Environmental Profile

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

Ecochain v3.5.64

Product:	3061876 - PE80 Geothermal Pipe BK 40 PN6 L=250
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	1.30E+2	1.38E+1	5.04E+0	1.49E+2	1.91E+0	8.32E+1	1.06E+0	-9.64E+1	1.39E+2
GWP-f	kg CO2 eq	1.50E+2	1.38E+1	3.66E+0	1.67E+2	1.91E+0	6.29E+1	1.06E+0	-9.60E+1	1.37E+2
GWP-b	kg CO2 eq	-1.97E+1	6.26E-3	9.62E-1	-1.88E+1	1.16E-3	2.03E+1	7.94E-4	-3.62E-1	1.23E+0
GWP-luluc	kg CO2 eq	5.67E-2	5.09E-3	4.25E-1	4.87E-1	6.75E-4	1.08E-2	1.52E-5	-2.46E-2	4.74E-1
ODP	kg CFC11 eq	8.46E-6	3.04E-6	4.14E-7	1.19E-5	4.40E-7	1.42E-6	2.26E-8	-4.69E-6	9.11E-6
AP	mol H+ eq	5.77E-1	8.40E-2	3.10E-2	6.92E-1	1.09E-2	6.07E-2	5.38E-4	-2.74E-1	4.90E-1
EP-fw	kg P eq	2.61E-3	1.38E-4	6.75E-5	2.81E-3	1.57E-5	3.12E-4	6.99E-7	-1.22E-3	1.92E-3
EP-m	kg N eq	9.90E-2	2.91E-2	9.18E-3	1.37E-1	3.89E-3	1.80E-2	3.81E-4	-5.11E-2	1.08E-1
EP-T	mol N eq	1.12E+0	3.21E-1	1.01E-1	1.55E+0	4.29E-2	1.98E-1	2.19E-3	-5.81E-1	1.21E+0
POCP	kg NMVOC eq	5.12E-1	9.12E-2	2.80E-2	6.31E-1	1.23E-2	6.21E-2	8.57E-4	-2.59E-1	4.48E-1
ADP-mm	kg Sb eq	1.88E-3	3.46E-4	1.10E-4	2.34E-3	4.94E-5	2.35E-4	5.40E-7	-6.23E-4	2.00E-3
ADP-f	MJ	5.23E+3	2.08E+2	3.63E+1	5.47E+3	2.93E+1	1.88E+2	1.65E+0	-2.87E+3	2.82E+3
WDP	m3 depriv.	1.13E+2	7.38E-1	2.34E+1	1.38E+2	8.99E-2	3.68E+0	7.54E-3	-5.57E+1	8.56E+1
PM	disease inc.	6.33E-6	1.23E-6	5.22E-7	8.08E-6	1.72E-7	9.86E-7	1.13E-8	-2.25E-6	7.00E-6
IR	kBq U-235 eq	4.71E+0	8.70E-1	1.08E-1	5.68E+0	1.28E-1	5.69E-1	7.68E-3	-1.75E+0	4.64E+0
ETP-fw	CTUe	1.06E+3	1.85E+2	1.01E+2	1.35E+3	2.38E+1	2.14E+2	1.45E+0	-5.00E+2	1.09E+3
HTP-c	CTUh	4.90E-8	6.03E-9	4.00E-9	5.90E-8	8.47E-10	2.65E-8	4.00E-11	-2.11E-8	6.54E-8
HTP-nc	CTUh	1.03E-6	2.01E-7	1.09E-7	1.34E-6	2.84E-8	3.23E-7	9.23E-10	-4.79E-7	1.21E-6
SQP	Pt	2.08E+3	1.79E+2	4.78E+0	2.27E+3	2.51E+1	1.50E+2	4.23E+0	-4.87E+2	1.96E+3
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	3.63E+2	2.59E+0	2.29E+2	5.95E+2	4.20E-1	9.24E+0	6.52E-2	-1.21E+2	4.83E+2
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	3.63E+2	2.59E+0	2.29E+2	5.95E+2	4.20E-1	9.24E+0	6.52E-2	-1.21E+2	4.83E+2
PENRE	MJ	5.61E+3	2.20E+2	3.86E+1	5.87E+3	3.11E+1	2.00E+2	1.75E+0	-3.10E+3	3.00E+3
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.61E+3	2.20E+2	3.86E+1	5.87E+3	3.11E+1	2.00E+2	1.75E+0	-3.10E+3	3.00E+3
PET	MJ	5.97E+3	2.23E+2	2.68E+2	6.46E+3	3.15E+1	2.09E+2	1.81E+0	-3.22E+3	3.49E+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	1.75E+0	2.51E-2	5.56E-1	2.33E+0	3.32E-3	1.10E-1	2.04E-3	-8.54E-1	1.59E+0

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	9.28E-4	5.23E-4	5.53E-5	1.51E-3	7.49E-5	3.08E-4	1.98E-6	-8.61E-4	1.03E-3
NHWD	kg	6.51E+0	1.30E+1	1.70E-1	1.97E+1	1.82E+0	9.57E+0	7.26E+0	-2.50E+0	3.59E+1
RWD	kg	5.14E-3	1.36E-3	1.54E-4	6.65E-3	1.99E-4	7.21E-4	1.08E-5	-1.63E-3	5.95E-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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