Environmental Profile

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

Ecochain v3.5.80

Product:	3021203 - PVC KGFix Bend 45° GY 250 SN4 S/SP
Unit:	1 piece
Manufacturer:	Wavin - NL - Hardenberg - Verified
Address:	J.C. Kellerlaan 3 7772 SG Hardenberg Netherlands

The Wavin KG sewer pipes and fittings are suitable for drain and underground sewer applications. This easy push-fit rubber ring jointing system is durable, corrosion free and light weight.

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

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	0.71	0.01	0.03	0.75	0.01	0.22	0	-0.33	0.65
ADPE	kg Sb-eq	5.68E-3	2.07E-6	8.53E-6	5.69E-3	1.87E-6	1.68E-5	2.14E-8	-6.95E-5	5.64E-3
ADPF	kg Sb-eq	7.22E-2	5.95E-4	1.47E-3	7.43E-2	5.25E-4	5.76E-3	2.97E-5	-3.75E-2	4.31E-2
GWP	kg CO2-eq	6.15E+0	8.09E-2	2.78E-1	6.51E+0	7.15E-2	2.38E+0	2.06E-2	-3.27E+0	5.71E+0
ODP	kg CFC-11-eq	3.14E-6	1.44E-8	2.20E-8	3.17E-6	1.33E-8	2.40E-7	7.08E-10	-1.56E-6	1.86E-6
POCP	kg ethene-eq	3.75E-3	4.88E-5	1.21E-4	3.92E-3	4.29E-5	4.60E-4	5.31E-6	-1.66E-3	2.77E-3
AP	kg SO2-eq	2.65E-2	3.56E-4	1.20E-3	2.81E-2	3.08E-4	3.40E-3	1.60E-5	-1.09E-2	2.08E-2
EP	kg PO4 3−-eq	3.57E-3	6.99E-5	1.54E-4	3.80E-3	6.15E-5	5.26E-4	7.03E-6	-1.55E-3	2.84E-3
HTP	kg 1,4-DB-eq	2.45E+0	3.41E-2	1.29E-1	2.61E+0	3.06E-2	8.74E-1	1.68E-3	-1.04E+0	2.48E+0
FAETP	kg 1,4-DB-eq	1.20E-1	9.95E-4	4.41E-3	1.26E-1	8.96E-4	1.34E-2	5.15E-4	-3.13E-2	1.09E-1
MAETP	kg 1,4-DB-eq	1.75E+2	3.58E+0	1.74E+1	1.96E+2	3.20E+0	4.65E+1	6.28E-1	-6.70E+1	1.79E+2
TETP	kg 1,4-DB-eq	2.79E-2	1.20E-4	9.61E-3	3.76E-2	1.08E-4	3.12E-3	5.67E-6	-1.04E-2	3.04E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	5.98E+0	8.17E-2	3.18E-1	6.38E+0	7.22E-2	2.75E+0	2.41E-2	-2.98E+0	6.24E+0
GWP-f	kg CO2 eq	6.28E+0	8.16E-2	2.45E-1	6.61E+0	7.21E-2	2.39E+0	2.41E-2	-3.34E+0	5.76E+0
GWP-b	kg CO2 eq	-3.15E-1	3.77E-5	5.05E-2	-2.64E-1	4.38E-5	3.56E-1	2.99E-5	3.65E-1	4.57E-1
GWP-luluc	kg CO2 eq	1.29E-2	2.99E-5	2.32E-2	3.62E-2	2.55E-5	8.90E-4	6.19E-7	-4.63E-3	3.25E-2
ODP	kg CFC11 eq	3.12E-6	1.80E-8	2.59E-8	3.16E-6	1.66E-8	2.48E-7	8.79E-10	-1.55E-6	1.87E-6
AP	mol H+ eq	3.22E-2	4.73E-4	1.49E-3	3.42E-2	4.11E-4	4.28E-3	2.14E-5	-1.33E-2	2.56E-2
EP-fw	kg P eq	3.44E-4	8.23E-7	4.28E-6	3.49E-4	5.93E-7	2.99E-5	2.80E-8	-1.44E-4	2.35E-4
EP-m	kg N eq	5.76E-3	1.67E-4	3.52E-4	6.28E-3	1.47E-4	1.06E-3	1.49E-5	-2.41E-3	5.08E-3
EP-T	mol N eq	6.12E-2	1.84E-3	3.89E-3	6.70E-2	1.62E-3	1.17E-2	8.54E-5	-2.61E-2	5.43E-2
POCP	kg NMVOC eq	1.94E-2	5.25E-4	1.11E-3	2.11E-2	4.63E-4	3.48E-3	2.95E-5	-8.58E-3	1.64E-2
ADP-mm	kg Sb eq	5.68E-3	2.07E-6	8.53E-6	5.69E-3	1.87E-6	1.68E-5	2.14E-8	-6.95E-5	5.64E-3
ADP-f	MJ	1.52E+2	1.23E+0	2.73E+0	1.56E+2	1.11E+0	1.14E+1	6.42E-2	-7.87E+1	9.01E+1
WDP	m3 depriv.	9.74E+0	4.40E-3	2.12E+0	1.19E+1	3.40E-3	4.51E-1	4.09E-4	-4.88E+0	7.44E+0
PM	disease inc.	2.39E-7	7.33E-9	1.84E-8	2.65E-7	6.51E-9	5.26E-8	4.42E-10	-1.09E-7	2.16E-7
IR	kBq U-235 eq	3.61E-1	5.16E-3	4.35E-3	3.70E-1	4.84E-3	4.04E-2	2.96E-4	-1.65E-1	2.51E-1
ETP-fw	CTUe	1.64E+2	1.10E+0	6.35E+0	1.71E+2	8.99E-1	8.84E+1	9.73E-1	-7.11E+1	1.90E+2
HTP-c	CTUh	4.96E-9	3.56E-11	2.20E-10	5.21E-9	3.20E-11	1.27E-9	1.77E-12	-1.82E-9	4.70E-9
HTP-nc	CTUh	1.62E-7	1.20E-9	6.87E-9	1.70E-7	1.07E-9	3.07E-8	1.88E-10	-6.26E-8	1.40E-7
SQP	Pt	4.09E+1	1.07E+0	2.04E-1	4.22E+1	9.47E-1	6.93E+0	1.64E-1	-7.70E+1	-2.67E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.24E+1	1.54E-2	1.33E+1	2.57E+1	1.59E-2	8.19E-1	2.43E-3	-1.57E+1	1.08E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.24E+1	1.54E-2	1.33E+1	2.57E+1	1.59E-2	8.19E-1	2.43E-3	-1.57E+1	1.08E+1
PENRE	MJ	1.63E+2	1.31E+0	2.96E+0	1.67E+2	1.17E+0	1.21E+1	6.81E-2	-8.48E+1	9.60E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.63E+2	1.31E+0	2.96E+0	1.67E+2	1.17E+0	1.21E+1	6.81E-2	-8.48E+1	9.60E+1
PET	MJ	1.75E+2	1.32E+0	1.63E+1	1.93E+2	1.19E+0	1.29E+1	7.06E-2	-1.00E+2	1.07E+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	1.21E-1	1.50E-4	5.00E-2	1.72E-1	1.25E-4	1.28E-2	7.88E-5	-5.98E-2	1.25E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	8.04E-4	3.12E-6	2.90E-6	8.10E-4	2.83E-6	1.90E-5	7.81E-8	-6.81E-5	7.64E-4
NHWD	kg	6.35E-1	7.81E-2	4.48E-3	7.17E-1	6.86E-2	4.20E-1	2.82E-1	-2.62E-1	1.23E+0
RWD	kg	3.33E-4	8.08E-6	5.38E-6	3.46E-4	7.53E-6	4.35E-5	4.18E-7	-1.48E-4	2.50E-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