Environmental Profile

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

Ecochain v3.5.80

Product:	3000530 - PVC Pipe GY BENOR 110x3.2 SN8 L=3 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	1.01	0.03	0.05	1.08	0.02	0.36	0	-0.51	0.96
ADPE	kg Sb-eq	2.75E-4	5.62E-6	8.25E-6	2.89E-4	3.53E-6	2.95E-5	3.70E-8	-1.07E-4	2.15E-4
ADPF	kg Sb-eq	1.13E-1	1.62E-3	2.21E-3	1.16E-1	9.92E-4	1.04E-2	5.22E-5	-5.97E-2	6.82E-2
GWP	kg CO2-eq	9.09E+0	2.20E-1	3.93E-1	9.70E+0	1.35E-1	3.50E+0	3.31E-2	-5.03E+0	8.34E+0
ODP	kg CFC-11-eq	5.30E-6	3.90E-8	3.69E-8	5.38E-6	2.51E-8	4.21E-7	1.25E-9	-2.63E-6	3.20E-6
POCP	kg ethene-eq	5.60E-3	1.33E-4	1.73E-4	5.91E-3	8.11E-5	8.17E-4	8.81E-6	-2.56E-3	4.25E-3
AP	kg SO2-eq	3.52E-2	9.67E-4	1.54E-3	3.77E-2	5.82E-4	5.98E-3	2.78E-5	-1.64E-2	2.78E-2
EP	kg PO4 3−-eq	4.20E-3	1.90E-4	2.43E-4	4.64E-3	1.16E-4	9.05E-4	1.08E-5	-1.99E-3	3.68E-3
HTP	kg 1,4-DB-eq	3.58E+0	9.26E-2	1.48E-1	3.82E+0	5.78E-2	1.60E+0	2.86E-3	-1.60E+0	3.89E+0
FAETP	kg 1,4-DB-eq	7.72E-2	2.70E-3	6.04E-3	8.59E-2	1.69E-3	2.36E-2	8.45E-4	-3.50E-2	7.71E-2
MAETP	kg 1,4-DB-eq	2.25E+2	9.72E+0	2.47E+1	2.60E+2	6.05E+0	7.81E+1	1.04E+0	-1.03E+2	2.42E+2
TETP	kg 1,4-DB-eq	2.46E-2	3.27E-4	9.22E-3	3.42E-2	2.05E-4	5.73E-3	9.49E-6	-1.16E-2	2.85E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	8.85E+0	2.22E-1	4.63E-1	9.53E+0	1.36E-1	4.08E+0	3.86E-2	-5.19E+0	8.60E+0
GWP-f	kg CO2 eq	9.32E+0	2.22E-1	3.63E-1	9.90E+0	1.36E-1	3.53E+0	3.86E-2	-5.15E+0	8.46E+0
GWP-b	kg CO2 eq	-4.77E-1	1.02E-4	7.84E-2	-3.98E-1	8.27E-5	5.48E-1	4.96E-5	-3.61E-2	1.13E-1
GWP-luluc	kg CO2 eq	7.51E-3	8.13E-5	2.21E-2	2.97E-2	4.82E-5	1.61E-3	1.04E-6	-3.43E-3	2.79E-2
ODP	kg CFC11 eq	5.23E-6	4.89E-8	4.38E-8	5.32E-6	3.14E-8	4.34E-7	1.56E-9	-2.60E-6	3.19E-6
AP	mol H+ eq	4.24E-2	1.29E-3	1.98E-3	4.57E-2	7.76E-4	7.50E-3	3.73E-5	-1.98E-2	3.41E-2
EP-fw	kg P eq	4.12E-4	2.24E-6	5.18E-6	4.20E-4	1.12E-6	5.36E-5	4.71E-8	-1.92E-4	2.82E-4
EP-m	kg N eq	7.14E-3	4.53E-4	5.83E-4	8.18E-3	2.78E-4	1.83E-3	2.29E-5	-3.46E-3	6.84E-3
EP-T	mol N eq	7.74E-2	5.00E-3	6.25E-3	8.86E-2	3.06E-3	2.01E-2	1.49E-4	-3.72E-2	7.48E-2
POCP	kg NMVOC eq	2.68E-2	1.43E-3	1.76E-3	2.99E-2	8.75E-4	6.04E-3	5.07E-5	-1.27E-2	2.42E-2
ADP-mm	kg Sb eq	2.75E-4	5.62E-6	8.25E-6	2.89E-4	3.53E-6	2.95E-5	3.70E-8	-1.07E-4	2.15E-4
ADP-f	MJ	2.39E+2	3.34E+0	4.20E+0	2.47E+2	2.09E+0	2.06E+1	1.13E-1	-1.25E+2	1.44E+2
WDP	m3 depriv.	1.57E+1	1.20E-2	2.84E+0	1.85E+1	6.42E-3	8.01E-1	6.49E-4	-7.47E+0	1.19E+1
PM	disease inc.	3.05E-7	1.99E-8	3.07E-8	3.56E-7	1.23E-8	9.39E-8	7.73E-10	-1.28E-7	3.34E-7
IR	kBq U-235 eq	5.10E-1	1.40E-2	7.58E-3	5.32E-1	9.14E-3	7.19E-2	5.18E-4	-2.42E-1	3.72E-1
ETP-fw	CTUe	1.61E+2	2.98E+0	7.00E+0	1.71E+2	1.70E+0	1.54E+2	1.69E+0	-7.46E+1	2.54E+2
HTP-c	CTUh	6.41E-9	9.67E-11	2.39E-10	6.75E-9	6.04E-11	2.26E-9	2.95E-12	-2.77E-9	6.30E-9
HTP-nc	CTUh	2.02E-7	3.26E-9	7.31E-9	2.13E-7	2.02E-9	5.42E-8	3.26E-10	-9.56E-8	1.74E-7
SQP	Pt	7.94E+1	2.90E+0	3.14E-1	8.26E+1	1.79E+0	1.29E+1	2.86E-1	-2.40E+1	7.36E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.90E+1	4.19E-2	1.27E+1	3.17E+1	3.00E-2	1.48E+0	4.07E-3	-7.58E+0	2.56E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.90E+1	4.19E-2	1.27E+1	3.17E+1	3.00E-2	1.48E+0	4.07E-3	-7.58E+0	2.56E+1
PENRE	MJ	2.57E+2	3.55E+0	4.55E+0	2.65E+2	2.22E+0	2.19E+1	1.20E-1	-1.35E+2	1.54E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.57E+2	3.55E+0	4.55E+0	2.65E+2	2.22E+0	2.19E+1	1.20E-1	-1.35E+2	1.54E+2
PET	MJ	2.76E+2	3.59E+0	1.72E+1	2.97E+2	2.25E+0	2.34E+1	1.24E-1	-1.42E+2	1.80E+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	1.68E-1	4.07E-4	6.68E-2	2.35E-1	2.37E-4	2.20E-2	1.38E-4	-7.81E-2	1.79E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.91E-4	8.47E-6	5.88E-6	2.05E-4	5.35E-6	3.32E-5	1.36E-7	-1.04E-4	1.40E-4
NHWD	kg	9.10E-1	2.12E-1	8.48E-3	1.13E+0	1.30E-1	7.65E-1	5.19E-1	-4.02E-1	2.14E+0
RWD	kg	4.50E-4	2.20E-5	1.06E-5	4.82E-4	1.42E-5	7.73E-5	7.37E-7	-2.13E-4	3.61E-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