Environmental Profile

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

Ecochain v3.5.80

Product:	3024573 - WfxPVC Branch 45° 160x125 GY/GDSN8 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	0.35	0.01	0.02	0.37	0	0.11	0	-0.18	0.31
ADPE	kg Sb-eq	2.95E-3	1.13E-6	4.97E-6	2.96E-3	1.04E-6	9.09E-6	1.16E-8	-3.49E-5	2.93E-3
ADPF	kg Sb-eq	3.85E-2	3.26E-4	8.54E-4	3.97E-2	2.93E-4	3.15E-3	1.61E-5	-2.08E-2	2.23E-2
GWP	kg CO2-eq	3.12E+0	4.44E-2	1.62E-1	3.33E+0	4.00E-2	1.12E+0	1.14E-2	-1.75E+0	2.75E+0
ODP	kg CFC-11-eq	1.64E-6	7.88E-9	1.28E-8	1.66E-6	7.41E-9	1.28E-7	3.84E-10	-8.41E-7	9.51E-7
POCP	kg ethene-eq	1.91E-3	2.68E-5	7.04E-5	2.00E-3	2.40E-5	2.52E-4	2.91E-6	-9.24E-4	1.36E-3
AP	kg SO2-eq	1.25E-2	1.95E-4	6.96E-4	1.33E-2	1.72E-4	1.83E-3	8.66E-6	-5.88E-3	9.47E-3
EP	kg PO4 3−-eq	1.58E-3	3.84E-5	8.95E-5	1.71E-3	3.43E-5	2.79E-4	3.64E-6	-7.84E-4	1.24E-3
HTP	kg 1,4-DB-eq	1.19E+0	1.87E-2	7.53E-2	1.28E+0	1.71E-2	4.87E-1	9.31E-4	-5.50E-1	1.24E+0
FAETP	kg 1,4-DB-eq	3.54E-2	5.46E-4	2.57E-3	3.85E-2	5.01E-4	7.50E-3	3.41E-4	-1.53E-2	3.16E-2
MAETP	kg 1,4-DB-eq	8.40E+1	1.96E+0	1.01E+1	9.61E+1	1.79E+0	2.52E+1	4.00E-1	-3.56E+1	8.79E+1
TETP	kg 1,4-DB-eq	8.53E-3	6.61E-5	5.60E-3	1.42E-2	6.05E-5	1.72E-3	3.01E-6	-5.08E-3	1.09E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.23E+0	4.48E-2	1.85E-1	3.46E+0	4.03E-2	1.19E+0	1.33E-2	-1.66E+0	3.04E+0
GWP-f	kg CO2 eq	3.19E+0	4.48E-2	1.42E-1	3.38E+0	4.03E-2	1.13E+0	1.33E-2	-1.79E+0	2.77E+0
GWP-b	kg CO2 eq	2.81E-2	2.07E-5	2.94E-2	5.75E-2	2.45E-5	6.26E-2	1.62E-5	1.34E-1	2.54E-1
GWP-luluc	kg CO2 eq	3.43E-3	1.64E-5	1.35E-2	1.70E-2	1.43E-5	4.85E-4	3.35E-7	-2.09E-3	1.54E-2
ODP	kg CFC11 eq	1.62E-6	9.88E-9	1.51E-8	1.64E-6	9.28E-9	1.32E-7	4.77E-10	-8.32E-7	9.52E-7
AP	mol H+ eq	1.51E-2	2.60E-4	8.69E-4	1.63E-2	2.29E-4	2.30E-3	1.16E-5	-7.12E-3	1.17E-2
EP-fw	kg P eq	1.48E-4	4.52E-7	2.50E-6	1.51E-4	3.31E-7	1.62E-5	1.52E-8	-7.37E-5	9.38E-5
EP-m	kg N eq	2.68E-3	9.15E-5	2.05E-4	2.98E-3	8.21E-5	5.66E-4	7.66E-6	-1.27E-3	2.37E-3
EP-T	mol N eq	2.90E-2	1.01E-3	2.26E-3	3.23E-2	9.05E-4	6.23E-3	4.63E-5	-1.37E-2	2.58E-2
POCP	kg NMVOC eq	9.63E-3	2.88E-4	6.44E-4	1.06E-2	2.59E-4	1.87E-3	1.60E-5	-4.63E-3	8.07E-3
ADP-mm	kg Sb eq	2.95E-3	1.13E-6	4.97E-6	2.96E-3	1.04E-6	9.08E-6	1.16E-8	-3.49E-5	2.93E-3
ADP-f	MJ	8.20E+1	6.75E-1	1.59E+0	8.42E+1	6.18E-1	6.25E+0	3.48E-2	-4.38E+1	4.73E+1
WDP	m3 depriv.	5.00E+0	2.42E-3	1.23E+0	6.24E+0	1.90E-3	2.41E-1	2.21E-4	-2.61E+0	3.87E+0
PM	disease inc.	1.07E-7	4.02E-9	1.07E-8	1.21E-7	3.64E-9	2.88E-8	2.40E-10	-5.50E-8	9.90E-8
IR	kBq U-235 eq	1.81E-1	2.83E-3	2.53E-3	1.87E-1	2.70E-3	2.20E-2	1.60E-4	-8.61E-2	1.25E-1
ETP-fw	CTUe	9.26E+1	6.02E-1	3.70E+0	9.69E+1	5.02E-1	4.65E+1	5.13E-1	-3.40E+1	1.10E+2
HTP-c	CTUh	2.52E-9	1.95E-11	1.28E-10	2.66E-9	1.79E-11	6.99E-10	9.55E-13	-9.61E-10	2.42E-9
HTP-nc	CTUh	8.24E-8	6.59E-10	4.00E-9	8.71E-8	5.98E-10	1.65E-8	9.95E-11	-3.31E-8	7.11E-8
SQP	Pt	1.62E+1	5.86E-1	1.19E-1	1.69E+1	5.29E-1	3.87E+0	8.92E-2	-3.04E+1	-9.01E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.07E+0	8.45E-3	7.74E+0	1.28E+1	8.87E-3	4.44E-1	1.31E-3	-6.48E+0	6.79E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.07E+0	8.45E-3	7.74E+0	1.28E+1	8.87E-3	4.44E-1	1.31E-3	-6.48E+0	6.79E+0
PENRE	MJ	8.79E+1	7.17E-1	1.72E+0	9.04E+1	6.56E-1	6.65E+0	3.70E-2	-4.72E+1	5.05E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	8.79E+1	7.17E-1	1.72E+0	9.04E+1	6.56E-1	6.65E+0	3.70E-2	-4.72E+1	5.05E+1
PET	MJ	9.30E+1	7.25E-1	9.46E+0	1.03E+2	6.65E-1	7.09E+0	3.83E-2	-5.37E+1	5.73E+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	5.78E-2	8.22E-5	2.91E-2	8.70E-2	7.00E-5	6.64E-3	4.27E-5	-3.08E-2	6.30E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.20E-4	1.71E-6	1.69E-6	4.23E-4	1.58E-6	1.02E-5	4.24E-8	-3.51E-5	4.00E-4
NHWD	kg	3.19E-1	4.28E-2	2.61E-3	3.64E-1	3.83E-2	2.30E-1	1.53E-1	-1.39E-1	6.47E-1
RWD	kg	1.63E-4	4.43E-6	3.13E-6	1.70E-4	4.20E-6	2.37E-5	2.27E-7	-7.65E-5	1.22E-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