Environmental Profile

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

Ecochain v3.5.80

Product:	3000561 - PVC Pipe BR BENOR 160x4.0 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

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	3.03	0.08	0.14	3.24	0.05	1.09	0.01	-1.52	2.87
ADPE	kg Sb-eq	8.06E-4	1.68E-5	2.50E-5	8.47E-4	1.06E-5	8.91E-5	1.12E-7	-3.21E-4	6.26E-4
ADPF	kg Sb-eq	3.38E-1	4.84E-3	6.69E-3	3.50E-1	2.99E-3	3.14E-2	1.57E-4	-1.80E-1	2.04E-1
GWP	kg CO2-eq	2.73E+1	6.59E-1	1.19E+0	2.91E+1	4.08E-1	1.05E+1	9.99E-2	-1.52E+1	2.50E+1
ODP	kg CFC-11-eq	1.60E-5	1.17E-7	1.12E-7	1.62E-5	7.57E-8	1.27E-6	3.78E-9	-7.93E-6	9.63E-6
POCP	kg ethene-eq	1.67E-2	3.98E-4	5.24E-4	1.76E-2	2.45E-4	2.46E-3	2.66E-5	-7.71E-3	1.26E-2
AP	kg SO2-eq	1.05E-1	2.90E-3	4.67E-3	1.13E-1	1.76E-3	1.80E-2	8.40E-5	-4.94E-2	8.33E-2
EP	kg PO4 3−-eq	1.25E-2	5.69E-4	7.37E-4	1.38E-2	3.51E-4	2.72E-3	3.25E-5	-5.94E-3	1.10E-2
HTP	kg 1,4-DB-eq	1.07E+1	2.77E-1	4.49E-1	1.14E+1	1.74E-1	4.84E+0	8.62E-3	-4.80E+0	1.17E+1
FAETP	kg 1,4-DB-eq	2.31E-1	8.10E-3	1.83E-2	2.58E-1	5.11E-3	7.12E-2	2.55E-3	-1.05E-1	2.31E-1
MAETP	kg 1,4-DB-eq	6.74E+2	2.91E+1	7.46E+1	7.78E+2	1.83E+1	2.36E+2	3.13E+0	-3.10E+2	7.25E+2
TETP	kg 1,4-DB-eq	7.38E-2	9.80E-4	2.79E-2	1.03E-1	6.18E-4	1.73E-2	2.86E-5	-3.50E-2	8.56E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.73E+1	6.65E-1	1.40E+0	2.94E+1	4.12E-1	1.15E+1	1.16E-1	-1.56E+1	2.58E+1
GWP-f	kg CO2 eq	2.80E+1	6.64E-1	1.10E+0	2.97E+1	4.11E-1	1.06E+1	1.16E-1	-1.55E+1	2.53E+1
GWP-b	kg CO2 eq	-6.32E-1	3.07E-4	2.37E-1	-3.95E-1	2.50E-4	8.48E-1	1.50E-4	-1.09E-1	3.45E-1
GWP-luluc	kg CO2 eq	2.21E-2	2.43E-4	6.69E-2	8.92E-2	1.46E-4	4.87E-3	3.15E-6	-1.03E-2	8.40E-2
ODP	kg CFC11 eq	1.58E-5	1.47E-7	1.33E-7	1.60E-5	9.48E-8	1.31E-6	4.69E-9	-7.85E-6	9.60E-6
AP	mol H+ eq	1.27E-1	3.85E-3	5.98E-3	1.37E-1	2.34E-3	2.25E-2	1.12E-4	-5.95E-2	1.02E-1
EP-fw	kg P eq	1.24E-3	6.70E-6	1.57E-5	1.26E-3	3.38E-6	1.62E-4	1.42E-7	-5.78E-4	8.45E-4
EP-m	kg N eq	2.12E-2	1.36E-3	1.76E-3	2.44E-2	8.38E-4	5.47E-3	6.87E-5	-1.03E-2	2.04E-2
EP-T	mol N eq	2.30E-1	1.50E-2	1.89E-2	2.64E-1	9.24E-3	6.03E-2	4.50E-4	-1.10E-1	2.23E-1
POCP	kg NMVOC eq	7.96E-2	4.27E-3	5.34E-3	8.92E-2	2.64E-3	1.81E-2	1.53E-4	-3.80E-2	7.21E-2
ADP-mm	kg Sb eq	8.06E-4	1.68E-5	2.50E-5	8.47E-4	1.06E-5	8.91E-5	1.12E-7	-3.21E-4	6.26E-4
ADP-f	MJ	7.19E+2	1.00E+1	1.27E+1	7.42E+2	6.31E+0	6.21E+1	3.40E-1	-3.78E+2	4.33E+2
WDP	m3 depriv.	4.72E+1	3.58E-2	8.59E+0	5.58E+1	1.94E-2	2.42E+0	1.96E-3	-2.25E+1	3.57E+1
PM	disease inc.	8.76E-7	5.97E-8	9.29E-8	1.03E-6	3.71E-8	2.83E-7	2.33E-9	-3.81E-7	9.70E-7
IR	kBq U-235 eq	1.53E+0	4.20E-2	2.29E-2	1.59E+0	2.76E-2	2.17E-1	1.56E-3	-7.28E-1	1.11E+0
ETP-fw	CTUe	4.82E+2	8.94E+0	2.12E+1	5.12E+2	5.13E+0	4.64E+2	5.11E+0	-2.22E+2	7.65E+2
HTP-c	CTUh	1.90E-8	2.90E-10	7.22E-10	2.00E-8	1.82E-10	6.78E-9	8.91E-12	-8.31E-9	1.87E-8
HTP-nc	CTUh	6.07E-7	9.77E-9	2.21E-8	6.39E-7	6.11E-9	1.64E-7	9.83E-10	-2.87E-7	5.22E-7
SQP	Pt	1.66E+2	8.69E+0	9.50E-1	1.76E+2	5.40E+0	3.88E+1	8.64E-1	-5.69E+1	1.64E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.62E+1	1.25E-1	3.83E+1	8.46E+1	9.06E-2	4.45E+0	1.23E-2	-1.97E+1	6.94E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.62E+1	1.25E-1	3.83E+1	8.46E+1	9.06E-2	4.45E+0	1.23E-2	-1.97E+1	6.94E+1
PENRE	MJ	7.71E+2	1.06E+1	1.38E+1	7.96E+2	6.70E+0	6.61E+1	3.61E-1	-4.07E+2	4.62E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	7.71E+2	1.06E+1	1.38E+1	7.96E+2	6.70E+0	6.61E+1	3.61E-1	-4.07E+2	4.62E+2
PET	MJ	8.17E+2	1.08E+1	5.21E+1	8.80E+2	6.79E+0	7.05E+1	3.73E-1	-4.26E+2	5.32E+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	5.04E-1	1.22E-3	2.02E-1	7.08E-1	7.14E-4	6.62E-2	4.17E-4	-2.36E-1	5.39E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.69E-4	2.54E-5	1.78E-5	6.13E-4	1.61E-5	1.00E-4	4.10E-7	-3.14E-4	4.15E-4
NHWD	kg	2.70E+0	6.36E-1	2.57E-2	3.37E+0	3.91E-1	2.29E+0	1.57E+0	-1.21E+0	6.41E+0
RWD	kg	1.34E-3	6.58E-5	3.19E-5	1.44E-3	4.29E-5	2.33E-4	2.22E-6	-6.42E-4	1.07E-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

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