Environmental Profile

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

Ecochain v3.5.80

Product:	3004880 - PVC Pipe CR KIWA 400x15.3 PN10 L=10 CH
Unit:	1 Piece
Manufacturer:	Wavin - NL - Hardenberg - Verified
Address:	J.C. Kellerlaan 3 7772 SG Hardenberg Netherlands

Within our range of PVC pressure pipes you will find the perfect solution for every component in your drinking water system. The Kiwa ATA quality mark confirms that you are making a reliable choice with these products.

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	58.92	1.07	2.43	62.42	0.87	20.18	0.13	-29.3	54.3
ADPE	kg Sb-eq	4.36E-1	2.27E-4	4.42E-4	4.37E-1	1.88E-4	1.63E-3	2.06E-6	-6.14E-3	4.33E-1
ADPF	kg Sb-eq	6.42E+0	6.54E-2	1.19E-1	6.60E+0	5.30E-2	5.71E-1	2.87E-3	-3.47E+0	3.76E+0
GWP	kg CO2-eq	5.25E+2	8.89E+0	2.11E+1	5.55E+2	7.21E+0	1.98E+2	1.91E+0	-2.92E+2	4.69E+2
ODP	kg CFC-11-eq	3.04E-4	1.58E-6	1.98E-6	3.07E-4	1.34E-6	2.38E-5	6.85E-8	-1.52E-4	1.80E-4
POCP	kg ethene-eq	3.13E-1	5.36E-3	9.28E-3	3.28E-1	4.33E-3	4.45E-2	4.99E-4	-1.48E-1	2.29E-1
AP	kg SO2-eq	2.09E+0	3.91E-2	8.27E-2	2.21E+0	3.10E-2	3.31E-1	1.54E-3	-9.50E-1	1.62E+0
EP	kg PO4 3−-eq	2.53E-1	7.68E-3	1.31E-2	2.74E-1	6.20E-3	4.98E-2	6.02E-4	-1.15E-1	2.16E-1
HTP	kg 1,4-DB-eq	2.07E+2	3.74E+0	7.96E+0	2.19E+2	3.09E+0	8.73E+1	1.60E-1	-9.24E+1	2.17E+2
FAETP	kg 1,4-DB-eq	5.22E+0	1.09E-1	3.24E-1	5.66E+0	9.04E-2	1.32E+0	4.88E-2	-2.02E+0	5.09E+0
MAETP	kg 1,4-DB-eq	1.41E+4	3.93E+2	1.32E+3	1.58E+4	3.23E+2	4.39E+3	5.97E+1	-5.95E+3	1.47E+4
TETP	kg 1,4-DB-eq	1.47E+0	1.32E-2	4.94E-1	1.97E+0	1.09E-2	3.13E-1	5.37E-4	-6.73E-1	1.63E+0
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	5.17E+2	8.97E+0	2.48E+1	5.51E+2	7.28E+0	2.25E+2	2.22E+0	-3.01E+2	4.84E+2
GWP-f	kg CO2 eq	5.38E+2	8.96E+0	1.94E+1	5.66E+2	7.27E+0	1.99E+2	2.22E+0	-2.99E+2	4.76E+2
GWP-b	kg CO2 eq	-2.09E+1	4.14E-3	4.20E+0	-1.67E+1	4.42E-3	2.55E+1	2.83E-3	-2.09E+0	6.76E+0
GWP-luluc	kg CO2 eq	4.77E-1	3.28E-3	1.19E+0	1.67E+0	2.57E-3	8.95E-2	5.90E-5	-1.98E-1	1.56E+0
ODP	kg CFC11 eq	3.00E-4	1.98E-6	2.35E-6	3.04E-4	1.68E-6	2.45E-5	8.50E-8	-1.51E-4	1.79E-4
AP	mol H+ eq	2.52E+0	5.20E-2	1.06E-1	2.68E+0	4.14E-2	4.14E-1	2.06E-3	-1.15E+0	1.99E+0
EP-fw	kg P eq	2.51E-2	9.04E-5	2.78E-4	2.55E-2	5.98E-5	2.99E-3	2.67E-6	-1.11E-2	1.74E-2
EP-m	kg N eq	4.33E-1	1.83E-2	3.13E-2	4.82E-1	1.48E-2	1.00E-1	1.27E-3	-1.99E-1	3.99E-1
EP-T	mol N eq	4.72E+0	2.02E-1	3.35E-1	5.26E+0	1.63E-1	1.11E+0	8.22E-3	-2.14E+0	4.40E+0
POCP	kg NMVOC eq	1.58E+0	5.77E-2	9.46E-2	1.73E+0	4.67E-2	3.31E-1	2.82E-3	-7.33E-1	1.38E+0
ADP-mm	kg Sb eq	4.36E-1	2.27E-4	4.42E-4	4.37E-1	1.88E-4	1.63E-3	2.06E-6	-6.13E-3	4.33E-1
ADP-f	MJ	1.37E+4	1.35E+2	2.25E+2	1.40E+4	1.12E+2	1.13E+3	6.20E+0	-7.27E+3	8.01E+3
WDP	m3 depriv.	9.08E+2	4.84E-1	1.52E+2	1.06E+3	3.43E-1	4.50E+1	3.90E-2	-4.32E+2	6.74E+2
PM	disease inc.	1.72E-5	8.05E-7	1.65E-6	1.97E-5	6.56E-7	5.11E-6	4.26E-8	-7.38E-6	1.81E-5
IR	kBq U-235 eq	3.04E+1	5.66E-1	4.06E-1	3.14E+1	4.88E-1	3.97E+0	2.85E-2	-1.40E+1	2.19E+1
ETP-fw	CTUe	1.27E+4	1.21E+2	3.75E+2	1.32E+4	9.06E+1	8.77E+3	9.71E+1	-4.27E+3	1.79E+4
HTP-c	CTUh	4.40E-7	3.91E-9	1.28E-8	4.56E-7	3.23E-9	1.26E-7	1.68E-10	-1.60E-7	4.26E-7
HTP-nc	CTUh	1.42E-5	1.32E-7	3.92E-7	1.47E-5	1.08E-7	3.04E-6	1.86E-8	-5.53E-6	1.24E-5
SQP	Pt	4.12E+3	1.17E+2	1.68E+1	4.26E+3	9.55E+1	6.95E+2	1.58E+1	-1.27E+3	3.79E+3

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.04E+3	1.69E+0	6.79E+2	1.72E+3	1.60E+0	8.21E+1	2.29E-1	-4.14E+2	1.39E+3
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.04E+3	1.69E+0	6.79E+2	1.72E+3	1.60E+0	8.21E+1	2.29E-1	-4.14E+2	1.39E+3
PENRE	MJ	1.47E+4	1.44E+2	2.44E+2	1.51E+4	1.18E+2	1.20E+3	6.58E+0	-7.83E+3	8.55E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.47E+4	1.44E+2	2.44E+2	1.51E+4	1.18E+2	1.20E+3	6.58E+0	-7.83E+3	8.55E+3
PET	MJ	1.57E+4	1.45E+2	9.23E+2	1.68E+4	1.20E+2	1.28E+3	6.80E+0	-8.24E+3	9.94E+3
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	9.95E+0	1.65E-2	3.58E+0	1.35E+1	1.26E-2	1.23E+0	7.59E-3	-4.51E+0	1.03E+1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	6.44E-2	3.43E-4	3.15E-4	6.51E-2	2.85E-4	1.82E-3	7.53E-6	-6.05E-3	6.11E-2
NHWD	kg	5.39E+1	8.58E+0	4.55E-1	6.29E+1	6.92E+0	4.14E+1	2.77E+1	-2.32E+1	1.16E+2
RWD	kg	2.64E-2	8.88E-4	5.66E-4	2.78E-2	7.59E-4	4.23E-3	4.04E-5	-1.23E-2	2.05E-2
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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