Environmental Profile

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

Ecochain v3.5.80

Product:	3000693 - PVC Pipe BR BENOR 200x3.9 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

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	2.27	0.06	0.1	2.43	0.04	0.82	0.01	-1.13	2.16
ADPE	kg Sb-eq	6.34E-4	1.26E-5	1.84E-5	6.65E-4	7.89E-6	6.61E-5	8.29E-8	-2.39E-4	5.00E-4
ADPF	kg Sb-eq	2.53E-1	3.63E-3	4.92E-3	2.61E-1	2.22E-3	2.33E-2	1.17E-4	-1.34E-1	1.53E-1
GWP	kg CO2-eq	2.04E+1	4.93E-1	8.75E-1	2.18E+1	3.02E-1	7.88E+0	7.43E-2	-1.13E+1	1.87E+1
ODP	kg CFC-11-eq	1.19E-5	8.75E-8	8.23E-8	1.20E-5	5.61E-8	9.40E-7	2.80E-9	-5.88E-6	7.16E-6
POCP	kg ethene-eq	1.26E-2	2.97E-4	3.86E-4	1.33E-2	1.82E-4	1.83E-3	1.97E-5	-5.75E-3	9.58E-3
AP	kg SO2-eq	7.91E-2	2.17E-3	3.43E-3	8.47E-2	1.30E-3	1.34E-2	6.24E-5	-3.68E-2	6.26E-2
EP	kg PO4 3−-eq	9.47E-3	4.26E-4	5.42E-4	1.04E-2	2.60E-4	2.03E-3	2.43E-5	-4.47E-3	8.27E-3
HTP	kg 1,4-DB-eq	8.04E+0	2.08E-1	3.30E-1	8.58E+0	1.29E-1	3.59E+0	6.40E-3	-3.58E+0	8.72E+0
FAETP	kg 1,4-DB-eq	1.74E-1	6.06E-3	1.35E-2	1.93E-1	3.79E-3	5.28E-2	1.89E-3	-7.83E-2	1.74E-1
MAETP	kg 1,4-DB-eq	5.07E+2	2.18E+1	5.49E+1	5.84E+2	1.35E+1	1.75E+2	2.32E+0	-2.30E+2	5.44E+2
TETP	kg 1,4-DB-eq	5.52E-2	7.34E-4	2.05E-2	7.65E-2	4.58E-4	1.28E-2	2.13E-5	-2.60E-2	6.37E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.97E+1	4.98E-1	1.03E+0	2.12E+1	3.05E-1	9.37E+0	8.66E-2	-1.16E+1	1.93E+1
GWP-f	kg CO2 eq	2.09E+1	4.97E-1	8.07E-1	2.22E+1	3.05E-1	7.94E+0	8.65E-2	-1.15E+1	1.90E+1
GWP-b	kg CO2 eq	-1.27E+0	2.30E-4	1.75E-1	-1.09E+0	1.85E-4	1.42E+0	1.11E-4	-8.08E-2	2.52E-1
GWP-luluc	kg CO2 eq	1.69E-2	1.82E-4	4.92E-2	6.63E-2	1.08E-4	3.61E-3	2.34E-6	-7.71E-3	6.24E-2
ODP	kg CFC11 eq	1.17E-5	1.10E-7	9.76E-8	1.19E-5	7.03E-8	9.70E-7	3.49E-9	-5.82E-6	7.14E-6
AP	mol H+ eq	9.54E-2	2.88E-3	4.40E-3	1.03E-1	1.74E-3	1.68E-2	8.35E-5	-4.45E-2	7.68E-2
EP-fw	kg P eq	9.25E-4	5.02E-6	1.15E-5	9.42E-4	2.51E-6	1.20E-4	1.06E-7	-4.30E-4	6.35E-4
EP-m	kg N eq	1.61E-2	1.02E-3	1.30E-3	1.84E-2	6.22E-4	4.09E-3	5.14E-5	-7.76E-3	1.54E-2
EP-T	mol N eq	1.74E-1	1.12E-2	1.39E-2	2.00E-1	6.85E-3	4.51E-2	3.34E-4	-8.36E-2	1.68E-1
POCP	kg NMVOC eq	6.03E-2	3.20E-3	3.93E-3	6.74E-2	1.96E-3	1.35E-2	1.14E-4	-2.85E-2	5.45E-2
ADP-mm	kg Sb eq	6.34E-4	1.26E-5	1.84E-5	6.65E-4	7.89E-6	6.61E-5	8.29E-8	-2.39E-4	5.00E-4
ADP-f	MJ	5.37E+2	7.50E+0	9.35E+0	5.54E+2	4.68E+0	4.61E+1	2.53E-1	-2.80E+2	3.24E+2
WDP	m3 depriv.	3.51E+1	2.68E-2	6.32E+0	4.14E+1	1.44E-2	1.79E+0	1.46E-3	-1.67E+1	2.65E+1
PM	disease inc.	6.97E-7	4.47E-8	6.84E-8	8.10E-7	2.75E-8	2.10E-7	1.73E-9	-2.89E-7	7.60E-7
IR	kBq U-235 eq	1.15E+0	3.14E-2	1.69E-2	1.19E+0	2.05E-2	1.61E-1	1.16E-3	-5.41E-1	8.36E-1
ETP-fw	CTUe	3.63E+2	6.69E+0	1.56E+1	3.85E+2	3.80E+0	3.44E+2	3.79E+0	-1.68E+2	5.69E+2
HTP-c	CTUh	1.44E-8	2.17E-10	5.32E-10	1.52E-8	1.35E-10	5.07E-9	6.61E-12	-6.20E-9	1.42E-8
HTP-nc	CTUh	4.54E-7	7.31E-9	1.63E-8	4.78E-7	4.53E-9	1.21E-7	7.28E-10	-2.14E-7	3.90E-7
SQP	Pt	1.96E+2	6.51E+0	6.99E-1	2.03E+2	4.00E+0	2.88E+1	6.41E-1	-5.76E+1	1.79E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.52E+1	9.39E-2	2.82E+1	7.35E+1	6.72E-2	3.30E+0	9.12E-3	-1.77E+1	5.91E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.52E+1	9.39E-2	2.82E+1	7.35E+1	6.72E-2	3.30E+0	9.12E-3	-1.77E+1	5.91E+1
PENRE	MJ	5.76E+2	7.96E+0	1.01E+1	5.94E+2	4.97E+0	4.90E+1	2.68E-1	-3.02E+2	3.46E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.76E+2	7.96E+0	1.01E+1	5.94E+2	4.97E+0	4.90E+1	2.68E-1	-3.02E+2	3.46E+2
PET	MJ	6.21E+2	8.06E+0	3.83E+1	6.68E+2	5.04E+0	5.23E+1	2.77E-1	-3.20E+2	4.05E+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	3.77E-1	9.13E-4	1.49E-1	5.26E-1	5.30E-4	4.92E-2	3.10E-4	-1.75E-1	4.02E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.29E-4	1.90E-5	1.31E-5	4.61E-4	1.20E-5	7.43E-5	3.05E-7	-2.34E-4	3.14E-4
NHWD	kg	2.05E+0	4.76E-1	1.89E-2	2.54E+0	2.90E-1	1.72E+0	1.16E+0	-9.00E-1	4.81E+0
RWD	kg	1.01E-3	4.92E-5	2.35E-5	1.09E-3	3.18E-5	1.73E-4	1.65E-6	-4.77E-4	8.15E-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

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