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ViegaPEX™ Barrier Hydronic Radiant Heat Tubing

Scope
This specification designates the requirements for ViegaPEX Barrier cross-linked polyethylene (PEX) tubing for use in hydronic radiant heating systems. ViegaPEX Barrier includes an oxygen barrier layer that helps restrict the passage of oxygen through the wall of the tubing. All ViegaPEX is manufactured and tested to the requirements of ASTM F876, F877, CSA B137.5 and is CTS-OD (copper tube size outer dimension controlled) with an SDR - (standard dimension ratio) 9 wall thickness. ViegaPEX Barrier is compatible with both ViegaPEX Press fittings and F1807 PEX Crimp fittings. Viega has no control over the quality of other manufacturers, therefore, we do not extend any warranty to those components that are not supplied by Viega.

Materials
ViegaPEX Barrier tubing is produced from cross-linkable, high density polyethylene resin. This cross-linkable resin is produced by grafting organo-silane molecules onto a base polyethylene chain. A catalyst that initiates the cross-linking process is blended with the resin before extrusion. Cross-linking is conducted after extrustion by exposing the tubing to heat and moisture (steam). ViegaPEX Barrier includes four (4) layers. The first layer is cross-linked, high density polyethylene. The second layer is an adhesive for the third layer, the ethylene vinyl alcohol layer (EVOH oxygen barrier). The fourth layer is another thin layer of polyethylene, applied on the outside to protect the EVOH layer from damage. EVOH is highly resistant to the passage of oxygen.

Marking and Certification
Tubing is marked with manufacturer, ViegaPEX Barrier, nominal size, rating, codes and standards, approvals, date, material code and location of production (i.e., 0000FT Viega ViegaPEX Barrier™ 5/16" SDR-9 100 PSI @ 180˚F [NSF-pw U.P. Code ASTM F876/F877 CSA B137.5] ICBO ES ER-5287 PEX1006 Date Code Material Code Made in the USA 0002FT). Tubing is third party tested to the requirements of the stated ASTM and CSA standards. Tubing includes incremental footage markings to assist with loop layout. ViegaPEX is certified to NSF 61 and 14 for use as part of, or connected to a potable water system.

Handling and Installation
ViegaPEX Barrier tubing is recommended for hydronic radiant heating, cooling and snow melting systems using water or a water/glycol mix as the heat transfer media. Tubing may be installed in concrete, gypsum based lightweight concrete, sand, asphalt (in accordance with special guidelines) in or under wood flooring or behind wallboard or plaster. ViegaPEX Barrier may also be used as transfer lines for baseboard heating systems with a maximum operating temperature of 200˚F @ 80 psi.

Recommended Uses
Install ViegaPEX Barrier in accordance with installation manuals provided by manufacturer and applicable code requirements. Water or air can be used to pressure test the system. Please follow manufacturer's requirements on pressure and length of time. ViegaPEX Barrier comes with a 90 day UV protection. For information on the suitablilty for other applications, contact your Viega representative.

Property	ASTM Test Method	Typical Values	
		English Units	SI Units
Density	D 792	–	0.952 g/cc
Melt Index[1]	D 1238	–	0.7g/10 min
Flexural Modulus[2]	D 638	150,000 psi	1000 MN/m2
Tensile Strength @ Yield (2 in/min)	D 638	3,900 psi	26 MN/m2
Coefficient of Linear Thermal Expansion @ 68°F	D 696	8 x 10^{-4}/°F	1.4 x 10^{-4}/°C
Hydrostatic Design Basis @ 73°F (23°C)	D 2837	1,250 psi	8.6 MPA
Hydrostatic Design Basis @ 180°F (82°C)	D 2837	800 psi	5.5 MPA
Vicat Softening Point	D 648	255°F	124°C
Thermal Conductivity	D 177	2.7 Btu/hr/ft^2/°F	1.1 x 10^{-3} cal/sec/cm/˚C

1. Before Cross-linking
2. 73°F

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Quality Assurance

ViegaPEX Barrier tubing is manufactured and tested to the requirements of ASTM F876, F877 and CSA B137.5. The degree of cross-linking of finished tubing is determined by method ASTM D2765.

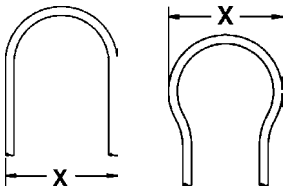
Quality Assurance

NSF-pw - tested for health effects to ANSI/NSF 61 and performance to ANSI/NSF standard 14.

Tube Spacing

When the tube spacing is less than the minimum recommended bending dimension, the loops ends should be swept out to at least the dimensions shown.

Otherwise, if tube spacing is equal or greater than "X", a standard loop may be used.



Dimension X

Tubing Size	With the Coil
5/16"	7"
3/8"	8"
1/2"	10"
5/8"	12"
3/4"	14"
1"	18"
1-1/4"	22"
1-1/2"	26"
2"	34"

SDR-9 PEX Tubing
ASTM F876/F877/CTS-OD SDR-9

Tubing Size	O.D.	Wall Thickness	Nom. I.D.	Weight Per Ft	Vol. (gal.)/ 100 Ft
5/16"	.430±.003	.064+.010	0.292	.0340	0.34
3/8"	.500±.003	.070+.010	0.350	.0413	0.50
1/2"	.625±.004	.070+.010	0.475	.0535	0.92
5/8"	.750±.004	.083+.010	0.574	.0752	1.34
3/4"	.875±.004	.097+.010	0.671	.1023	1.82
1"	1.125±.005	.125+.010	0.862	.1689	3.04
1-1/4"	1.375±.005	.153+.015	1.053	.2523	4.52
1-1/2"	1.625±.006	.181+.019	1.243	.3536	6.30
2"	2.125±.006	.236+.024	1.629	.6026	10.83

NOTE: Dimensions are in English units. Tolerances shown are ASTM requirements. ViegaPEX is manufactured within these specifications.

ViegaPEX Barrier tubing is available in both straight lengths and coils.

ViegaPEX Barrier Oxygen Permeation

All sizes have less than 0.1 gram m^3/day

Note: ViegaPEX Barrier tubing meets DIN 4726 requirements for oxygen tight pipes.

Pressure Drop Table
Expressed as psi/ft.

	SIZE								
GPM	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"	1-1/2"	2"
.1	.002	.001							
.2	.009	.004	.001						
.3	.018	.008	.002	.001					
.4	.031	.013	.003	.001					
.5	.047	.020	.004	.002					
.6	.066	.027	.006	.003	.001				
.7	.088	.036	.008	.003	.002				
.8		.047	.011	.004	.002				
.9		.058	.013	.005	.002				
1		.070	.016	.007	.003	.001			
1.5			.034	.014	.006	.002			
2			.058	.024	.011	.003			
3				.050	.023	.007			
4				.085	.039	.011			
6				.181	.082	.024			
8					.140	.041			
10					.211	.062	.023		
12					.296	.087	.032		
14							.042		
16							.053	.022	
18							.065	.027	
20							.078	.033	
22							.093	.039	
24							.108	.045	
26								.052	
28								.060	
30								.067	
32								.075	.024
34									.027
36									.030
38									.033
40									.037
45									.046
50									.056
55									.066
60									.078
65									.090
70									.104
75									.118

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