Environmental Profile

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

Ecochain v3.5.80

Product:	3000346 - PVC Pipe GY BENOR 200x5.9 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

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Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	5.52	0.14	0.25	5.91	0.09	1.99	0.01	-2.77	5.23
ADPE	kg Sb-eq	1.46E-3	3.07E-5	4.55E-5	1.53E-3	1.94E-5	1.62E-4	2.04E-7	-5.85E-4	1.13E-3
ADPF	kg Sb-eq	6.16E-1	8.83E-3	1.22E-2	6.37E-1	5.46E-3	5.72E-2	2.87E-4	-3.28E-1	3.72E-1
GWP	kg CO2-eq	4.97E+1	1.20E+0	2.17E+0	5.30E+1	7.44E-1	1.92E+1	1.82E-1	-2.76E+1	4.55E+1
ODP	kg CFC-11-eq	2.92E-5	2.13E-7	2.04E-7	2.96E-5	1.38E-7	2.31E-6	6.89E-9	-1.45E-5	1.76E-5
POCP	kg ethene-eq	3.04E-2	7.25E-4	9.54E-4	3.21E-2	4.46E-4	4.48E-3	4.84E-5	-1.40E-2	2.30E-2
AP	kg SO2-eq	1.92E-1	5.28E-3	8.50E-3	2.05E-1	3.20E-3	3.28E-2	1.53E-4	-9.00E-2	1.52E-1
EP	kg PO4 3−-eq	2.28E-2	1.04E-3	1.34E-3	2.52E-2	6.39E-4	4.95E-3	5.92E-5	-1.08E-2	2.00E-2
HTP	kg 1,4-DB-eq	1.95E+1	5.06E-1	8.18E-1	2.09E+1	3.18E-1	8.82E+0	1.57E-2	-8.75E+0	2.13E+1
FAETP	kg 1,4-DB-eq	4.20E-1	1.48E-2	3.33E-2	4.69E-1	9.32E-3	1.30E-1	4.64E-3	-1.92E-1	4.21E-1
MAETP	kg 1,4-DB-eq	1.23E+3	5.31E+1	1.36E+2	1.42E+3	3.33E+1	4.30E+2	5.70E+0	-5.65E+2	1.32E+3
TETP	kg 1,4-DB-eq	1.35E-1	1.79E-3	5.08E-2	1.87E-1	1.13E-3	3.15E-2	5.22E-5	-6.38E-2	1.56E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	4.99E+1	1.21E+0	2.55E+0	5.37E+1	7.51E-1	2.07E+1	2.12E-1	-2.85E+1	4.69E+1
GWP-f	kg CO2 eq	5.09E+1	1.21E+0	2.00E+0	5.42E+1	7.50E-1	1.93E+1	2.12E-1	-2.83E+1	4.61E+1
GWP-b	kg CO2 eq	-1.03E+0	5.59E-4	4.32E-1	-6.00E-1	4.55E-4	1.43E+0	2.73E-4	-1.99E-1	6.29E-1
GWP-luluc	kg CO2 eq	4.03E-2	4.44E-4	1.22E-1	1.63E-1	2.65E-4	8.88E-3	5.74E-6	-1.87E-2	1.53E-1
ODP	kg CFC11 eq	2.87E-5	2.67E-7	2.41E-7	2.93E-5	1.73E-7	2.39E-6	8.56E-9	-1.43E-5	1.75E-5
AP	mol H+ eq	2.31E-1	7.02E-3	1.09E-2	2.49E-1	4.27E-3	4.11E-2	2.05E-4	-1.08E-1	1.86E-1
EP-fw	kg P eq	2.25E-3	1.22E-5	2.86E-5	2.29E-3	6.17E-6	2.95E-4	2.59E-7	-1.05E-3	1.54E-3
EP-m	kg N eq	3.87E-2	2.48E-3	3.21E-3	4.44E-2	1.53E-3	9.98E-3	1.25E-4	-1.88E-2	3.72E-2
EP-T	mol N eq	4.18E-1	2.73E-2	3.44E-2	4.80E-1	1.68E-2	1.10E-1	8.20E-4	-2.01E-1	4.06E-1
POCP	kg NMVOC eq	1.45E-1	7.79E-3	9.73E-3	1.62E-1	4.82E-3	3.30E-2	2.79E-4	-6.93E-2	1.31E-1
ADP-mm	kg Sb eq	1.46E-3	3.07E-5	4.55E-5	1.53E-3	1.94E-5	1.62E-4	2.04E-7	-5.85E-4	1.13E-3
ADP-f	MJ	1.31E+3	1.83E+1	2.31E+1	1.35E+3	1.15E+1	1.13E+2	6.20E-1	-6.88E+2	7.89E+2
WDP	m3 depriv.	8.61E+1	6.53E-2	1.56E+1	1.02E+2	3.53E-2	4.41E+0	3.57E-3	-4.11E+1	6.51E+1
PM	disease inc.	1.59E-6	1.09E-7	1.69E-7	1.87E-6	6.77E-8	5.16E-7	4.25E-9	-6.94E-7	1.76E-6
IR	kBq U-235 eq	2.78E+0	7.65E-2	4.17E-2	2.90E+0	5.03E-2	3.96E-1	2.85E-3	-1.33E+0	2.02E+0
ETP-fw	CTUe	8.78E+2	1.63E+1	3.86E+1	9.33E+2	9.35E+0	8.47E+2	9.33E+0	-4.04E+2	1.39E+3
HTP-c	CTUh	3.46E-8	5.28E-10	1.32E-9	3.65E-8	3.33E-10	1.23E-8	1.62E-11	-1.51E-8	3.40E-8
HTP-nc	CTUh	1.11E-6	1.78E-8	4.03E-8	1.16E-6	1.11E-8	2.98E-7	1.79E-9	-5.24E-7	9.52E-7
SQP	Pt	2.92E+2	1.58E+1	1.73E+0	3.09E+2	9.85E+0	7.08E+1	1.57E+0	-1.01E+2	2.90E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	8.26E+1	2.29E-1	6.98E+1	1.53E+2	1.65E-1	8.12E+0	2.24E-2	-3.55E+1	1.25E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	8.26E+1	2.29E-1	6.98E+1	1.53E+2	1.65E-1	8.12E+0	2.24E-2	-3.55E+1	1.25E+2
PENRE	MJ	1.41E+3	1.94E+1	2.51E+1	1.45E+3	1.22E+1	1.21E+2	6.58E-1	-7.41E+2	8.43E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.41E+3	1.94E+1	2.51E+1	1.45E+3	1.22E+1	1.21E+2	6.58E-1	-7.41E+2	8.43E+2
PET	MJ	1.49E+3	1.96E+1	9.48E+1	1.60E+3	1.24E+1	1.29E+2	6.81E-1	-7.77E+2	9.68E+2
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	9.19E-1	2.22E-3	3.68E-1	1.29E+0	1.30E-3	1.21E-1	7.60E-4	-4.30E-1	9.82E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.04E-3	4.63E-5	3.24E-5	1.12E-3	2.94E-5	1.82E-4	7.48E-7	-5.72E-4	7.56E-4
NHWD	kg	4.92E+0	1.16E+0	4.67E-2	6.13E+0	7.13E-1	4.18E+0	2.85E+0	-2.20E+0	1.17E+1
RWD	kg	2.44E-3	1.20E-4	5.82E-5	2.62E-3	7.83E-5	4.25E-4	4.05E-6	-1.17E-3	1.95E-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