Environmental Profile

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

Ecochain v3.5.80

Product:	3009609 - KG Branch 45° DN250xDN200
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]

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Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	1.41	0.03	0.06	1.5	0.02	0.39	0	-0.78	1.13
ADPE	kg Sb-eq	1.01E-2	6.41E-6	1.52E-5	1.01E-2	3.31E-6	3.00E-5	3.79E-8	-1.34E-4	1.00E-2
ADPF	kg Sb-eq	1.32E-1	1.84E-3	2.61E-3	1.36E-1	9.32E-4	1.05E-2	5.25E-5	-7.25E-2	7.53E-2
GWP	kg CO2-eq	1.12E+1	2.51E-1	4.96E-1	1.19E+1	1.27E-1	4.15E+0	3.64E-2	-6.47E+0	9.75E+0
ODP	kg CFC-11-eq	5.64E-6	4.45E-8	3.92E-8	5.72E-6	2.35E-8	4.32E-7	1.25E-9	-2.84E-6	3.34E-6
POCP	kg ethene-eq	7.96E-3	1.51E-4	2.15E-4	8.32E-3	7.61E-5	8.28E-4	9.37E-6	-4.27E-3	4.97E-3
AP	kg SO2-eq	4.63E-2	1.10E-3	2.13E-3	4.95E-2	5.46E-4	6.21E-3	2.83E-5	-2.24E-2	3.39E-2
EP	kg PO4 3−-eq	5.88E-3	2.17E-4	2.74E-4	6.37E-3	1.09E-4	9.68E-4	1.22E-5	-3.07E-3	4.38E-3
HTP	kg 1,4-DB-eq	5.99E+0	1.06E-1	2.30E-1	6.33E+0	5.43E-2	1.55E+0	2.96E-3	-3.36E+0	4.58E+0
FAETP	kg 1,4-DB-eq	1.46E-1	3.08E-3	7.86E-3	1.57E-1	1.59E-3	2.36E-2	9.11E-4	-7.13E-2	1.11E-1
MAETP	kg 1,4-DB-eq	3.21E+2	1.11E+1	3.10E+1	3.63E+2	5.68E+0	7.93E+1	1.11E+0	-1.41E+2	3.08E+2
TETP	kg 1,4-DB-eq	3.70E-2	3.73E-4	1.71E-2	5.45E-2	1.92E-4	5.58E-3	1.00E-5	-2.03E-2	3.99E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	6.62E+0	2.53E-1	5.67E-1	7.44E+0	1.28E-1	9.07E+0	4.24E-2	-6.66E+0	1.00E+1
GWP-f	kg CO2 eq	1.14E+1	2.53E-1	4.36E-1	1.21E+1	1.28E-1	4.18E+0	4.24E-2	-6.62E+0	9.85E+0
GWP-b	kg CO2 eq	-4.81E+0	1.17E-4	9.00E-2	-4.72E+0	7.77E-5	4.89E+0	5.28E-5	-3.69E-2	1.29E-1
GWP-luluc	kg CO2 eq	1.21E-2	9.26E-5	4.14E-2	5.35E-2	4.53E-5	1.60E-3	1.09E-6	-6.57E-3	4.86E-2
ODP	kg CFC11 eq	5.60E-6	5.58E-8	4.61E-8	5.70E-6	2.95E-8	4.46E-7	1.55E-9	-2.83E-6	3.35E-6
AP	mol H+ eq	5.61E-2	1.47E-3	2.66E-3	6.02E-2	7.29E-4	7.83E-3	3.78E-5	-2.75E-2	4.14E-2
EP-fw	kg P eq	5.39E-4	2.55E-6	7.63E-6	5.49E-4	1.05E-6	5.36E-5	4.95E-8	-2.57E-4	3.47E-4
EP-m	kg N eq	1.00E-2	5.17E-4	6.28E-4	1.12E-2	2.61E-4	1.97E-3	2.59E-5	-5.31E-3	8.13E-3
EP-T	mol N eq	1.10E-1	5.70E-3	6.92E-3	1.23E-1	2.87E-3	2.18E-2	1.51E-4	-5.91E-2	8.88E-2
POCP	kg NMVOC eq	3.85E-2	1.63E-3	1.97E-3	4.21E-2	8.21E-4	6.44E-3	5.21E-5	-2.04E-2	2.90E-2
ADP-mm	kg Sb eq	1.01E-2	6.41E-6	1.52E-5	1.01E-2	3.31E-6	3.00E-5	3.79E-8	-1.34E-4	1.00E-2
ADP-f	MJ	2.79E+2	3.81E+0	4.87E+0	2.87E+2	1.96E+0	2.07E+1	1.14E-1	-1.50E+2	1.60E+2
WDP	m3 depriv.	1.69E+1	1.36E-2	3.77E+0	2.06E+1	6.03E-3	8.03E-1	7.27E-4	-7.99E+0	1.35E+1
PM	disease inc.	4.68E-7	2.27E-8	3.28E-8	5.23E-7	1.15E-8	9.55E-8	7.81E-10	-2.54E-7	3.77E-7
IR	kBq U-235 eq	6.69E-1	1.60E-2	7.75E-3	6.92E-1	8.58E-3	7.42E-2	5.23E-4	-3.08E-1	4.67E-1
ETP-fw	CTUe	2.93E+2	3.40E+0	1.13E+1	3.07E+2	1.59E+0	1.57E+2	1.73E+0	-1.14E+2	3.54E+2
HTP-c	CTUh	1.35E-8	1.10E-10	3.92E-10	1.40E-8	5.67E-11	2.37E-9	3.13E-12	-7.14E-9	9.31E-9
HTP-nc	CTUh	3.26E-7	3.72E-9	1.22E-8	3.42E-7	1.90E-9	5.51E-8	3.34E-10	-1.45E-7	2.54E-7
SQP	Pt	4.47E+2	3.31E+0	3.64E-1	4.50E+2	1.68E+0	1.28E+1	2.91E-1	-3.87E+2	7.84E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	7.29E+1	4.77E-2	2.37E+1	9.67E+1	2.82E-2	1.47E+0	4.29E-3	-6.46E+1	3.36E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	7.29E+1	4.77E-2	2.37E+1	9.67E+1	2.82E-2	1.47E+0	4.29E-3	-6.46E+1	3.36E+1
PENRE	MJ	2.99E+2	4.05E+0	5.27E+0	3.08E+2	2.08E+0	2.21E+1	1.20E-1	-1.62E+2	1.70E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.99E+2	4.05E+0	5.27E+0	3.08E+2	2.08E+0	2.21E+1	1.20E-1	-1.62E+2	1.70E+2
PET	MJ	3.72E+2	4.10E+0	2.90E+1	4.05E+2	2.11E+0	2.35E+1	1.25E-1	-2.26E+2	2.04E+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	2.00E-1	4.64E-4	8.91E-2	2.89E-1	2.22E-4	2.29E-2	1.39E-4	-9.06E-2	2.22E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.47E-3	9.66E-6	5.17E-6	1.48E-3	5.02E-6	3.46E-5	1.38E-7	-1.58E-4	1.36E-3
NHWD	kg	1.39E+0	2.42E-1	7.99E-3	1.64E+0	1.22E-1	7.79E-1	4.99E-1	-7.34E-1	2.31E+0
RWD	kg	6.20E-4	2.50E-5	9.59E-6	6.55E-4	1.34E-5	8.05E-5	7.39E-7	-2.84E-4	4.65E-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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