Environmental Profile

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

Ecochain v3.5.80

Product:	3024571 - WfxPVC Branch 45° 160 GY/GD SN8 S/S/S
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	0.44	0.01	0.03	0.47	0.01	0.14	0	-0.22	0.4
ADPE	kg Sb-eq	3.77E-3	1.43E-6	6.30E-6	3.77E-3	1.31E-6	1.15E-5	1.46E-8	-4.44E-5	3.74E-3
ADPF	kg Sb-eq	4.82E-2	4.11E-4	1.08E-3	4.97E-2	3.69E-4	4.00E-3	2.03E-5	-2.61E-2	2.79E-2
GWP	kg CO2-eq	3.94E+0	5.59E-2	2.05E-1	4.20E+0	5.02E-2	1.41E+0	1.42E-2	-2.21E+0	3.46E+0
ODP	kg CFC-11-eq	2.09E-6	9.92E-9	1.62E-8	2.11E-6	9.32E-9	1.63E-7	4.83E-10	-1.07E-6	1.22E-6
POCP	kg ethene-eq	2.37E-3	3.37E-5	8.92E-5	2.50E-3	3.01E-5	3.20E-4	3.64E-6	-1.17E-3	1.68E-3
AP	kg SO2-eq	1.57E-2	2.46E-4	8.83E-4	1.68E-2	2.16E-4	2.32E-3	1.09E-5	-7.48E-3	1.19E-2
EP	kg PO4 3−-eq	2.01E-3	4.83E-5	1.14E-4	2.17E-3	4.32E-5	3.55E-4	4.52E-6	-1.01E-3	1.56E-3
HTP	kg 1,4-DB-eq	1.51E+0	2.35E-2	9.54E-2	1.62E+0	2.15E-2	6.15E-1	1.17E-3	-7.01E-1	1.56E+0
FAETP	kg 1,4-DB-eq	4.54E-2	6.87E-4	3.26E-3	4.94E-2	6.29E-4	9.47E-3	4.15E-4	-1.98E-2	4.01E-2
MAETP	kg 1,4-DB-eq	1.06E+2	2.47E+0	1.28E+1	1.22E+2	2.25E+0	3.20E+1	4.89E-1	-4.53E+1	1.11E+2
TETP	kg 1,4-DB-eq	1.09E-2	8.32E-5	7.09E-3	1.81E-2	7.61E-5	2.18E-3	3.80E-6	-6.60E-3	1.37E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	4.07E+0	5.64E-2	2.35E-1	4.36E+0	5.07E-2	1.51E+0	1.66E-2	-2.08E+0	3.86E+0
GWP-f	kg CO2 eq	4.03E+0	5.64E-2	1.81E-1	4.27E+0	5.06E-2	1.42E+0	1.66E-2	-2.26E+0	3.49E+0
GWP-b	kg CO2 eq	3.65E-2	2.60E-5	3.73E-2	7.38E-2	3.08E-5	8.65E-2	2.04E-5	1.87E-1	3.47E-1
GWP-luluc	kg CO2 eq	4.44E-3	2.07E-5	1.71E-2	2.16E-2	1.79E-5	6.16E-4	4.21E-7	-2.76E-3	1.95E-2
ODP	kg CFC11 eq	2.06E-6	1.24E-8	1.91E-8	2.10E-6	1.17E-8	1.68E-7	6.00E-10	-1.06E-6	1.22E-6
AP	mol H+ eq	1.91E-2	3.27E-4	1.10E-3	2.06E-2	2.88E-4	2.92E-3	1.46E-5	-9.05E-3	1.47E-2
EP-fw	kg P eq	1.89E-4	5.69E-7	3.16E-6	1.92E-4	4.17E-7	2.06E-5	1.91E-8	-9.48E-5	1.19E-4
EP-m	kg N eq	3.41E-3	1.15E-4	2.60E-4	3.79E-3	1.03E-4	7.19E-4	9.51E-6	-1.62E-3	3.00E-3
EP-T	mol N eq	3.68E-2	1.27E-3	2.87E-3	4.10E-2	1.14E-3	7.92E-3	5.82E-5	-1.74E-2	3.26E-2
POCP	kg NMVOC eq	1.21E-2	3.63E-4	8.16E-4	1.33E-2	3.25E-4	2.37E-3	2.01E-5	-5.87E-3	1.01E-2
ADP-mm	kg Sb eq	3.77E-3	1.43E-6	6.30E-6	3.77E-3	1.31E-6	1.15E-5	1.46E-8	-4.43E-5	3.74E-3
ADP-f	MJ	1.03E+2	8.50E-1	2.02E+0	1.05E+2	7.77E-1	7.92E+0	4.38E-2	-5.51E+1	5.92E+1
WDP	m3 depriv.	6.35E+0	3.04E-3	1.56E+0	7.92E+0	2.39E-3	3.07E-1	2.79E-4	-3.33E+0	4.90E+0
PM	disease inc.	1.34E-7	5.06E-9	1.36E-8	1.53E-7	4.57E-9	3.65E-8	3.02E-10	-7.09E-8	1.23E-7
IR	kBq U-235 eq	2.28E-1	3.56E-3	3.21E-3	2.35E-1	3.40E-3	2.79E-2	2.02E-4	-1.10E-1	1.57E-1
ETP-fw	CTUe	1.20E+2	7.58E-1	4.69E+0	1.25E+2	6.31E-1	5.95E+1	6.55E-1	-4.43E+1	1.41E+2
HTP-c	CTUh	3.20E-9	2.46E-11	1.62E-10	3.39E-9	2.25E-11	8.85E-10	1.20E-12	-1.23E-9	3.07E-9
HTP-nc	CTUh	1.05E-7	8.29E-10	5.07E-9	1.11E-7	7.53E-10	2.10E-8	1.27E-10	-4.23E-8	9.05E-8
SQP	Pt	2.11E+1	7.38E-1	1.51E-1	2.20E+1	6.65E-1	4.89E+0	1.12E-1	-4.15E+1	-1.38E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.55E+0	1.06E-2	9.82E+0	1.64E+1	1.12E-2	5.65E-1	1.65E-3	-8.75E+0	8.20E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.55E+0	1.06E-2	9.82E+0	1.64E+1	1.12E-2	5.65E-1	1.65E-3	-8.75E+0	8.20E+0
PENRE	MJ	1.10E+2	9.03E-1	2.18E+0	1.13E+2	8.25E-1	8.43E+0	4.65E-2	-5.93E+1	6.32E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.10E+2	9.03E-1	2.18E+0	1.13E+2	8.25E-1	8.43E+0	4.65E-2	-5.93E+1	6.32E+1
PET	MJ	1.17E+2	9.13E-1	1.20E+1	1.29E+2	8.37E-1	8.99E+0	4.81E-2	-6.80E+1	7.14E+1
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	7.31E-2	1.04E-4	3.69E-2	1.10E-1	8.80E-5	8.45E-3	5.37E-5	-3.95E-2	7.92E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.37E-4	2.15E-6	2.14E-6	5.41E-4	1.99E-6	1.30E-5	5.33E-8	-4.47E-5	5.12E-4
NHWD	kg	4.07E-1	5.39E-2	3.31E-3	4.64E-1	4.82E-2	2.90E-1	1.93E-1	-1.77E-1	8.18E-1
RWD	kg	2.04E-4	5.58E-6	3.97E-6	2.13E-4	5.29E-6	3.01E-5	2.85E-7	-9.79E-5	1.51E-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

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777