Environmental Profile

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

Ecochain v3.5.80

Product:	3000514 - PVC Pipe GY BENOR 110x3.2 SN8 L=5 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	1.66	0.04	0.08	1.78	0.03	0.6	0	-0.83	1.57
ADPE	kg Sb-eq	4.20E-4	9.25E-6	1.37E-5	4.43E-4	5.84E-6	4.89E-5	6.12E-8	-1.76E-4	3.22E-4
ADPF	kg Sb-eq	1.85E-1	2.66E-3	3.68E-3	1.91E-1	1.64E-3	1.72E-2	8.62E-5	-9.87E-2	1.12E-1
GWP	kg CO2-eq	1.49E+1	3.62E-1	6.55E-1	1.59E+1	2.24E-1	5.72E+0	5.47E-2	-8.31E+0	1.36E+1
ODP	kg CFC-11-eq	8.77E-6	6.42E-8	6.16E-8	8.90E-6	4.15E-8	6.97E-7	2.07E-9	-4.36E-6	5.28E-6
POCP	kg ethene-eq	9.12E-3	2.18E-4	2.89E-4	9.63E-3	1.34E-4	1.35E-3	1.45E-5	-4.23E-3	6.90E-3
AP	kg SO2-eq	5.76E-2	1.59E-3	2.57E-3	6.18E-2	9.63E-4	9.88E-3	4.60E-5	-2.71E-2	4.55E-2
EP	kg PO4 3−-eq	6.85E-3	3.13E-4	4.06E-4	7.57E-3	1.92E-4	1.49E-3	1.77E-5	-3.26E-3	6.01E-3
HTP	kg 1,4-DB-eq	5.87E+0	1.52E-1	2.47E-1	6.27E+0	9.57E-2	2.66E+0	4.72E-3	-2.64E+0	6.39E+0
FAETP	kg 1,4-DB-eq	1.26E-1	4.45E-3	1.01E-2	1.41E-1	2.80E-3	3.91E-2	1.40E-3	-5.78E-2	1.26E-1
MAETP	kg 1,4-DB-eq	3.69E+2	1.60E+1	4.11E+1	4.26E+2	1.00E+1	1.29E+2	1.71E+0	-1.70E+2	3.97E+2
TETP	kg 1,4-DB-eq	4.05E-2	5.39E-4	1.54E-2	5.64E-2	3.39E-4	9.49E-3	1.57E-5	-1.92E-2	4.70E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.49E+1	3.65E-1	7.72E-1	1.60E+1	2.26E-1	6.31E+0	6.37E-2	-8.56E+0	1.41E+1
GWP-f	kg CO2 eq	1.53E+1	3.65E-1	6.04E-1	1.63E+1	2.26E-1	5.77E+0	6.37E-2	-8.50E+0	1.38E+1
GWP-b	kg CO2 eq	-4.26E-1	1.69E-4	1.31E-1	-2.95E-1	1.37E-4	5.45E-1	8.19E-5	-6.00E-2	1.91E-1
GWP-luluc	kg CO2 eq	1.22E-2	1.34E-4	3.68E-2	4.91E-2	7.98E-5	2.67E-3	1.72E-6	-5.64E-3	4.62E-2
ODP	kg CFC11 eq	8.65E-6	8.06E-8	7.30E-8	8.80E-6	5.20E-8	7.19E-7	2.57E-9	-4.31E-6	5.26E-6
AP	mol H+ eq	6.94E-2	2.12E-3	3.30E-3	7.48E-2	1.29E-3	1.24E-2	6.16E-5	-3.27E-2	5.58E-2
EP-fw	kg P eq	6.78E-4	3.68E-6	8.64E-6	6.90E-4	1.86E-6	8.89E-5	7.78E-8	-3.18E-4	4.63E-4
EP-m	kg N eq	1.16E-2	7.46E-4	9.71E-4	1.34E-2	4.60E-4	3.01E-3	3.75E-5	-5.68E-3	1.12E-2
EP-T	mol N eq	1.26E-1	8.23E-3	1.04E-2	1.45E-1	5.07E-3	3.32E-2	2.46E-4	-6.08E-2	1.22E-1
POCP	kg NMVOC eq	4.36E-2	2.35E-3	2.94E-3	4.88E-2	1.45E-3	9.96E-3	8.38E-5	-2.09E-2	3.94E-2
ADP-mm	kg Sb eq	4.20E-4	9.25E-6	1.37E-5	4.43E-4	5.84E-6	4.89E-5	6.12E-8	-1.76E-4	3.22E-4
ADP-f	MJ	3.94E+2	5.51E+0	6.99E+0	4.06E+2	3.46E+0	3.41E+1	1.86E-1	-2.07E+2	2.37E+2
WDP	m3 depriv.	2.59E+1	1.97E-2	4.73E+0	3.06E+1	1.06E-2	1.33E+0	1.07E-3	-1.24E+1	1.96E+1
PM	disease inc.	4.81E-7	3.28E-8	5.12E-8	5.65E-7	2.04E-8	1.55E-7	1.28E-9	-2.10E-7	5.32E-7
IR	kBq U-235 eq	8.34E-1	2.31E-2	1.26E-2	8.70E-1	1.51E-2	1.19E-1	8.55E-4	-4.00E-1	6.05E-1
ETP-fw	CTUe	2.64E+2	4.91E+0	1.17E+1	2.81E+2	2.81E+0	2.55E+2	2.81E+0	-1.22E+2	4.19E+2
HTP-c	CTUh	1.04E-8	1.59E-10	3.98E-10	1.10E-8	1.00E-10	3.72E-9	4.88E-12	-4.56E-9	1.03E-8
HTP-nc	CTUh	3.33E-7	5.37E-9	1.22E-8	3.51E-7	3.35E-9	8.98E-8	5.40E-10	-1.58E-7	2.86E-7
SQP	Pt	9.81E+1	4.78E+0	5.23E-1	1.03E+2	2.96E+0	2.13E+1	4.73E-1	-3.28E+1	9.54E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.64E+1	6.89E-2	2.11E+1	4.76E+1	4.97E-2	2.45E+0	6.72E-3	-1.11E+1	3.89E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.64E+1	6.89E-2	2.11E+1	4.76E+1	4.97E-2	2.45E+0	6.72E-3	-1.11E+1	3.89E+1
PENRE	MJ	4.22E+2	5.85E+0	7.58E+0	4.36E+2	3.68E+0	3.63E+1	1.98E-1	-2.23E+2	2.53E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.22E+2	5.85E+0	7.58E+0	4.36E+2	3.68E+0	3.63E+1	1.98E-1	-2.23E+2	2.53E+2
PET	MJ	4.49E+2	5.92E+0	2.87E+1	4.83E+2	3.73E+0	3.88E+1	2.05E-1	-2.34E+2	2.92E+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	2.76E-1	6.71E-4	1.11E-1	3.88E-1	3.92E-4	3.63E-2	2.28E-4	-1.29E-1	2.96E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.12E-4	1.40E-5	9.79E-6	3.36E-4	8.86E-6	5.49E-5	2.25E-7	-1.72E-4	2.28E-4
NHWD	kg	1.48E+0	3.49E-1	1.41E-2	1.85E+0	2.15E-1	1.26E+0	8.58E-1	-6.63E-1	3.52E+0
RWD	kg	7.31E-4	3.62E-5	1.76E-5	7.84E-4	2.36E-5	1.28E-4	1.22E-6	-3.53E-4	5.84E-4
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

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