Environmental Profile

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

Ecochain v3.5.80

Product:	3021212 - PVC KGFix Branch 88° 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	1.2	0.02	0.06	1.28	0.01	0.38	0	-0.56	1.12
ADPE	kg Sb-eq	9.54E-3	3.48E-6	1.54E-5	9.56E-3	3.13E-6	2.80E-5	3.62E-8	-1.18E-4	9.47E-3
ADPF	kg Sb-eq	1.23E-1	1.00E-3	2.65E-3	1.26E-1	8.81E-4	9.64E-3	5.01E-5	-6.31E-2	7.38E-2
GWP	kg CO2-eq	1.04E+1	1.36E-1	5.03E-1	1.11E+1	1.20E-1	4.12E+0	3.50E-2	-5.53E+0	9.82E+0
ODP	kg CFC-11-eq	5.27E-6	2.42E-8	3.97E-8	5.33E-6	2.23E-8	4.02E-7	1.20E-9	-2.62E-6	3.14E-6
POCP	kg ethene-eq	6.45E-3	8.23E-5	2.18E-4	6.75E-3	7.20E-5	7.69E-4	8.98E-6	-2.79E-3	4.80E-3
AP	kg SO2-eq	4.51E-2	6.00E-4	2.16E-3	4.79E-2	5.17E-4	5.70E-3	2.70E-5	-1.84E-2	3.57E-2
EP	kg PO4 3−-eq	6.08E-3	1.18E-4	2.78E-4	6.47E-3	1.03E-4	8.84E-4	1.21E-5	-2.60E-3	4.87E-3
HTP	kg 1,4-DB-eq	4.16E+0	5.74E-2	2.34E-1	4.45E+0	5.14E-2	1.46E+0	2.83E-3	-1.74E+0	4.23E+0
FAETP	kg 1,4-DB-eq	2.05E-1	1.68E-3	7.98E-3	2.14E-1	1.50E-3	2.24E-2	8.69E-4	-5.26E-2	1.86E-1
MAETP	kg 1,4-DB-eq	2.97E+2	6.03E+0	3.14E+1	3.35E+2	5.37E+0	7.78E+1	1.06E+0	-1.12E+2	3.07E+2
TETP	kg 1,4-DB-eq	4.72E-2	2.03E-4	1.74E-2	6.48E-2	1.82E-4	5.21E-3	9.57E-6	-1.75E-2	5.26E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	1.01E+1	1.38E-1	5.75E-1	1.08E+1	1.21E-1	4.75E+0	4.08E-2	-5.03E+0	1.07E+1
GWP-f	kg CO2 eq	1.07E+1	1.38E-1	4.42E-1	1.12E+1	1.21E-1	4.14E+0	4.08E-2	-5.64E+0	9.90E+0
GWP-b	kg CO2 eq	-5.40E-1	6.35E-5	9.12E-2	-4.48E-1	7.35E-5	6.06E-1	5.06E-5	6.22E-1	7.80E-1
GWP-luluc	kg CO2 eq	2.20E-2	5.04E-5	4.20E-2	6.40E-2	4.28E-5	1.49E-3	1.04E-6	-7.83E-3	5.77E-2
ODP	kg CFC11 eq	5.24E-6	3.04E-8	4.67E-8	5.31E-6	2.79E-8	4.14E-7	1.48E-9	-2.60E-6	3.16E-6
AP	mol H+ eq	5.48E-2	7.98E-4	2.69E-3	5.83E-2	6.89E-4	7.17E-3	3.61E-5	-2.23E-2	4.39E-2
EP-fw	kg P eq	5.82E-4	1.39E-6	7.74E-6	5.91E-4	9.96E-7	4.99E-5	4.73E-8	-2.42E-4	4.00E-4
EP-m	kg N eq	9.78E-3	2.81E-4	6.37E-4	1.07E-2	2.47E-4	1.78E-3	2.56E-5	-4.06E-3	8.69E-3
EP-T	mol N eq	1.04E-1	3.10E-3	7.02E-3	1.14E-1	2.72E-3	1.96E-2	1.44E-4	-4.39E-2	9.29E-2
POCP	kg NMVOC eq	3.32E-2	8.85E-4	2.00E-3	3.61E-2	7.77E-4	5.84E-3	4.98E-5	-1.44E-2	2.83E-2
ADP-mm	kg Sb eq	9.54E-3	3.48E-6	1.54E-5	9.56E-3	3.13E-6	2.80E-5	3.62E-8	-1.18E-4	9.47E-3
ADP-f	MJ	2.59E+2	2.07E+0	4.94E+0	2.66E+2	1.86E+0	1.91E+1	1.08E-1	-1.33E+2	1.54E+2
WDP	m3 depriv.	1.64E+1	7.42E-3	3.82E+0	2.02E+1	5.70E-3	7.55E-1	6.89E-4	-8.16E+0	1.28E+1
PM	disease inc.	4.12E-7	1.23E-8	3.33E-8	4.58E-7	1.09E-8	8.80E-8	7.46E-10	-1.84E-7	3.74E-7
IR	kBq U-235 eq	6.16E-1	8.69E-3	7.86E-3	6.32E-1	8.12E-3	6.76E-2	5.00E-4	-2.77E-1	4.32E-1
ETP-fw	CTUe	2.77E+2	1.85E+0	1.15E+1	2.90E+2	1.51E+0	1.48E+2	1.63E+0	-1.20E+2	3.22E+2
HTP-c	CTUh	8.37E-9	6.00E-11	3.97E-10	8.83E-9	5.37E-11	2.12E-9	2.99E-12	-3.05E-9	7.96E-9
HTP-nc	CTUh	2.73E-7	2.02E-9	1.24E-8	2.87E-7	1.80E-9	5.14E-8	3.15E-10	-1.05E-7	2.36E-7
SQP	Pt	6.99E+1	1.80E+0	3.69E-1	7.21E+1	1.59E+0	1.16E+1	2.78E-1	-1.31E+2	-4.53E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.10E+1	2.60E-2	2.40E+1	4.50E+1	2.67E-2	1.37E+0	4.11E-3	-2.66E+1	1.98E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.10E+1	2.60E-2	2.40E+1	4.50E+1	2.67E-2	1.37E+0	4.11E-3	-2.66E+1	1.98E+1
PENRE	MJ	2.77E+2	2.20E+0	5.34E+0	2.85E+2	1.97E+0	2.03E+1	1.15E-1	-1.43E+2	1.64E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.77E+2	2.20E+0	5.34E+0	2.85E+2	1.97E+0	2.03E+1	1.15E-1	-1.43E+2	1.64E+2
PET	MJ	2.98E+2	2.23E+0	2.94E+1	3.30E+2	2.00E+0	2.16E+1	1.19E-1	-1.69E+2	1.84E+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	2.06E-1	2.53E-4	9.04E-2	2.96E-1	2.10E-4	2.16E-2	1.33E-4	-1.00E-1	2.18E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.35E-3	5.26E-6	5.25E-6	1.36E-3	4.75E-6	3.19E-5	1.32E-7	-1.15E-4	1.28E-3
NHWD	kg	1.08E+0	1.32E-1	8.10E-3	1.22E+0	1.15E-1	7.04E-1	4.76E-1	-4.38E-1	2.08E+0
RWD	kg	5.74E-4	1.36E-5	9.73E-6	5.97E-4	1.26E-5	7.27E-5	7.06E-7	-2.49E-4	4.34E-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