TECHNICAL SHEET

VERSAPIPE® HD100 GEO

High Density Polyethylene IPS Pipe for Geothermal Applications

Manufactured from PE4710. Certified to NSF-358-1, ANSI/CSA/IGSHPA C448, ASTM D3035 and CSA137.1

NSF Certified to NSF/ANSI 358

Scope

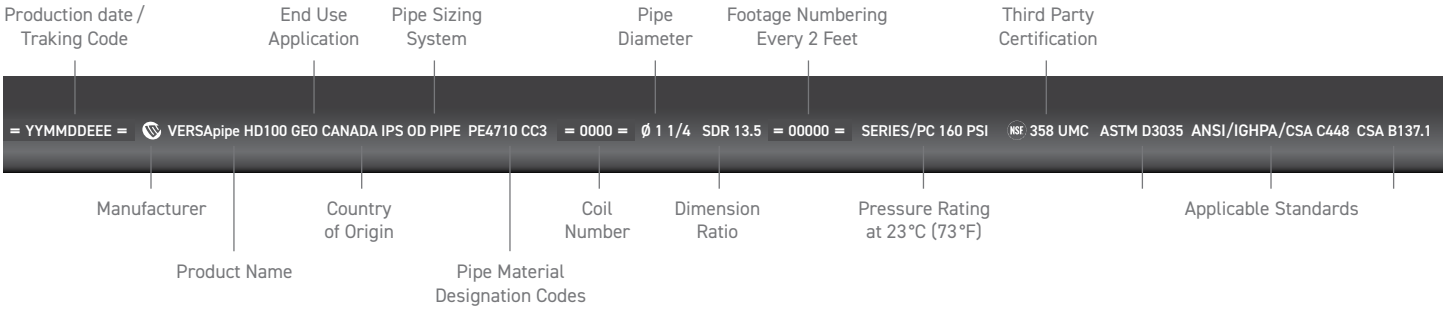
This technical data sheet designates the properties of the **VERSAPIPE® HD100 GEO** pipe for use in ground source heat pump exchanger applications. It describes the minimum requirements established by **Versaprofiles** for the design and manufacture of a pipe especially created for various closed-loop heat exchanger purposes, like vertical, horizontal and pond installations.

Raw Material

All **VERSAPIPE® HD100 GEO** geothermal high density polyethylene pipes are manufactured from PE4710 high density polyethylene resin meeting the cell classification 445574C, or equivalent, as per ASTM D3350. The raw material is filled with carbon black as an ultra violet inhibitor and can be stored outside. This formulation is also classified "CC3" for its resistance to oxidation and offers good protection against chemical products such as glycol and methanol. See the tables below for more information.

Printline

Versaprofiles VERSAPIPE® HD100 GEO pipe is identified with permanent marking and sequential footage numbering every two (2) feet.



Handling, joining and installation

All **VERSAPIPE® HD100 GEO** geothermal loops and pipes are manufactured according to the requirements of NSF/ANSI 358 and ASTM F2620 standards, with heat fusion fittings meeting the requirements of ASTM D2683 or ASTM D3261. The fittings must be made of PE4710 high density polyethylene.

To ensure complete integrity of the piping system, **VERSAPIPE® HD100 GEO** pipes must be handled with care. Do not drag or roll pipe across rocks or rough ground. Installation and backfill practices for **VERSAPIPE® HD100 GEO** pipes in trenched, vertical bore or pond applications, should comply with guidelines prepared by the International Ground Source Heat Pump Association (IGSHPA), Plastics Pipe Institute (PPI)[1], and according to the installation recommendations found in ANSI/CSA/IGSHPA C448 standards. Before being buried, the loops should be tested using pressurized water at a maximum 150% of the nominal pressure related to the dimension ratio. This test should never be done using air or compressed gas.

[1]http://plasticpipe.org/pdf/chapter12.pdf [2] http://plasticpipe.org/pdf/chapter09.pdf

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RAW MATERIAL PROPERTIES AND CELL CLASSIFICATION (PER ASTM D3350)

Properties	Cell Classification (445574C)	ASTM Test Method	Typical Values	
			Imperial Units	SI Units
Density (natural)	4	D792	0,949 g / cm³	0,949 g / cm³
Melt Index (190 °C / 21,6 kg)	4	D1238	7 g / 10 min	7 g / 10 min
Flexural Modulus	5	D790B	150 000 psi	1 030 MPa
Tensile Strength at Yield	5	D638	> 3 500 psi	> 24,1 MPa
Elongation at Break	-	D638	> 500 %	> 500 %
Resistance to Slow Crack Growth (SCG), h (PENT)	7	F1473	> 10 000 h	> 10 000 h
Hydrostatic Design Basis @ 23 °C (73 °F)	4	D2837	1 600 psi	11 MPa
Hydrostatic Design Basis @ 60 °C (140 °F)			1 000 psi	6,9 MPa
Carbon Black Concentration	C	-	2 %	2 %
IZOD Impact Strength, Notched	-	D256A	9,1 ft-lb / in	490 J / m
Brittleness Temperature	-	D746A	< -103°F	< -75 °C
Thermal Stability	-	D3350	> 428 °F	> 220 °C
Thermal Conductivity	-	-	0,23 BTU / (h ft °F)	0,40W/m°C
Oxidative Resistance Classification	-	D3350	CC3	CC3

STANDARD PRODUCT SIZES IPS SDR[1] (PER ASTM D3035 AND F714)

ANSI / CSA / IGSHPA C448 | CSA B137,1 (3/4 to 6 in) | *NSF / ANSI 358-1

Color : Black

Nominal Pipe Size in (IPS) [2]	Outside Diameter in (mm)	Tolerance ± in (mm)	SDR 17 (125 psi)		SDR 15,5 (138 psi)		SDR 13,5 (160 psi)		SDR 11 (200 psi)		SDR 9 (250 psi)	
			Minimum Wall Thickness in (mm)	Weight for 100 ft lb (kg)	Minimum Wall Thickness in (mm)	Weight for 100 ft lb (kg)	Minimum Wall Thickness in (mm)	Weight for 100 ft lb (kg)	Minimum Wall Thickness in (mm)	Weight for 100 ft lb (kg)	Minimum Wall Thickness in (mm)	Weight for 100 ft lb (kg)
3/4	1,050	0,004	0,062	9,2	0,068	10,4	0,078 *	11,1	0,095 *	13,0	0,117 *	15,3
	(26,67)	(0,10)	(1,57)	(4,2)	1,73	4,7	(1,98) *	(5,0)	(2,41) *	(5,9)	(2,97) *	(7,0)
1	1,315	0,005	0,077	14,0	0,085	14,4	0,097 *	16,9	0,120 *	20,1	0,146 *	23,6
	(33,40)	(0,13)	(1,96)	(6,3)	2,16	6,5	(2,46) *	(7,7)	(3,05) *	(9,1)	(3,71) *	(10,7)
1 ¼	1,660	0,005	0,098	21,9	0,107	23,0	0,123 *	26,5	0,151 *	31,5	0,184 *	37,3
	(42,16)	(0,13)	(2,49)	(10,0)	2,72	10,4	(3,12) *	(12,1)	(3,84) *	(14,3)	(4,67) *	(17,0)
1 ½	1,900	0,006	0,112	28,3	0,123	30,0	0,141 *	34,5	0,173 *	41,1	0,211 *	48,9
	(48,26)	(0,15)	(2,84)	(12,8)	3,12	13,6	(3,58) *	(15,7)	(4,39) *	(18,7)	(5,36) *	(22,2)
2	2,375	0,006	0,140	43,6	0,153	47,0	0,176 *	53,3	0,216 *	64,2	0,264 *	76,6
	(60,31)	(0,15)	(3,56)	(19,8)	3,89	21,3	(4,47) *	(24,2)	(5,49) *	(29,2)	(6,71) *	(34,8)
3	3,500	0,008	0,206*	93,6	0,226	102,1	0,259 *	115,6	0,318 *	139,2	0,389 *	166,3
	(88,90)	(0,20)	(5,23)*	(42,6)	5,74	46,3	(6,58) *	(52,6)	(8,08) *	(63,3)	(9,88) *	(75,6)
4	4,500	0,009	0,265*	154,8	0,290	168,5	0,333 *	191,2	0,409 *	230,2	0,500 *	274,8
	(114,30)	(0,23)	(6,73)*	(70,4)	7,37	76,4	(8,46) *	(86,9)	(10,39) *	(104,7)	(12,70) *	(124,9)
6	6,625	0,011	0,390*	335,5	0,428	365,5	0,491 *	415,0	0,602 *	498,9	0,736 *	595,5
	(168,28)	(0,28)	(9,91)*	(152,5)	10,87	165,8	(12,47) *	(188,6)	(15,29) *	(226,8)	(18,69) *	(270,7)
8	8,625	0,013	0,507*	567,8	0,557	618,5	0,639 *	703,3	0,784 *	845,9	0,958 *	1 009,3
	(219,08)	(0,33)	(12,88)*	(258,1)	14,15	280,5	(16,23) *	(319,7)	(19,91) *	(384,5)	(24,33) *	(458,8)
10	10,750	0,015	0,632*	857,5	0,694	961,6	0,796 *	1 092,0	0,977 *	1 313,9	1,194 *	1 567,7
	(273,05)	(0,38)	(16,05)*	(389,8)	17,63	436,2	(20,22) *	(496,4)	(24,82) *	(597,2)	(30,33) *	(712,6)

[1] IPS (Iron Pipe Size) SDR (outside diameter controlled pipe) pipe dimensions.
[2] Ask your account manager about the availability of the displayed sizes. Versaprofiles may also offer options that are not listed in this document.

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DIAMETERS AND AVAILABLE PACKAGING - GEOTHERMAL PRODUCTS

VERTICALOOP™ — Single U-bend

Nominal Diameter (in)	VERTICALOOP™	Loop	U-bend Lenght ft (5 feet increment)	GEO-GLIDE U-POINT	U-BEND	VERSAPOINT
3/4	●	-	300 to 900	●	-	-
1	●	-	300 to 900	●	-	-
1 ¼	●	-	300 to 900	-	-	●
1 ½	●	-	400 to 900	-	-	●
2	●	-	400 to 750	-	●	-
2	-	●	400 to 1 500	-	●	-

TWINLOOP™ — Double U-bend

Nominal Diameter (in)	Dimension (in)	Maximum TWINLOOP Loop Length* (ft)
1 ¼	4.25"	1 000
1 ½	4.75"	900


LOOP ON PALLET


TWINLOOP™

VERTICALOOP™ and **TWINLOOP™** are manufactured according to the requirements of ASTM F2620 standards, with heat fusion fittings meeting the requirements of ASTM D2683 or ASTM D3261.

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VERSAPROFILES
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Pipes for headers, horizontal ties and distribution manifolds

Pipe sizes and diameters available in sticks, coils and reels.

Bundle of 8”

STICKS

Standard Length* (ft)	Resin	Diametre (in)
20, 40 & 50	PE4710	• ¾” to 8” IPS • SDR 9 to SDR 26 • 80 PSI to 250 PSI

TITAN™ REELS & COILS

Resin	Dimensions
PE4710	• ¾” to 10” IPS • SDR 9 to SDR 32.5 • 63 PSI to 250 PSI

Standard lengths available*		
Nominal Diameter (in)	Length (ft)	
	COIL	TITAN^{MC} REEL
¾	100, 250, 500, 600, 800, 1 000	15 000
1	100, 250, 500, 1 000	12 000
1 ¼	100, 250, 500, 1 000	7 000
1 ½	100, 250, 500, 1 000	5 500
2	100, 250, 500, 1 000, 1 500	3 000
3	500	1000
4	250	500

1 ¼” on TITAN™ REEL

Coil of 3”

[1] Other stick, roll and coil lengths available on request.

References: ASTM Standards D2683, D3035, D3261, D3350 and F2620 — ANSI/CSA/IGSHPA C448 and B137.1 Standards — NSF/ANSI 358 Standards — Plastics Pipe Institute (PPI), http://plasticpipe.org/publications/pe_handbook.html

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About Versaprofiles

With over 50 years of experience in thermoplastic extrusion, **Versaprofiles** offers innovation to make your job easier and lighten your workload. We are producing pipe and tubing for maple sap, geothermal, water and natural gas distribution applications in addition of specializing into custom made profiles. With our collective expertise in various sectors and our versatile equipment, we can bring your projects to higher level. We work closely and in a friendly atmosphere with each partner to deliver products that meet expectations and provide dedicated customer service.

MEMBER OF

OGA Ontario Geothermal Association

IGSHPA

PPI Plastics Pipe Institute MEMBER COMPANY

NY-GEO

CERTIFIED SYSTEM BNQ ISO 9001:2015

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