Environmental Profile

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

Ecochain v3.5.80

Product:	3021201 - PVC KGFix Bend 45° 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]

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Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	1.23	0.02	0.06	1.31	0.02	0.38	0	-0.58	1.13
ADPE	kg Sb-eq	9.87E-3	3.60E-6	1.49E-5	9.89E-3	3.24E-6	2.93E-5	3.71E-8	-1.20E-4	9.80E-3
ADPF	kg Sb-eq	1.25E-1	1.04E-3	2.56E-3	1.28E-1	9.12E-4	1.00E-2	5.14E-5	-6.50E-2	7.43E-2
GWP	kg CO2-eq	1.07E+1	1.41E-1	4.85E-1	1.13E+1	1.24E-1	4.05E+0	3.56E-2	-5.68E+0	9.82E+0
ODP	kg CFC-11-eq	5.45E-6	2.50E-8	3.84E-8	5.51E-6	2.30E-8	4.19E-7	1.23E-9	-2.72E-6	3.23E-6
POCP	kg ethene-eq	6.43E-3	8.50E-5	2.11E-4	6.73E-3	7.45E-5	8.03E-4	9.17E-6	-2.90E-3	4.72E-3
AP	kg SO2-eq	4.60E-2	6.19E-4	2.09E-3	4.87E-2	5.35E-4	5.93E-3	2.77E-5	-1.91E-2	3.60E-2
EP	kg PO4 3−-eq	6.22E-3	1.22E-4	2.68E-4	6.61E-3	1.07E-4	9.15E-4	1.20E-5	-2.72E-3	4.93E-3
HTP	kg 1,4-DB-eq	4.24E+0	5.93E-2	2.25E-1	4.52E+0	5.31E-2	1.52E+0	2.90E-3	-1.81E+0	4.29E+0
FAETP	kg 1,4-DB-eq	2.13E-1	1.73E-3	7.70E-3	2.22E-1	1.56E-3	2.33E-2	8.91E-4	-5.52E-2	1.93E-1
MAETP	kg 1,4-DB-eq	3.02E+2	6.23E+0	3.03E+1	3.38E+2	5.56E+0	8.13E+1	1.09E+0	-1.17E+2	3.09E+2
TETP	kg 1,4-DB-eq	4.93E-2	2.10E-4	1.68E-2	6.63E-2	1.88E-4	5.43E-3	9.80E-6	-1.84E-2	5.35E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.03E+1	1.42E-1	5.55E-1	1.10E+1	1.25E-1	4.72E+0	4.15E-2	-5.14E+0	1.08E+1
GWP-f	kg CO2 eq	1.09E+1	1.42E-1	4.27E-1	1.15E+1	1.25E-1	4.07E+0	4.15E-2	-5.80E+0	9.89E+0
GWP-b	kg CO2 eq	-5.71E-1	6.56E-5	8.81E-2	-4.83E-1	7.60E-5	6.44E-1	5.18E-5	6.63E-1	8.25E-1
GWP-luluc	kg CO2 eq	2.30E-2	5.20E-5	4.05E-2	6.36E-2	4.43E-5	1.55E-3	1.07E-6	-8.26E-3	5.69E-2
ODP	kg CFC11 eq	5.41E-6	3.14E-8	4.51E-8	5.49E-6	2.89E-8	4.32E-7	1.52E-9	-2.70E-6	3.25E-6
AP	mol H+ eq	5.58E-2	8.24E-4	2.60E-3	5.93E-2	7.13E-4	7.45E-3	3.70E-5	-2.32E-2	4.42E-2
EP-fw	kg P eq	6.02E-4	1.43E-6	7.47E-6	6.11E-4	1.03E-6	5.21E-5	4.85E-8	-2.54E-4	4.10E-4
EP-m	kg N eq	1.00E-2	2.90E-4	6.14E-4	1.09E-2	2.55E-4	1.85E-3	2.54E-5	-4.23E-3	8.82E-3
EP-T	mol N eq	1.06E-1	3.20E-3	6.78E-3	1.16E-1	2.81E-3	2.04E-2	1.48E-4	-4.57E-2	9.40E-2
POCP	kg NMVOC eq	3.35E-2	9.14E-4	1.93E-3	3.64E-2	8.04E-4	6.07E-3	5.10E-5	-1.50E-2	2.83E-2
ADP-mm	kg Sb eq	9.87E-3	3.60E-6	1.49E-5	9.88E-3	3.24E-6	2.93E-5	3.71E-8	-1.20E-4	9.80E-3
ADP-f	MJ	2.63E+2	2.14E+0	4.77E+0	2.70E+2	1.92E+0	1.99E+1	1.11E-1	-1.37E+2	1.55E+2
WDP	m3 depriv.	1.69E+1	7.66E-3	3.69E+0	2.06E+1	5.90E-3	7.86E-1	7.10E-4	-8.54E+0	1.29E+1
PM	disease inc.	4.13E-7	1.28E-8	3.21E-8	4.58E-7	1.13E-8	9.17E-8	7.65E-10	-1.92E-7	3.70E-7
IR	kBq U-235 eq	6.21E-1	8.98E-3	7.58E-3	6.37E-1	8.40E-3	7.05E-2	5.12E-4	-2.88E-1	4.28E-1
ETP-fw	CTUe	2.84E+2	1.91E+0	1.11E+1	2.97E+2	1.56E+0	1.54E+2	1.70E+0	-1.26E+2	3.29E+2
HTP-c	CTUh	8.61E-9	6.20E-11	3.83E-10	9.06E-9	5.55E-11	2.21E-9	3.06E-12	-3.18E-9	8.14E-9
HTP-nc	CTUh	2.82E-7	2.09E-9	1.20E-8	2.96E-7	1.86E-9	5.35E-8	3.27E-10	-1.10E-7	2.42E-7
SQP	Pt	7.21E+1	1.86E+0	3.57E-1	7.43E+1	1.64E+0	1.21E+1	2.85E-1	-1.39E+2	-5.05E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.18E+1	2.68E-2	2.32E+1	4.50E+1	2.76E-2	1.43E+0	4.20E-3	-2.82E+1	1.82E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.18E+1	2.68E-2	2.32E+1	4.50E+1	2.76E-2	1.43E+0	4.20E-3	-2.82E+1	1.82E+1
PENRE	MJ	2.82E+2	2.27E+0	5.16E+0	2.89E+2	2.04E+0	2.11E+1	1.18E-1	-1.47E+2	1.65E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.82E+2	2.27E+0	5.16E+0	2.89E+2	2.04E+0	2.11E+1	1.18E-1	-1.47E+2	1.65E+2
PET	MJ	3.03E+2	2.30E+0	2.83E+1	3.34E+2	2.07E+0	2.26E+1	1.22E-1	-1.76E+2	1.83E+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	2.11E-1	2.61E-4	8.73E-2	2.98E-1	2.18E-4	2.22E-2	1.36E-4	-1.05E-1	2.16E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.40E-3	5.43E-6	5.07E-6	1.41E-3	4.92E-6	3.31E-5	1.35E-7	-1.18E-4	1.33E-3
NHWD	kg	1.10E+0	1.36E-1	7.82E-3	1.24E+0	1.19E-1	7.30E-1	4.88E-1	-4.58E-1	2.12E+0
RWD	kg	5.69E-4	1.41E-5	9.39E-6	5.93E-4	1.31E-5	7.59E-5	7.23E-7	-2.59E-4	4.23E-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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