Environmental Profile

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

Ecochain v3.5.80

Product:	3001605 - KG Bend 45° DN300
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	1.32	0.03	0.06	1.41	0.01	0.38	0	-0.72	1.09
ADPE	kg Sb-eq	9.69E-3	5.75E-6	1.53E-5	9.71E-3	3.18E-6	2.86E-5	3.64E-8	-1.27E-4	9.61E-3
ADPF	kg Sb-eq	1.26E-1	1.66E-3	2.63E-3	1.30E-1	8.95E-4	9.97E-3	5.05E-5	-6.85E-2	7.23E-2
GWP	kg CO2-eq	1.06E+1	2.25E-1	4.99E-1	1.13E+1	1.22E-1	4.00E+0	3.50E-2	-6.08E+0	9.36E+0
ODP	kg CFC-11-eq	5.40E-6	3.99E-8	3.95E-8	5.48E-6	2.26E-8	4.13E-7	1.20E-9	-2.71E-6	3.20E-6
POCP	kg ethene-eq	7.43E-3	1.36E-4	2.17E-4	7.78E-3	7.31E-5	7.87E-4	9.01E-6	-3.89E-3	4.76E-3
AP	kg SO2-eq	4.37E-2	9.90E-4	2.15E-3	4.69E-2	5.25E-4	5.91E-3	2.72E-5	-2.08E-2	3.26E-2
EP	kg PO4 3−-eq	5.52E-3	1.94E-4	2.76E-4	5.99E-3	1.05E-4	9.19E-4	1.18E-5	-2.81E-3	4.22E-3
HTP	kg 1,4-DB-eq	5.49E+0	9.48E-2	2.32E-1	5.82E+0	5.21E-2	1.48E+0	2.85E-3	-3.00E+0	4.36E+0
FAETP	kg 1,4-DB-eq	1.35E-1	2.77E-3	7.92E-3	1.45E-1	1.53E-3	2.26E-2	8.75E-4	-6.39E-2	1.06E-1
MAETP	kg 1,4-DB-eq	3.03E+2	9.95E+0	3.12E+1	3.44E+2	5.46E+0	7.58E+1	1.07E+0	-1.31E+2	2.96E+2
TETP	kg 1,4-DB-eq	3.43E-2	3.35E-4	1.72E-2	5.18E-2	1.85E-4	5.35E-3	9.62E-6	-1.84E-2	3.89E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	6.85E+0	2.27E-1	5.71E-1	7.65E+0	1.23E-1	8.08E+0	4.08E-2	-6.26E+0	9.63E+0
GWP-f	kg CO2 eq	1.08E+1	2.27E-1	4.39E-1	1.15E+1	1.23E-1	4.03E+0	4.08E-2	-6.22E+0	9.46E+0
GWP-b	kg CO2 eq	-3.98E+0	1.05E-4	9.06E-2	-3.89E+0	7.46E-5	4.05E+0	5.08E-5	-3.54E-2	1.27E-1
GWP-luluc	kg CO2 eq	1.12E-2	8.32E-5	4.17E-2	5.30E-2	4.35E-5	1.53E-3	1.05E-6	-5.90E-3	4.86E-2
ODP	kg CFC11 eq	5.36E-6	5.01E-8	4.64E-8	5.46E-6	2.83E-8	4.27E-7	1.49E-9	-2.70E-6	3.22E-6
AP	mol H+ eq	5.30E-2	1.32E-3	2.68E-3	5.70E-2	7.00E-4	7.44E-3	3.64E-5	-2.55E-2	3.98E-2
EP-fw	kg P eq	5.09E-4	2.29E-6	7.69E-6	5.19E-4	1.01E-6	5.13E-5	4.76E-8	-2.39E-4	3.33E-4
EP-m	kg N eq	9.43E-3	4.64E-4	6.32E-4	1.05E-2	2.50E-4	1.87E-3	2.50E-5	-4.87E-3	7.79E-3
EP-T	mol N eq	1.04E-1	5.12E-3	6.97E-3	1.16E-1	2.76E-3	2.06E-2	1.45E-4	-5.40E-2	8.53E-2
POCP	kg NMVOC eq	3.60E-2	1.46E-3	1.98E-3	3.95E-2	7.89E-4	6.10E-3	5.01E-5	-1.86E-2	2.78E-2
ADP-mm	kg Sb eq	9.69E-3	5.75E-6	1.53E-5	9.71E-3	3.18E-6	2.86E-5	3.64E-8	-1.27E-4	9.61E-3
ADP-f	MJ	2.66E+2	3.42E+0	4.91E+0	2.74E+2	1.89E+0	1.98E+1	1.09E-1	-1.42E+2	1.53E+2
WDP	m3 depriv.	1.62E+1	1.22E-2	3.80E+0	2.00E+1	5.79E-3	7.70E-1	6.99E-4	-7.63E+0	1.31E+1
PM	disease inc.	4.33E-7	2.04E-8	3.31E-8	4.86E-7	1.11E-8	9.08E-8	7.51E-10	-2.28E-7	3.61E-7
IR	kBq U-235 eq	6.35E-1	1.43E-2	7.80E-3	6.57E-1	8.24E-3	7.06E-2	5.03E-4	-2.89E-1	4.48E-1
ETP-fw	CTUe	2.77E+2	3.05E+0	1.14E+1	2.91E+2	1.53E+0	1.51E+2	1.66E+0	-1.04E+2	3.41E+2
HTP-c	CTUh	1.23E-8	9.90E-11	3.95E-10	1.28E-8	5.45E-11	2.25E-9	3.01E-12	-6.29E-9	8.82E-9
HTP-nc	CTUh	3.06E-7	3.34E-9	1.23E-8	3.22E-7	1.83E-9	5.27E-8	3.21E-10	-1.33E-7	2.43E-7
SQP	Pt	3.75E+2	2.97E+0	3.67E-1	3.79E+2	1.61E+0	1.22E+1	2.79E-1	-3.23E+2	7.03E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.23E+1	4.29E-2	2.39E+1	8.62E+1	2.71E-2	1.41E+0	4.12E-3	-5.43E+1	3.33E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.23E+1	4.29E-2	2.39E+1	8.62E+1	2.71E-2	1.41E+0	4.12E-3	-5.43E+1	3.33E+1
PENRE	MJ	2.84E+2	3.64E+0	5.31E+0	2.93E+2	2.00E+0	2.10E+1	1.16E-1	-1.53E+2	1.63E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.84E+2	3.64E+0	5.31E+0	2.93E+2	2.00E+0	2.10E+1	1.16E-1	-1.53E+2	1.63E+2
PET	MJ	3.47E+2	3.68E+0	2.92E+1	3.80E+2	2.03E+0	2.24E+1	1.20E-1	-2.07E+2	1.97E+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	1.90E-1	4.17E-4	8.98E-2	2.81E-1	2.13E-4	2.19E-2	1.34E-4	-8.57E-2	2.17E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.40E-3	8.68E-6	5.21E-6	1.42E-3	4.82E-6	3.29E-5	1.33E-7	-1.46E-4	1.31E-3
NHWD	kg	1.29E+0	2.17E-1	8.05E-3	1.52E+0	1.17E-1	7.41E-1	4.80E-1	-6.62E-1	2.19E+0
RWD	kg	5.88E-4	2.25E-5	9.66E-6	6.21E-4	1.28E-5	7.64E-5	7.10E-7	-2.65E-4	4.46E-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