Environmental Profile

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

Ecochain v3.5.80

Product:	3021337 - PVC KGFix Bend 45° GY 200 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	0.33	0	0.02	0.35	0	0.1	0	-0.15	0.3
ADPE	kg Sb-eq	2.60E-3	9.59E-7	3.92E-6	2.60E-3	8.53E-7	7.76E-6	9.75E-9	-3.17E-5	2.58E-3
ADPF	kg Sb-eq	3.29E-2	2.76E-4	6.74E-4	3.39E-2	2.40E-4	2.66E-3	1.35E-5	-1.72E-2	1.96E-2
GWP	kg CO2-eq	2.83E+0	3.75E-2	1.28E-1	3.00E+0	3.27E-2	1.06E+0	9.35E-3	-1.51E+0	2.59E+0
ODP	kg CFC-11-eq	1.44E-6	6.66E-9	1.01E-8	1.45E-6	6.06E-9	1.11E-7	3.22E-10	-7.20E-7	8.51E-7
POCP	kg ethene-eq	1.70E-3	2.26E-5	5.56E-5	1.78E-3	1.96E-5	2.14E-4	2.41E-6	-7.74E-4	1.24E-3
AP	kg SO2-eq	1.23E-2	1.65E-4	5.50E-4	1.30E-2	1.41E-4	1.57E-3	7.27E-6	-5.13E-3	9.59E-3
EP	kg PO4 3−-eq	1.69E-3	3.24E-5	7.07E-5	1.79E-3	2.81E-5	2.43E-4	3.13E-6	-7.42E-4	1.32E-3
HTP	kg 1,4-DB-eq	1.13E+0	1.58E-2	5.94E-2	1.20E+0	1.40E-2	4.04E-1	7.63E-4	-4.84E-1	1.13E+0
FAETP	kg 1,4-DB-eq	6.00E-2	4.61E-4	2.03E-3	6.25E-2	4.10E-4	6.19E-3	2.34E-4	-1.52E-2	5.40E-2
MAETP	kg 1,4-DB-eq	8.01E+1	1.66E+0	8.00E+0	8.98E+1	1.46E+0	2.17E+1	2.86E-1	-3.13E+1	8.19E+1
TETP	kg 1,4-DB-eq	1.38E-2	5.58E-5	4.42E-3	1.83E-2	4.96E-5	1.43E-3	2.58E-6	-5.09E-3	1.47E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.72E+0	3.79E-2	1.46E-1	2.91E+0	3.30E-2	1.26E+0	1.09E-2	-1.34E+0	2.87E+0
GWP-f	kg CO2 eq	2.89E+0	3.78E-2	1.13E-1	3.04E+0	3.30E-2	1.06E+0	1.09E-2	-1.54E+0	2.61E+0
GWP-b	kg CO2 eq	-1.73E-1	1.75E-5	2.32E-2	-1.50E-1	2.00E-5	1.92E-1	1.36E-5	1.99E-1	2.42E-1
GWP-luluc	kg CO2 eq	6.55E-3	1.39E-5	1.07E-2	1.72E-2	1.17E-5	4.10E-4	2.81E-7	-2.35E-3	1.53E-2
ODP	kg CFC11 eq	1.43E-6	8.35E-9	1.19E-8	1.45E-6	7.60E-9	1.14E-7	4.00E-10	-7.13E-7	8.55E-7
AP	mol H+ eq	1.49E-2	2.19E-4	6.86E-4	1.58E-2	1.88E-4	1.98E-3	9.73E-6	-6.24E-3	1.18E-2
EP-fw	kg P eq	1.63E-4	3.82E-7	1.97E-6	1.66E-4	2.71E-7	1.37E-5	1.27E-8	-6.90E-5	1.11E-4
EP-m	kg N eq	2.70E-3	7.73E-5	1.62E-4	2.94E-3	6.72E-5	4.91E-4	6.63E-6	-1.14E-3	2.36E-3
EP-T	mol N eq	2.86E-2	8.53E-4	1.79E-3	3.12E-2	7.40E-4	5.41E-3	3.88E-5	-1.23E-2	2.50E-2
POCP	kg NMVOC eq	8.91E-3	2.43E-4	5.08E-4	9.66E-3	2.12E-4	1.61E-3	1.34E-5	-4.02E-3	7.47E-3
ADP-mm	kg Sb eq	2.60E-3	9.59E-7	3.92E-6	2.60E-3	8.53E-7	7.76E-6	9.75E-9	-3.16E-5	2.58E-3
ADP-f	MJ	6.93E+1	5.71E-1	1.26E+0	7.12E+1	5.06E-1	5.26E+0	2.92E-2	-3.62E+1	4.08E+1
WDP	m3 depriv.	4.49E+0	2.04E-3	9.73E-1	5.46E+0	1.55E-3	2.07E-1	1.87E-4	-2.29E+0	3.39E+0
PM	disease inc.	1.11E-7	3.40E-9	8.47E-9	1.23E-7	2.98E-9	2.44E-8	2.01E-10	-5.29E-8	9.78E-8
IR	kBq U-235 eq	1.64E-1	2.39E-3	2.00E-3	1.68E-1	2.21E-3	1.87E-2	1.35E-4	-7.75E-2	1.12E-1
ETP-fw	CTUe	7.59E+1	5.09E-1	2.92E+0	7.93E+1	4.11E-1	4.06E+1	4.47E-1	-3.50E+1	8.58E+1
HTP-c	CTUh	2.28E-9	1.65E-11	1.01E-10	2.40E-9	1.46E-11	5.87E-10	8.05E-13	-8.53E-10	2.15E-9
HTP-nc	CTUh	7.48E-8	5.57E-10	3.16E-9	7.85E-8	4.90E-10	1.42E-8	8.63E-11	-2.94E-8	6.38E-8
SQP	Pt	2.02E+1	4.95E-1	9.40E-2	2.08E+1	4.33E-1	3.20E+0	7.48E-2	-4.10E+1	-1.64E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.04E+0	7.14E-3	6.12E+0	1.22E+1	7.26E-3	3.77E-1	1.10E-3	-8.23E+0	4.33E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.04E+0	7.14E-3	6.12E+0	1.22E+1	7.26E-3	3.77E-1	1.10E-3	-8.23E+0	4.33E+0
PENRE	MJ	7.43E+1	6.06E-1	1.36E+0	7.63E+1	5.37E-1	5.60E+0	3.10E-2	-3.90E+1	4.34E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	7.43E+1	6.06E-1	1.36E+0	7.63E+1	5.37E-1	5.60E+0	3.10E-2	-3.90E+1	4.34E+1
PET	MJ	8.03E+1	6.13E-1	7.48E+0	8.84E+1	5.44E-1	5.98E+0	3.21E-2	-4.72E+1	4.78E+1
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	5.64E-2	6.95E-5	2.30E-2	7.95E-2	5.73E-5	5.84E-3	3.58E-5	-2.86E-2	5.68E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.70E-4	1.45E-6	1.34E-6	3.73E-4	1.29E-6	8.78E-6	3.55E-8	-3.14E-5	3.52E-4
NHWD	kg	2.93E-1	3.62E-2	2.06E-3	3.31E-1	3.14E-2	1.93E-1	1.28E-1	-1.23E-1	5.61E-1
RWD	kg	1.50E-4	3.75E-6	2.48E-6	1.56E-4	3.44E-6	2.01E-5	1.90E-7	-6.96E-5	1.10E-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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