Environmental Profile

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

Ecochain v3.5.80

Product:	3001601 - KG Bend 45° DN250
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	0.76	0.01	0.03	0.81	0.01	0.22	0	-0.4	0.64
ADPE	kg Sb-eq	5.69E-3	3.15E-6	8.53E-6	5.70E-3	1.87E-6	1.66E-5	2.15E-8	-7.41E-5	5.65E-3
ADPF	kg Sb-eq	7.38E-2	9.06E-4	1.47E-3	7.62E-2	5.26E-4	5.80E-3	2.98E-5	-3.97E-2	4.28E-2
GWP	kg CO2-eq	6.16E+0	1.23E-1	2.78E-1	6.57E+0	7.17E-2	2.41E+0	2.07E-2	-3.51E+0	5.56E+0
ODP	kg CFC-11-eq	3.16E-6	2.19E-8	2.20E-8	3.21E-6	1.33E-8	2.41E-7	7.11E-10	-1.58E-6	1.88E-6
POCP	kg ethene-eq	4.30E-3	7.43E-5	1.21E-4	4.50E-3	4.30E-5	4.56E-4	5.34E-6	-2.16E-3	2.84E-3
AP	kg SO2-eq	2.55E-2	5.42E-4	1.20E-3	2.73E-2	3.08E-4	3.43E-3	1.61E-5	-1.18E-2	1.92E-2
EP	kg PO4 3−-eq	3.20E-3	1.06E-4	1.54E-4	3.46E-3	6.16E-5	5.34E-4	7.10E-6	-1.57E-3	2.49E-3
HTP	kg 1,4-DB-eq	3.09E+0	5.19E-2	1.29E-1	3.27E+0	3.07E-2	8.65E-1	1.68E-3	-1.63E+0	2.54E+0
FAETP	kg 1,4-DB-eq	7.63E-2	1.51E-3	4.41E-3	8.22E-2	8.98E-4	1.32E-2	5.17E-4	-3.47E-2	6.21E-2
MAETP	kg 1,4-DB-eq	1.77E+2	5.45E+0	1.74E+1	2.00E+2	3.21E+0	4.41E+1	6.30E-1	-7.41E+1	1.74E+2
TETP	kg 1,4-DB-eq	1.94E-2	1.83E-4	9.61E-3	2.92E-2	1.09E-4	3.12E-3	5.69E-6	-1.02E-2	2.23E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	4.36E+0	1.24E-1	3.18E-1	4.80E+0	7.23E-2	4.43E+0	2.42E-2	-3.61E+0	5.71E+0
GWP-f	kg CO2 eq	6.31E+0	1.24E-1	2.45E-1	6.68E+0	7.22E-2	2.43E+0	2.42E-2	-3.59E+0	5.62E+0
GWP-b	kg CO2 eq	-1.96E+0	5.73E-5	5.05E-2	-1.91E+0	4.39E-5	2.00E+0	3.01E-5	-2.07E-2	7.05E-2
GWP-luluc	kg CO2 eq	6.38E-3	4.55E-5	2.32E-2	2.97E-2	2.56E-5	8.94E-4	6.22E-7	-3.22E-3	2.74E-2
ODP	kg CFC11 eq	3.14E-6	2.74E-8	2.59E-8	3.20E-6	1.66E-8	2.49E-7	8.82E-10	-1.57E-6	1.89E-6
AP	mol H+ eq	3.09E-2	7.20E-4	1.49E-3	3.31E-2	4.12E-4	4.32E-3	2.15E-5	-1.44E-2	2.35E-2
EP-fw	kg P eq	2.95E-4	1.25E-6	4.28E-6	3.01E-4	5.95E-7	2.99E-5	2.82E-8	-1.35E-4	1.96E-4
EP-m	kg N eq	5.45E-3	2.54E-4	3.52E-4	6.05E-3	1.47E-4	1.08E-3	1.50E-5	-2.72E-3	4.57E-3
EP-T	mol N eq	5.99E-2	2.80E-3	3.89E-3	6.66E-2	1.62E-3	1.19E-2	8.57E-5	-3.01E-2	5.02E-2
POCP	kg NMVOC eq	2.08E-2	7.99E-4	1.11E-3	2.27E-2	4.64E-4	3.53E-3	2.96E-5	-1.04E-2	1.64E-2
ADP-mm	kg Sb eq	5.69E-3	3.15E-6	8.53E-6	5.70E-3	1.87E-6	1.66E-5	2.15E-8	-7.41E-5	5.65E-3
ADP-f	MJ	1.56E+2	1.87E+0	2.73E+0	1.61E+2	1.11E+0	1.15E+1	6.45E-2	-8.25E+1	9.08E+1
WDP	m3 depriv.	9.47E+0	6.70E-3	2.12E+0	1.16E+1	3.40E-3	4.51E-1	4.12E-4	-4.44E+0	7.61E+0
PM	disease inc.	2.48E-7	1.12E-8	1.84E-8	2.78E-7	6.52E-9	5.27E-8	4.44E-10	-1.24E-7	2.13E-7
IR	kBq U-235 eq	3.73E-1	7.85E-3	4.35E-3	3.85E-1	4.85E-3	4.09E-2	2.97E-4	-1.65E-1	2.67E-1
ETP-fw	CTUe	1.61E+2	1.67E+0	6.35E+0	1.69E+2	9.01E-1	8.81E+1	9.73E-1	-5.80E+1	2.01E+2
HTP-c	CTUh	6.85E-9	5.42E-11	2.20E-10	7.12E-9	3.20E-11	1.30E-9	1.78E-12	-3.36E-9	5.10E-9
HTP-nc	CTUh	1.76E-7	1.83E-9	6.87E-9	1.85E-7	1.07E-9	3.08E-8	1.88E-10	-7.44E-8	1.42E-7
SQP	Pt	1.89E+2	1.63E+0	2.04E-1	1.91E+2	9.49E-1	7.08E+0	1.65E-1	-1.61E+2	3.85E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.20E+1	2.35E-2	1.33E+1	4.53E+1	1.59E-2	8.22E-1	2.44E-3	-2.73E+1	1.88E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.20E+1	2.35E-2	1.33E+1	4.53E+1	1.59E-2	8.22E-1	2.44E-3	-2.73E+1	1.88E+1
PENRE	MJ	1.67E+2	1.99E+0	2.96E+0	1.72E+2	1.18E+0	1.22E+1	6.84E-2	-8.88E+1	9.68E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.67E+2	1.99E+0	2.96E+0	1.72E+2	1.18E+0	1.22E+1	6.84E-2	-8.88E+1	9.68E+1
PET	MJ	1.99E+2	2.01E+0	1.63E+1	2.17E+2	1.19E+0	1.31E+1	7.09E-2	-1.16E+2	1.16E+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	1.12E-1	2.28E-4	5.00E-2	1.62E-1	1.26E-4	1.29E-2	7.91E-5	-4.95E-2	1.26E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	8.17E-4	4.75E-6	2.90E-6	8.24E-4	2.84E-6	1.91E-5	7.84E-8	-8.24E-5	7.64E-4
NHWD	kg	7.33E-1	1.19E-1	4.48E-3	8.56E-1	6.87E-2	4.31E-1	2.83E-1	-3.63E-1	1.28E+0
RWD	kg	3.48E-4	1.23E-5	5.38E-6	3.66E-4	7.54E-6	4.42E-5	4.20E-7	-1.51E-4	2.67E-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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