Environmental Profile

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

Ecochain v3.5.80

Product:	3000657 - PVC Pipe GY BENOR 200x3.9 SN2 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

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	3.73	0.1	0.17	4	0.06	1.35	0.01	-1.87	3.55
ADPE	kg Sb-eq	9.39E-4	2.07E-5	3.06E-5	9.91E-4	1.30E-5	1.09E-4	1.36E-7	-3.91E-4	7.22E-4
ADPF	kg Sb-eq	4.18E-1	5.96E-3	8.21E-3	4.32E-1	3.66E-3	3.84E-2	1.92E-4	-2.22E-1	2.52E-1
GWP	kg CO2-eq	3.37E+1	8.10E-1	1.46E+0	3.59E+1	4.99E-1	1.31E+1	1.22E-1	-1.87E+1	3.09E+1
ODP	kg CFC-11-eq	1.96E-5	1.44E-7	1.37E-7	1.98E-5	9.25E-8	1.55E-6	4.61E-9	-9.72E-6	1.18E-5
POCP	kg ethene-eq	2.08E-2	4.89E-4	6.43E-4	2.19E-2	2.99E-4	3.02E-3	3.24E-5	-9.47E-3	1.58E-2
AP	kg SO2-eq	1.30E-1	3.56E-3	5.72E-3	1.39E-1	2.15E-3	2.21E-2	1.02E-4	-6.06E-2	1.03E-1
EP	kg PO4 3−-eq	1.55E-2	7.00E-4	9.04E-4	1.71E-2	4.28E-4	3.34E-3	3.95E-5	-7.31E-3	1.36E-2
HTP	kg 1,4-DB-eq	1.32E+1	3.41E-1	5.51E-1	1.41E+1	2.13E-1	5.93E+0	1.05E-2	-5.89E+0	1.43E+1
FAETP	kg 1,4-DB-eq	2.84E-1	9.96E-3	2.24E-2	3.17E-1	6.25E-3	8.90E-2	3.11E-3	-1.29E-1	2.86E-1
MAETP	kg 1,4-DB-eq	8.30E+2	3.58E+1	9.15E+1	9.57E+2	2.23E+1	2.92E+2	3.82E+0	-3.80E+2	8.95E+2
TETP	kg 1,4-DB-eq	9.08E-2	1.21E-3	3.42E-2	1.26E-1	7.56E-4	2.12E-2	3.49E-5	-4.29E-2	1.05E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.34E+1	8.18E-1	1.72E+0	3.59E+1	5.03E-1	1.46E+1	1.42E-1	-1.93E+1	3.19E+1
GWP-f	kg CO2 eq	3.45E+1	8.17E-1	1.35E+0	3.67E+1	5.03E-1	1.32E+1	1.42E-1	-1.91E+1	3.14E+1
GWP-b	kg CO2 eq	-1.18E+0	3.77E-4	2.91E-1	-8.86E-1	3.05E-4	1.43E+0	1.83E-4	-1.34E-1	4.15E-1
GWP-luluc	kg CO2 eq	2.75E-2	2.99E-4	8.20E-2	1.10E-1	1.78E-4	5.96E-3	3.84E-6	-1.26E-2	1.03E-1
ODP	kg CFC11 eq	1.93E-5	1.80E-7	1.63E-7	1.96E-5	1.16E-7	1.60E-6	5.73E-9	-9.62E-6	1.17E-5
AP	mol H+ eq	1.56E-1	4.74E-3	7.34E-3	1.69E-1	2.86E-3	2.77E-2	1.37E-4	-7.31E-2	1.26E-1
EP-fw	kg P eq	1.52E-3	8.24E-6	1.92E-5	1.55E-3	4.14E-6	1.98E-4	1.73E-7	-7.08E-4	1.04E-3
EP-m	kg N eq	2.63E-2	1.67E-3	2.16E-3	3.01E-2	1.02E-3	6.73E-3	8.35E-5	-1.27E-2	2.53E-2
EP-T	mol N eq	2.85E-1	1.84E-2	2.32E-2	3.26E-1	1.13E-2	7.42E-2	5.49E-4	-1.36E-1	2.76E-1
POCP	kg NMVOC eq	9.88E-2	5.26E-3	6.55E-3	1.11E-1	3.23E-3	2.23E-2	1.87E-4	-4.68E-2	8.94E-2
ADP-mm	kg Sb eq	9.39E-4	2.07E-5	3.06E-5	9.91E-4	1.30E-5	1.09E-4	1.36E-7	-3.91E-4	7.22E-4
ADP-f	MJ	8.88E+2	1.23E+1	1.56E+1	9.16E+2	7.72E+0	7.61E+1	4.15E-1	-4.65E+2	5.35E+2
WDP	m3 depriv.	5.80E+1	4.41E-2	1.05E+1	6.86E+1	2.37E-2	2.96E+0	2.39E-3	-2.76E+1	4.40E+1
PM	disease inc.	1.10E-6	7.34E-8	1.14E-7	1.28E-6	4.54E-8	3.47E-7	2.85E-9	-4.70E-7	1.21E-6
IR	kBq U-235 eq	1.87E+0	5.16E-2	2.81E-2	1.95E+0	3.37E-2	2.66E-1	1.90E-3	-8.92E-1	1.36E+0
ETP-fw	CTUe	5.94E+2	1.10E+1	2.60E+1	6.31E+2	6.26E+0	5.68E+2	6.26E+0	-2.73E+2	9.39E+2
HTP-c	CTUh	2.35E-8	3.56E-10	8.86E-10	2.47E-8	2.23E-10	8.35E-9	1.09E-11	-1.02E-8	2.31E-8
HTP-nc	CTUh	7.46E-7	1.20E-8	2.71E-8	7.85E-7	7.47E-9	2.01E-7	1.20E-9	-3.52E-7	6.42E-7
SQP	Pt	2.40E+2	1.07E+1	1.17E+0	2.52E+2	6.60E+0	4.76E+1	1.05E+0	-7.73E+1	2.30E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.22E+1	1.54E-1	4.70E+1	1.09E+2	1.11E-1	5.45E+0	1.50E-2	-2.57E+1	8.92E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.22E+1	1.54E-1	4.70E+1	1.09E+2	1.11E-1	5.45E+0	1.50E-2	-2.57E+1	8.92E+1
PENRE	MJ	9.52E+2	1.31E+1	1.69E+1	9.82E+2	8.19E+0	8.10E+1	4.41E-1	-5.01E+2	5.71E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.52E+2	1.31E+1	1.69E+1	9.82E+2	8.19E+0	8.10E+1	4.41E-1	-5.01E+2	5.71E+2
PET	MJ	1.01E+3	1.32E+1	6.39E+1	1.09E+3	8.30E+0	8.64E+1	4.56E-1	-5.26E+2	6.60E+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	6.22E-1	1.50E-3	2.48E-1	8.72E-1	8.73E-4	8.10E-2	5.09E-4	-2.89E-1	6.65E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.99E-4	3.12E-5	2.18E-5	7.52E-4	1.97E-5	1.23E-4	5.01E-7	-3.87E-4	5.08E-4
NHWD	kg	3.34E+0	7.82E-1	3.15E-2	4.16E+0	4.78E-1	2.83E+0	1.91E+0	-1.48E+0	7.89E+0
RWD	kg	1.64E-3	8.09E-5	3.92E-5	1.76E-3	5.25E-5	2.85E-4	2.71E-6	-7.87E-4	1.31E-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