Environmental Profile

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

Ecochain v3.5.80

Product:	3001630 - KG Branch 45° DN250xDN250
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	1.83	0.04	0.08	1.95	0.02	0.51	0	-1	1.48
ADPE	kg Sb-eq	1.31E-2	8.19E-6	1.98E-5	1.32E-2	4.31E-6	3.89E-5	4.94E-8	-1.75E-4	1.30E-2
ADPF	kg Sb-eq	1.72E-1	2.36E-3	3.40E-3	1.78E-1	1.21E-3	1.36E-2	6.85E-5	-9.40E-2	9.84E-2
GWP	kg CO2-eq	1.45E+1	3.20E-1	6.44E-1	1.55E+1	1.65E-1	5.46E+0	4.75E-2	-8.39E+0	1.27E+1
ODP	kg CFC-11-eq	7.33E-6	5.68E-8	5.09E-8	7.44E-6	3.06E-8	5.61E-7	1.63E-9	-3.69E-6	4.35E-6
POCP	kg ethene-eq	1.03E-2	1.93E-4	2.80E-4	1.08E-2	9.92E-5	1.07E-3	1.22E-5	-5.47E-3	6.51E-3
AP	kg SO2-eq	6.01E-2	1.41E-3	2.77E-3	6.43E-2	7.11E-4	8.06E-3	3.69E-5	-2.89E-2	4.43E-2
EP	kg PO4 3−-eq	7.63E-3	2.77E-4	3.56E-4	8.26E-3	1.42E-4	1.26E-3	1.61E-5	-3.95E-3	5.73E-3
HTP	kg 1,4-DB-eq	7.71E+0	1.35E-1	2.99E-1	8.15E+0	7.07E-2	2.01E+0	3.87E-3	-4.28E+0	5.95E+0
FAETP	kg 1,4-DB-eq	1.88E-1	3.94E-3	1.02E-2	2.02E-1	2.07E-3	3.07E-2	1.19E-3	-9.10E-2	1.45E-1
MAETP	kg 1,4-DB-eq	4.17E+2	1.42E+1	4.03E+1	4.71E+2	7.40E+0	1.03E+2	1.45E+0	-1.82E+2	4.01E+2
TETP	kg 1,4-DB-eq	4.77E-2	4.77E-4	2.23E-2	7.04E-2	2.50E-4	7.26E-3	1.31E-5	-2.60E-2	5.19E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	8.85E+0	3.23E-1	7.37E-1	9.91E+0	1.67E-1	1.16E+1	5.54E-2	-8.63E+0	1.31E+1
GWP-f	kg CO2 eq	1.48E+1	3.23E-1	5.67E-1	1.57E+1	1.67E-1	5.49E+0	5.54E-2	-8.57E+0	1.29E+1
GWP-b	kg CO2 eq	-6.01E+0	1.49E-4	1.17E-1	-5.89E+0	1.01E-4	6.11E+0	6.90E-5	-4.79E-2	1.66E-1
GWP-luluc	kg CO2 eq	1.56E-2	1.18E-4	5.38E-2	6.95E-2	5.90E-5	2.08E-3	1.43E-6	-8.39E-3	6.33E-2
ODP	kg CFC11 eq	7.29E-6	7.13E-8	5.99E-8	7.42E-6	3.84E-8	5.80E-7	2.03E-9	-3.67E-6	4.37E-6
AP	mol H+ eq	7.29E-2	1.87E-3	3.46E-3	7.83E-2	9.49E-4	1.02E-2	4.94E-5	-3.54E-2	5.40E-2
EP-fw	kg P eq	6.99E-4	3.26E-6	9.93E-6	7.12E-4	1.37E-6	6.96E-5	6.46E-8	-3.31E-4	4.52E-4
EP-m	kg N eq	1.30E-2	6.60E-4	8.16E-4	1.45E-2	3.40E-4	2.56E-3	3.40E-5	-6.82E-3	1.06E-2
EP-T	mol N eq	1.43E-1	7.28E-3	9.00E-3	1.59E-1	3.74E-3	2.82E-2	1.97E-4	-7.58E-2	1.16E-1
POCP	kg NMVOC eq	4.99E-2	2.08E-3	2.56E-3	5.45E-2	1.07E-3	8.35E-3	6.79E-5	-2.62E-2	3.78E-2
ADP-mm	kg Sb eq	1.31E-2	8.19E-6	1.98E-5	1.32E-2	4.31E-6	3.89E-5	4.94E-8	-1.75E-4	1.30E-2
ADP-f	MJ	3.63E+2	4.87E+0	6.34E+0	3.74E+2	2.56E+0	2.69E+1	1.48E-1	-1.95E+2	2.09E+2
WDP	m3 depriv.	2.19E+1	1.74E-2	4.90E+0	2.69E+1	7.85E-3	1.04E+0	9.47E-4	-1.04E+1	1.75E+1
PM	disease inc.	6.06E-7	2.90E-8	4.27E-8	6.77E-7	1.50E-8	1.24E-7	1.02E-9	-3.25E-7	4.93E-7
IR	kBq U-235 eq	8.71E-1	2.04E-2	1.01E-2	9.02E-1	1.12E-2	9.62E-2	6.82E-4	-3.98E-1	6.12E-1
ETP-fw	CTUe	3.80E+2	4.34E+0	1.47E+1	3.99E+2	2.08E+0	2.04E+2	2.25E+0	-1.46E+2	4.62E+2
HTP-c	CTUh	1.73E-8	1.41E-10	5.09E-10	1.80E-8	7.39E-11	3.07E-9	4.08E-12	-9.07E-9	1.21E-8
HTP-nc	CTUh	4.22E-7	4.75E-9	1.59E-8	4.42E-7	2.48E-9	7.16E-8	4.35E-10	-1.86E-7	3.30E-7
SQP	Pt	5.60E+2	4.23E+0	4.74E-1	5.65E+2	2.19E+0	1.66E+1	3.79E-1	-4.84E+2	1.00E+2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	9.19E+1	6.10E-2	3.08E+1	1.23E+2	3.67E-2	1.91E+0	5.60E-3	-8.10E+1	4.37E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	9.19E+1	6.10E-2	3.08E+1	1.23E+2	3.67E-2	1.91E+0	5.60E-3	-8.10E+1	4.37E+1
PENRE	MJ	3.89E+2	5.17E+0	6.85E+0	4.01E+2	2.72E+0	2.86E+1	1.57E-1	-2.10E+2	2.23E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.89E+2	5.17E+0	6.85E+0	4.01E+2	2.72E+0	2.86E+1	1.57E-1	-2.10E+2	2.23E+2
PET	MJ	4.81E+2	5.23E+0	3.77E+1	5.24E+2	2.75E+0	3.05E+1	1.63E-1	-2.91E+2	2.66E+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	2.60E-1	5.93E-4	1.16E-1	3.76E-1	2.89E-4	2.98E-2	1.82E-4	-1.17E-1	2.89E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.91E-3	1.23E-5	6.73E-6	1.92E-3	6.54E-6	4.49E-5	1.80E-7	-2.03E-4	1.77E-3
NHWD	kg	1.80E+0	3.09E-1	1.04E-2	2.12E+0	1.59E-1	1.01E+0	6.51E-1	-9.38E-1	3.00E+0
RWD	kg	8.10E-4	3.20E-5	1.25E-5	8.54E-4	1.74E-5	1.04E-4	9.64E-7	-3.67E-4	6.10E-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