Environmental Profile

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

Ecochain v3.5.80

Product:	3001288 - Wafix PVC Bend 45° GY 160 SN4 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	0.24	0	0.01	0.25	0	0.08	0	-0.12	0.21
ADPE	kg Sb-eq	2.04E-3	7.74E-7	3.30E-6	2.04E-3	7.07E-7	6.26E-6	7.89E-9	-2.40E-5	2.02E-3
ADPF	kg Sb-eq	2.60E-2	2.23E-4	5.67E-4	2.68E-2	1.99E-4	2.16E-3	1.09E-5	-1.41E-2	1.50E-2
GWP	kg CO2-eq	2.13E+0	3.03E-2	1.08E-1	2.27E+0	2.71E-2	7.62E-1	7.65E-3	-1.20E+0	1.87E+0
ODP	kg CFC-11-eq	1.13E-6	5.37E-9	8.50E-9	1.14E-6	5.03E-9	8.83E-8	2.61E-10	-5.78E-7	6.59E-7
POCP	kg ethene-eq	1.28E-3	1.83E-5	4.67E-5	1.35E-3	1.63E-5	1.73E-4	1.96E-6	-6.31E-4	9.06E-4
AP	kg SO2-eq	8.51E-3	1.33E-4	4.62E-4	9.10E-3	1.17E-4	1.26E-3	5.88E-6	-4.06E-3	6.42E-3
EP	kg PO4 3−-eq	1.09E-3	2.62E-5	5.94E-5	1.18E-3	2.33E-5	1.92E-4	2.43E-6	-5.53E-4	8.42E-4
HTP	kg 1,4-DB-eq	8.15E-1	1.28E-2	5.00E-2	8.78E-1	1.16E-2	3.33E-1	6.28E-4	-3.81E-1	8.42E-1
FAETP	kg 1,4-DB-eq	2.48E-2	3.72E-4	1.71E-3	2.69E-2	3.40E-4	5.12E-3	2.22E-4	-1.09E-2	2.17E-2
MAETP	kg 1,4-DB-eq	5.77E+1	1.34E+0	6.72E+0	6.57E+1	1.21E+0	1.74E+1	2.63E-1	-2.46E+1	6.00E+1
TETP	kg 1,4-DB-eq	5.92E-3	4.51E-5	3.71E-3	9.68E-3	4.11E-5	1.18E-3	2.05E-6	-3.64E-3	7.26E-3
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.20E+0	3.06E-2	1.23E-1	2.36E+0	2.73E-2	8.18E-1	8.93E-3	-1.12E+0	2.09E+0
GWP-f	kg CO2 eq	2.18E+0	3.05E-2	9.46E-2	2.31E+0	2.73E-2	7.67E-1	8.92E-3	-1.22E+0	1.88E+0
GWP-b	kg CO2 eq	1.99E-2	1.41E-5	1.95E-2	3.94E-2	1.66E-5	5.02E-2	1.10E-5	1.09E-1	1.98E-1
GWP-luluc	kg CO2 eq	2.44E-3	1.12E-5	8.97E-3	1.14E-2	9.67E-6	3.33E-4	2.27E-7	-1.55E-3	1.02E-2
ODP	kg CFC11 eq	1.12E-6	6.74E-9	9.99E-9	1.13E-6	6.30E-9	9.11E-8	3.24E-10	-5.73E-7	6.59E-7
AP	mol H+ eq	1.04E-2	1.77E-4	5.76E-4	1.11E-2	1.56E-4	1.58E-3	7.87E-6	-4.92E-3	7.93E-3
EP-fw	kg P eq	1.02E-4	3.08E-7	1.66E-6	1.04E-4	2.25E-7	1.11E-5	1.03E-8	-5.19E-5	6.38E-5
EP-m	kg N eq	1.85E-3	6.24E-5	1.36E-4	2.05E-3	5.57E-5	3.90E-4	5.12E-6	-8.82E-4	1.62E-3
EP-T	mol N eq	2.00E-2	6.88E-4	1.50E-3	2.22E-2	6.14E-4	4.29E-3	3.14E-5	-9.51E-3	1.76E-2
POCP	kg NMVOC eq	6.55E-3	1.96E-4	4.27E-4	7.17E-3	1.75E-4	1.29E-3	1.09E-5	-3.19E-3	5.45E-3
ADP-mm	kg Sb eq	2.04E-3	7.74E-7	3.30E-6	2.04E-3	7.07E-7	6.26E-6	7.89E-9	-2.40E-5	2.02E-3
ADP-f	MJ	5.54E+1	4.61E-1	1.06E+0	5.69E+1	4.19E-1	4.28E+0	2.36E-2	-2.98E+1	3.19E+1
WDP	m3 depriv.	3.44E+0	1.65E-3	8.18E-1	4.26E+0	1.29E-3	1.66E-1	1.50E-4	-1.81E+0	2.62E+0
PM	disease inc.	7.29E-8	2.74E-9	7.12E-9	8.28E-8	2.47E-9	1.98E-8	1.63E-10	-3.90E-8	6.62E-8
IR	kBq U-235 eq	1.24E-1	1.93E-3	1.68E-3	1.27E-1	1.83E-3	1.51E-2	1.09E-4	-5.99E-2	8.43E-2
ETP-fw	CTUe	6.56E+1	4.11E-1	2.45E+0	6.84E+1	3.41E-1	3.22E+1	3.55E-1	-2.45E+1	7.68E+1
HTP-c	CTUh	1.73E-9	1.33E-11	8.50E-11	1.83E-9	1.21E-11	4.79E-10	6.49E-13	-6.67E-10	1.66E-9
HTP-nc	CTUh	5.69E-8	4.49E-10	2.65E-9	6.00E-8	4.06E-10	1.14E-8	6.86E-11	-2.30E-8	4.88E-8
SQP	Pt	1.17E+1	4.00E-1	7.90E-2	1.22E+1	3.59E-1	2.64E+0	6.05E-2	-2.38E+1	-8.59E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.60E+0	5.77E-3	5.14E+0	8.75E+0	6.02E-3	3.06E-1	8.89E-4	-4.98E+0	4.08E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.60E+0	5.77E-3	5.14E+0	8.75E+0	6.02E-3	3.06E-1	8.89E-4	-4.98E+0	4.08E+0
PENRE	MJ	5.94E+1	4.89E-1	1.14E+0	6.10E+1	4.45E-1	4.56E+0	2.51E-2	-3.20E+1	3.40E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.94E+1	4.89E-1	1.14E+0	6.10E+1	4.45E-1	4.56E+0	2.51E-2	-3.20E+1	3.40E+1
PET	MJ	6.30E+1	4.95E-1	6.28E+0	6.98E+1	4.51E-1	4.86E+0	2.60E-2	-3.70E+1	3.81E+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	3.96E-2	5.61E-5	1.93E-2	5.90E-2	4.75E-5	4.57E-3	2.90E-5	-2.16E-2	4.20E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.91E-4	1.17E-6	1.12E-6	2.93E-4	1.07E-6	7.03E-6	2.88E-8	-2.42E-5	2.77E-4
NHWD	kg	2.21E-1	2.92E-2	1.73E-3	2.52E-1	2.60E-2	1.57E-1	1.04E-1	-9.63E-2	4.42E-1
RWD	kg	1.10E-4	3.02E-6	2.08E-6	1.15E-4	2.85E-6	1.63E-5	1.54E-7	-5.33E-5	8.12E-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