Environmental Profile

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

Ecochain v3.5.80

Product:	3000689 - PVC Pipe BR BENOR 160x3.2 SN2 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

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Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	1.49	0.04	0.07	1.6	0.02	0.54	0	-0.74	1.41
ADPE	kg Sb-eq	4.14E-4	8.27E-6	1.21E-5	4.35E-4	5.18E-6	4.34E-5	5.45E-8	-1.57E-4	3.26E-4
ADPF	kg Sb-eq	1.66E-1	2.38E-3	3.25E-3	1.72E-1	1.46E-3	1.53E-2	7.68E-5	-8.79E-2	1.00E-1
GWP	kg CO2-eq	1.34E+1	3.24E-1	5.77E-1	1.43E+1	1.99E-1	5.17E+0	4.88E-2	-7.41E+0	1.23E+1
ODP	kg CFC-11-eq	7.80E-6	5.74E-8	5.43E-8	7.91E-6	3.69E-8	6.18E-7	1.84E-9	-3.87E-6	4.70E-6
POCP	kg ethene-eq	8.27E-3	1.95E-4	2.54E-4	8.72E-3	1.19E-4	1.20E-3	1.30E-5	-3.78E-3	6.28E-3
AP	kg SO2-eq	5.19E-2	1.42E-3	2.27E-3	5.56E-2	8.55E-4	8.79E-3	4.10E-5	-2.42E-2	4.11E-2
EP	kg PO4 3−-eq	6.21E-3	2.80E-4	3.58E-4	6.84E-3	1.71E-4	1.33E-3	1.59E-5	-2.93E-3	5.43E-3
HTP	kg 1,4-DB-eq	5.28E+0	1.36E-1	2.18E-1	5.63E+0	8.50E-2	2.36E+0	4.21E-3	-2.35E+0	5.73E+0
FAETP	kg 1,4-DB-eq	1.14E-1	3.98E-3	8.87E-3	1.27E-1	2.49E-3	3.47E-2	1.24E-3	-5.14E-2	1.14E-1
MAETP	kg 1,4-DB-eq	3.33E+2	1.43E+1	3.62E+1	3.83E+2	8.90E+0	1.15E+2	1.53E+0	-1.51E+2	3.57E+2
TETP	kg 1,4-DB-eq	3.63E-2	4.82E-4	1.35E-2	5.03E-2	3.01E-4	8.42E-3	1.40E-5	-1.71E-2	4.19E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.30E+1	3.27E-1	6.80E-1	1.40E+1	2.01E-1	6.10E+0	5.69E-2	-7.64E+0	1.27E+1
GWP-f	kg CO2 eq	1.37E+1	3.26E-1	5.33E-1	1.46E+1	2.00E-1	5.22E+0	5.69E-2	-7.58E+0	1.25E+1
GWP-b	kg CO2 eq	-7.75E-1	1.51E-4	1.15E-1	-6.60E-1	1.22E-4	8.79E-1	7.30E-5	-5.31E-2	1.66E-1
GWP-luluc	kg CO2 eq	1.11E-2	1.20E-4	3.25E-2	4.37E-2	7.09E-5	2.37E-3	1.54E-6	-5.06E-3	4.11E-2
ODP	kg CFC11 eq	7.69E-6	7.21E-8	6.43E-8	7.83E-6	4.62E-8	6.37E-7	2.29E-9	-3.83E-6	4.69E-6
AP	mol H+ eq	6.26E-2	1.89E-3	2.90E-3	6.74E-2	1.14E-3	1.10E-2	5.49E-5	-2.92E-2	5.04E-2
EP-fw	kg P eq	6.07E-4	3.29E-6	7.62E-6	6.18E-4	1.65E-6	7.88E-5	6.94E-8	-2.82E-4	4.16E-4
EP-m	kg N eq	1.05E-2	6.67E-4	8.56E-4	1.21E-2	4.08E-4	2.69E-3	3.37E-5	-5.10E-3	1.01E-2
EP-T	mol N eq	1.14E-1	7.36E-3	9.18E-3	1.31E-1	4.50E-3	2.96E-2	2.20E-4	-5.48E-2	1.10E-1
POCP	kg NMVOC eq	3.95E-2	2.10E-3	2.59E-3	4.42E-2	1.29E-3	8.89E-3	7.47E-5	-1.87E-2	3.58E-2
ADP-mm	kg Sb eq	4.14E-4	8.27E-6	1.21E-5	4.35E-4	5.18E-6	4.34E-5	5.45E-8	-1.57E-4	3.26E-4
ADP-f	MJ	3.53E+2	4.92E+0	6.16E+0	3.64E+2	3.08E+0	3.03E+1	1.66E-1	-1.84E+2	2.13E+2
WDP	m3 depriv.	2.30E+1	1.76E-2	4.17E+0	2.72E+1	9.44E-3	1.18E+0	9.58E-4	-1.10E+1	1.74E+1
PM	disease inc.	4.55E-7	2.93E-8	4.51E-8	5.29E-7	1.81E-8	1.38E-7	1.14E-9	-1.89E-7	4.97E-7
IR	kBq U-235 eq	7.52E-1	2.06E-2	1.11E-2	7.84E-1	1.34E-2	1.06E-1	7.62E-4	-3.55E-1	5.49E-1
ETP-fw	CTUe	2.38E+2	4.39E+0	1.03E+1	2.53E+2	2.50E+0	2.26E+2	2.49E+0	-1.10E+2	3.74E+2
HTP-c	CTUh	9.47E-9	1.42E-10	3.51E-10	9.96E-9	8.89E-11	3.33E-9	4.35E-12	-4.07E-9	9.31E-9
HTP-nc	CTUh	2.98E-7	4.80E-9	1.07E-8	3.14E-7	2.98E-9	7.98E-8	4.79E-10	-1.41E-7	2.56E-7
SQP	Pt	1.24E+2	4.27E+0	4.61E-1	1.28E+2	2.63E+0	1.89E+1	4.21E-1	-3.67E+1	1.14E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.89E+1	6.16E-2	1.86E+1	4.76E+1	4.41E-2	2.17E+0	5.99E-3	-1.14E+1	3.84E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.89E+1	6.16E-2	1.86E+1	4.76E+1	4.41E-2	2.17E+0	5.99E-3	-1.14E+1	3.84E+1
PENRE	MJ	3.78E+2	5.23E+0	6.68E+0	3.90E+2	3.27E+0	3.22E+1	1.76E-1	-1.98E+2	2.27E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.78E+2	5.23E+0	6.68E+0	3.90E+2	3.27E+0	3.22E+1	1.76E-1	-1.98E+2	2.27E+2
PET	MJ	4.07E+2	5.29E+0	2.53E+1	4.38E+2	3.31E+0	3.44E+1	1.82E-1	-2.10E+2	2.66E+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	2.47E-1	6.00E-4	9.82E-2	3.46E-1	3.48E-4	3.23E-2	2.03E-4	-1.15E-1	2.64E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.81E-4	1.25E-5	8.63E-6	3.02E-4	7.87E-6	4.88E-5	2.00E-7	-1.53E-4	2.06E-4
NHWD	kg	1.34E+0	3.12E-1	1.25E-2	1.67E+0	1.91E-1	1.13E+0	7.64E-1	-5.91E-1	3.16E+0
RWD	kg	6.64E-4	3.23E-5	1.55E-5	7.12E-4	2.09E-5	1.14E-4	1.08E-6	-3.14E-4	5.34E-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