Environmental Profile

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

Ecochain v3.5.80

Product:	3024595 - Wfx PVC Bend 88° BR/GD 160 SN8 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]

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Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	0.3	0	0.02	0.32	0	0.1	0	-0.15	0.27
ADPE	kg Sb-eq	2.59E-3	9.78E-7	4.34E-6	2.59E-3	8.99E-7	7.92E-6	1.00E-8	-3.04E-5	2.57E-3
ADPF	kg Sb-eq	3.30E-2	2.81E-4	7.45E-4	3.40E-2	2.53E-4	2.74E-3	1.39E-5	-1.79E-2	1.91E-2
GWP	kg CO2-eq	2.70E+0	3.83E-2	1.41E-1	2.88E+0	3.45E-2	9.68E-1	9.74E-3	-1.51E+0	2.37E+0
ODP	kg CFC-11-eq	1.43E-6	6.79E-9	1.12E-8	1.45E-6	6.39E-9	1.12E-7	3.31E-10	-7.34E-7	8.36E-7
POCP	kg ethene-eq	1.62E-3	2.31E-5	6.15E-5	1.71E-3	2.07E-5	2.19E-4	2.50E-6	-7.98E-4	1.15E-3
AP	kg SO2-eq	1.08E-2	1.68E-4	6.08E-4	1.16E-2	1.48E-4	1.59E-3	7.48E-6	-5.12E-3	8.18E-3
EP	kg PO4 3−-eq	1.37E-3	3.30E-5	7.82E-5	1.48E-3	2.96E-5	2.43E-4	3.09E-6	-6.88E-4	1.07E-3
HTP	kg 1,4-DB-eq	1.03E+0	1.61E-2	6.57E-2	1.11E+0	1.47E-2	4.22E-1	7.99E-4	-4.80E-1	1.07E+0
FAETP	kg 1,4-DB-eq	3.11E-2	4.70E-4	2.24E-3	3.38E-2	4.32E-4	6.49E-3	2.84E-4	-1.35E-2	2.75E-2
MAETP	kg 1,4-DB-eq	7.30E+1	1.69E+0	8.84E+0	8.36E+1	1.54E+0	2.20E+1	3.35E-1	-3.11E+1	7.64E+1
TETP	kg 1,4-DB-eq	7.48E-3	5.69E-5	4.89E-3	1.24E-2	5.22E-5	1.49E-3	2.61E-6	-4.50E-3	9.47E-3
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.79E+0	3.86E-2	1.62E-1	2.99E+0	3.48E-2	1.03E+0	1.14E-2	-1.43E+0	2.64E+0
GWP-f	kg CO2 eq	2.76E+0	3.86E-2	1.24E-1	2.92E+0	3.47E-2	9.74E-1	1.14E-2	-1.55E+0	2.39E+0
GWP-b	kg CO2 eq	2.50E-2	1.78E-5	2.57E-2	5.07E-2	2.11E-5	5.78E-2	1.40E-5	1.24E-1	2.33E-1
GWP-luluc	kg CO2 eq	3.03E-3	1.41E-5	1.18E-2	1.49E-2	1.23E-5	4.23E-4	2.89E-7	-1.87E-3	1.34E-2
ODP	kg CFC11 eq	1.42E-6	8.52E-9	1.31E-8	1.44E-6	8.01E-9	1.15E-7	4.11E-10	-7.27E-7	8.36E-7
AP	mol H+ eq	1.31E-2	2.24E-4	7.58E-4	1.41E-2	1.98E-4	2.00E-3	1.00E-5	-6.19E-3	1.01E-2
EP-fw	kg P eq	1.29E-4	3.89E-7	2.18E-6	1.32E-4	2.86E-7	1.41E-5	1.31E-8	-6.48E-5	8.15E-5
EP-m	kg N eq	2.33E-3	7.88E-5	1.79E-4	2.59E-3	7.08E-5	4.93E-4	6.51E-6	-1.11E-3	2.06E-3
EP-T	mol N eq	2.52E-2	8.69E-4	1.98E-3	2.81E-2	7.80E-4	5.43E-3	3.99E-5	-1.19E-2	2.24E-2
POCP	kg NMVOC eq	8.28E-3	2.48E-4	5.62E-4	9.09E-3	2.23E-4	1.63E-3	1.38E-5	-4.01E-3	6.94E-3
ADP-mm	kg Sb eq	2.59E-3	9.78E-7	4.34E-6	2.59E-3	8.99E-7	7.92E-6	1.00E-8	-3.04E-5	2.57E-3
ADP-f	MJ	7.03E+1	5.82E-1	1.39E+0	7.22E+1	5.33E-1	5.43E+0	3.01E-2	-3.77E+1	4.05E+1
WDP	m3 depriv.	4.36E+0	2.08E-3	1.08E+0	5.44E+0	1.64E-3	2.11E-1	1.92E-4	-2.28E+0	3.37E+0
PM	disease inc.	9.18E-8	3.46E-9	9.37E-9	1.05E-7	3.14E-9	2.50E-8	2.07E-10	-4.83E-8	8.47E-8
IR	kBq U-235 eq	1.57E-1	2.44E-3	2.21E-3	1.61E-1	2.33E-3	1.91E-2	1.38E-4	-7.53E-2	1.07E-1
ETP-fw	CTUe	8.16E+1	5.19E-1	3.23E+0	8.54E+1	4.33E-1	4.08E+1	4.50E-1	-3.01E+1	9.70E+1
HTP-c	CTUh	2.20E-9	1.68E-11	1.12E-10	2.33E-9	1.54E-11	6.07E-10	8.26E-13	-8.40E-10	2.11E-9
HTP-nc	CTUh	7.21E-8	5.68E-10	3.49E-9	7.62E-8	5.16E-10	1.44E-8	8.71E-11	-2.90E-8	6.22E-8
SQP	Pt	1.43E+1	5.05E-1	1.04E-1	1.49E+1	4.56E-1	3.35E+0	7.70E-2	-2.78E+1	-9.00E+0

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.46E+0	7.28E-3	6.76E+0	1.12E+1	7.65E-3	3.88E-1	1.13E-3	-5.89E+0	5.74E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.46E+0	7.28E-3	6.76E+0	1.12E+1	7.65E-3	3.88E-1	1.13E-3	-5.89E+0	5.74E+0
PENRE	MJ	7.54E+1	6.18E-1	1.50E+0	7.75E+1	5.66E-1	5.78E+0	3.19E-2	-4.06E+1	4.33E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	7.54E+1	6.18E-1	1.50E+0	7.75E+1	5.66E-1	5.78E+0	3.19E-2	-4.06E+1	4.33E+1
PET	MJ	7.98E+1	6.25E-1	8.26E+0	8.87E+1	5.74E-1	6.17E+0	3.30E-2	-4.65E+1	4.90E+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	5.01E-2	7.09E-5	2.54E-2	7.56E-2	6.04E-5	5.80E-3	3.69E-5	-2.70E-2	5.46E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.69E-4	1.47E-6	1.48E-6	3.72E-4	1.36E-6	8.89E-6	3.66E-8	-3.06E-5	3.52E-4
NHWD	kg	2.79E-1	3.69E-2	2.28E-3	3.18E-1	3.31E-2	1.99E-1	1.32E-1	-1.21E-1	5.61E-1
RWD	kg	1.39E-4	3.82E-6	2.74E-6	1.46E-4	3.63E-6	2.06E-5	1.96E-7	-6.70E-5	1.04E-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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