Environmental Profile

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

Ecochain v3.5.80

Product:	3009608 - KG Branch 45° DN250xDN150
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	1.14	0.02	0.05	1.21	0.01	0.33	0	-0.61	0.95
ADPE	kg Sb-eq	8.49E-3	4.84E-6	1.28E-5	8.51E-3	2.79E-6	2.50E-5	3.20E-8	-1.10E-4	8.43E-3
ADPF	kg Sb-eq	1.10E-1	1.39E-3	2.20E-3	1.13E-1	7.85E-4	8.71E-3	4.43E-5	-5.95E-2	6.31E-2
GWP	kg CO2-eq	9.18E+0	1.89E-1	4.17E-1	9.79E+0	1.07E-1	3.51E+0	3.07E-2	-5.27E+0	8.17E+0
ODP	kg CFC-11-eq	4.73E-6	3.36E-8	3.30E-8	4.79E-6	1.98E-8	3.62E-7	1.06E-9	-2.37E-6	2.80E-6
POCP	kg ethene-eq	6.40E-3	1.14E-4	1.81E-4	6.69E-3	6.42E-5	6.86E-4	7.91E-6	-3.30E-3	4.15E-3
AP	kg SO2-eq	3.80E-2	8.32E-4	1.79E-3	4.06E-2	4.60E-4	5.16E-3	2.39E-5	-1.79E-2	2.84E-2
EP	kg PO4 3−-eq	4.78E-3	1.64E-4	2.31E-4	5.17E-3	9.19E-5	8.00E-4	1.04E-5	-2.40E-3	3.68E-3
HTP	kg 1,4-DB-eq	4.68E+0	7.97E-2	1.94E-1	4.95E+0	4.57E-2	1.30E+0	2.50E-3	-2.52E+0	3.78E+0
FAETP	kg 1,4-DB-eq	1.15E-1	2.33E-3	6.62E-3	1.24E-1	1.34E-3	1.97E-2	7.68E-4	-5.36E-2	9.23E-2
MAETP	kg 1,4-DB-eq	2.63E+2	8.37E+0	2.61E+1	2.98E+2	4.79E+0	6.62E+1	9.37E-1	-1.12E+2	2.57E+2
TETP	kg 1,4-DB-eq	2.94E-2	2.82E-4	1.44E-2	4.41E-2	1.62E-4	4.68E-3	8.45E-6	-1.56E-2	3.33E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	6.25E+0	1.91E-1	4.78E-1	6.92E+0	1.08E-1	6.76E+0	3.58E-2	-5.42E+0	8.40E+0
GWP-f	kg CO2 eq	9.41E+0	1.91E-1	3.67E-1	9.96E+0	1.08E-1	3.53E+0	3.58E-2	-5.39E+0	8.25E+0
GWP-b	kg CO2 eq	-3.16E+0	8.81E-5	7.57E-2	-3.08E+0	6.55E-5	3.22E+0	4.46E-5	-3.10E-2	1.08E-1
GWP-luluc	kg CO2 eq	9.62E-3	7.00E-5	3.48E-2	4.45E-2	3.82E-5	1.34E-3	9.23E-7	-4.97E-3	4.09E-2
ODP	kg CFC11 eq	4.70E-6	4.21E-8	3.88E-8	4.78E-6	2.48E-8	3.73E-7	1.31E-9	-2.36E-6	2.82E-6
AP	mol H+ eq	4.60E-2	1.11E-3	2.24E-3	4.94E-2	6.14E-4	6.49E-3	3.19E-5	-2.18E-2	3.47E-2
EP-fw	kg P eq	4.42E-4	1.93E-6	6.43E-6	4.50E-4	8.87E-7	4.49E-5	4.18E-8	-2.05E-4	2.91E-4
EP-m	kg N eq	8.15E-3	3.90E-4	5.28E-4	9.07E-3	2.20E-4	1.62E-3	2.20E-5	-4.15E-3	6.78E-3
EP-T	mol N eq	8.96E-2	4.30E-3	5.83E-3	9.97E-2	2.42E-3	1.79E-2	1.27E-4	-4.59E-2	7.43E-2
POCP	kg NMVOC eq	3.11E-2	1.23E-3	1.66E-3	3.40E-2	6.92E-4	5.31E-3	4.39E-5	-1.59E-2	2.41E-2
ADP-mm	kg Sb eq	8.49E-3	4.84E-6	1.28E-5	8.51E-3	2.79E-6	2.50E-5	3.20E-8	-1.10E-4	8.43E-3
ADP-f	MJ	2.32E+2	2.88E+0	4.10E+0	2.39E+2	1.65E+0	1.73E+1	9.58E-2	-1.24E+2	1.34E+2
WDP	m3 depriv.	1.41E+1	1.03E-2	3.17E+0	1.73E+1	5.08E-3	6.75E-1	6.13E-4	-6.68E+0	1.13E+1
PM	disease inc.	3.71E-7	1.71E-8	2.76E-8	4.15E-7	9.73E-9	7.92E-8	6.59E-10	-1.91E-7	3.13E-7
IR	kBq U-235 eq	5.53E-1	1.21E-2	6.52E-3	5.71E-1	7.23E-3	6.16E-2	4.41E-4	-2.49E-1	3.91E-1
ETP-fw	CTUe	2.40E+2	2.57E+0	9.53E+0	2.52E+2	1.34E+0	1.32E+2	1.46E+0	-8.86E+1	2.99E+2
HTP-c	CTUh	1.04E-8	8.33E-11	3.30E-10	1.09E-8	4.78E-11	1.96E-9	2.64E-12	-5.23E-9	7.64E-9
HTP-nc	CTUh	2.65E-7	2.81E-9	1.03E-8	2.78E-7	1.60E-9	4.61E-8	2.82E-10	-1.14E-7	2.12E-7
SQP	Pt	3.01E+2	2.50E+0	3.07E-1	3.04E+2	1.42E+0	1.06E+1	2.45E-1	-2.58E+2	5.89E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.05E+1	3.61E-2	1.99E+1	7.05E+1	2.37E-2	1.23E+0	3.62E-3	-4.36E+1	2.81E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.05E+1	3.61E-2	1.99E+1	7.05E+1	2.37E-2	1.23E+0	3.62E-3	-4.36E+1	2.81E+1
PENRE	MJ	2.48E+2	3.06E+0	4.43E+0	2.56E+2	1.76E+0	1.84E+1	1.02E-1	-1.33E+2	1.43E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	2.48E+2	3.06E+0	4.43E+0	2.56E+2	1.76E+0	1.84E+1	1.02E-1	-1.33E+2	1.43E+2
PET	MJ	2.99E+2	3.09E+0	2.44E+1	3.26E+2	1.78E+0	1.96E+1	1.05E-1	-1.77E+2	1.71E+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	1.66E-1	3.51E-4	7.50E-2	2.42E-1	1.87E-4	1.92E-2	1.17E-4	-7.45E-2	1.87E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.23E-3	7.30E-6	4.36E-6	1.24E-3	4.23E-6	2.87E-5	1.16E-7	-1.25E-4	1.15E-3
NHWD	kg	1.11E+0	1.83E-1	6.73E-3	1.29E+0	1.03E-1	6.46E-1	4.21E-1	-5.59E-1	1.90E+0
RWD	kg	5.12E-4	1.89E-5	8.07E-6	5.39E-4	1.13E-5	6.65E-5	6.23E-7	-2.28E-4	3.89E-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