Environmental Profile

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

Ecochain v3.5.80

Product:	3000685 - PVC Pipe GY BENOR 400x7.9 SN2 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

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Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	15.08	0.4	0.67	16.14	0.24	5.41	0.03	-7.53	14.3
ADPE	kg Sb-eq	4.12E-3	8.38E-5	1.22E-4	4.33E-3	5.23E-5	4.39E-4	5.50E-7	-1.58E-3	3.24E-3
ADPF	kg Sb-eq	1.68E+0	2.41E-2	3.28E-2	1.73E+0	1.47E-2	1.55E-1	7.75E-4	-8.87E-1	1.02E+0
GWP	kg CO2-eq	1.35E+2	3.28E+0	5.84E+0	1.45E+2	2.01E+0	5.21E+1	4.92E-1	-7.48E+1	1.24E+2
ODP	kg CFC-11-eq	7.88E-5	5.82E-7	5.48E-7	7.99E-5	3.72E-7	6.25E-6	1.86E-8	-3.90E-5	4.75E-5
POCP	kg ethene-eq	8.38E-2	1.98E-3	2.57E-3	8.83E-2	1.20E-3	1.22E-2	1.31E-4	-3.82E-2	6.36E-2
AP	kg SO2-eq	5.25E-1	1.44E-2	2.29E-2	5.63E-1	8.64E-3	8.89E-2	4.14E-4	-2.45E-1	4.16E-1
EP	kg PO4 3−-eq	6.30E-2	2.83E-3	3.62E-3	6.94E-2	1.72E-3	1.35E-2	1.61E-4	-2.98E-2	5.50E-2
HTP	kg 1,4-DB-eq	5.34E+1	1.38E+0	2.20E+0	5.70E+1	8.58E-1	2.38E+1	4.24E-2	-2.38E+1	5.79E+1
FAETP	kg 1,4-DB-eq	1.15E+0	4.03E-2	8.97E-2	1.28E+0	2.51E-2	3.51E-1	1.25E-2	-5.21E-1	1.15E+0
MAETP	kg 1,4-DB-eq	3.37E+3	1.45E+2	3.66E+2	3.88E+3	8.98E+1	1.16E+3	1.54E+1	-1.53E+3	3.61E+3
TETP	kg 1,4-DB-eq	3.67E-1	4.88E-3	1.37E-1	5.09E-1	3.04E-3	8.51E-2	1.41E-4	-1.73E-1	4.24E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.29E+2	3.31E+0	6.88E+0	1.39E+2	2.02E+0	6.36E+1	5.74E-1	-7.71E+1	1.28E+2
GWP-f	kg CO2 eq	1.39E+2	3.31E+0	5.38E+0	1.48E+2	2.02E+0	5.25E+1	5.73E-1	-7.65E+1	1.26E+2
GWP-b	kg CO2 eq	-1.00E+1	1.53E-3	1.16E+0	-8.88E+0	1.23E-3	1.11E+1	7.37E-4	-5.36E-1	1.68E+0
GWP-luluc	kg CO2 eq	1.13E-1	1.21E-3	3.28E-1	4.43E-1	7.16E-4	2.39E-2	1.55E-5	-5.14E-2	4.16E-1
ODP	kg CFC11 eq	7.77E-5	7.30E-7	6.50E-7	7.91E-5	4.66E-7	6.44E-6	2.31E-8	-3.86E-5	4.74E-5
AP	mol H+ eq	6.34E-1	1.92E-2	2.94E-2	6.82E-1	1.15E-2	1.12E-1	5.54E-4	-2.96E-1	5.10E-1
EP-fw	kg P eq	6.15E-3	3.34E-5	7.70E-5	6.26E-3	1.66E-5	7.96E-4	7.00E-7	-2.85E-3	4.22E-3
EP-m	kg N eq	1.07E-1	6.76E-3	8.65E-3	1.22E-1	4.12E-3	2.72E-2	3.40E-4	-5.17E-2	1.02E-1
EP-T	mol N eq	1.16E+0	7.46E-2	9.28E-2	1.33E+0	4.54E-2	3.00E-1	2.22E-3	-5.58E-1	1.12E+0
POCP	kg NMVOC eq	4.01E-1	2.13E-2	2.62E-2	4.48E-1	1.30E-2	9.00E-2	7.53E-4	-1.90E-1	3.62E-1
ADP-mm	kg Sb eq	4.12E-3	8.38E-5	1.22E-4	4.33E-3	5.23E-5	4.39E-4	5.50E-7	-1.58E-3	3.24E-3
ADP-f	MJ	3.56E+3	4.99E+1	6.23E+1	3.68E+3	3.11E+1	3.06E+2	1.68E+0	-1.86E+3	2.15E+3
WDP	m3 depriv.	2.33E+2	1.79E-1	4.21E+1	2.75E+2	9.53E-2	1.19E+1	9.63E-3	-1.11E+2	1.76E+2
PM	disease inc.	4.69E-6	2.97E-7	4.56E-7	5.45E-6	1.83E-7	1.40E-6	1.15E-8	-1.93E-6	5.11E-6
IR	kBq U-235 eq	7.61E+0	2.09E-1	1.12E-1	7.93E+0	1.36E-1	1.07E+0	7.69E-3	-3.59E+0	5.55E+0
ETP-fw	CTUe	2.41E+3	4.45E+1	1.04E+2	2.56E+3	2.52E+1	2.28E+3	2.52E+1	-1.12E+3	3.78E+3
HTP-c	CTUh	9.64E-8	1.44E-9	3.55E-9	1.01E-7	8.97E-10	3.38E-8	4.38E-11	-4.13E-8	9.48E-8
HTP-nc	CTUh	3.02E-6	4.87E-8	1.09E-7	3.18E-6	3.01E-8	8.06E-7	4.83E-9	-1.42E-6	2.59E-6
SQP	Pt	1.45E+3	4.33E+1	4.66E+0	1.50E+3	2.66E+1	1.91E+2	4.25E+0	-4.14E+2	1.31E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.22E+2	6.25E-1	1.88E+2	5.11E+2	4.46E-1	2.19E+1	6.05E-2	-1.24E+2	4.09E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.22E+2	6.25E-1	1.88E+2	5.11E+2	4.46E-1	2.19E+1	6.05E-2	-1.24E+2	4.09E+2
PENRE	MJ	3.82E+3	5.30E+1	6.75E+1	3.94E+3	3.30E+1	3.26E+2	1.78E+0	-2.00E+3	2.30E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.82E+3	5.30E+1	6.75E+1	3.94E+3	3.30E+1	3.26E+2	1.78E+0	-2.00E+3	2.30E+3
PET	MJ	4.14E+3	5.36E+1	2.55E+2	4.45E+3	3.34E+1	3.48E+2	1.84E+0	-2.13E+3	2.71E+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	2.50E+0	6.08E-3	9.92E-1	3.50E+0	3.51E-3	3.27E-1	2.05E-3	-1.16E+0	2.67E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.85E-3	1.26E-4	8.73E-5	3.07E-3	7.94E-5	4.93E-4	2.02E-6	-1.55E-3	2.09E-3
NHWD	kg	1.37E+1	3.17E+0	1.26E-1	1.69E+1	1.92E+0	1.14E+1	7.71E+0	-5.99E+0	3.20E+1
RWD	kg	6.72E-3	3.28E-4	1.57E-4	7.20E-3	2.11E-4	1.15E-3	1.09E-5	-3.17E-3	5.41E-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