



MATERIAL SPECIFICATION SHEET



CANPEX™ *ULTRA* Cross-linked Polyethylene (PEX)

SCOPE:

This material specification designates the requirements for CANPEX *ULTRA* hot and cold water distribution tubing. All CANPEX *ULTRA* tubing is copper tube size dimension (CTS), SDR-9 wall thickness and meets the requirements of ASTM F876/F877, cNSF CSA B137.5, ULC/UL S101 UL263, and ULC S102/E84.

MATERIALS:

All CANPEX *ULTRA* 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). The multi-layered construction ensures the customer that if the pipe is exposed to UV light, its physical properties as well as its long term Chlorine/ORP resistance will be retained at the highest level in the industry today. The exterior layer, also with superior Chlorine/ORP resistance, is provided in the colours red, white and blue for easy identification of hot and cold lines.

MARKING & CERTIFICATION:

All CANPEX *ULTRA* tubing is marked with the name VPFL as the manufacturer, nominal size, plastic tubing material designation code PEX 5306 (indicating that the PEX tubing has been tested and meets the F876 requirements for minimum chlorine resistance at the end use condition of 100% @140°F), design pressure and temperature ratings, relevant ASTM standards, manufacturing date and production code, as well as 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 the manufacturing facilities and independently tests CANPEX *ULTRA* tubing for compliance with physical, performance, and toxicological standards. CANPEX *ULTRA* is also certified to meet the Uniform Plumbing Code, NSF 14/61, NSF Annex G (Lead Free), CSA (Canadian Standards Association) B137.5 (cNSF), ULC/UL (Underwriters Laboratory) S101/UL263 and ULC S102/E84 through Warnock Hersey.

RECOMMENDED USES:

CANPEX *ULTRA* tubing is intended and recommended for use in hot and cold potable water distribution systems. Design temperature and pressure ratings for CANPEX *ULTRA* are 160 psi @ 73°F and 100 psi @ 180°F. CANPEX *ULTRA* tubing can be used in “continuously recirculating hot water 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 Vanguard representative.

HANDLING AND INSTALLATION:

CANPEX *ULTRA* cross-linked polyethylene tubing is tough yet flexible. However, it is softer than metals and may be damaged by abrasion or by objects with cutting edges. 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 Vanguard. CANPEX *ULTRA* is manufactured to meet written National standards. Contact a Vanguard representative or the applicable code enforcement bureau for information about approvals for specific applications.

MATERIAL PROPERTIES:

Property	ASTM Test Method	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	8x10 ⁻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

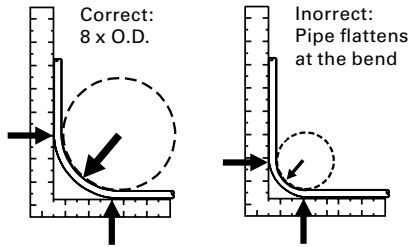
CANPEX™ ULTRA

QUALITY ASSURANCE

When the product is marked with ASTM F876/ F877 and CSA B137.5 designations, it affirms that the product was manufactured, inspected, sampled and tested in accordance with these specifications and it has been found to meet the specified requirements.

CERTIFICATIONS

Indicates that the tubing has been tested and meets the F876 requirements for minimum chlorine resistance at the end use of condition of 100% 140°F (60°C) (old domestic re-circulation rating, CL-R). NSF tested according to ASTM Standard F2023, evaluating the oxidative resistance of Cross-linked Polyethylene (PEX) tubing and systems to hot chlorinated water greatly exceeding the minimum chlorine resistance requirements of ASTM F876.



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

MINIMUM BURST PRESSURE (PSI)

Per ASTM F876/F877

Size	74° (23°C)	180° (82°C)
3/8"	620	275
1/2"	480	215
3/4"	475	210
1"	475	210
1-1/4"	475	210
1-1/2"	475	210

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.	Volume (Gal)/100 ft.
PX2	3/8"	0.500 ± .003	0.070 ± .010	0.350	.0413	0.50
PX3	1/2"	0.625 ± .003	0.070 ± .010	0.475	.0535	0.92
PX4	3/4"	0.875 ± .004	0.097 ± .010	0.671	.1023	1.82
PX5	1"	1.125 ± .005	0.125 ± .013	0.863	.1689	3.04

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

PRESSURE DROP TABLE

Expressed as PSI/FT Pressure Drop

GPM	Size					
	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"
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	.024	
11			.252	.074	.028	
12			.296	.087	.033	
13			.343	.101	.038	
14				.116	.044	
16				.148*	.056	.025
18				.184	.070	.031
20				.224	.085	.038
22				.267	.102	.045
24					.119*	.053
26					.138	.062
28					.159	.071
30					.180	.080*
32					.203	.091
34						.101
36						.113
38						.125
40						.137

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.

NSF-pw

NSF International
Performance and
Health Effects
(Standards 14 & 61)



ULC/UL S101/UL263 Listed
for Fire Resistant & Firestop
Products & Systems.



NSF certified to
CSA B137.5



IAPMO Certified



Warnock Hersey
Certified to
ULC S102/E84

ANNEX G Lead-free