Environmental Profile

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

Ecochain v3.5.64

Product:	3061867 - PE80 Geothermal Pipe BK 32 PN6 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	3.95E+1	3.62E+0	1.35E+0	4.45E+1	5.03E-1	1.69E+1	2.79E-1	-2.55E+1	3.67E+1
GWP-f	kg CO2 eq	3.93E+1	3.61E+0	9.80E-1	4.39E+1	5.03E-1	1.69E+1	2.79E-1	-2.54E+1	3.62E+1
GWP-b	kg CO2 eq	1.81E-1	1.64E-3	2.58E-1	4.41E-1	3.05E-4	-2.01E-2	2.09E-4	-9.56E-2	3.26E-1
GWP-luluc	kg CO2 eq	1.19E-2	1.33E-3	1.14E-1	1.27E-1	1.78E-4	2.83E-3	4.00E-6	-5.73E-3	1.24E-1
ODP	kg CFC11 eq	2.12E-6	7.97E-7	1.11E-7	3.03E-6	1.16E-7	3.69E-7	5.94E-9	-1.23E-6	2.29E-6
AP	mol H+ eq	1.48E-1	2.20E-2	8.30E-3	1.78E-1	2.86E-3	1.55E-2	1.42E-4	-6.99E-2	1.27E-1
EP-fw	kg P eq	6.47E-4	3.62E-5	1.81E-5	7.01E-4	4.14E-6	8.16E-5	1.84E-7	-3.13E-4	4.73E-4
EP-m	kg N eq	2.47E-2	7.63E-3	2.46E-3	3.48E-2	1.02E-3	4.53E-3	1.00E-4	-1.28E-2	2.76E-2
EP-T	mol N eq	2.78E-1	8.41E-2	2.70E-2	3.89E-1	1.13E-2	4.99E-2	5.76E-4	-1.42E-1	3.09E-1
POCP	kg NMVOC eq	1.31E-1	2.39E-2	7.50E-3	1.62E-1	3.23E-3	1.58E-2	2.26E-4	-6.63E-2	1.15E-1
ADP-mm	kg Sb eq	4.82E-4	9.08E-5	2.95E-5	6.02E-4	1.30E-5	6.13E-5	1.42E-7	-1.63E-4	5.14E-4
ADP-f	MJ	1.38E+3	5.44E+1	9.74E+0	1.44E+3	7.72E+0	4.91E+1	4.34E-1	-7.58E+2	7.41E+2
WDP	m3 depriv.	2.99E+1	1.94E-1	6.27E+0	3.64E+1	2.37E-2	9.64E-1	1.99E-3	-1.47E+1	2.27E+1
PM	disease inc.	1.41E-6	3.22E-7	1.40E-7	1.87E-6	4.54E-8	2.55E-7	2.98E-9	-5.52E-7	1.63E-6
IR	kBq U-235 eq	1.19E+0	2.28E-1	2.90E-2	1.44E+0	3.37E-2	1.48E-1	2.02E-3	-4.56E-1	1.17E+0
ETP-fw	CTUe	2.57E+2	4.84E+1	2.71E+1	3.33E+2	6.27E+0	5.61E+1	3.83E-1	-1.10E+2	2.86E+2
HTP-c	CTUh	1.09E-8	1.58E-9	1.07E-9	1.36E-8	2.23E-10	6.68E-9	1.05E-11	-5.23E-9	1.53E-8
HTP-nc	CTUh	2.50E-7	5.28E-8	2.92E-8	3.32E-7	7.47E-9	8.41E-8	2.43E-10	-1.17E-7	3.07E-7
SQP	Pt	6.09E+1	4.68E+1	1.28E+0	1.09E+2	6.60E+0	3.92E+1	1.11E+0	-2.40E+1	1.32E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.25E+1	6.78E-1	6.14E+1	8.46E+1	1.11E-1	2.42E+0	1.72E-2	-1.09E+1	7.62E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.25E+1	6.78E-1	6.14E+1	8.46E+1	1.11E-1	2.42E+0	1.72E-2	-1.09E+1	7.62E+1
PENRE	MJ	1.48E+3	5.78E+1	1.03E+1	1.55E+3	8.19E+0	5.23E+1	4.60E-1	-8.18E+2	7.89E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.48E+3	5.78E+1	1.03E+1	1.55E+3	8.19E+0	5.23E+1	4.60E-1	-8.18E+2	7.89E+2
PET	MJ	1.50E+3	5.85E+1	7.17E+1	1.63E+3	8.31E+0	5.47E+1	4.78E-1	-8.29E+2	8.65E+2
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	4.59E-1	6.59E-3	1.49E-1	6.15E-1	8.73E-4	2.84E-2	5.36E-4	-2.24E-1	4.20E-1

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.07E-4	1.37E-4	1.48E-5	3.59E-4	1.97E-5	8.01E-5	5.21E-7	-2.26E-4	2.33E-4
NHWD	kg	1.49E+0	3.42E+0	4.54E-2	4.95E+0	4.78E-1	2.43E+0	1.91E+0	-6.16E-1	9.16E+0
RWD	kg	1.29E-3	3.58E-4	4.12E-5	1.69E-3	5.25E-5	1.88E-4	2.84E-6	-4.24E-4	1.51E-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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