Environmental Profile

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

Ecochain v3.5.80

Product:	3001598 - KG Bend 87° BR 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]

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Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	0.42	0.01	0.02	0.45	0.01	0.14	0	-0.21	0.39
ADPE	kg Sb-eq	3.65E-3	1.31E-6	5.53E-6	3.65E-3	1.20E-6	1.08E-5	1.37E-8	-4.38E-5	3.62E-3
ADPF	kg Sb-eq	4.49E-2	3.77E-4	9.50E-4	4.63E-2	3.37E-4	3.71E-3	1.89E-5	-2.39E-2	2.65E-2
GWP	kg CO2-eq	3.75E+0	5.12E-2	1.80E-1	3.98E+0	4.59E-2	1.46E+0	1.31E-2	-2.07E+0	3.43E+0
ODP	kg CFC-11-eq	2.02E-6	9.09E-9	1.42E-8	2.04E-6	8.52E-9	1.55E-7	4.51E-10	-1.01E-6	1.20E-6
POCP	kg ethene-eq	2.27E-3	3.09E-5	7.83E-5	2.38E-3	2.76E-5	2.95E-4	3.37E-6	-1.06E-3	1.65E-3
AP	kg SO2-eq	1.52E-2	2.25E-4	7.75E-4	1.62E-2	1.98E-4	2.18E-3	1.02E-5	-6.95E-3	1.16E-2
EP	kg PO4 3−-eq	1.97E-3	4.43E-5	9.96E-5	2.11E-3	3.95E-5	3.35E-4	4.36E-6	-9.64E-4	1.53E-3
HTP	kg 1,4-DB-eq	1.48E+0	2.16E-2	8.37E-2	1.58E+0	1.97E-2	5.63E-1	1.07E-3	-6.60E-1	1.51E+0
FAETP	kg 1,4-DB-eq	4.51E-2	6.30E-4	2.86E-3	4.86E-2	5.76E-4	8.60E-3	3.29E-4	-1.93E-2	3.88E-2
MAETP	kg 1,4-DB-eq	1.05E+2	2.27E+0	1.13E+1	1.19E+2	2.06E+0	2.98E+1	4.01E-1	-4.27E+1	1.09E+2
TETP	kg 1,4-DB-eq	1.06E-2	7.63E-5	6.23E-3	1.69E-2	6.96E-5	2.01E-3	3.61E-6	-6.45E-3	1.26E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.87E+0	5.17E-2	2.06E-1	4.13E+0	4.64E-2	1.57E+0	1.53E-2	-1.91E+0	3.84E+0
GWP-f	kg CO2 eq	3.83E+0	5.17E-2	1.59E-1	4.04E+0	4.63E-2	1.47E+0	1.53E-2	-2.12E+0	3.46E+0
GWP-b	kg CO2 eq	3.26E-2	2.39E-5	3.27E-2	6.53E-2	2.81E-5	9.42E-2	1.90E-5	2.05E-1	3.65E-1
GWP-luluc	kg CO2 eq	4.45E-3	1.89E-5	1.50E-2	1.95E-2	1.64E-5	5.75E-4	3.95E-7	-2.78E-3	1.73E-2
ODP	kg CFC11 eq	2.00E-6	1.14E-8	1.67E-8	2.03E-6	1.07E-8	1.60E-7	5.60E-10	-9.99E-7	1.20E-6
AP	mol H+ eq	1.85E-2	3.00E-4	9.66E-4	1.98E-2	2.64E-4	2.74E-3	1.36E-5	-8.42E-3	1.44E-2
EP-fw	kg P eq	1.83E-4	5.21E-7	2.78E-6	1.87E-4	3.81E-7	1.93E-5	1.79E-8	-9.06E-5	1.16E-4
EP-m	kg N eq	3.33E-3	1.06E-4	2.28E-4	3.66E-3	9.44E-5	6.77E-4	9.21E-6	-1.52E-3	2.92E-3
EP-T	mol N eq	3.59E-2	1.16E-3	2.52E-3	3.95E-2	1.04E-3	7.46E-3	5.44E-5	-1.64E-2	3.17E-2
POCP	kg NMVOC eq	1.17E-2	3.32E-4	7.16E-4	1.27E-2	2.97E-4	2.22E-3	1.88E-5	-5.43E-3	9.84E-3
ADP-mm	kg Sb eq	3.65E-3	1.31E-6	5.53E-6	3.65E-3	1.20E-6	1.08E-5	1.37E-8	-4.38E-5	3.62E-3
ADP-f	MJ	9.55E+1	7.79E-1	1.77E+0	9.81E+1	7.11E-1	7.34E+0	4.09E-2	-5.02E+1	5.60E+1
WDP	m3 depriv.	6.05E+0	2.79E-3	1.37E+0	7.42E+0	2.18E-3	2.91E-1	2.63E-4	-3.11E+0	4.60E+0
PM	disease inc.	1.33E-7	4.64E-9	1.19E-8	1.50E-7	4.18E-9	3.37E-8	2.82E-10	-6.74E-8	1.21E-7
IR	kBq U-235 eq	2.24E-1	3.27E-3	2.82E-3	2.30E-1	3.11E-3	2.60E-2	1.89E-4	-1.04E-1	1.55E-1
ETP-fw	CTUe	1.19E+2	6.95E-1	4.12E+0	1.24E+2	5.77E-1	5.70E+1	6.29E-1	-4.36E+1	1.39E+2
HTP-c	CTUh	3.10E-9	2.25E-11	1.42E-10	3.27E-9	2.05E-11	8.16E-10	1.13E-12	-1.16E-9	2.95E-9
HTP-nc	CTUh	1.01E-7	7.60E-10	4.45E-9	1.07E-7	6.88E-10	1.98E-8	1.21E-10	-3.99E-8	8.74E-8
SQP	Pt	2.16E+1	6.76E-1	1.32E-1	2.24E+1	6.08E-1	4.47E+0	1.05E-1	-4.42E+1	-1.66E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	6.50E+0	9.76E-3	8.61E+0	1.51E+1	1.02E-2	5.29E-1	1.54E-3	-9.14E+0	6.52E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	6.50E+0	9.76E-3	8.61E+0	1.51E+1	1.02E-2	5.29E-1	1.54E-3	-9.14E+0	6.52E+0
PENRE	MJ	1.02E+2	8.28E-1	1.92E+0	1.05E+2	7.55E-1	7.81E+0	4.34E-2	-5.40E+1	5.97E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.02E+2	8.28E-1	1.92E+0	1.05E+2	7.55E-1	7.81E+0	4.34E-2	-5.40E+1	5.97E+1
PET	MJ	1.09E+2	8.37E-1	1.05E+1	1.20E+2	7.65E-1	8.34E+0	4.50E-2	-6.32E+1	6.63E+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	7.02E-2	9.49E-5	3.24E-2	1.03E-1	8.04E-5	8.17E-3	5.02E-5	-3.75E-2	7.35E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	5.17E-4	1.98E-6	1.88E-6	5.21E-4	1.82E-6	1.22E-5	4.98E-8	-4.31E-5	4.91E-4
NHWD	kg	4.01E-1	4.94E-2	2.90E-3	4.53E-1	4.41E-2	2.69E-1	1.80E-1	-1.67E-1	7.79E-1
RWD	kg	2.04E-4	5.12E-6	3.49E-6	2.13E-4	4.83E-6	2.79E-5	2.66E-7	-9.34E-5	1.52E-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