

# GeoGuard GEOTHERMAL

## FEATURES:

- Lightweight and flexible for easy handling
- Superior chemical resistance for improved reliability
- Improved thermal conductive properties with the use of carbon impregnated black colorant
- Outstanding flexibility and crush resistance
- Compact U-bend design for lower drilling cost

## APPLICATIONS:

Geothermal Pipe for Ground Source Heat Pump (GSHP)

## STANDARDS:

ASTM D 3035

ANSI/NSF 61/14 if specified

ASTM D 2513 (Wall Tolerance)

Meets specification requirements of IGSHPA

## RESINS per ASTM D 3350:

HDPE 3608

Cell Classification 345464C or E

HDPE 4710

Cell Classification 445574C or E

## SIZE RANGE:

3/4" – 12" diameter

## COLOR:

Black



## PACKAGING OPTIONS:

GeoGuard™ Coils 3/4" – 2"

GeoGuard™ Loops 3/4" – 1 1/4"

GeoGuard™ Sticks 3/4" – 12"

## WARRANTY:

GeoGuard™ products are covered for a period of 50 years from the date of purchase when used in accordance with accepted industry standards, guidelines and practices. A-D Technologies will replace GeoGuard™ products that were defective in workmanship or materials. See our website for complete warranty details.





IPS Pipe Size		3/4"	1"	1 1/4"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
Nom. OD (in)		1.050	1.315	1.660	1.900	2.375	3.500	4.500	6.625	8.625	10.750	12.750
<b>DR 9.0</b> (200 psi)	Min Wall (in)	0.117	0.146	0.184	0.211	0.264	0.389	0.500	0.736	0.958	1.194	1.417
	Avg ID (in)	0.803	1.006	1.269	1.453	1.816	2.676	3.440	5.065	6.594	8.218	9.747
	Weight (lbs/ft)	0.149	0.234	0.372	0.488	0.762	1.656	2.737	5.932	10.054	15.618	21.970
<b>DR 11.0</b> (160 psi)	Min Wall (in)	0.095	0.120	0.151	0.173	0.216	0.318	0.409	0.602	0.784	0.977	1.159
	Avg ID (in)	0.848	1.062	1.341	1.534	1.918	2.826	3.633	5.349	6.963	8.679	10.293
	Weight (lbs/ft)	0.125	0.196	0.312	0.409	0.639	1.387	2.294	4.971	8.425	13.089	18.412
<b>DR 15.5</b> (110 psi)	Min Wall (in)	0.068	0.085	0.107	0.123	0.153	0.226	0.290	0.427	0.556	0.694	0.823
	Avg ID (in)	0.907	1.136	1.433	1.641	2.051	3.022	3.885	5.719	7.446	9.280	11.007
	Weight (lbs/ft)	0.091	0.143	0.228	0.299	0.467	1.015	1.678	3.637	6.164	9.576	13.471

PE 4710

IPS Pipe Size		3/4"	1"	1 1/4"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
Nom. OD (in)		1.050	1.315	1.660	1.900	2.375	3.500	4.500	6.625	8.625	10.750	12.750
<b>DR 9.0</b> (255 psi)	Min Wall (in)	0.117	0.146	0.184	0.211	0.264	0.389	0.500	0.736	0.958	1.194	1.417
	Avg ID (in)	0.803	1.006	1.269	1.453	1.816	2.676	3.440	5.065	6.594	8.218	9.747
	Weight (lbs/ft)	0.150	0.235	0.374	0.490	0.766	1.664	2.751	5.963	10.106	15.700	22.085
<b>DR 11.0</b> (200 psi)	Min Wall (in)	0.095	0.120	0.151	0.173	0.216	0.318	0.409	0.602	0.784	0.977	1.159
	Avg ID (in)	0.848	1.062	1.341	1.534	1.918	2.826	3.633	5.349	6.963	8.679	10.293
	Weight (lbs/ft)	0.126	0.197	0.314	0.411	0.642	1.395	2.306	4.997	8.470	13.157	18.508
<b>DR 15.5</b> (135 psi)	Min Wall (in)	0.068	0.085	0.107	0.123	0.153	0.226	0.290	0.427	0.556	0.694	0.823
	Avg ID (in)	0.907	1.136	1.433	1.641	2.051	3.022	3.885	5.719	7.446	9.280	11.007
	Weight (lbs/ft)	0.092	0.144	0.230	0.301	0.470	1.020	1.687	3.656	6.197	9.626	13.541

Pressure Ratings are calculated based on the HDS for PE 3608 or HDPE 4710 resin at 73° F as listed in TR-4 using a design factor of 0.50 for water (HDPE 3608) and 0.63 for water (HDPE 4710). Changes to temperature, chemical & environmental conditions may require additional design factor adjustments to be made.



Vertical Drill



GeoGuard Lengths



Slinky Installation



GeoGuard Silo Packs

Size	Length Feet	Sticks/Bundle	Ft/Bundle	Bundle Height	Bundles/Truck	Ft/Truck	Feet/Coil	ID	Width	Pallet	SP Height	Coils/Silo	Feet/Silo	Pallets/TL	Qty/TL	
3/4" STICK	20	510	10,200	15.5	28	285,600	3/4" COIL	200	24	8	42	86	10	2,000	28	56,000
	40	510	20,400	15.5	14	285,600		300	24	8	42	86	10	3,000	28	84,000
1" STICK	20	260	5,200	13.75	32	166,400	3/4" COIL	500	24	11	42	94	8	4,000	28	112,000
	40	260	10,400	13.75	16	166,400		600	24	11	42	94	8	4,800	28	134,400
1 1/4" STICK	20	165	3,300	13.3125	32	105,600	3/4" COIL	700	24	11	42	94	8	5,600	28	156,800
	40	165	6,600	13.3125	16	105,600		800	24	11	42	94	8	6,400	28	179,200
1 1/2" STICK	20	135	2,700	14.625	32	86,400	3/4" COIL	1,000	24	11	48	94	8	8,000	26	208,000
	40	135	5,400	14.625	16	86,400		310	30	9	42	87	9	2,790	28	78,120
2" STICK	20	105	2,100	17.125	28	58,800	3/4" COIL	410	30	9	42	87	9	3,690	28	103,320
	40	105	4,200	17.125	14	58,800		510	30	9	48	87	9	4,590	26	119,340
3" STICK	20	50	1,000	17.0625	28	28,000	3/4" COIL	610	30	9	48	87	9	5,490	26	142,740
	40	50	2,000	17.0625	14	28,000		710	30	9	48	87	9	6,390	26	166,140
4" STICK	20	29	580	16.75	28	16,240	3/4" COIL	810	30	11.5	48	86.5	7	5,670	26	147,420
	40	29	1,160	16.75	14	16,240		910	30	11.5	48	86.5	7	6,370	26	165,620
6" STICK	20	26	520	28.25	16	8,320	3/4" COIL	1,010	30	13.5	48	100.5	7	7,070	26	183,820
	40	26	1,040	28.25	8	8,320		200	24	11	42	94	8	1,600	28	44,800
8" STICK	20	14	280	28	16	4,480	3/4" COIL	300	24	11	42	94	8	2,400	28	67,200
	40	14	560	28	8	4,480		400	24	11	42	94	8	3,200	28	89,600
10" STICK	20	4	80	15.25	28	2,240	3/4" COIL	500	24	11	42	94	8	4,000	28	112,000
	40	4	160	15.25	14	2,240		600	24	11	48	94	8	4,800	28	134,400
12" STICK	20	3/4	60/80	17.25	24	1,680	3/4" COIL	700	24	11	48	94	8	5,600	26	145,600
	40	3/4	120/160	17.25	12	1,680		800	24	13	48	84	6	4,800	26	124,800

\*Stick Bundle quantities reflect hard sided packaging.

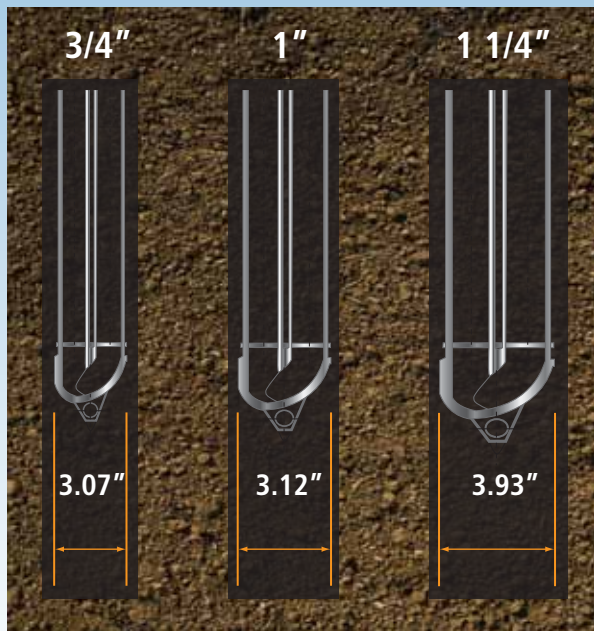
Special coil, loop or stick lengths available upon request.  
Reverse loops can be requested.

## U-BENDS

The U-Bend fitting guides the GeoGuard™ tubing down the vertical bore hole easily and efficiently.

U-Bend fittings accommodate pipe in 3/4", 1" and 1 1/4" diameters and are one of the narrowest u-bends available. The smaller diameter of these u-bends reduce installation costs:

- Their narrow design requires a smaller bore and utilizes less grout
- The smaller bore size increases drilling efficiency



1" COIL	310	30	9	48	87	9	2,790	26	72,540	
	410	30	9	48	87	9	3,690	26	95,940	
	510	30	11.5	48	98	8	4,080	26	106,080	
	610	30	11.5	48	98	8	4,880	26	126,880	
	710	30	11.5	60	98	8	5,680	10	56,800	
	810	30	11.5	60	98	8	6,480	10	64,800	
	910	30	11.5	60	98	8	7,280	10	72,800	
	1,010	30	11.5	60	98	8	8,080	10	80,800	
	1 1/4" COIL	100	48	5.5	60	88.5	15	1,500	10	15,000
		200	48	7	72	90	12	2,400	8	19,200
300		48	7	72	90	12	3,600	8	28,800	
400		48	7	72	90	12	4,800	8	38,400	
500		48	7.5	72	96	12	6,000	8	48,000	
600		48	9.5	72	91.5	9	5,400	8	43,200	
700		48	10	72	86	8	5,600	8	44,800	
800		48	12	72	90	7	5,600	8	44,800	
1 1/4" LOOP	310	42	8	72	86	10	3,100	8	24,800	
	410	42	8	72	86	10	4,100	8	32,800	
	510	42	8	72	86	10	5,100	8	40,800	
	610	42	11	72	94	8	4,880	8	39,040	
	810	42	11	72	94	8	6,480	8	51,840	
	910	42	14.5	72	93	6	5,460	8	43,680	
	1,010	42	14.5	72	93	6	6,060	8	48,480	
	1 1/2" COIL	100	48	6	60	90	14	1,400	10	14,000
		200	48	6	72	90	14	2,800	8	22,400
		300	48	8.5	72	91	10	3,000	8	24,000
400		48	8.5	72	91	10	4,000	8	32,000	
500		48	8.5	78	91	10	5,000	8	40,000	
600		48	10	78	86	8	4,800	8	38,400	
700		48	12	78	90	7	4,900	8	39,200	
800		48	12	78	90	7	5,600	8	44,800	
900		48	14.5	78	93	6	5,400	8	43,200	
1,000		48	16.5	78	88.5	5	5,000	8	40,000	
2" COIL	100	51	9	72	87	9	900	8	7,200	
	200	51	9	72	87	9	1,800	8	14,400	
	300	51	12	72	90	7	2,100	8	16,800	
	400	51	13	78	84	6	2,400	8	19,200	
	500	51	13	78	84	6	3,000	8	24,000	
	600	51	16	78	86	5	3,000	8	24,000	
	700	51	18	78	78	4	2,800	8	22,400	
	800	51	21	78	90	4	3,200	8	25,600	
	900	51	28	78	90	3	2,700	8	21,600	
	1,000	48	28	78	90	3	3,000	8	24,000	

Material Designation

**PE 3408/3608 Cell Classification**  
345464 C or E per ASTM D 3350

**PE 4710 Cell Classification**  
445576 C or E per ASTM D 3350

Physical Properties	Test Method	Units	Standard	Typical(2)
Density	ASTM D 1505	g/cm <sup>3</sup>	>0.940-0.947	0.945
Melt Index Flow Rate(1)	ASTM D 1238	g/10min	<0.15	<0.15
Flexural Modulus @ 2% Strain	ASTM D 790	PSI	110,000 to 160,000	125,000
Tensile Strength @ yield(3)	ASTM D 638	PSI	3,000-~3,500	3,250
Ultimate Elongation,(3)	ASTM D 638	%	>500	>500
SCG Resistance PENT (hours)	ASTM D 1473	HR	>100	>100
Carbon Black (UV Protection)	ASTM D 1603	%	2-% minimum	2.25%
Brittleness Temperature	ASTM D 746	°F	<-76	<-76

**Pipe Properties**

Long-Term Hydrostatic Strength	ASTM D 2837 or PPI TR-3			
Nominal @ 73.4 °F	PSI	1600	1600	
Nominal @ 140 °F	PSI	800	800	

Physical Properties	Test Method	Units	Standard	Typical (2)
Density	ASTM D 1505	g/cm <sup>3</sup>	>0.947-0.955	0.954
Melt Index Flow Rate (1)	ASTM D 1238	g/10min	<0.15	0.08
Flexural Modulus @ 2% Strain	ASTM D 790	PSI	110,000 to 160,000	150,000
Tensile Strength @ yield (3)	ASTM D 638	PSI	3,500-~4,000	3,600
Ultimate Elongation (3)	ASTM D 638	%	>500	>740
SCG Resistance PENT	ASTM D 1473	HR	>500	>10,000
Carbon Black (UV Protection)	ASTM D 1603	%	2-% minimum	2.25%
Brittleness Temperature	ASTM D 746	°F	<-76	<-76

**Pipe Properties**

Long-Term Hydrostatic Strength	ASTM D 2837 or PPI TR-3			
Nominal @ 73.4 °F	PSI	1600	1600	
Nominal @ 140 °F	PSI	1000	1000	

**Notes:**

1. Test condition HLMI using 190° C/2.16 kg.
2. Typical listed values represent average laboratory test results. They are provided as guides only. They are not intended as specifications.
3. Test rate is 2 inches per minute.

**Plant Locations**



**Pressure Pipe Technical Support: 800-321-7914**

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Water



Gas



Geothermal



Irrigation