Environmental Profile

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

Ecochain v3.5.80

Ecochain

Product:	3000343 - PVC Pipe GY BENOR 160x4.7 SN8 L=5 SC/CH
Unit:	1 piece
Manufacturer:	Wavin - NL - Hardenberg - Verified
Address:	J.C. Kellerlaan 3
	7772 SG Hardenberg
	Netherlands

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

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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.

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	3.53	0.09	0.16	3.78	0.06	1.28	0.01	−1.77	3.35
ADPE	kg Sb-eq	9.32E-4	1.96E-5	2.93E-5	9.81E-4	1.24E-5	1.04E-4	1.30E-7	−3.74E-4	7.23E-4
ADPF	kg Sb-eq	3.94E-1	5.65E-3	7.86E-3	4.08E-1	3.49E-3	3.66E-2	1.84E-4	−2.10E-1	2.38E-1
GWP	kg CO2-eq	3.18E+1	7.68E-1	1.40E+0	3.39E+1	4.76E-1	1.23E+1	1.17E-1	−1.77E+1	2.91E+1
ODP	kg CFC-11-eq	1.87E-5	1.36E-7	1.31E-7	1.89E-5	8.83E-8	1.48E-6	4.41E-9	−9.26E-6	1.12E-5
POCP	kg ethene-eq	1.94E-2	4.64E-4	6.16E-4	2.05E-2	2.86E-4	2.86E-3	3.10E-5	−8.99E-3	1.47E-2
AP	kg SO2-eq	1.23E-1	3.38E-3	5.48E-3	1.31E-1	2.05E-3	2.10E-2	9.80E-5	−5.76E-2	9.70E-2
EP	kg PO4 3−-eq	1.46E-2	6.64E-4	8.66E-4	1.61E-2	4.09E-4	3.17E-3	3.79E-5	−6.91E-3	1.28E-2
HTP	kg 1,4-DB-eq	1.25E+1	3.23E-1	5.28E-1	1.33E+1	2.04E-1	5.64E+0	1.01E-2	−5.60E+0	1.36E+1
FAETP	kg 1,4-DB-eq	2.69E-1	9.44E-3	2.15E-2	3.00E-1	5.96E-3	8.31E-2	2.97E-3	−1.23E-1	2.69E-1
MAETP	kg 1,4-DB-eq	7.85E+2	3.40E+1	8.76E+1	9.07E+2	2.13E+1	2.75E+2	3.65E+0	−3.61E+2	8.45E+2
TETP	kg 1,4-DB-eq	8.61E-2	1.14E-3	3.28E-2	1.20E-1	7.21E-4	2.02E-2	3.34E-5	−4.08E-2	1.00E-1

Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.20E+1	7.75E-1	1.65E+0	3.44E+1	4.80E-1	1.32E+1	1.36E-1	−1.82E+1	3.00E+1
GWP-f	kg CO2 eq	3.26E+1	7.75E-1	1.29E+0	3.46E+1	4.80E-1	1.24E+1	1.36E-1	−1.81E+1	2.95E+1
GWP-b	kg CO2 eq	−5.94E-1	3.58E-4	2.79E-1	−3.15E-1	2.91E-4	8.46E-1	1.75E-4	−1.27E-1	4.05E-1
GWP-luluc	kg CO2 eq	2.57E-2	2.84E-4	7.86E-2	1.05E-1	1.70E-4	5.68E-3	3.67E-6	−1.19E-2	9.85E-2
ODP	kg CFC11 eq	1.84E-5	1.71E-7	1.56E-7	1.87E-5	1.11E-7	1.53E-6	5.47E-9	−9.16E-6	1.12E-5
AP	mol H+ eq	1.48E-1	4.49E-3	7.03E-3	1.59E-1	2.73E-3	2.63E-2	1.31E-4	−6.94E-2	1.19E-1
EP-fw	kg P eq	1.44E-3	7.81E-6	1.84E-5	1.47E-3	3.95E-6	1.89E-4	1.66E-7	−6.75E-4	9.85E-4
EP-m	kg N eq	2.47E-2	1.58E-3	2.07E-3	2.84E-2	9.78E-4	6.38E-3	8.02E-5	−1.20E-2	2.38E-2
EP-T	mol N eq	2.67E-1	1.75E-2	2.22E-2	3.07E-1	1.08E-2	7.04E-2	5.25E-4	−1.29E-1	2.60E-1
POCP	kg NMVOC eq	9.27E-2	4.98E-3	6.28E-3	1.04E-1	3.08E-3	2.11E-2	1.78E-4	−4.43E-2	8.40E-2
ADP-mm	kg Sb eq	9.32E-4	1.96E-5	2.93E-5	9.81E-4	1.24E-5	1.04E-4	1.30E-7	−3.74E-4	7.23E-4
ADP-f	MJ	8.39E+2	1.17E+1	1.49E+1	8.65E+2	7.37E+0	7.25E+1	3.97E-1	−4.41E+2	5.05E+2
WDP	m3 depriv.	5.51E+1	4.18E-2	1.01E+1	6.52E+1	2.26E-2	2.82E+0	2.28E-3	−2.63E+1	4.17E+1
PM	disease inc.	1.01E-6	6.96E-8	1.09E-7	1.19E-6	4.33E-8	3.30E-7	2.72E-9	−4.44E-7	1.12E-6
IR	kBq U-235 eq	1.78E+0	4.90E-2	2.69E-2	1.85E+0	3.22E-2	2.53E-1	1.82E-3	−8.50E-1	1.29E+0
ETP-fw	CTUe	5.62E+2	1.04E+1	2.49E+1	5.97E+2	5.98E+0	5.42E+2	5.97E+0	−2.58E+2	8.92E+2
HTP-c	CTUh	2.21E-8	3.38E-10	8.49E-10	2.33E-8	2.13E-10	7.89E-9	1.04E-11	−9.68E-9	2.17E-8
HTP-nc	CTUh	7.08E-7	1.14E-8	2.60E-8	7.45E-7	7.13E-9	1.91E-7	1.15E-9	−3.35E-7	6.09E-7
SQP	Pt	1.81E+2	1.01E+1	1.12E+0	1.92E+2	6.30E+0	4.53E+1	1.01E+0	−6.36E+1	1.81E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.19E+1	1.46E-1	4.50E+1	9.71E+1	1.06E-1	5.20E+0	1.43E-2	-2.25E+1	7.99E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.19E+1	1.46E-1	4.50E+1	9.71E+1	1.06E-1	5.20E+0	1.43E-2	-2.25E+1	7.99E+1
PENRE	MJ	9.00E+2	1.24E+1	1.62E+1	9.28E+2	7.82E+0	7.71E+1	4.21E-1	-4.74E+2	5.39E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.00E+2	1.24E+1	1.62E+1	9.28E+2	7.82E+0	7.71E+1	4.21E-1	-4.74E+2	5.39E+2
PET	MJ	9.52E+2	1.26E+1	6.12E+1	1.03E+3	7.93E+0	8.23E+1	4.36E-1	-4.97E+2	6.19E+2
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	5.88E-1	1.42E-3	2.38E-1	8.27E-1	8.34E-4	7.72E-2	4.86E-4	-2.75E-1	6.30E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.63E-4	2.96E-5	2.09E-5	7.14E-4	1.88E-5	1.17E-4	4.79E-7	-3.66E-4	4.84E-4
NHWD	kg	3.15E+0	7.41E-1	3.01E-2	3.92E+0	4.57E-1	2.67E+0	1.83E+0	-1.41E+0	7.47E+0
RWD	kg	1.56E-3	7.67E-5	3.75E-5	1.67E-3	5.01E-5	2.72E-4	2.59E-6	-7.49E-4	1.25E-3
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