Environmental Profile

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

Ecochain v3.5.80

Product:	3000544 - PVC Pipe BR BENOR 160x4.0 SN4 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	3.01	0.08	0.14	3.23	0.05	1.09	0.01	-1.52	2.85
ADPE	kg Sb-eq	7.64E-4	1.68E-5	2.50E-5	8.06E-4	1.06E-5	8.89E-5	1.11E-7	-3.19E-4	5.86E-4
ADPF	kg Sb-eq	3.36E-1	4.83E-3	6.69E-3	3.48E-1	2.99E-3	3.13E-2	1.57E-4	-1.79E-1	2.03E-1
GWP	kg CO2-eq	2.71E+1	6.57E-1	1.19E+0	2.89E+1	4.07E-1	1.04E+1	9.94E-2	-1.51E+1	2.48E+1
ODP	kg CFC-11-eq	1.59E-5	1.17E-7	1.12E-7	1.62E-5	7.54E-8	1.27E-6	3.76E-9	-7.91E-6	9.59E-6
POCP	kg ethene-eq	1.65E-2	3.96E-4	5.24E-4	1.75E-2	2.44E-4	2.45E-3	2.64E-5	-7.68E-3	1.25E-2
AP	kg SO2-eq	1.05E-1	2.89E-3	4.67E-3	1.12E-1	1.75E-3	1.79E-2	8.36E-5	-4.92E-2	8.26E-2
EP	kg PO4 3−-eq	1.24E-2	5.67E-4	7.37E-4	1.37E-2	3.49E-4	2.71E-3	3.22E-5	-5.92E-3	1.09E-2
HTP	kg 1,4-DB-eq	1.07E+1	2.77E-1	4.49E-1	1.14E+1	1.74E-1	4.83E+0	8.58E-3	-4.79E+0	1.16E+1
FAETP	kg 1,4-DB-eq	2.30E-1	8.07E-3	1.83E-2	2.56E-1	5.09E-3	7.11E-2	2.54E-3	-1.05E-1	2.30E-1
MAETP	kg 1,4-DB-eq	6.69E+2	2.90E+1	7.46E+1	7.73E+2	1.82E+1	2.35E+2	3.11E+0	-3.09E+2	7.20E+2
TETP	kg 1,4-DB-eq	7.36E-2	9.77E-4	2.79E-2	1.02E-1	6.16E-4	1.72E-2	2.85E-5	-3.49E-2	8.54E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.72E+1	6.63E-1	1.40E+0	2.92E+1	4.10E-1	1.13E+1	1.16E-1	-1.56E+1	2.55E+1
GWP-f	kg CO2 eq	2.78E+1	6.62E-1	1.10E+0	2.96E+1	4.10E-1	1.05E+1	1.16E-1	-1.54E+1	2.51E+1
GWP-b	kg CO2 eq	-6.31E-1	3.06E-4	2.37E-1	-3.93E-1	2.49E-4	8.48E-1	1.49E-4	-1.09E-1	3.46E-1
GWP-luluc	kg CO2 eq	2.20E-2	2.43E-4	6.69E-2	8.91E-2	1.45E-4	4.86E-3	3.14E-6	-1.02E-2	8.39E-2
ODP	kg CFC11 eq	1.57E-5	1.46E-7	1.33E-7	1.60E-5	9.45E-8	1.30E-6	4.67E-9	-7.83E-6	9.56E-6
AP	mol H+ eq	1.26E-1	3.84E-3	5.98E-3	1.36E-1	2.33E-3	2.25E-2	1.12E-4	-5.94E-2	1.01E-1
EP-fw	kg P eq	1.23E-3	6.68E-6	1.57E-5	1.25E-3	3.37E-6	1.61E-4	1.41E-7	-5.77E-4	8.40E-4
EP-m	kg N eq	2.11E-2	1.35E-3	1.76E-3	2.42E-2	8.35E-4	5.46E-3	6.81E-5	-1.03E-2	2.03E-2
EP-T	mol N eq	2.28E-1	1.49E-2	1.89E-2	2.62E-1	9.21E-3	6.02E-2	4.48E-4	-1.10E-1	2.22E-1
POCP	kg NMVOC eq	7.90E-2	4.26E-3	5.34E-3	8.86E-2	2.63E-3	1.81E-2	1.52E-4	-3.79E-2	7.15E-2
ADP-mm	kg Sb eq	7.64E-4	1.68E-5	2.50E-5	8.06E-4	1.06E-5	8.89E-5	1.11E-7	-3.19E-4	5.86E-4
ADP-f	MJ	7.15E+2	9.99E+0	1.27E+1	7.37E+2	6.29E+0	6.20E+1	3.39E-1	-3.76E+2	4.30E+2
WDP	m3 depriv.	4.70E+1	3.57E-2	8.59E+0	5.56E+1	1.93E-2	2.41E+0	1.96E-3	-2.25E+1	3.56E+1
PM	disease inc.	8.67E-7	5.95E-8	9.29E-8	1.02E-6	3.70E-8	2.82E-7	2.32E-9	-3.80E-7	9.61E-7
IR	kBq U-235 eq	1.51E+0	4.19E-2	2.29E-2	1.58E+0	2.75E-2	2.16E-1	1.55E-3	-7.26E-1	1.10E+0
ETP-fw	CTUe	4.79E+2	8.91E+0	2.12E+1	5.09E+2	5.11E+0	4.63E+2	5.10E+0	-2.21E+2	7.61E+2
HTP-c	CTUh	1.89E-8	2.89E-10	7.22E-10	1.99E-8	1.82E-10	6.76E-9	8.87E-12	-8.29E-9	1.86E-8
HTP-nc	CTUh	6.05E-7	9.74E-9	2.21E-8	6.37E-7	6.09E-9	1.63E-7	9.80E-10	-2.87E-7	5.20E-7
SQP	Pt	1.65E+2	8.67E+0	9.50E-1	1.75E+2	5.38E+0	3.87E+1	8.60E-1	-5.67E+1	1.63E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.60E+1	1.25E-1	3.83E+1	8.44E+1	9.03E-2	4.44E+0	1.22E-2	-1.97E+1	6.93E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.60E+1	1.25E-1	3.83E+1	8.44E+1	9.03E-2	4.44E+0	1.22E-2	-1.97E+1	6.93E+1
PENRE	MJ	7.67E+2	1.06E+1	1.38E+1	7.91E+2	6.68E+0	6.59E+1	3.59E-1	-4.05E+2	4.59E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	7.67E+2	1.06E+1	1.38E+1	7.91E+2	6.68E+0	6.59E+1	3.59E-1	-4.05E+2	4.59E+2
PET	MJ	8.13E+2	1.07E+1	5.21E+1	8.75E+2	6.77E+0	7.04E+1	3.72E-1	-4.25E+2	5.28E+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	5.01E-1	1.22E-3	2.02E-1	7.05E-1	7.12E-4	6.59E-2	4.15E-4	-2.35E-1	5.37E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.66E-4	2.53E-5	1.78E-5	6.10E-4	1.61E-5	9.97E-5	4.09E-7	-3.12E-4	4.14E-4
NHWD	kg	2.69E+0	6.34E-1	2.57E-2	3.35E+0	3.90E-1	2.29E+0	1.56E+0	-1.20E+0	6.38E+0
RWD	kg	1.33E-3	6.56E-5	3.19E-5	1.42E-3	4.28E-5	2.32E-4	2.21E-6	-6.40E-4	1.06E-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