Environmental Profile

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

Ecochain v3.5.80

Product:	3001616 - KG Branch 45° DN150xDN150 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

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Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	0.37	0.01	0.02	0.4	0	0.12	0	-0.18	0.34
ADPE	kg Sb-eq	3.16E-3	1.14E-6	4.74E-6	3.16E-3	1.04E-6	9.29E-6	1.19E-8	-3.86E-5	3.13E-3
ADPF	kg Sb-eq	3.96E-2	3.29E-4	8.15E-4	4.08E-2	2.92E-4	3.20E-3	1.65E-5	-2.08E-2	2.35E-2
GWP	kg CO2-eq	3.30E+0	4.48E-2	1.55E-1	3.50E+0	3.98E-2	1.33E+0	1.15E-2	-1.81E+0	3.06E+0
ODP	kg CFC-11-eq	1.75E-6	7.94E-9	1.22E-8	1.77E-6	7.38E-9	1.33E-7	3.94E-10	-8.69E-7	1.04E-6
POCP	kg ethene-eq	2.04E-3	2.70E-5	6.72E-5	2.13E-3	2.39E-5	2.55E-4	2.95E-6	-9.19E-4	1.49E-3
AP	kg SO2-eq	1.34E-2	1.97E-4	6.65E-4	1.43E-2	1.71E-4	1.89E-3	8.90E-6	-6.04E-3	1.03E-2
EP	kg PO4 3−-eq	1.75E-3	3.87E-5	8.55E-5	1.87E-3	3.42E-5	2.91E-4	3.91E-6	-8.46E-4	1.35E-3
HTP	kg 1,4-DB-eq	1.30E+0	1.88E-2	7.19E-2	1.39E+0	1.70E-2	4.85E-1	9.33E-4	-5.73E-1	1.32E+0
FAETP	kg 1,4-DB-eq	4.00E-2	5.50E-4	2.45E-3	4.30E-2	4.98E-4	7.42E-3	2.86E-4	-1.70E-2	3.42E-2
MAETP	kg 1,4-DB-eq	9.35E+1	1.98E+0	9.67E+0	1.05E+2	1.78E+0	2.57E+1	3.49E-1	-3.70E+1	9.60E+1
TETP	kg 1,4-DB-eq	9.27E-3	6.66E-5	5.34E-3	1.47E-2	6.03E-5	1.73E-3	3.15E-6	-5.67E-3	1.08E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	3.41E+0	4.52E-2	1.77E-1	3.63E+0	4.01E-2	1.42E+0	1.34E-2	-1.66E+0	3.44E+0
GWP-f	kg CO2 eq	3.38E+0	4.51E-2	1.36E-1	3.56E+0	4.01E-2	1.33E+0	1.34E-2	-1.85E+0	3.09E+0
GWP-b	kg CO2 eq	2.69E-2	2.08E-5	2.81E-2	5.50E-2	2.43E-5	8.69E-2	1.66E-5	1.90E-1	3.32E-1
GWP-luluc	kg CO2 eq	3.95E-3	1.65E-5	1.29E-2	1.69E-2	1.42E-5	4.94E-4	3.44E-7	-2.49E-3	1.49E-2
ODP	kg CFC11 eq	1.74E-6	9.96E-9	1.44E-8	1.76E-6	9.24E-9	1.38E-7	4.89E-10	-8.61E-7	1.05E-6
AP	mol H+ eq	1.64E-2	2.62E-4	8.29E-4	1.75E-2	2.28E-4	2.37E-3	1.19E-5	-7.33E-3	1.28E-2
EP-fw	kg P eq	1.61E-4	4.55E-7	2.38E-6	1.63E-4	3.30E-7	1.66E-5	1.56E-8	-7.91E-5	1.01E-4
EP-m	kg N eq	2.94E-3	9.23E-5	1.96E-4	3.23E-3	8.17E-5	5.87E-4	8.29E-6	-1.33E-3	2.58E-3
EP-T	mol N eq	3.17E-2	1.02E-3	2.16E-3	3.49E-2	9.01E-4	6.47E-3	4.75E-5	-1.43E-2	2.80E-2
POCP	kg NMVOC eq	1.04E-2	2.90E-4	6.15E-4	1.13E-2	2.57E-4	1.93E-3	1.64E-5	-4.73E-3	8.78E-3
ADP-mm	kg Sb eq	3.16E-3	1.14E-6	4.74E-6	3.16E-3	1.04E-6	9.29E-6	1.19E-8	-3.86E-5	3.13E-3
ADP-f	MJ	8.42E+1	6.81E-1	1.52E+0	8.64E+1	6.15E-1	6.32E+0	3.57E-2	-4.37E+1	4.97E+1
WDP	m3 depriv.	5.24E+0	2.44E-3	1.18E+0	6.42E+0	1.89E-3	2.51E-1	2.28E-4	-2.69E+0	3.98E+0
PM	disease inc.	1.21E-7	4.05E-9	1.02E-8	1.35E-7	3.62E-9	2.91E-8	2.46E-10	-5.94E-8	1.09E-7
IR	kBq U-235 eq	1.99E-1	2.85E-3	2.42E-3	2.05E-1	2.69E-3	2.24E-2	1.65E-4	-9.08E-2	1.39E-1
ETP-fw	CTUe	1.06E+2	6.07E-1	3.53E+0	1.10E+2	5.00E-1	4.91E+1	5.41E-1	-3.85E+1	1.22E+2
HTP-c	CTUh	2.71E-9	1.97E-11	1.22E-10	2.85E-9	1.78E-11	7.04E-10	9.85E-13	-1.00E-9	2.57E-9
HTP-nc	CTUh	8.82E-8	6.64E-10	3.82E-9	9.27E-8	5.96E-10	1.71E-8	1.05E-10	-3.46E-8	7.59E-8
SQP	Pt	1.95E+1	5.91E-1	1.14E-1	2.02E+1	5.27E-1	3.85E+0	9.15E-2	-4.04E+1	-1.57E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.77E+0	8.52E-3	7.39E+0	1.32E+1	8.83E-3	4.55E-1	1.35E-3	-8.30E+0	5.34E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.77E+0	8.52E-3	7.39E+0	1.32E+1	8.83E-3	4.55E-1	1.35E-3	-8.30E+0	5.34E+0
PENRE	MJ	9.03E+1	7.23E-1	1.64E+0	9.26E+1	6.53E-1	6.73E+0	3.79E-2	-4.71E+1	5.30E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	9.03E+1	7.23E-1	1.64E+0	9.26E+1	6.53E-1	6.73E+0	3.79E-2	-4.71E+1	5.30E+1
PET	MJ	9.60E+1	7.31E-1	9.04E+0	1.06E+2	6.62E-1	7.18E+0	3.93E-2	-5.54E+1	5.83E+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	6.16E-2	8.29E-5	2.78E-2	8.95E-2	6.96E-5	7.11E-3	4.38E-5	-3.27E-2	6.40E-2
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.45E-4	1.73E-6	1.61E-6	4.48E-4	1.57E-6	1.05E-5	4.35E-8	-3.77E-5	4.23E-4
NHWD	kg	3.53E-1	4.32E-2	2.49E-3	3.99E-1	3.81E-2	2.33E-1	1.57E-1	-1.44E-1	6.83E-1
RWD	kg	1.84E-4	4.47E-6	2.99E-6	1.92E-4	4.19E-6	2.41E-5	2.33E-7	-8.15E-5	1.39E-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