Environmental Profile

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

Ecochain v3.5.80

Product:	3000680 - PVC Pipe GY BENOR 250x4.9 SN2 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	3.57	0.09	0.16	3.82	0.06	1.28	0.01	-1.78	3.4
ADPE	kg Sb-eq	1.06E-3	1.97E-5	2.87E-5	1.11E-3	1.23E-5	1.03E-4	1.30E-7	-3.76E-4	8.50E-4
ADPF	kg Sb-eq	3.97E-1	5.68E-3	7.69E-3	4.11E-1	3.48E-3	3.64E-2	1.83E-4	-2.10E-1	2.41E-1
GWP	kg CO2-eq	3.21E+1	7.73E-1	1.37E+0	3.42E+1	4.73E-1	1.25E+1	1.17E-1	-1.77E+1	2.96E+1
ODP	kg CFC-11-eq	1.86E-5	1.37E-7	1.29E-7	1.89E-5	8.78E-8	1.47E-6	4.40E-9	-9.20E-6	1.12E-5
POCP	kg ethene-eq	2.00E-2	4.66E-4	6.03E-4	2.10E-2	2.84E-4	2.86E-3	3.10E-5	-9.00E-3	1.52E-2
AP	kg SO2-eq	1.25E-1	3.40E-3	5.37E-3	1.33E-1	2.04E-3	2.09E-2	9.78E-5	-5.76E-2	9.88E-2
EP	kg PO4 3−-eq	1.49E-2	6.67E-4	8.47E-4	1.64E-2	4.07E-4	3.18E-3	3.84E-5	-7.01E-3	1.30E-2
HTP	kg 1,4-DB-eq	1.27E+1	3.25E-1	5.16E-1	1.35E+1	2.03E-1	5.61E+0	1.00E-2	-5.60E+0	1.37E+1
FAETP	kg 1,4-DB-eq	2.73E-1	9.50E-3	2.10E-2	3.04E-1	5.93E-3	8.26E-2	2.97E-3	-1.23E-1	2.73E-1
MAETP	kg 1,4-DB-eq	8.00E+2	3.42E+1	8.58E+1	9.20E+2	2.12E+1	2.73E+2	3.64E+0	-3.60E+2	8.57E+2
TETP	kg 1,4-DB-eq	8.66E-2	1.15E-3	3.21E-2	1.20E-1	7.17E-4	2.00E-2	3.33E-5	-4.07E-2	9.99E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.08E+1	7.80E-1	1.61E+0	3.32E+1	4.78E-1	1.50E+1	1.36E-1	-1.82E+1	3.05E+1
GWP-f	kg CO2 eq	3.29E+1	7.79E-1	1.26E+0	3.49E+1	4.77E-1	1.26E+1	1.36E-1	-1.81E+1	3.00E+1
GWP-b	kg CO2 eq	-2.12E+0	3.60E-4	2.73E-1	-1.85E+0	2.90E-4	2.37E+0	1.74E-4	-1.26E-1	3.90E-1
GWP-luluc	kg CO2 eq	2.67E-2	2.85E-4	7.69E-2	1.04E-1	1.69E-4	5.64E-3	3.67E-6	-1.21E-2	9.77E-2
ODP	kg CFC11 eq	1.83E-5	1.72E-7	1.52E-7	1.87E-5	1.10E-7	1.52E-6	5.46E-9	-9.10E-6	1.12E-5
AP	mol H+ eq	1.50E-1	4.52E-3	6.88E-3	1.62E-1	2.72E-3	2.63E-2	1.31E-4	-6.96E-2	1.21E-1
EP-fw	kg P eq	1.45E-3	7.86E-6	1.80E-5	1.48E-3	3.93E-6	1.87E-4	1.66E-7	-6.71E-4	9.99E-4
EP-m	kg N eq	2.53E-2	1.59E-3	2.03E-3	2.90E-2	9.73E-4	6.41E-3	8.13E-5	-1.22E-2	2.43E-2
EP-T	mol N eq	2.75E-1	1.76E-2	2.18E-2	3.14E-1	1.07E-2	7.07E-2	5.24E-4	-1.31E-1	2.65E-1
POCP	kg NMVOC eq	9.52E-2	5.01E-3	6.14E-3	1.06E-1	3.06E-3	2.12E-2	1.78E-4	-4.47E-2	8.61E-2
ADP-mm	kg Sb eq	1.06E-3	1.97E-5	2.87E-5	1.11E-3	1.23E-5	1.03E-4	1.30E-7	-3.76E-4	8.50E-4
ADP-f	MJ	8.45E+2	1.17E+1	1.46E+1	8.71E+2	7.33E+0	7.21E+1	3.96E-1	-4.39E+2	5.11E+2
WDP	m3 depriv.	5.49E+1	4.20E-2	9.88E+0	6.48E+1	2.25E-2	2.80E+0	2.28E-3	-2.61E+1	4.16E+1
PM	disease inc.	1.11E-6	7.00E-8	1.07E-7	1.29E-6	4.31E-8	3.29E-7	2.72E-9	-4.53E-7	1.21E-6
IR	kBq U-235 eq	1.81E+0	4.92E-2	2.64E-2	1.88E+0	3.20E-2	2.52E-1	1.82E-3	-8.46E-1	1.32E+0
ETP-fw	CTUe	5.72E+2	1.05E+1	2.44E+1	6.07E+2	5.95E+0	5.38E+2	5.92E+0	-2.63E+2	8.94E+2
HTP-c	CTUh	2.27E-8	3.40E-10	8.31E-10	2.39E-8	2.12E-10	7.93E-9	1.04E-11	-9.71E-9	2.23E-8
HTP-nc	CTUh	7.12E-7	1.15E-8	2.54E-8	7.49E-7	7.09E-9	1.90E-7	1.14E-9	-3.35E-7	6.12E-7
SQP	Pt	3.20E+2	1.02E+1	1.09E+0	3.31E+2	6.27E+0	4.50E+1	1.01E+0	-9.27E+1	2.91E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	7.27E+1	1.47E-1	4.41E+1	1.17E+2	1.05E-1	5.16E+0	1.43E-2	-2.83E+1	9.39E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	7.27E+1	1.47E-1	4.41E+1	1.17E+2	1.05E-1	5.16E+0	1.43E-2	-2.83E+1	9.39E+1
PENRE	MJ	9.06E+2	1.25E+1	1.58E+1	9.34E+2	7.78E+0	7.67E+1	4.20E-1	-4.73E+2	5.46E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.06E+2	1.25E+1	1.58E+1	9.34E+2	7.78E+0	7.67E+1	4.20E-1	-4.73E+2	5.46E+2
PET	MJ	9.79E+2	1.26E+1	5.99E+1	1.05E+3	7.88E+0	8.18E+1	4.35E-1	-5.02E+2	6.40E+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	5.92E-1	1.43E-3	2.33E-1	8.26E-1	8.29E-4	7.72E-2	4.85E-4	-2.73E-1	6.31E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.74E-4	2.98E-5	2.05E-5	7.24E-4	1.87E-5	1.16E-4	4.78E-7	-3.67E-4	4.93E-4
NHWD	kg	3.22E+0	7.45E-1	2.95E-2	4.00E+0	4.54E-1	2.69E+0	1.82E+0	-1.41E+0	7.56E+0
RWD	kg	1.61E-3	7.72E-5	3.67E-5	1.72E-3	4.98E-5	2.70E-4	2.59E-6	-7.47E-4	1.30E-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

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777