Environmental Profile

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

Ecochain v3.5.64

Product:	3061875 - PE80 Geothermal Pipe BK 40 PN6 L=200
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	1.01E+2	1.11E+1	4.03E+0	1.16E+2	1.53E+0	7.08E+1	8.46E-1	-7.73E+1	1.12E+2
GWP-f	kg CO2 eq	1.21E+2	1.10E+1	2.92E+0	1.35E+2	1.53E+0	5.04E+1	8.46E-1	-7.70E+1	1.11E+2
GWP-b	kg CO2 eq	-1.99E+1	5.02E-3	7.69E-1	-1.91E+1	9.27E-4	2.04E+1	6.35E-4	-2.90E-1	9.75E-1
GWP-luluc	kg CO2 eq	4.79E-2	4.08E-3	3.40E-1	3.92E-1	5.40E-4	8.63E-3	1.21E-5	-2.03E-2	3.81E-1
ODP	kg CFC11 eq	6.86E-6	2.43E-6	3.31E-7	9.63E-6	3.52E-7	1.14E-6	1.80E-8	-3.77E-6	7.37E-6
AP	mol H+ eq	4.67E-1	6.73E-2	2.48E-2	5.59E-1	8.70E-3	4.90E-2	4.31E-4	-2.21E-1	3.96E-1
EP-fw	kg P eq	2.12E-3	1.11E-4	5.40E-5	2.29E-3	1.26E-5	2.50E-4	5.59E-7	-9.83E-4	1.57E-3
EP-m	kg N eq	8.07E-2	2.33E-2	7.34E-3	1.11E-1	3.11E-3	1.46E-2	3.05E-4	-4.14E-2	8.78E-2
EP-T	mol N eq	9.18E-1	2.57E-1	8.05E-2	1.26E+0	3.43E-2	1.60E-1	1.75E-3	-4.74E-1	9.78E-1
POCP	kg NMVOC eq	4.14E-1	7.31E-2	2.24E-2	5.10E-1	9.80E-3	5.02E-2	6.85E-4	-2.09E-1	3.62E-1
ADP-mm	kg Sb eq	1.52E-3	2.78E-4	8.80E-5	1.88E-3	3.95E-5	1.88E-4	4.32E-7	-4.99E-4	1.61E-3
ADP-f	MJ	4.20E+3	1.66E+2	2.91E+1	4.39E+3	2.34E+1	1.51E+2	1.32E+0	-2.30E+3	2.27E+3
WDP	m3 depriv.	9.12E+1	5.91E-1	1.87E+1	1.10E+2	7.19E-2	2.95E+0	6.04E-3	-4.46E+1	6.89E+1
PM	disease inc.	5.29E-6	9.84E-7	4.18E-7	6.69E-6	1.38E-7	7.93E-7	9.05E-9	-1.83E-6	5.79E-6
IR	kBq U-235 eq	3.81E+0	6.97E-1	8.64E-2	4.60E+0	1.02E-1	4.56E-1	6.14E-3	-1.41E+0	3.76E+0
ETP-fw	CTUe	8.73E+2	1.48E+2	8.10E+1	1.10E+3	1.90E+1	1.72E+2	1.16E+0	-4.17E+2	8.77E+2
HTP-c	CTUh	4.08E-8	4.83E-9	3.20E-9	4.89E-8	6.77E-10	2.15E-8	3.20E-11	-1.71E-8	5.40E-8
HTP-nc	CTUh	8.39E-7	1.61E-7	8.72E-8	1.09E-6	2.27E-8	2.60E-7	7.38E-10	-3.90E-7	9.80E-7
SQP	Pt	2.04E+3	1.43E+2	3.82E+0	2.19E+3	2.01E+1	1.20E+2	3.38E+0	-4.69E+2	1.86E+3
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.46E+2	2.07E+0	1.83E+2	5.32E+2	3.36E-1	7.40E+0	5.21E-2	-1.13E+2	4.27E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.46E+2	2.07E+0	1.83E+2	5.32E+2	3.36E-1	7.40E+0	5.21E-2	-1.13E+2	4.27E+2
PENRE	MJ	4.50E+3	1.77E+2	3.09E+1	4.71E+3	2.49E+1	1.61E+2	1.40E+0	-2.48E+3	2.42E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.50E+3	1.77E+2	3.09E+1	4.71E+3	2.49E+1	1.61E+2	1.40E+0	-2.48E+3	2.42E+3
PET	MJ	4.85E+3	1.79E+2	2.14E+2	5.24E+3	2.52E+1	1.68E+2	1.45E+0	-2.59E+3	2.84E+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	1.41E+0	2.01E-2	4.45E-1	1.88E+0	2.65E-3	8.87E-2	1.63E-3	-6.84E-1	1.29E+0

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	7.72E-4	4.19E-4	4.42E-5	1.24E-3	5.99E-5	2.47E-4	1.58E-6	-6.93E-4	8.51E-4
NHWD	kg	5.41E+0	1.05E+1	1.36E-1	1.60E+1	1.45E+0	7.74E+0	5.81E+0	-2.04E+0	2.90E+1
RWD	kg	4.16E-3	1.09E-3	1.23E-4	5.38E-3	1.59E-4	5.80E-4	8.62E-6	-1.31E-3	4.81E-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

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777