Environmental Profile

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

Ecochain v3.5.71

Product:	3030928 - PVC ML KG Pipe 110 SN4 L=5 114u
Unit:	1 piece
Manufacturer:	Wavin - HU - Zsámbék - Verified

The PVC KG multilayer pipe system is a modern PVC product with low pipe wall roughness and favorable flow proprieties, which can be used for cost-effective drainage of both precipitation and municipal wastewater. Sewer pipes combine the advantages of a traditional smooth inner pipe surface with the technology of a modern three-layer pipe wall structure.

LCA standard:	EN15804+A2 (2019)
Standard database:	Worldwide - Ecoinvent v 3.6 Cut-Off
Externally verified:	Yes
Issue date:	14-03-2023
End of validity:	14-03-2028
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 - HU - Zsámbék - Verified (2021). (☑ = 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

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	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.02E+1	1.13E-1	2.33E-1	1.05E+1	1.44E-1	4.32E+0	4.19E-2	-7.72E+0	7.29E+0
GWP-f	kg CO2 eq	1.07E+1	1.13E-1	1.30E-1	1.09E+1	1.44E-1	3.67E+0	4.19E-2	-7.68E+0	7.12E+0
GWP-b	kg CO2 eq	-5.64E-1	6.83E-5	1.02E-1	-4.62E-1	8.74E-5	6.50E-1	5.41E-5	-3.96E-2	1.48E-1
GWP-luluc	kg CO2 eq	2.13E-2	3.98E-5	6.20E-4	2.20E-2	5.09E-5	1.67E-3	1.16E-6	-3.78E-3	1.99E-2
ODP	kg CFC11 eq	5.66E-6	2.59E-8	2.06E-7	5.90E-6	3.32E-8	4.62E-7	1.75E-9	-3.03E-6	3.36E-6
AP	mol H+ eq	4.99E-2	6.41E-4	9.50E-4	5.15E-2	8.20E-4	7.79E-3	4.17E-5	-2.29E-2	3.72E-2
EP-fw	kg P eq	4.76E-4	9.26E-7	5.44E-6	4.83E-4	1.18E-6	5.59E-5	5.20E-8	-2.10E-4	3.30E-4
EP-m	kg N eq	8.63E-3	2.29E-4	3.14E-4	9.17E-3	2.93E-4	1.89E-3	2.51E-5	-4.23E-3	7.15E-3
EP-T	mol N eq	9.06E-2	2.53E-3	1.54E-3	9.47E-2	3.23E-3	2.08E-2	1.67E-4	-4.56E-2	7.33E-2
POCP	kg NMVOC eq	3.15E-2	7.23E-4	4.80E-4	3.27E-2	9.24E-4	6.23E-3	5.65E-5	-1.55E-2	2.44E-2
ADP-mm	kg Sb eq	3.60E-3	2.91E-6	8.36E-6	3.62E-3	3.72E-6	3.05E-5	4.13E-8	-1.15E-4	3.54E-3
ADP-f	MJ	2.68E+2	1.73E+0	5.33E+1	3.23E+2	2.21E+0	2.11E+1	1.27E-1	-1.71E+2	1.75E+2
WDP	m3 depriv.	1.72E+1	5.30E-3	6.66E-1	1.78E+1	6.78E-3	8.36E-1	7.14E-4	-8.14E+0	1.05E+1
PM	disease inc.	3.59E-7	1.02E-8	6.03E-9	3.75E-7	1.30E-8	9.71E-8	8.66E-10	-1.44E-7	3.42E-7
IR	kBq U-235 eq	5.63E-1	7.55E-3	6.35E-1	1.21E+0	9.66E-3	7.45E-2	5.80E-4	-2.70E-1	1.02E+0
ETP-fw	CTUe	2.03E+2	1.40E+0	1.48E+1	2.19E+2	1.79E+0	1.65E+2	1.84E+0	-8.28E+1	3.05E+2
HTP-c	CTUh	7.49E-9	4.99E-11	2.68E-10	7.81E-9	6.38E-11	2.35E-9	3.24E-12	-3.13E-9	7.09E-9
HTP-nc	CTUh	2.41E-7	1.67E-9	7.33E-9	2.50E-7	2.14E-9	5.70E-8	3.54E-10	-1.05E-7	2.05E-7
SQP	Pt	9.06E+1	1.48E+0	7.57E-1	9.28E+1	1.89E+0	1.32E+1	3.20E-1	-2.75E+1	8.07E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.14E+1	2.48E-2	1.34E+0	2.28E+1	3.17E-2	1.53E+0	4.47E-3	-8.39E+0	1.60E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.14E+1	2.48E-2	1.34E+0	2.28E+1	3.17E-2	1.53E+0	4.47E-3	-8.39E+0	1.60E+1
PENRE	MJ	2.87E+2	1.83E+0	5.33E+1	3.42E+2	2.35E+0	2.25E+1	1.34E-1	-1.85E+2	1.82E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.87E+2	1.83E+0	5.33E+1	3.42E+2	2.35E+0	2.25E+1	1.34E-1	-1.85E+2	1.82E+2
PET	MJ	3.09E+2	1.86E+0	5.47E+1	3.65E+2	2.38E+0	2.40E+1	1.39E-1	-1.93E+2	1.98E+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	1.87E-1	1.96E-4	2.33E-2	2.11E-1	2.50E-4	2.29E-2	1.55E-4	-8.62E-2	1.48E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.27E-4	4.42E-6	1.11E-6	6.32E-4	5.65E-6	3.42E-5	1.52E-7	-1.55E-4	5.17E-4
NHWD	kg	1.00E+0	1.07E-1	1.24E-1	1.23E+0	1.37E-1	7.70E-1	5.95E-1	-4.47E-1	2.29E+0
RWD	kg	4.94E-4	1.17E-5	2.90E-6	5.08E-4	1.50E-5	7.96E-5	8.28E-7	-2.43E-4	3.61E-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