Environmental Profile

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

Ecochain v3.5.80

Product:	3002850 - PVC Pipe GY BENOR 50x3 L=4 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	0.55	0.01	0.02	0.59	0.01	0.2	0	-0.28	0.52
ADPE	kg Sb-eq	1.39E-4	3.06E-6	4.53E-6	1.46E-4	1.93E-6	1.62E-5	2.02E-8	-5.80E-5	1.06E-4
ADPF	kg Sb-eq	6.12E-2	8.81E-4	1.22E-3	6.33E-2	5.43E-4	5.69E-3	2.85E-5	-3.26E-2	3.69E-2
GWP	kg CO2-eq	4.93E+0	1.20E-1	2.16E-1	5.27E+0	7.39E-2	1.89E+0	1.81E-2	-2.74E+0	4.51E+0
ODP	kg CFC-11-eq	2.90E-6	2.12E-8	2.03E-8	2.94E-6	1.37E-8	2.30E-7	6.83E-10	-1.44E-6	1.75E-6
POCP	kg ethene-eq	3.02E-3	7.23E-5	9.52E-5	3.19E-3	4.44E-5	4.46E-4	4.80E-6	-1.40E-3	2.28E-3
AP	kg SO2-eq	1.91E-2	5.27E-4	8.48E-4	2.04E-2	3.18E-4	3.27E-3	1.52E-5	-8.97E-3	1.51E-2
EP	kg PO4 3−-eq	2.27E-3	1.03E-4	1.34E-4	2.51E-3	6.35E-5	4.93E-4	5.85E-6	-1.08E-3	1.99E-3
HTP	kg 1,4-DB-eq	1.94E+0	5.04E-2	8.16E-2	2.07E+0	3.16E-2	8.78E-1	1.56E-3	-8.72E-1	2.11E+0
FAETP	kg 1,4-DB-eq	4.18E-2	1.47E-3	3.32E-3	4.66E-2	9.26E-4	1.29E-2	4.61E-4	-1.91E-2	4.18E-2
MAETP	kg 1,4-DB-eq	1.22E+2	5.30E+0	1.36E+1	1.41E+2	3.31E+0	4.27E+1	5.66E-1	-5.62E+1	1.31E+2
TETP	kg 1,4-DB-eq	1.34E-2	1.78E-4	5.07E-3	1.87E-2	1.12E-4	3.14E-3	5.18E-6	-6.36E-3	1.55E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	4.89E+0	1.21E-1	2.55E-1	5.26E+0	7.46E-2	2.12E+0	2.10E-2	-2.83E+0	4.65E+0
GWP-f	kg CO2 eq	5.06E+0	1.21E-1	1.99E-1	5.38E+0	7.45E-2	1.90E+0	2.10E-2	-2.81E+0	4.57E+0
GWP-b	kg CO2 eq	-1.76E-1	5.58E-5	4.31E-2	-1.33E-1	4.52E-5	2.15E-1	2.71E-5	-1.98E-2	6.29E-2
GWP-luluc	kg CO2 eq	4.04E-3	4.43E-5	1.22E-2	1.62E-2	2.64E-5	8.83E-4	5.70E-7	-1.87E-3	1.53E-2
ODP	kg CFC11 eq	2.86E-6	2.67E-8	2.41E-8	2.91E-6	1.72E-8	2.37E-7	8.49E-10	-1.42E-6	1.74E-6
AP	mol H+ eq	2.30E-2	7.01E-4	1.09E-3	2.47E-2	4.24E-4	4.09E-3	2.03E-5	-1.08E-2	1.85E-2
EP-fw	kg P eq	2.24E-4	1.22E-6	2.85E-6	2.28E-4	6.13E-7	2.94E-5	2.57E-8	-1.05E-4	1.53E-4
EP-m	kg N eq	3.85E-3	2.47E-4	3.20E-4	4.42E-3	1.52E-4	9.95E-4	1.24E-5	-1.88E-3	3.70E-3
EP-T	mol N eq	4.17E-2	2.72E-3	3.44E-3	4.79E-2	1.67E-3	1.10E-2	8.14E-5	-2.01E-2	4.05E-2
POCP	kg NMVOC eq	1.44E-2	7.77E-4	9.70E-4	1.62E-2	4.78E-4	3.29E-3	2.77E-5	-6.91E-3	1.31E-2
ADP-mm	kg Sb eq	1.39E-4	3.06E-6	4.53E-6	1.46E-4	1.93E-6	1.62E-5	2.02E-8	-5.80E-5	1.06E-4
ADP-f	MJ	1.30E+2	1.82E+0	2.31E+0	1.34E+2	1.14E+0	1.13E+1	6.16E-2	-6.84E+1	7.83E+1
WDP	m3 depriv.	8.55E+0	6.52E-3	1.56E+0	1.01E+1	3.51E-3	4.39E-1	3.54E-4	-4.09E+0	6.47E+0
PM	disease inc.	1.61E-7	1.08E-8	1.69E-8	1.88E-7	6.73E-9	5.14E-8	4.22E-10	-6.96E-8	1.77E-7
IR	kBq U-235 eq	2.76E-1	7.63E-3	4.16E-3	2.88E-1	5.00E-3	3.94E-2	2.82E-4	-1.32E-1	2.00E-1
ETP-fw	CTUe	8.74E+1	1.62E+0	3.85E+0	9.28E+1	9.29E-1	8.42E+1	9.28E-1	-4.05E+1	1.38E+2
HTP-c	CTUh	3.46E-9	5.27E-11	1.31E-10	3.65E-9	3.31E-11	1.23E-9	1.61E-12	-1.51E-9	3.41E-9
HTP-nc	CTUh	1.10E-7	1.78E-9	4.02E-9	1.16E-7	1.11E-9	2.97E-8	1.78E-10	-5.22E-8	9.47E-8
SQP	Pt	3.56E+1	1.58E+0	1.73E-1	3.74E+1	9.79E-1	7.04E+0	1.56E-1	-1.15E+1	3.40E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	9.20E+0	2.28E-2	6.96E+0	1.62E+1	1.64E-2	8.08E-1	2.22E-3	-3.82E+0	1.32E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	9.20E+0	2.28E-2	6.96E+0	1.62E+1	1.64E-2	8.08E-1	2.22E-3	-3.82E+0	1.32E+1
PENRE	MJ	1.40E+2	1.93E+0	2.50E+0	1.44E+2	1.21E+0	1.20E+1	6.53E-2	-7.36E+1	8.36E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.40E+2	1.93E+0	2.50E+0	1.44E+2	1.21E+0	1.20E+1	6.53E-2	-7.36E+1	8.36E+1
PET	MJ	1.49E+2	1.96E+0	9.46E+0	1.60E+2	1.23E+0	1.28E+1	6.75E-2	-7.75E+1	9.68E+1
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	9.12E-2	2.22E-4	3.67E-2	1.28E-1	1.29E-4	1.20E-2	7.54E-5	-4.27E-2	9.77E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.03E-4	4.62E-6	3.23E-6	1.11E-4	2.93E-6	1.81E-5	7.43E-8	-5.68E-5	7.56E-5
NHWD	kg	4.92E-1	1.16E-1	4.66E-3	6.12E-1	7.09E-2	4.17E-1	2.83E-1	-2.19E-1	1.16E+0
RWD	kg	2.42E-4	1.20E-5	5.80E-6	2.59E-4	7.78E-6	4.23E-5	4.02E-7	-1.17E-4	1.93E-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

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