Environmental Profile

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

Ecochain v3.5.80

Product:	3021024 - PVC Pipe BR BENOR 160x4.7 SN8 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

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	2.14	0.06	0.1	2.29	0.03	0.77	0	-1.07	2.03
ADPE	kg Sb-eq	5.80E-4	1.19E-5	1.76E-5	6.09E-4	7.49E-6	6.27E-5	7.86E-8	-2.26E-4	4.53E-4
ADPF	kg Sb-eq	2.39E-1	3.42E-3	4.72E-3	2.47E-1	2.11E-3	2.21E-2	1.11E-4	-1.27E-1	1.44E-1
GWP	kg CO2-eq	1.92E+1	4.65E-1	8.39E-1	2.06E+1	2.87E-1	7.43E+0	7.04E-2	-1.07E+1	1.77E+1
ODP	kg CFC-11-eq	1.13E-5	8.25E-8	7.88E-8	1.14E-5	5.32E-8	8.93E-7	2.66E-9	-5.58E-6	6.78E-6
POCP	kg ethene-eq	1.18E-2	2.81E-4	3.69E-4	1.25E-2	1.72E-4	1.73E-3	1.87E-5	-5.44E-3	8.97E-3
AP	kg SO2-eq	7.45E-2	2.05E-3	3.29E-3	7.98E-2	1.24E-3	1.27E-2	5.91E-5	-3.48E-2	5.89E-2
EP	kg PO4 3−-eq	8.87E-3	4.02E-4	5.19E-4	9.79E-3	2.47E-4	1.92E-3	2.29E-5	-4.20E-3	7.78E-3
HTP	kg 1,4-DB-eq	7.58E+0	1.96E-1	3.17E-1	8.09E+0	1.23E-1	3.40E+0	6.07E-3	-3.39E+0	8.24E+0
FAETP	kg 1,4-DB-eq	1.64E-1	5.72E-3	1.29E-2	1.82E-1	3.60E-3	5.01E-2	1.79E-3	-7.41E-2	1.64E-1
MAETP	kg 1,4-DB-eq	4.77E+2	2.06E+1	5.26E+1	5.50E+2	1.28E+1	1.66E+2	2.20E+0	-2.18E+2	5.13E+2
TETP	kg 1,4-DB-eq	5.21E-2	6.92E-4	1.97E-2	7.25E-2	4.35E-4	1.22E-2	2.02E-5	-2.47E-2	6.04E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.90E+1	4.70E-1	9.88E-1	2.05E+1	2.90E-1	8.37E+0	8.20E-2	-1.10E+1	1.82E+1
GWP-f	kg CO2 eq	1.97E+1	4.69E-1	7.73E-1	2.10E+1	2.89E-1	7.49E+0	8.20E-2	-1.09E+1	1.79E+1
GWP-b	kg CO2 eq	-7.26E-1	2.17E-4	1.67E-1	-5.58E-1	1.76E-4	8.77E-1	1.05E-4	-7.68E-2	2.42E-1
GWP-luluc	kg CO2 eq	1.58E-2	1.72E-4	4.71E-2	6.31E-2	1.02E-4	3.42E-3	2.22E-6	-7.25E-3	5.94E-2
ODP	kg CFC11 eq	1.11E-5	1.04E-7	9.34E-8	1.13E-5	6.67E-8	9.20E-7	3.30E-9	-5.53E-6	6.76E-6
AP	mol H+ eq	8.97E-2	2.72E-3	4.22E-3	9.66E-2	1.65E-3	1.59E-2	7.92E-5	-4.20E-2	7.23E-2
EP-fw	kg P eq	8.73E-4	4.73E-6	1.11E-5	8.89E-4	2.38E-6	1.14E-4	1.00E-7	-4.07E-4	5.98E-4
EP-m	kg N eq	1.51E-2	9.59E-4	1.24E-3	1.73E-2	5.90E-4	3.86E-3	4.85E-5	-7.31E-3	1.45E-2
EP-T	mol N eq	1.63E-1	1.06E-2	1.33E-2	1.87E-1	6.50E-3	4.26E-2	3.17E-4	-7.83E-2	1.58E-1
POCP	kg NMVOC eq	5.65E-2	3.02E-3	3.77E-3	6.32E-2	1.86E-3	1.28E-2	1.08E-4	-2.69E-2	5.11E-2
ADP-mm	kg Sb eq	5.80E-4	1.19E-5	1.76E-5	6.09E-4	7.49E-6	6.27E-5	7.86E-8	-2.26E-4	4.53E-4
ADP-f	MJ	5.07E+2	7.08E+0	8.95E+0	5.23E+2	4.44E+0	4.37E+1	2.40E-1	-2.66E+2	3.06E+2
WDP	m3 depriv.	3.32E+1	2.53E-2	6.06E+0	3.93E+1	1.36E-2	1.70E+0	1.38E-3	-1.59E+1	2.52E+1
PM	disease inc.	6.33E-7	4.21E-8	6.55E-8	7.41E-7	2.61E-8	1.99E-7	1.64E-9	-2.71E-7	6.97E-7
IR	kBq U-235 eq	1.08E+0	2.96E-2	1.62E-2	1.12E+0	1.94E-2	1.53E-1	1.10E-3	-5.13E-1	7.85E-1
ETP-fw	CTUe	3.41E+2	6.31E+0	1.49E+1	3.63E+2	3.61E+0	3.27E+2	3.60E+0	-1.57E+2	5.39E+2
HTP-c	CTUh	1.35E-8	2.05E-10	5.09E-10	1.42E-8	1.28E-10	4.79E-9	6.27E-12	-5.86E-9	1.33E-8
HTP-nc	CTUh	4.29E-7	6.90E-9	1.56E-8	4.51E-7	4.30E-9	1.15E-7	6.92E-10	-2.03E-7	3.69E-7
SQP	Pt	1.43E+2	6.14E+0	6.70E-1	1.49E+2	3.80E+0	2.73E+1	6.08E-1	-4.54E+1	1.36E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.64E+1	8.86E-2	2.70E+1	6.34E+1	6.37E-2	3.13E+0	8.64E-3	-1.50E+1	5.17E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.64E+1	8.86E-2	2.70E+1	6.34E+1	6.37E-2	3.13E+0	8.64E-3	-1.50E+1	5.17E+1
PENRE	MJ	5.44E+2	7.51E+0	9.70E+0	5.61E+2	4.72E+0	4.65E+1	2.54E-1	-2.86E+2	3.27E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.44E+2	7.51E+0	9.70E+0	5.61E+2	4.72E+0	4.65E+1	2.54E-1	-2.86E+2	3.27E+2
PET	MJ	5.81E+2	7.60E+0	3.67E+1	6.25E+2	4.78E+0	4.97E+1	2.63E-1	-3.01E+2	3.78E+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	3.56E-1	8.62E-4	1.43E-1	4.99E-1	5.03E-4	4.66E-2	2.93E-4	-1.66E-1	3.81E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.03E-4	1.79E-5	1.25E-5	4.34E-4	1.14E-5	7.04E-5	2.89E-7	-2.21E-4	2.95E-4
NHWD	kg	1.92E+0	4.49E-1	1.81E-2	2.39E+0	2.75E-1	1.62E+0	1.10E+0	-8.51E-1	4.53E+0
RWD	kg	9.50E-4	4.65E-5	2.25E-5	1.02E-3	3.02E-5	1.64E-4	1.56E-6	-4.52E-4	7.62E-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