Environmental Profile

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

Ecochain v3.5.64

Product:	3061879 - PE80 geothermal pipes BK 50 PN8 L=100
Unit:	1 piece
Manufacturer:	Wavin - SE - Eskilstuna

Ground heating pipes produced in PE80 (PEM), and according to EN 12201. The pipes are marked with the Nordic Poly Mark and DS approved.

LCA standard:	EN15804+A2 (2019)
Standard database:	Worldwide - Ecoinvent v 3.6 Cut-Off
Externally verified:	Yes
Issue date:	20-06-2022
End of validity:	20-06-2027
Verifier:	Harry van Ewijk - 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 - SE - Eskilstuna (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

GWP-total = EF Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF 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	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	9.01E+1	8.44E+0	3.16E+0	1.02E+2	1.18E+0	3.82E+1	6.51E-1	-5.89E+1	8.28E+1
GWP-f	kg CO2 eq	8.97E+1	8.43E+0	2.29E+0	1.00E+2	1.17E+0	3.82E+1	6.51E-1	-5.87E+1	8.18E+1
GWP-b	kg CO2 eq	4.45E-1	3.83E-3	6.02E-1	1.05E+0	7.13E-4	-4.70E-2	4.88E-4	-2.23E-1	7.83E-1
GWP-luluc	kg CO2 eq	2.72E-2	3.11E-3	2.66E-1	2.96E-1	4.16E-4	6.60E-3	9.33E-6	-1.34E-2	2.90E-1
ODP	kg CFC11 eq	4.93E-6	1.86E-6	2.59E-7	7.04E-6	2.71E-7	8.58E-7	1.39E-8	-2.82E-6	5.37E-6
AP	mol H+ eq	3.37E-1	5.14E-2	1.94E-2	4.08E-1	6.69E-3	3.61E-2	3.31E-4	-1.63E-1	2.89E-1
EP-fw	kg P eq	1.49E-3	8.45E-5	4.22E-5	1.62E-3	9.66E-6	1.90E-4	4.30E-7	-7.31E-4	1.09E-3
EP-m	kg N eq	5.63E-2	1.78E-2	5.74E-3	7.98E-2	2.39E-3	1.05E-2	2.34E-4	-2.97E-2	6.33E-2
EP-T	mol N eq	6.35E-1	1.96E-1	6.30E-2	8.94E-1	2.64E-2	1.16E-1	1.34E-3	-3.30E-1	7.07E-1
POCP	kg NMVOC eq	2.99E-1	5.58E-2	1.75E-2	3.73E-1	7.54E-3	3.65E-2	5.27E-4	-1.54E-1	2.63E-1
ADP-mm	kg Sb eq	1.12E-3	2.12E-4	6.89E-5	1.40E-3	3.04E-5	1.43E-4	3.32E-7	-3.79E-4	1.20E-3
ADP-f	MJ	3.18E+3	1.27E+2	2.27E+1	3.33E+3	1.80E+1	1.14E+2	1.01E+0	-1.76E+3	1.70E+3
WDP	m3 depriv.	6.84E+1	4.51E-1	1.47E+1	8.35E+1	5.53E-2	2.25E+0	4.64E-3	-3.42E+1	5.16E+1
PM	disease inc.	3.22E-6	7.52E-7	3.27E-7	4.30E-6	1.06E-7	5.94E-7	6.96E-9	-1.29E-6	3.72E-6
IR	kBq U-235 eq	2.75E+0	5.32E-1	6.76E-2	3.35E+0	7.88E-2	3.45E-1	4.72E-3	-1.06E+0	2.72E+0
ETP-fw	CTUe	5.88E+2	1.13E+2	6.34E+1	7.64E+2	1.46E+1	1.30E+2	8.93E-1	-2.56E+2	6.54E+2
HTP-c	CTUh	2.51E-8	3.69E-9	2.50E-9	3.13E-8	5.21E-10	1.54E-8	2.46E-11	-1.22E-8	3.51E-8
HTP-nc	CTUh	5.77E-7	1.23E-7	6.83E-8	7.68E-7	1.74E-8	1.95E-7	5.68E-10	-2.72E-7	7.09E-7
SQP	Pt	1.38E+2	1.09E+2	2.99E+0	2.50E+2	1.54E+1	9.14E+1	2.60E+0	-5.58E+1	3.03E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.15E+1	1.58E+0	1.43E+2	1.96E+2	2.59E-1	5.65E+0	4.01E-2	-2.55E+1	1.77E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.15E+1	1.58E+0	1.43E+2	1.96E+2	2.59E-1	5.65E+0	4.01E-2	-2.55E+1	1.77E+2
PENRE	MJ	3.41E+3	1.35E+2	2.41E+1	3.57E+3	1.91E+1	1.22E+2	1.08E+0	-1.90E+3	1.81E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.41E+3	1.35E+2	2.41E+1	3.57E+3	1.91E+1	1.22E+2	1.08E+0	-1.90E+3	1.81E+3
PET	MJ	3.46E+3	1.36E+2	1.68E+2	3.76E+3	1.94E+1	1.28E+2	1.12E+0	-1.92E+3	1.99E+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	1.04E+0	1.54E-2	3.48E-1	1.40E+0	2.04E-3	6.61E-2	1.25E-3	-5.23E-1	9.48E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.80E-4	3.20E-4	3.46E-5	8.35E-4	4.61E-5	1.86E-4	1.22E-6	-5.17E-4	5.51E-4
NHWD	kg	3.40E+0	7.98E+0	1.06E-1	1.15E+1	1.12E+0	5.62E+0	4.47E+0	-1.43E+0	2.13E+1
RWD	kg	3.00E-3	8.34E-4	9.62E-5	3.93E-3	1.23E-4	4.37E-4	6.63E-6	-9.87E-4	3.51E-3
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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