Environmental Profile

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

Ecochain v3.5.64

Product:	3061877 - PE80 Geothermal Pipe BK 40 PN6,3 L=350
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	2.07E+2	1.93E+1	7.26E+0	2.34E+2	2.69E+0	8.81E+1	1.49E+0	-1.35E+2	1.91E+2
GWP-f	kg CO2 eq	2.06E+2	1.93E+1	5.26E+0	2.31E+2	2.69E+0	8.82E+1	1.49E+0	-1.35E+2	1.89E+2
GWP-b	kg CO2 eq	1.01E+0	8.78E-3	1.38E+0	2.40E+0	1.63E-3	-1.08E-1	1.12E-3	-5.10E-1	1.79E+0
GWP-luluc	kg CO2 eq	6.25E-2	7.13E-3	6.12E-1	6.81E-1	9.52E-4	1.51E-2	2.14E-5	-3.06E-2	6.67E-1
ODP	kg CFC11 eq	1.13E-5	4.26E-6	5.96E-7	1.62E-5	6.20E-7	1.97E-6	3.18E-8	-6.47E-6	1.23E-5
AP	mol H+ eq	7.76E-1	1.18E-1	4.46E-2	9.39E-1	1.53E-2	8.28E-2	7.59E-4	-3.73E-1	6.65E-1
EP-fw	kg P eq	3.43E-3	1.94E-4	9.71E-5	3.72E-3	2.21E-5	4.36E-4	9.85E-7	-1.68E-3	2.50E-3
EP-m	kg N eq	1.30E-1	4.08E-2	1.32E-2	1.84E-1	5.48E-3	2.41E-2	5.37E-4	-6.81E-2	1.46E-1
EP-T	mol N eq	1.46E+0	4.50E-1	1.45E-1	2.06E+0	6.04E-2	2.65E-1	3.08E-3	-7.58E-1	1.63E+0
POCP	kg NMVOC eq	6.88E-1	1.28E-1	4.02E-2	8.56E-1	1.73E-2	8.38E-2	1.21E-3	-3.53E-1	6.05E-1
ADP-mm	kg Sb eq	2.57E-3	4.86E-4	1.58E-4	3.22E-3	6.96E-5	3.27E-4	7.61E-7	-8.69E-4	2.74E-3
ADP-f	MJ	7.30E+3	2.91E+2	5.23E+1	7.64E+3	4.13E+1	2.62E+2	2.32E+0	-4.04E+3	3.91E+3
WDP	m3 depriv.	1.57E+2	1.03E+0	3.37E+1	1.92E+2	1.27E-1	5.15E+0	1.06E-2	-7.84E+1	1.19E+2
PM	disease inc.	7.41E-6	1.72E-6	7.52E-7	9.89E-6	2.43E-7	1.36E-6	1.60E-8	-2.95E-6	8.56E-6
IR	kBq U-235 eq	6.31E+0	1.22E+0	1.55E-1	7.68E+0	1.80E-1	7.90E-1	1.08E-2	-2.44E+0	6.23E+0
ETP-fw	CTUe	1.35E+3	2.59E+2	1.46E+2	1.76E+3	3.35E+1	2.98E+2	2.05E+0	-5.86E+2	1.50E+3
HTP-c	CTUh	5.77E-8	8.45E-9	5.76E-9	7.19E-8	1.19E-9	3.54E-8	5.64E-11	-2.79E-8	8.07E-8
HTP-nc	CTUh	1.33E-6	2.82E-7	1.57E-7	1.76E-6	4.00E-8	4.47E-7	1.30E-9	-6.24E-7	1.63E-6
SQP	Pt	3.17E+2	2.50E+2	6.87E+0	5.75E+2	3.53E+1	2.09E+2	5.96E+0	-1.28E+2	6.97E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.18E+2	3.63E+0	3.30E+2	4.52E+2	5.92E-1	1.29E+1	9.19E-2	-5.83E+1	4.07E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.18E+2	3.63E+0	3.30E+2	4.52E+2	5.92E-1	1.29E+1	9.19E-2	-5.83E+1	4.07E+2
PENRE	MJ	7.82E+3	3.09E+2	5.55E+1	8.19E+3	4.38E+1	2.79E+2	2.46E+0	-4.36E+3	4.16E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	7.82E+3	3.09E+2	5.55E+1	8.19E+3	4.38E+1	2.79E+2	2.46E+0	-4.36E+3	4.16E+3
PET	MJ	7.94E+3	3.12E+2	3.85E+2	8.64E+3	4.44E+1	2.92E+2	2.56E+0	-4.41E+3	4.56E+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	2.39E+0	3.52E-2	8.00E-1	3.23E+0	4.67E-3	1.52E-1	2.87E-3	-1.20E+0	2.19E+0

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.10E-3	7.33E-4	7.96E-5	1.91E-3	1.06E-4	4.27E-4	2.79E-6	-1.19E-3	1.26E-3
NHWD	kg	7.83E+0	1.83E+1	2.44E-1	2.64E+1	2.56E+0	1.29E+1	1.02E+1	-3.29E+0	4.88E+1
RWD	kg	6.89E-3	1.91E-3	2.21E-4	9.02E-3	2.81E-4	1.00E-3	1.52E-5	-2.26E-3	8.05E-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