Environmental Profile

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

Ecochain v3.5.80

Product:	3024590 - WfxPVC Bend 45° BR/GD 160 SN8 S/SP
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

This document and supporting material contain confidential and proprietary business information of Wavin - NL - Hardenberg - Verified. These materials may be printed or (photo) copied or otherwise used only with the written consent of Wavin - NL - Hardenberg - Verified.

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	0.23	0	0.01	0.25	0	0.07	0	-0.12	0.21
ADPE	kg Sb-eq	1.99E-3	7.42E-7	3.25E-6	2.00E-3	6.80E-7	6.08E-6	7.59E-9	-2.33E-5	1.98E-3
ADPF	kg Sb-eq	2.48E-2	2.13E-4	5.58E-4	2.56E-2	1.91E-4	2.10E-3	1.05E-5	-1.35E-2	1.44E-2
GWP	kg CO2-eq	2.05E+0	2.90E-2	1.06E-1	2.18E+0	2.61E-2	7.31E-1	7.29E-3	-1.15E+0	1.80E+0
ODP	kg CFC-11-eq	1.11E-6	5.15E-9	8.37E-9	1.12E-6	4.83E-9	8.64E-8	2.51E-10	-5.64E-7	6.47E-7
POCP	kg ethene-eq	1.21E-3	1.75E-5	4.60E-5	1.28E-3	1.56E-5	1.68E-4	1.88E-6	-6.06E-4	8.55E-4
AP	kg SO2-eq	8.20E-3	1.28E-4	4.55E-4	8.78E-3	1.12E-4	1.22E-3	5.65E-6	-3.93E-3	6.19E-3
EP	kg PO4 3−-eq	1.06E-3	2.51E-5	5.85E-5	1.14E-3	2.24E-5	1.87E-4	2.30E-6	-5.38E-4	8.14E-4
HTP	kg 1,4-DB-eq	7.89E-1	1.22E-2	4.92E-2	8.51E-1	1.11E-2	3.22E-1	6.01E-4	-3.70E-1	8.14E-1
FAETP	kg 1,4-DB-eq	2.42E-2	3.57E-4	1.68E-3	2.63E-2	3.27E-4	4.94E-3	2.04E-4	-1.07E-2	2.10E-2
MAETP	kg 1,4-DB-eq	5.59E+1	1.28E+0	6.62E+0	6.38E+1	1.17E+0	1.69E+1	2.43E-1	-2.40E+1	5.81E+1
TETP	kg 1,4-DB-eq	5.79E-3	4.32E-5	3.66E-3	9.49E-3	3.95E-5	1.14E-3	1.98E-6	-3.57E-3	7.09E-3
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.12E+0	2.93E-2	1.21E-1	2.27E+0	2.63E-2	7.87E-1	8.50E-3	-1.07E+0	2.02E+0
GWP-f	kg CO2 eq	2.10E+0	2.93E-2	9.31E-2	2.22E+0	2.63E-2	7.36E-1	8.50E-3	-1.18E+0	1.81E+0
GWP-b	kg CO2 eq	1.98E-2	1.35E-5	1.92E-2	3.90E-2	1.60E-5	5.02E-2	1.06E-5	1.09E-1	1.98E-1
GWP-luluc	kg CO2 eq	2.39E-3	1.07E-5	8.83E-3	1.12E-2	9.30E-6	3.24E-4	2.19E-7	-1.52E-3	1.00E-2
ODP	kg CFC11 eq	1.09E-6	6.46E-9	9.84E-9	1.11E-6	6.05E-9	8.91E-8	3.11E-10	-5.58E-7	6.47E-7
AP	mol H+ eq	9.99E-3	1.70E-4	5.67E-4	1.07E-2	1.50E-4	1.54E-3	7.57E-6	-4.76E-3	7.65E-3
EP-fw	kg P eq	9.96E-5	2.95E-7	1.63E-6	1.02E-4	2.16E-7	1.08E-5	9.90E-9	-5.07E-5	6.19E-5
EP-m	kg N eq	1.79E-3	5.98E-5	1.34E-4	1.99E-3	5.35E-5	3.78E-4	4.85E-6	-8.55E-4	1.57E-3
EP-T	mol N eq	1.93E-2	6.59E-4	1.48E-3	2.15E-2	5.90E-4	4.16E-3	3.02E-5	-9.21E-3	1.70E-2
POCP	kg NMVOC eq	6.26E-3	1.88E-4	4.21E-4	6.87E-3	1.69E-4	1.25E-3	1.04E-5	-3.07E-3	5.23E-3
ADP-mm	kg Sb eq	1.99E-3	7.42E-7	3.25E-6	2.00E-3	6.80E-7	6.08E-6	7.59E-9	-2.33E-5	1.98E-3
ADP-f	MJ	5.28E+1	4.41E-1	1.04E+0	5.43E+1	4.03E-1	4.16E+0	2.27E-2	-2.85E+1	3.04E+1
WDP	m3 depriv.	3.35E+0	1.58E-3	8.05E-1	4.15E+0	1.24E-3	1.62E-1	1.46E-4	-1.76E+0	2.56E+0
PM	disease inc.	6.97E-8	2.63E-9	7.01E-9	7.93E-8	2.37E-9	1.91E-8	1.56E-10	-3.79E-8	6.31E-8
IR	kBq U-235 eq	1.19E-1	1.85E-3	1.65E-3	1.22E-1	1.76E-3	1.47E-2	1.05E-4	-5.84E-2	8.06E-2
ETP-fw	CTUe	6.42E+1	3.94E-1	2.42E+0	6.70E+1	3.27E-1	3.16E+1	3.48E-1	-2.41E+1	7.52E+1
HTP-c	CTUh	1.69E-9	1.28E-11	8.36E-11	1.79E-9	1.17E-11	4.64E-10	6.26E-13	-6.50E-10	1.61E-9
HTP-nc	CTUh	5.55E-8	4.31E-10	2.61E-9	5.86E-8	3.90E-10	1.11E-8	6.71E-11	-2.24E-8	4.77E-8
SQP	Pt	1.14E+1	3.83E-1	7.78E-2	1.19E+1	3.45E-1	2.55E+0	5.82E-2	-2.37E+1	-8.89E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.52E+0	5.53E-3	5.06E+0	8.58E+0	5.79E-3	2.98E-1	8.52E-4	-4.95E+0	3.94E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.52E+0	5.53E-3	5.06E+0	8.58E+0	5.79E-3	2.98E-1	8.52E-4	-4.95E+0	3.94E+0
PENRE	MJ	5.66E+1	4.69E-1	1.12E+0	5.82E+1	4.28E-1	4.42E+0	2.41E-2	-3.07E+1	3.24E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.66E+1	4.69E-1	1.12E+0	5.82E+1	4.28E-1	4.42E+0	2.41E-2	-3.07E+1	3.24E+1
PET	MJ	6.02E+1	4.74E-1	6.18E+0	6.68E+1	4.34E-1	4.72E+0	2.50E-2	-3.56E+1	3.64E+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	3.82E-2	5.38E-5	1.90E-2	5.73E-2	4.56E-5	4.46E-3	2.79E-5	-2.10E-2	4.08E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.85E-4	1.12E-6	1.10E-6	2.88E-4	1.03E-6	6.82E-6	2.77E-8	-2.35E-5	2.72E-4
NHWD	kg	2.15E-1	2.80E-2	1.71E-3	2.45E-1	2.50E-2	1.51E-1	9.99E-2	-9.37E-2	4.28E-1
RWD	kg	1.05E-4	2.90E-6	2.05E-6	1.10E-4	2.74E-6	1.58E-5	1.48E-7	-5.20E-5	7.69E-5
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

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