Environmental Profile

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

Ecochain v3.5.80

Product:	3001596 - KG Bend 45° DN200 EXP
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	0.31	0	0.02	0.33	0	0.1	0	-0.15	0.29
ADPE	kg Sb-eq	2.61E-3	9.49E-7	3.91E-6	2.61E-3	8.56E-7	7.68E-6	9.85E-9	-3.19E-5	2.59E-3
ADPF	kg Sb-eq	3.28E-2	2.73E-4	6.73E-4	3.38E-2	2.41E-4	2.64E-3	1.36E-5	-1.72E-2	1.95E-2
GWP	kg CO2-eq	2.74E+0	3.71E-2	1.28E-1	2.90E+0	3.28E-2	1.10E+0	9.48E-3	-1.50E+0	2.54E+0
ODP	kg CFC-11-eq	1.44E-6	6.59E-9	1.01E-8	1.46E-6	6.09E-9	1.10E-7	3.25E-10	-7.18E-7	8.61E-7
POCP	kg ethene-eq	1.69E-3	2.24E-5	5.55E-5	1.76E-3	1.97E-5	2.11E-4	2.44E-6	-7.62E-4	1.24E-3
AP	kg SO2-eq	1.11E-2	1.63E-4	5.49E-4	1.19E-2	1.41E-4	1.56E-3	7.35E-6	-5.02E-3	8.54E-3
EP	kg PO4 3−-eq	1.45E-3	3.21E-5	7.05E-5	1.55E-3	2.82E-5	2.41E-4	3.23E-6	-7.07E-4	1.12E-3
HTP	kg 1,4-DB-eq	1.08E+0	1.56E-2	5.93E-2	1.15E+0	1.40E-2	4.01E-1	7.71E-4	-4.75E-1	1.10E+0
FAETP	kg 1,4-DB-eq	3.33E-2	4.56E-4	2.02E-3	3.58E-2	4.11E-4	6.14E-3	2.37E-4	-1.43E-2	2.83E-2
MAETP	kg 1,4-DB-eq	7.74E+1	1.64E+0	7.98E+0	8.71E+1	1.47E+0	2.13E+1	2.89E-1	-3.07E+1	7.94E+1
TETP	kg 1,4-DB-eq	7.69E-3	5.52E-5	4.41E-3	1.22E-2	4.98E-5	1.43E-3	2.60E-6	-4.76E-3	8.87E-3
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.82E+0	3.75E-2	1.46E-1	3.00E+0	3.31E-2	1.18E+0	1.11E-2	-1.37E+0	2.86E+0
GWP-f	kg CO2 eq	2.80E+0	3.74E-2	1.12E-1	2.95E+0	3.31E-2	1.10E+0	1.11E-2	-1.53E+0	2.56E+0
GWP-b	kg CO2 eq	2.23E-2	1.73E-5	2.32E-2	4.54E-2	2.01E-5	7.55E-2	1.37E-5	1.65E-1	2.86E-1
GWP-luluc	kg CO2 eq	3.31E-3	1.37E-5	1.07E-2	1.40E-2	1.17E-5	4.08E-4	2.84E-7	-2.11E-3	1.23E-2
ODP	kg CFC11 eq	1.44E-6	8.26E-9	1.19E-8	1.46E-6	7.63E-9	1.14E-7	4.04E-10	-7.12E-7	8.66E-7
AP	mol H+ eq	1.36E-2	2.17E-4	6.84E-4	1.45E-2	1.89E-4	1.96E-3	9.84E-6	-6.09E-3	1.06E-2
EP-fw	kg P eq	1.33E-4	3.78E-7	1.97E-6	1.35E-4	2.72E-7	1.37E-5	1.29E-8	-6.60E-5	8.35E-5
EP-m	kg N eq	2.45E-3	7.65E-5	1.62E-4	2.68E-3	6.75E-5	4.86E-4	6.85E-6	-1.11E-3	2.14E-3
EP-T	mol N eq	2.64E-2	8.44E-4	1.78E-3	2.90E-2	7.43E-4	5.36E-3	3.92E-5	-1.20E-2	2.32E-2
POCP	kg NMVOC eq	8.63E-3	2.41E-4	5.07E-4	9.38E-3	2.13E-4	1.60E-3	1.35E-5	-3.93E-3	7.27E-3
ADP-mm	kg Sb eq	2.61E-3	9.49E-7	3.91E-6	2.61E-3	8.56E-7	7.68E-6	9.85E-9	-3.19E-5	2.59E-3
ADP-f	MJ	6.97E+1	5.65E-1	1.25E+0	7.15E+1	5.08E-1	5.23E+0	2.95E-2	-3.61E+1	4.11E+1
WDP	m3 depriv.	4.33E+0	2.02E-3	9.71E-1	5.30E+0	1.56E-3	2.07E-1	1.88E-4	-2.23E+0	3.28E+0
PM	disease inc.	1.00E-7	3.36E-9	8.45E-9	1.12E-7	2.99E-9	2.41E-8	2.03E-10	-4.98E-8	8.97E-8
IR	kBq U-235 eq	1.65E-1	2.37E-3	1.99E-3	1.69E-1	2.22E-3	1.85E-2	1.36E-4	-7.55E-2	1.15E-1
ETP-fw	CTUe	8.85E+1	5.04E-1	2.91E+0	9.19E+1	4.13E-1	4.05E+1	4.46E-1	-3.24E+1	1.01E+2
HTP-c	CTUh	2.24E-9	1.63E-11	1.01E-10	2.36E-9	1.47E-11	5.82E-10	8.14E-13	-8.34E-10	2.12E-9
HTP-nc	CTUh	7.29E-8	5.51E-10	3.15E-9	7.66E-8	4.92E-10	1.41E-8	8.63E-11	-2.87E-8	6.26E-8
SQP	Pt	1.65E+1	4.90E-1	9.38E-2	1.71E+1	4.35E-1	3.18E+0	7.55E-2	-3.49E+1	-1.42E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	4.84E+0	7.07E-3	6.10E+0	1.09E+1	7.29E-3	3.76E-1	1.12E-3	-7.13E+0	4.20E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	4.84E+0	7.07E-3	6.10E+0	1.09E+1	7.29E-3	3.76E-1	1.12E-3	-7.13E+0	4.20E+0
PENRE	MJ	7.47E+1	6.00E-1	1.36E+0	7.67E+1	5.39E-1	5.56E+0	3.13E-2	-3.89E+1	4.39E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	7.47E+1	6.00E-1	1.36E+0	7.67E+1	5.39E-1	5.56E+0	3.13E-2	-3.89E+1	4.39E+1
PET	MJ	7.95E+1	6.07E-1	7.46E+0	8.76E+1	5.47E-1	5.94E+0	3.24E-2	-4.61E+1	4.81E+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	5.10E-2	6.88E-5	2.30E-2	7.40E-2	5.75E-5	5.87E-3	3.62E-5	-2.73E-2	5.26E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	3.67E-4	1.43E-6	1.33E-6	3.70E-4	1.30E-6	8.72E-6	3.59E-8	-3.13E-5	3.49E-4
NHWD	kg	2.93E-1	3.58E-2	2.06E-3	3.31E-1	3.15E-2	1.93E-1	1.30E-1	-1.20E-1	5.65E-1
RWD	kg	1.53E-4	3.71E-6	2.47E-6	1.59E-4	3.46E-6	1.99E-5	1.92E-7	-6.77E-5	1.15E-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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