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Material Specification Sheet

Non-Barrier Cross-linked Polyethylene (PEX)

SCOPE:

This material specification designates the requirements for Allied PEX cross-linked polyethylene (PEX) tubing for use in hot and cold water distribution tubing. All Allied tubing is copper tube size dimension (CTS), SDR9 wall thickness and meets the respective requirements of ASTM F876 and F877.

MATERIAL:

All Allied 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. Allied tubing is available in white or pigmented red or blue for easy identification of hot and cold lines.

MARKING AND CERTIFICATION:

All Allied tubing is marked with the name Allied as the manufacturer, nominal size, design pressure and temperature ratings, relevant ASTM standards numbers, manufacturing date and production code and NSFpw stamp including third party certification by NSF International for meeting and exceeding performance and toxicological standards.

RECOMMENDED USES:

Allied tubing is intended and recommended for use in hot and cold potable water distribution systems and hydronic radiant heating systems. Design temperature and pressure ratings for Allied PEX is 160 psi @ 73° F and 100 psi @ 180° F. Allied tubing can also be used in "continuously re-circulating" 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 Allied Piping Systems representative.

HANDLING AND INSTALLATION:

Allied 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 Allied. Allied is manufactured to meet written national standards. Contact an Allied representative or the applicable code enforcement bureau for information about approvals for specific applications.

Property	ASTM	Typical Values	
		English Units	SI Units
Density	D 792	-	0.946 g/cc
Melt Index 1 (190° C/2.16kg)	D 1238	-	0.7 g/10min
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	8 x 10 ⁻⁵ /°F	15 x 10 ⁻⁵ /°C
Hydrostatic Design Basis @ 73° F (23° C) @ 180° F (82° C)	D 2837 D 2837	1250 PSI 800 PSI	8.6 MPa 5.5 MPa
Vicat Softening Point	D 1525	255° F	124° C
Thermal Conductivity	C 177	2.4 BTU/(hr)(ft ²)(°F/in)	3.5 x 10 ⁻³ Watts/(cm ²)(°C/cm)

1. Before Crosslinking 2. 73° F

SDR9 PEX TUBING

ASTM F876/F877/CTS-OD SDR9

NOTE: Dimensions are in English units. Tolerances are ASTM requirements.

Part Number	Tubing Size	O.D	Wall Thickness	Nom. I.D.	Weight Per Foot	Volume (Gal.) Per 100 Foot
	1/4"	0.375 ± .002	0.065 ± .002	0.250	.0261	.25
	3/8"	0.500 ± .002	0.075 ± .002	0.350	.0413	.50
	1/2"	0.625 ± .002	0.075 ± .002	0.475	.0535	.92
	5/8"	0.750 ± .002	0.088 ± .002	0.574	.0752	1.34
	3/4"	0.875 ± .002	0.102 ± .002	0.671	.1023	1.82
	1"	1.125 ± .003	0.132 ± .002	0.863	.1689	3.04
	1 1/4 "	1.375 ± .003	0.161 ± .003	1.053	.2523	4.52
	1 1/2 "	1.625 ± .004	0.191 ± .004	1.243	.3536	6.30
	2 "	2.125 ± .004	0.248 ± .004	1.629	.6010	10.83

* Indicates Oxygen Barrier Allied PEX tubing pat numbers

PRESSURE DROP TABLE

Expressed per/foot

	3/8"	3/8"	1/2"	1/2"	5/8"	5/8"	3/4"	3/4"	1"	1"
	PSI	Head Loss	PSI	Head Loss	PSI	Head Loss	PSI	Head Loss	PSI	Head Loss
.1	.001	.002								
.2	.004	.008	.001	.002						
.3	.008	.017	.002	.004	.001	.002				
.4	.013	.030	.003	.007	.001	.002				
.5	.020	.045	.004	.010	.002	.004				
.6	.027	.063	.006	.014	.003	.006	.001	.003		
.7	.036	.084	.008	.019	.003	.008	.002	.004		
.8	.047	.108	.011	.024	.004	.010	.002	.005		
.9	.058	.134	.013	.030	.005	.012	.002	.006		
1	.070	.1626	.016	.037	.007	.015	.003	.007	.001	.002
1.5			.034	.078	.014	.032	.006	.015	.002	.004
2			.058	.133	.024	.055	.011	.025	.003	.007
2.5			.087	.201	.036	.083	.016	.037	.005	.011
3					.050	.116	.023	.052	.007	.015
3.5					.067	.154	.030	.070	.009	.021
4					.085	.197	.039	.089	.011	.026
5					.129	.298	.059	.135	.017	.040
6					.181	.417	.082	.189	.024	.056
7							.109	.252	.032	.075
8							.140	.322	.041	.095
9							.174	.401	.051	.118
10							.211	.487	.062	.143
11							.252	.581	.074	.171
12							.296	.683	.087	.201
13							.343	.792	.101	.233

* Indicates 8fps maximum velocity required by some plumbing codes.

NOTE: Maximum flow for each size based on 12 FPS velocity. PSI x 2.307 = head loss.

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.

VOLUME/100FT

Tubing Size	Gallons
3/8"	.50
1/2"	.92
5/8"	1.33
3/4"	1.84
1"	3.04

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 specified requirements.

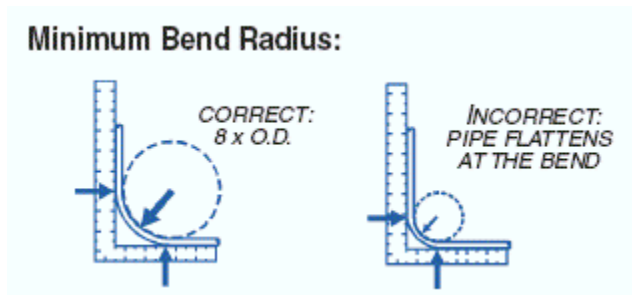
LISTINGS:

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

IAPMO – approved for UPS, listed to ASTM F876/F877

ICBO ER # 5287 – listed for plumbing and hydronic heating applications

Intertek Testing Services (Warmock Hersey) – certification to CSA B137.5 (Canadian Standards Association)



Changes in direction may be made bending PEX tubing. The minimum bend radius is 8 times the outside diameter. When bending against the coil direction, the minimum bend radius is 24 times the O.D. No special tools necessary.

Minimum Burst Pressure (PSI)
Per ASTM F876/F877

Size	74 degree F (23 C)	180 degree F (82 C)
1/4"	870	390
3/8"	620	275
1/2"	480	215
5/8"	475	210
3/4"	475	210
1"	475	210
1 1/4"	475	210
1 1/2"	475	210
2"	475	210

Allied reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Allied products previously or subsequently sold.

USA: P. O. BOX 443, Lyons, IL 60543
www.alliedpipesystems.com