Environmental Profile

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

Ecochain v3.5.80

Product:	3009595 - KG Branch 45° BR DN200xDN100 S/S/SP
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	0.49	0.01	0.02	0.52	0.01	0.14	0	-0.26	0.41
ADPE	kg Sb-eq	3.69E-3	2.07E-6	5.56E-6	3.70E-3	1.21E-6	1.08E-5	1.39E-8	-4.78E-5	3.66E-3
ADPF	kg Sb-eq	4.75E-2	5.97E-4	9.56E-4	4.91E-2	3.41E-4	3.78E-3	1.92E-5	-2.58E-2	2.74E-2
GWP	kg CO2-eq	3.98E+0	8.12E-2	1.81E-1	4.24E+0	4.65E-2	1.52E+0	1.33E-2	-2.28E+0	3.55E+0
ODP	kg CFC-11-eq	2.05E-6	1.44E-8	1.43E-8	2.08E-6	8.62E-9	1.57E-7	4.59E-10	-1.03E-6	1.22E-6
POCP	kg ethene-eq	2.76E-3	4.90E-5	7.88E-5	2.89E-3	2.79E-5	2.98E-4	3.44E-6	-1.42E-3	1.80E-3
AP	kg SO2-eq	1.65E-2	3.57E-4	7.80E-4	1.76E-2	2.00E-4	2.24E-3	1.04E-5	-7.72E-3	1.23E-2
EP	kg PO4 3−-eq	2.07E-3	7.01E-5	1.00E-4	2.24E-3	3.99E-5	3.47E-4	4.50E-6	-1.03E-3	1.60E-3
HTP	kg 1,4-DB-eq	2.02E+0	3.42E-2	8.43E-2	2.13E+0	1.99E-2	5.64E-1	1.09E-3	-1.08E+0	1.64E+0
FAETP	kg 1,4-DB-eq	4.97E-2	9.98E-4	2.88E-3	5.36E-2	5.82E-4	8.59E-3	3.34E-4	-2.30E-2	4.01E-2
MAETP	kg 1,4-DB-eq	1.14E+2	3.59E+0	1.13E+1	1.29E+2	2.08E+0	2.88E+1	4.07E-1	-4.86E+1	1.12E+2
TETP	kg 1,4-DB-eq	1.27E-2	1.21E-4	6.27E-3	1.91E-2	7.04E-5	2.03E-3	3.67E-6	-6.70E-3	1.45E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.75E+0	8.20E-2	2.08E-1	3.04E+0	4.69E-2	2.89E+0	1.56E-2	-2.35E+0	3.65E+0
GWP-f	kg CO2 eq	4.08E+0	8.19E-2	1.60E-1	4.32E+0	4.68E-2	1.53E+0	1.55E-2	-2.33E+0	3.58E+0
GWP-b	kg CO2 eq	-1.33E+0	3.78E-5	3.29E-2	-1.30E+0	2.84E-5	1.36E+0	1.94E-5	-1.35E-2	4.68E-2
GWP-luluc	kg CO2 eq	4.15E-3	3.00E-5	1.51E-2	1.93E-2	1.66E-5	5.83E-4	4.01E-7	-2.13E-3	1.78E-2
ODP	kg CFC11 eq	2.04E-6	1.81E-8	1.69E-8	2.07E-6	1.08E-8	1.62E-7	5.69E-10	-1.02E-6	1.22E-6
AP	mol H+ eq	1.99E-2	4.75E-4	9.72E-4	2.14E-2	2.67E-4	2.82E-3	1.39E-5	-9.43E-3	1.51E-2
EP-fw	kg P eq	1.92E-4	8.26E-7	2.79E-6	1.95E-4	3.85E-7	1.95E-5	1.82E-8	-8.88E-5	1.26E-4
EP-m	kg N eq	3.53E-3	1.67E-4	2.30E-4	3.92E-3	9.55E-5	7.04E-4	9.53E-6	-1.79E-3	2.94E-3
EP-T	mol N eq	3.87E-2	1.85E-3	2.53E-3	4.31E-2	1.05E-3	7.77E-3	5.53E-5	-1.98E-2	3.22E-2
POCP	kg NMVOC eq	1.34E-2	5.27E-4	7.21E-4	1.47E-2	3.01E-4	2.30E-3	1.91E-5	-6.83E-3	1.05E-2
ADP-mm	kg Sb eq	3.69E-3	2.07E-6	5.56E-6	3.70E-3	1.21E-6	1.08E-5	1.39E-8	-4.78E-5	3.66E-3
ADP-f	MJ	1.01E+2	1.24E+0	1.78E+0	1.04E+2	7.19E-1	7.49E+0	4.16E-2	-5.36E+1	5.82E+1
WDP	m3 depriv.	6.15E+0	4.42E-3	1.38E+0	7.53E+0	2.21E-3	2.94E-1	2.66E-4	-2.90E+0	4.93E+0
PM	disease inc.	1.60E-7	7.35E-9	1.20E-8	1.79E-7	4.23E-9	3.44E-8	2.86E-10	-8.21E-8	1.36E-7
IR	kBq U-235 eq	2.39E-1	5.17E-3	2.83E-3	2.48E-1	3.14E-3	2.67E-2	1.92E-4	-1.08E-1	1.70E-1
ETP-fw	CTUe	1.04E+2	1.10E+0	4.14E+0	1.09E+2	5.84E-1	5.73E+1	6.34E-1	-3.82E+1	1.30E+2
HTP-c	CTUh	4.49E-9	3.57E-11	1.43E-10	4.67E-9	2.08E-11	8.50E-10	1.15E-12	-2.23E-9	3.31E-9
HTP-nc	CTUh	1.15E-7	1.20E-9	4.48E-9	1.20E-7	6.96E-10	2.00E-8	1.22E-10	-4.89E-8	9.22E-8
SQP	Pt	1.27E+2	1.07E+0	1.33E-1	1.28E+2	6.15E-1	4.62E+0	1.07E-1	-1.09E+2	2.52E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.14E+1	1.55E-2	8.67E+0	3.01E+1	1.03E-2	5.36E-1	1.57E-3	-1.84E+1	1.22E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.14E+1	1.55E-2	8.67E+0	3.01E+1	1.03E-2	5.36E-1	1.57E-3	-1.84E+1	1.22E+1
PENRE	MJ	1.08E+2	1.31E+0	1.93E+0	1.11E+2	7.63E-1	7.97E+0	4.41E-2	-5.77E+1	6.20E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.08E+2	1.31E+0	1.93E+0	1.11E+2	7.63E-1	7.97E+0	4.41E-2	-5.77E+1	6.20E+1
PET	MJ	1.29E+2	1.33E+0	1.06E+1	1.41E+2	7.74E-1	8.51E+0	4.57E-2	-7.61E+1	7.42E+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	7.21E-2	1.50E-4	3.26E-2	1.05E-1	8.14E-5	8.34E-3	5.10E-5	-3.23E-2	8.11E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.32E-4	3.13E-6	1.89E-6	5.37E-4	1.84E-6	1.24E-5	5.06E-8	-5.38E-5	4.98E-4
NHWD	kg	4.77E-1	7.83E-2	2.92E-3	5.58E-1	4.46E-2	2.80E-1	1.83E-1	-2.40E-1	8.26E-1
RWD	kg	2.21E-4	8.11E-6	3.51E-6	2.33E-4	4.89E-6	2.88E-5	2.71E-7	-9.86E-5	1.68E-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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