

ViegaPEX™ Cross-linked Polyethylene (PEX)

Scope

This material specification designates the requirements for ViegaPEX hot and cold water distribution tubing. All ViegaPEX tubing is copper tube size dimension (CTS), SDR-9 wall thickness and meets the respective requirements of ASTM F876 and F877.

Materials

All ViegaPEX tubing is manufactured from a cross-linkable high density polyethylene produced by grafting organo-silanes onto a polyethylene base. A catalyst (accelerator) added to the cross-linkable polyethylene during extrusion initiates the cross-linking process. Cross-linking is completed with hot water or steam (sauna). ViegaPEX tubing is available in red, white, or blue for easy identification of hot and cold lines.

Marking and Certification

All ViegaPEX tubing is marked with the name Viega as the manufacturer, nominal size, plastic tubing material designation code PEX 5006, Chlorine resistance rating NSF-pw (CL5), design pressure and temperature ratings, relevant ASTM standards, manufacturing date and production code, as well as the NSF-pw stamps indicating third-party certification by NSF International for meeting and exceeding performance and toxicological standards, as well as achieving the highest chlorine resistance rating in the PEX industry. NSF conducts random on-site inspections of Viega manufacturing facilities and independently tests ViegaPEX tubing for compliance with physical, performance and toxicological standards. ViegaPEX is also certified to meet the Uniform Plumbing Code, IAPMO UPC®, CSA (Canadian Standards Association) B137.5 (cNSF_{U.S.}) the ICC (International Code Council) Evaluation Service, and HUD (Housing and Urban Development).

Recommended Uses

ViegaPEX tubing is intended and recommended for use in hot and cold potable water distribution systems. Design temperature and pressure ratings for ViegaPEX is 160 psi @ 73°F and 100 psi @ 180°F. ViegaPEX tubing can also be used in “continuously-recirculating” plumbing systems at temperatures of up to 140°F while still maintaining excellent chlorine resistance. For information on the suitability for other hot and cold water applications not listed here, consult with your Viega representative.

Handling and Installation

ViegaPEX cross-linked polyethylene tubing is tough yet flexible. However, it is softer than metals and may be damaged by abrasion or by objects with a cutting edge. Use of these materials in hot and cold water distribution systems must be in accordance with good plumbing practices, applicable code requirements, and current installation practices available from Viega. ViegaPEX is manufactured to meet written national standards. Contact a Viega representative or the applicable code enforcement bureau for information about approvals for specific applications.

Property	ASTM Test Method	Typical Values	
		English Units	SI Units
Density	D 792	–	0.946 g/cc
Melt Index ¹ (190°C/2.16 kg)	D 1238	–	0.7g/10 min
Flexural Modulus ²	D 790	120,000 psi	830 MPa
Tensile Strength @ Yield (2 in/min)	D 638	2,900 psi	20 MPa
Coefficient of Linear Thermal Expansion @ 68°F	D 696	9.2 x 10 ⁻⁵ /°F	15x10 ⁻⁵ /°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 696	255°F	124°C
Thermal Conductivity	D 177	2.4 Btu-in (hr)(ft ²)(°F/in)	3.5x10 ⁻³ Watts/(cm ²)(°C/cm)

1. Before Cross-linking

2. 73°F

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Quality Assurance

When the product is marked with the ASTM F876/F877 designation, it affirms that the product was manufactured, inspected, sampled and tested in accordance with these specifications and has been found to meet the specified requirements.

Certifications

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

PEX 5006 - Tested and listed to the NSF-pw (CL5) Chlorine resistance rating for an end use condition of 100% @ 140°F per ASTM F876, which is the highest Chlorine resistance rating available through ASTM. When the product is marked with the PEX 5006 NSF-pw (CL5) designation, it affirms the product is approved for use in continuous domestic hot water circulation systems with up to 140°F water temperatures.



- IAPMO Certified



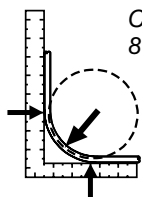
- ICC ES-PMG™ 1038 plumbing applications



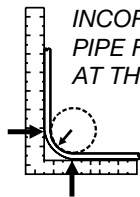
- NSF certified to CSA B137.5 (Canadian Standards Association)

HUD (Housing and Urban Development) - MR 1276

Minimum Bend Radius



CORRECT:
8 x O.D.



INCORRECT:
PIPE FLATTENS
AT THE BEND

NOTE: ViegaPEX tubing may be bent to a minimum of 5 x O.D. with approved bend support.

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

Stock Code	Tubing Size	O.D.	Wall Thickness	Nom. I.D.	Weight Per Ft	Vol. (gal.) Per 100 Ft
33000	3/8"	0.500±.003	0.070+.010	0.350	.0413	0.50
33020	1/2"	0.625±.004	0.070+.010	0.475	.0535	0.92
33045	3/4"	0.875±.004	0.097+.010	0.671	.1023	1.82
33061	1"	1.125±.005	0.125+.013	0.862	.1689	3.04

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

Pressure Drop Table Expressed as PSI/ft. Pressure Drop SIZE

GPM	3/8"	1/2"	3/4"	1"
1	.070	.016		
1.5	.149	.034		
2.2	.303	.069		
2.5	.385*	.087		
3	.539	.122	.023	
3.5	.717	.162	.030	
4		.208*	.039	
5		.314	.059	
6		.440	.082	.024
7		.586	.109	.032
8			.140	.041
9			.174*	.051
10			.211	.062
11			.252	.074
12			.296	.087
13			.343	.101
14				.116
16				.148*
18				.184
20				.224
22				.267

EXAMPLE: To calculate the pressure drop of a 1/2" line, 40 ft. long, with a 3 gpm flow rate, calculate .122 psi x 40 ft. = 4.9 psi pressure drop. Most plumbing codes require 8 psi residual pressure at the fixture. Refer to your local code requirements.

*Indicates 8 fps maximum velocity required by some plumbing codes. NOTE: Maximum flow for each size based on 12 FPS velocity. PSI x 2.307 = head loss.

Minimum Burst Pressure (PSI) Per ASTM F876/F877

SIZE	73°F (23°C)	180°F (82°C)
3/8"	620	275
1/2"	480	215
3/4"	475	210
1"	475	210

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