Environmental Profile

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

Ecochain v3.5.80

Product:	3000534 - PVC Pipe GY BENOR 125x3.2 SN4 L=5 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

This document and supporting material contain confidential and proprietary business information of Wavin - NL - Hardenberg - Verified. These materials may be printed or (photo) copied or otherwise used only with the written consent of Wavin - NL - Hardenberg - Verified.

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	1.9	0.05	0.09	2.04	0.03	0.69	0	-0.96	1.81
ADPE	kg Sb-eq	5.06E-4	1.06E-5	1.57E-5	5.33E-4	6.68E-6	5.60E-5	7.01E-8	-2.02E-4	3.94E-4
ADPF	kg Sb-eq	2.13E-1	3.05E-3	4.20E-3	2.20E-1	1.88E-3	1.97E-2	9.88E-5	-1.13E-1	1.28E-1
GWP	kg CO2-eq	1.71E+1	4.15E-1	7.47E-1	1.83E+1	2.56E-1	6.61E+0	6.27E-2	-9.52E+0	1.57E+1
ODP	kg CFC-11-eq	1.00E-5	7.36E-8	7.02E-8	1.02E-5	4.75E-8	7.97E-7	2.37E-9	-4.98E-6	6.05E-6
POCP	kg ethene-eq	1.05E-2	2.50E-4	3.29E-4	1.11E-2	1.54E-4	1.54E-3	1.67E-5	-4.84E-3	7.97E-3
AP	kg SO2-eq	6.62E-2	1.82E-3	2.93E-3	7.10E-2	1.10E-3	1.13E-2	5.27E-5	-3.10E-2	5.24E-2
EP	kg PO4 3−-eq	7.88E-3	3.58E-4	4.63E-4	8.70E-3	2.20E-4	1.71E-3	2.04E-5	-3.74E-3	6.91E-3
HTP	kg 1,4-DB-eq	6.74E+0	1.75E-1	2.82E-1	7.20E+0	1.10E-1	3.04E+0	5.41E-3	-3.02E+0	7.34E+0
FAETP	kg 1,4-DB-eq	1.45E-1	5.10E-3	1.15E-2	1.62E-1	3.21E-3	4.47E-2	1.60E-3	-6.61E-2	1.45E-1
MAETP	kg 1,4-DB-eq	4.24E+2	1.83E+1	4.69E+1	4.89E+2	1.15E+1	1.48E+2	1.96E+0	-1.95E+2	4.56E+2
TETP	kg 1,4-DB-eq	4.65E-2	6.17E-4	1.75E-2	6.46E-2	3.88E-4	1.09E-2	1.80E-5	-2.20E-2	5.38E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.70E+1	4.19E-1	8.80E-1	1.83E+1	2.58E-1	7.35E+0	7.31E-2	-9.82E+0	1.62E+1
GWP-f	kg CO2 eq	1.76E+1	4.18E-1	6.89E-1	1.87E+1	2.58E-1	6.66E+0	7.31E-2	-9.74E+0	1.59E+1
GWP-b	kg CO2 eq	-5.56E-1	1.93E-4	1.49E-1	-4.06E-1	1.57E-4	6.91E-1	9.39E-5	-6.85E-2	2.16E-1
GWP-luluc	kg CO2 eq	1.40E-2	1.53E-4	4.20E-2	5.62E-2	9.14E-5	3.06E-3	1.98E-6	-6.46E-3	5.28E-2
ODP	kg CFC11 eq	9.90E-6	9.23E-8	8.32E-8	1.01E-5	5.95E-8	8.22E-7	2.95E-9	-4.93E-6	6.03E-6
AP	mol H+ eq	7.98E-2	2.43E-3	3.76E-3	8.59E-2	1.47E-3	1.42E-2	7.06E-5	-3.74E-2	6.42E-2
EP-fw	kg P eq	7.77E-4	4.22E-6	9.85E-6	7.91E-4	2.12E-6	1.02E-4	8.92E-8	-3.63E-4	5.32E-4
EP-m	kg N eq	1.34E-2	8.55E-4	1.11E-3	1.54E-2	5.26E-4	3.44E-3	4.32E-5	-6.51E-3	1.29E-2
EP-T	mol N eq	1.45E-1	9.42E-3	1.19E-2	1.66E-1	5.80E-3	3.80E-2	2.82E-4	-6.97E-2	1.41E-1
POCP	kg NMVOC eq	5.02E-2	2.69E-3	3.35E-3	5.62E-2	1.66E-3	1.14E-2	9.61E-5	-2.39E-2	4.54E-2
ADP-mm	kg Sb eq	5.06E-4	1.06E-5	1.57E-5	5.33E-4	6.68E-6	5.60E-5	7.01E-8	-2.02E-4	3.94E-4
ADP-f	MJ	4.52E+2	6.31E+0	7.98E+0	4.66E+2	3.96E+0	3.90E+1	2.14E-1	-2.37E+2	2.72E+2
WDP	m3 depriv.	2.96E+1	2.26E-2	5.39E+0	3.51E+1	1.22E-2	1.52E+0	1.23E-3	-1.42E+1	2.24E+1
PM	disease inc.	5.58E-7	3.76E-8	5.83E-8	6.54E-7	2.33E-8	1.78E-7	1.46E-9	-2.41E-7	6.16E-7
IR	kBq U-235 eq	9.60E-1	2.64E-2	1.44E-2	1.00E+0	1.73E-2	1.36E-1	9.80E-4	-4.58E-1	6.98E-1
ETP-fw	CTUe	3.04E+2	5.62E+0	1.33E+1	3.22E+2	3.22E+0	2.92E+2	3.21E+0	-1.40E+2	4.81E+2
HTP-c	CTUh	1.20E-8	1.82E-10	4.54E-10	1.26E-8	1.15E-10	4.26E-9	5.59E-12	-5.22E-9	1.18E-8
HTP-nc	CTUh	3.82E-7	6.15E-9	1.39E-8	4.02E-7	3.84E-9	1.03E-7	6.17E-10	-1.81E-7	3.28E-7
SQP	Pt	1.19E+2	5.47E+0	5.97E-1	1.25E+2	3.39E+0	2.44E+1	5.42E-1	-3.88E+1	1.14E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.12E+1	7.90E-2	2.41E+1	5.53E+1	5.69E-2	2.80E+0	7.70E-3	-1.30E+1	4.52E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.12E+1	7.90E-2	2.41E+1	5.53E+1	5.69E-2	2.80E+0	7.70E-3	-1.30E+1	4.52E+1
PENRE	MJ	4.85E+2	6.70E+0	8.64E+0	5.00E+2	4.21E+0	4.15E+1	2.27E-1	-2.55E+2	2.91E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.85E+2	6.70E+0	8.64E+0	5.00E+2	4.21E+0	4.15E+1	2.27E-1	-2.55E+2	2.91E+2
PET	MJ	5.16E+2	6.78E+0	3.27E+1	5.56E+2	4.26E+0	4.43E+1	2.34E-1	-2.68E+2	3.36E+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	3.17E-1	7.68E-4	1.27E-1	4.45E-1	4.49E-4	4.16E-2	2.62E-4	-1.48E-1	3.39E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.59E-4	1.60E-5	1.12E-5	3.86E-4	1.01E-5	6.28E-5	2.58E-7	-1.97E-4	2.62E-4
NHWD	kg	1.70E+0	4.00E-1	1.61E-2	2.12E+0	2.46E-1	1.44E+0	9.83E-1	-7.58E-1	4.03E+0
RWD	kg	8.44E-4	4.14E-5	2.01E-5	9.05E-4	2.70E-5	1.46E-4	1.40E-6	-4.04E-4	6.76E-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