Environmental Profile

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

Ecochain v3.5.80

Product:	3000662 - PVC Pipe GY BENOR 250x4.9 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	5.83	0.15	0.26	6.25	0.09	2.11	0.01	-2.93	5.54
ADPE	kg Sb-eq	1.47E-3	3.24E-5	4.78E-5	1.55E-3	2.03E-5	1.71E-4	2.13E-7	-6.11E-4	1.13E-3
ADPF	kg Sb-eq	6.52E-1	9.31E-3	1.28E-2	6.74E-1	5.72E-3	6.01E-2	3.00E-4	-3.46E-1	3.94E-1
GWP	kg CO2-eq	5.26E+1	1.27E+0	2.28E+0	5.61E+1	7.79E-1	2.04E+1	1.90E-1	-2.92E+1	4.82E+1
ODP	kg CFC-11-eq	3.06E-5	2.25E-7	2.14E-7	3.10E-5	1.44E-7	2.43E-6	7.20E-9	-1.52E-5	1.84E-5
POCP	kg ethene-eq	3.24E-2	7.64E-4	1.00E-3	3.42E-2	4.68E-4	4.71E-3	5.06E-5	-1.48E-2	2.46E-2
AP	kg SO2-eq	2.03E-1	5.57E-3	8.95E-3	2.17E-1	3.35E-3	3.45E-2	1.60E-4	-9.48E-2	1.61E-1
EP	kg PO4 3−-eq	2.41E-2	1.09E-3	1.41E-3	2.67E-2	6.70E-4	5.21E-3	6.17E-5	-1.14E-2	2.12E-2
HTP	kg 1,4-DB-eq	2.06E+1	5.33E-1	8.61E-1	2.20E+1	3.33E-1	9.27E+0	1.64E-2	-9.21E+0	2.24E+1
FAETP	kg 1,4-DB-eq	4.44E-1	1.56E-2	3.50E-2	4.95E-1	9.76E-3	1.39E-1	4.86E-3	-2.02E-1	4.46E-1
MAETP	kg 1,4-DB-eq	1.30E+3	5.60E+1	1.43E+2	1.50E+3	3.49E+1	4.55E+2	5.96E+0	-5.93E+2	1.40E+3
TETP	kg 1,4-DB-eq	1.42E-1	1.88E-3	5.35E-2	1.97E-1	1.18E-3	3.31E-2	5.46E-5	-6.71E-2	1.64E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	5.20E+1	1.28E+0	2.69E+0	5.60E+1	7.86E-1	2.29E+1	2.22E-1	-3.01E+1	4.97E+1
GWP-f	kg CO2 eq	5.39E+1	1.28E+0	2.10E+0	5.73E+1	7.85E-1	2.05E+1	2.22E-1	-2.99E+1	4.89E+1
GWP-b	kg CO2 eq	-1.93E+0	5.90E-4	4.55E-1	-1.47E+0	4.77E-4	2.33E+0	2.85E-4	-2.09E-1	6.50E-1
GWP-luluc	kg CO2 eq	4.30E-2	4.68E-4	1.28E-1	1.72E-1	2.78E-4	9.31E-3	6.00E-6	-1.97E-2	1.62E-1
ODP	kg CFC11 eq	3.01E-5	2.82E-7	2.54E-7	3.07E-5	1.81E-7	2.50E-6	8.95E-9	-1.50E-5	1.83E-5
AP	mol H+ eq	2.44E-1	7.41E-3	1.15E-2	2.63E-1	4.47E-3	4.32E-2	2.14E-4	-1.14E-1	1.97E-1
EP-fw	kg P eq	2.38E-3	1.29E-5	3.01E-5	2.42E-3	6.46E-6	3.10E-4	2.71E-7	-1.11E-3	1.63E-3
EP-m	kg N eq	4.11E-2	2.61E-3	3.38E-3	4.71E-2	1.60E-3	1.05E-2	1.30E-4	-1.99E-2	3.95E-2
EP-T	mol N eq	4.45E-1	2.88E-2	3.63E-2	5.10E-1	1.76E-2	1.16E-1	8.58E-4	-2.13E-1	4.31E-1
POCP	kg NMVOC eq	1.54E-1	8.22E-3	1.02E-2	1.73E-1	5.04E-3	3.48E-2	2.92E-4	-7.32E-2	1.40E-1
ADP-mm	kg Sb eq	1.47E-3	3.24E-5	4.78E-5	1.55E-3	2.03E-5	1.71E-4	2.13E-7	-6.11E-4	1.13E-3
ADP-f	MJ	1.39E+3	1.93E+1	2.43E+1	1.43E+3	1.21E+1	1.19E+2	6.49E-1	-7.26E+2	8.35E+2
WDP	m3 depriv.	9.06E+1	6.89E-2	1.65E+1	1.07E+2	3.70E-2	4.63E+0	3.73E-3	-4.31E+1	6.87E+1
PM	disease inc.	1.72E-6	1.15E-7	1.78E-7	2.01E-6	7.09E-8	5.42E-7	4.45E-9	-7.35E-7	1.89E-6
IR	kBq U-235 eq	2.92E+0	8.07E-2	4.39E-2	3.05E+0	5.27E-2	4.15E-1	2.98E-3	-1.39E+0	2.12E+0
ETP-fw	CTUe	9.28E+2	1.72E+1	4.06E+1	9.86E+2	9.79E+0	8.88E+2	9.78E+0	-4.27E+2	1.47E+3
HTP-c	CTUh	3.67E-8	5.57E-10	1.39E-9	3.86E-8	3.48E-10	1.31E-8	1.70E-11	-1.59E-8	3.61E-8
HTP-nc	CTUh	1.17E-6	1.88E-8	4.24E-8	1.23E-6	1.17E-8	3.13E-7	1.88E-9	-5.51E-7	1.00E-6
SQP	Pt	3.83E+2	1.67E+1	1.82E+0	4.02E+2	1.03E+1	7.43E+1	1.65E+0	-1.23E+2	3.65E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	9.84E+1	2.41E-1	7.34E+1	1.72E+2	1.73E-1	8.52E+0	2.34E-2	-4.05E+1	1.40E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	9.84E+1	2.41E-1	7.34E+1	1.72E+2	1.73E-1	8.52E+0	2.34E-2	-4.05E+1	1.40E+2
PENRE	MJ	1.49E+3	2.04E+1	2.64E+1	1.53E+3	1.28E+1	1.27E+2	6.89E-1	-7.82E+2	8.92E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.49E+3	2.04E+1	2.64E+1	1.53E+3	1.28E+1	1.27E+2	6.89E-1	-7.82E+2	8.92E+2
PET	MJ	1.59E+3	2.07E+1	9.98E+1	1.71E+3	1.30E+1	1.35E+2	7.12E-1	-8.22E+2	1.03E+3
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	9.71E-1	2.35E-3	3.88E-1	1.36E+0	1.36E-3	1.27E-1	7.95E-4	-4.51E-1	1.04E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.09E-3	4.88E-5	3.41E-5	1.18E-3	3.08E-5	1.92E-4	7.83E-7	-6.04E-4	7.95E-4
NHWD	kg	5.23E+0	1.22E+0	4.92E-2	6.50E+0	7.47E-1	4.42E+0	2.99E+0	-2.31E+0	1.23E+1
RWD	kg	2.56E-3	1.26E-4	6.12E-5	2.75E-3	8.20E-5	4.46E-4	4.24E-6	-1.23E-3	2.05E-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

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