.17E-1	1.82E-2	-7.55E-1	1.68E+0
MAETP	kg 1,4-DB-eq	4.88E+3	2.10E+2	5.35E+2	5.63E+3	1.31E+2	1.70E+3	2.24E+1	-2.22E+3	5.26E+3
TETP	kg 1,4-DB-eq	5.33E-1	7.07E-3	2.00E-1	7.40E-1	4.42E-3	1.24E-1	2.05E-4	-2.51E-1	6.17E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.93E+2	4.79E+0	1.00E+1	2.08E+2	2.94E+0	8.84E+1	8.32E-1	-1.13E+2	1.87E+2
GWP-f	kg CO2 eq	2.02E+2	4.79E+0	7.86E+0	2.15E+2	2.94E+0	7.73E+1	8.32E-1	-1.12E+2	1.84E+2
GWP-b	kg CO2 eq	-9.58E+0	2.21E-3	1.70E+0	-7.87E+0	1.79E-3	1.11E+1	1.07E-3	-7.81E-1	2.42E+0
GWP-luluc	kg CO2 eq	1.63E-1	1.76E-3	4.79E-1	6.44E-1	1.04E-3	3.48E-2	2.25E-5	-7.40E-2	6.05E-1
ODP	kg CFC11 eq	1.13E-4	1.06E-6	9.50E-7	1.15E-4	6.78E-7	9.36E-6	3.36E-8	-5.62E-5	6.87E-5
AP	mol H+ eq	9.20E-1	2.78E-2	4.29E-2	9.91E-1	1.67E-2	1.62E-1	8.04E-4	-4.29E-1	7.42E-1
EP-fw	kg P eq	8.93E-3	4.83E-5	1.12E-4	9.09E-3	2.42E-5	1.16E-3	1.02E-6	-4.14E-3	6.13E-3
EP-m	kg N eq	1.55E-1	9.79E-3	1.26E-2	1.77E-1	5.99E-3	3.95E-2	4.92E-4	-7.47E-2	1.49E-1
EP-T	mol N eq	1.68E+0	1.08E-1	1.36E-1	1.92E+0	6.60E-2	4.35E-1	3.22E-3	-8.03E-1	1.62E+0
POCP	kg NMVOC eq	5.82E-1	3.08E-2	3.83E-2	6.51E-1	1.89E-2	1.31E-1	1.09E-3	-2.75E-1	5.27E-1
ADP-mm	kg Sb eq	5.84E-3	1.21E-4	1.79E-4	6.14E-3	7.61E-5	6.38E-4	7.98E-7	-2.30E-3	4.56E-3
ADP-f	MJ	5.20E+3	7.23E+1	9.10E+1	5.36E+3	4.51E+1	4.45E+2	2.43E+0	-2.72E+3	3.14E+3
WDP	m3 depriv.	3.39E+2	2.58E-1	6.15E+1	4.01E+2	1.39E-1	1.73E+1	1.40E-2	-1.61E+2	2.57E+2
PM	disease inc.	6.59E-6	4.30E-7	6.66E-7	7.69E-6	2.65E-7	2.03E-6	1.67E-8	-2.77E-6	7.23E-6
IR	kBq U-235 eq	1.10E+1	3.03E-1	1.64E-1	1.15E+1	1.97E-1	1.55E+0	1.12E-2	-5.22E+0	8.03E+0
ETP-fw	CTUe	3.50E+3	6.44E+1	1.52E+2	3.71E+3	3.67E+1	3.32E+3	3.66E+1	-1.61E+3	5.50E+3
HTP-c	CTUh	1.38E-7	2.09E-9	5.18E-9	1.46E-7	1.30E-9	4.89E-8	6.37E-11	-5.98E-8	1.36E-7
HTP-nc	CTUh	4.38E-6	7.05E-8	1.58E-7	4.61E-6	4.37E-8	1.17E-6	7.03E-9	-2.06E-6	3.76E-6
SQP	Pt	1.65E+3	6.27E+1	6.81E+0	1.72E+3	3.86E+1	2.78E+2	6.18E+0	-5.04E+2	1.54E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.01E+2	9.05E-1	2.75E+2	6.76E+2	6.48E-1	3.19E+1	8.78E-2	-1.61E+2	5.48E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.01E+2	9.05E-1	2.75E+2	6.76E+2	6.48E-1	3.19E+1	8.78E-2	-1.61E+2	5.48E+2
PENRE	MJ	5.58E+3	7.67E+1	9.86E+1	5.75E+3	4.79E+1	4.73E+2	2.58E+0	-2.93E+3	3.35E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.58E+3	7.67E+1	9.86E+1	5.75E+3	4.79E+1	4.73E+2	2.58E+0	-2.93E+3	3.35E+3
PET	MJ	5.98E+3	7.76E+1	3.73E+2	6.43E+3	4.86E+1	5.05E+2	2.67E+0	-3.09E+3	3.90E+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	3.64E+0	8.80E-3	1.45E+0	5.10E+0	5.11E-3	4.74E-1	2.98E-3	-1.69E+0	3.90E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.12E-3	1.83E-4	1.27E-4	4.43E-3	1.15E-4	7.17E-4	2.93E-6	-2.26E-3	3.00E-3
NHWD	kg	1.97E+1	4.58E+0	1.84E-1	2.45E+1	2.80E+0	1.66E+1	1.12E+1	-8.67E+0	4.64E+1
RWD	kg	9.70E-3	4.74E-4	2.29E-4	1.04E-2	3.07E-4	1.67E-3	1.59E-5	-4.61E-3	7.79E-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