Environmental Profile

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

Ecochain v3.5.80

Product:	3021202 - PVC KGFix Bend 88° GY 315 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	1.59	0.02	0.08	1.69	0.02	0.5	0	-0.76	1.45
ADPE	kg Sb-eq	1.30E-2	4.69E-6	1.97E-5	1.30E-2	4.26E-6	3.86E-5	4.85E-8	-1.56E-4	1.29E-2
ADPF	kg Sb-eq	1.62E-1	1.35E-3	3.38E-3	1.66E-1	1.20E-3	1.33E-2	6.72E-5	-8.50E-2	9.58E-2
GWP	kg CO2-eq	1.38E+1	1.84E-1	6.42E-1	1.46E+1	1.63E-1	5.14E+0	4.64E-2	-7.40E+0	1.26E+1
ODP	kg CFC-11-eq	7.17E-6	3.26E-8	5.08E-8	7.25E-6	3.03E-8	5.54E-7	1.60E-9	-3.59E-6	4.24E-6
POCP	kg ethene-eq	8.22E-3	1.11E-4	2.79E-4	8.61E-3	9.80E-5	1.06E-3	1.20E-5	-3.80E-3	5.98E-3
AP	kg SO2-eq	5.92E-2	8.08E-4	2.76E-3	6.28E-2	7.03E-4	7.80E-3	3.62E-5	-2.51E-2	4.63E-2
EP	kg PO4 3−-eq	7.99E-3	1.59E-4	3.55E-4	8.50E-3	1.40E-4	1.20E-3	1.54E-5	-3.52E-3	6.33E-3
HTP	kg 1,4-DB-eq	5.48E+0	7.74E-2	2.98E-1	5.85E+0	6.99E-2	2.01E+0	3.80E-3	-2.37E+0	5.56E+0
FAETP	kg 1,4-DB-eq	2.70E-1	2.26E-3	1.02E-2	2.83E-1	2.05E-3	3.07E-2	1.17E-3	-7.13E-2	2.45E-1
MAETP	kg 1,4-DB-eq	3.89E+2	8.12E+0	4.02E+1	4.37E+2	7.31E+0	1.07E+2	1.42E+0	-1.54E+2	3.99E+2
TETP	kg 1,4-DB-eq	6.30E-2	2.73E-4	2.22E-2	8.55E-2	2.48E-4	7.16E-3	1.28E-5	-2.38E-2	6.91E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.34E+1	1.85E-1	7.35E-1	1.43E+1	1.65E-1	5.97E+0	5.41E-2	-6.75E+0	1.38E+1
GWP-f	kg CO2 eq	1.41E+1	1.85E-1	5.65E-1	1.48E+1	1.65E-1	5.17E+0	5.40E-2	-7.56E+0	1.27E+1
GWP-b	kg CO2 eq	-6.96E-1	8.55E-5	1.17E-1	-5.80E-1	1.00E-4	7.98E-1	6.76E-5	8.18E-1	1.04E+0
GWP-luluc	kg CO2 eq	2.91E-2	6.79E-5	5.36E-2	8.28E-2	5.83E-5	2.05E-3	1.40E-6	-1.05E-2	7.44E-2
ODP	kg CFC11 eq	7.10E-6	4.09E-8	5.97E-8	7.21E-6	3.80E-8	5.71E-7	1.99E-9	-3.56E-6	4.25E-6
AP	mol H+ eq	7.19E-2	1.07E-3	3.44E-3	7.65E-2	9.38E-4	9.80E-3	4.84E-5	-3.04E-2	5.69E-2
EP-fw	kg P eq	7.77E-4	1.87E-6	9.89E-6	7.89E-4	1.36E-6	6.88E-5	6.34E-8	-3.30E-4	5.29E-4
EP-m	kg N eq	1.29E-2	3.79E-4	8.14E-4	1.41E-2	3.36E-4	2.42E-3	3.25E-5	-5.51E-3	1.14E-2
EP-T	mol N eq	1.37E-1	4.17E-3	8.97E-3	1.50E-1	3.70E-3	2.67E-2	1.93E-4	-5.95E-2	1.21E-1
POCP	kg NMVOC eq	4.30E-2	1.19E-3	2.55E-3	4.68E-2	1.06E-3	7.97E-3	6.66E-5	-1.96E-2	3.63E-2
ADP-mm	kg Sb eq	1.30E-2	4.69E-6	1.97E-5	1.30E-2	4.26E-6	3.86E-5	4.85E-8	-1.56E-4	1.29E-2
ADP-f	MJ	3.41E+2	2.79E+0	6.31E+0	3.50E+2	2.53E+0	2.62E+1	1.45E-1	-1.79E+2	2.00E+2
WDP	m3 depriv.	2.22E+1	1.00E-2	4.89E+0	2.71E+1	7.76E-3	1.04E+0	9.31E-4	-1.12E+1	1.70E+1
PM	disease inc.	5.24E-7	1.66E-8	4.25E-8	5.83E-7	1.49E-8	1.21E-7	1.00E-9	-2.48E-7	4.72E-7
IR	kBq U-235 eq	8.00E-1	1.17E-2	1.00E-2	8.21E-1	1.11E-2	9.30E-2	6.69E-4	-3.77E-1	5.49E-1
ETP-fw	CTUe	3.69E+2	2.49E+0	1.47E+1	3.86E+2	2.05E+0	2.03E+2	2.24E+0	-1.62E+2	4.32E+2
HTP-c	CTUh	1.12E-8	8.08E-11	5.08E-10	1.18E-8	7.31E-11	2.92E-9	4.01E-12	-4.17E-9	1.07E-8
HTP-nc	CTUh	3.69E-7	2.73E-9	1.59E-8	3.88E-7	2.45E-9	7.06E-8	4.32E-10	-1.44E-7	3.18E-7
SQP	Pt	9.10E+1	2.42E+0	4.72E-1	9.39E+1	2.16E+0	1.60E+1	3.72E-1	-1.73E+2	-6.07E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.78E+1	3.50E-2	3.07E+1	5.85E+1	3.63E-2	1.89E+0	5.47E-3	-3.54E+1	2.51E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.78E+1	3.50E-2	3.07E+1	5.85E+1	3.63E-2	1.89E+0	5.47E-3	-3.54E+1	2.51E+1
PENRE	MJ	3.65E+2	2.97E+0	6.83E+0	3.75E+2	2.68E+0	2.79E+1	1.54E-1	-1.93E+2	2.13E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.65E+2	2.97E+0	6.83E+0	3.75E+2	2.68E+0	2.79E+1	1.54E-1	-1.93E+2	2.13E+2
PET	MJ	3.93E+2	3.00E+0	3.75E+1	4.34E+2	2.72E+0	2.98E+1	1.60E-1	-2.28E+2	2.38E+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	2.73E-1	3.40E-4	1.16E-1	3.89E-1	2.86E-4	2.91E-2	1.78E-4	-1.37E-1	2.82E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.85E-3	7.08E-6	6.71E-6	1.86E-3	6.47E-6	4.35E-5	1.77E-7	-1.54E-4	1.76E-3
NHWD	kg	1.43E+0	1.77E-1	1.04E-2	1.61E+0	1.57E-1	9.58E-1	6.39E-1	-6.01E-1	2.77E+0
RWD	kg	7.24E-4	1.84E-5	1.24E-5	7.55E-4	1.72E-5	1.00E-4	9.45E-7	-3.38E-4	5.36E-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