



## MATERIAL SPECIFICATION SHEET



### CANPEX™ UV Plus

#### SCOPE:

This material specification designates the requirements for CANPEX *UV Plus* hot and cold water distribution tubing. All CANPEX *UV Plus* 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.

#### MATERIALS:

All CANPEX *UV Plus* 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 advanced formulation ensures that when the product is exposed to UV radiation, it will retain both its physical properties, as well as its long term Chlorine/ORP resistance at the highest level in the industry today. The single layer product is provided in the colours red, white and blue for easy identification of hot and cold lines.

#### MARKING & CERTIFICATION:

All CANPEX *UV Plus* 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 *UV Plus* tubing for compliance with physical, performance, and toxicological standards. CANPEX *UV Plus* 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 through Warnock Hersey.

#### RECOMMENDED USES:

CANPEX *UV Plus* tubing is intended and recommended for use in hot and cold potable water distribution systems. Design temperature and pressure ratings for CANPEX *UV Plus* are 160 psi @ 73°F and 100 psi @ 180°F. CANPEX *UV Plus* 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 CB Supplies representative.

#### HANDLING AND INSTALLATION:

CANPEX *UV Plus* 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 CB Supplies. CANPEX *UV Plus* is manufactured to meet written national standards. Contact a CB Supplies 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 <sup>1</sup> (190°C/2.16 kg)	D 1238	–	0.7g/10 min
Flexural Modulus <sup>2</sup>	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 <sup>-5</sup> /°F	15x10 <sup>-5</sup> /°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 <sup>2</sup> )(°F/in)	3.5x10 <sup>-3</sup> Watts/(cm <sup>2</sup> )(°C/cm)

1. Before cross-linking  
2. 73°F

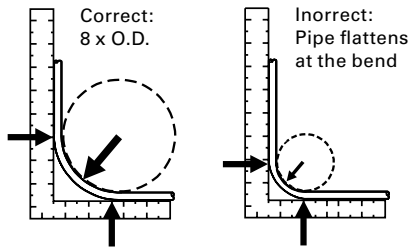
## CANPEX™ UV Plus

### 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 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 UV Plus 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

ANNEX G Lead-free



CB SUPPLIES LTD.  
www.cbsupplies.ca

PHONE: 1-888-PIPE PEX (747-3739)  
EMAIL: sales@cbsupplies.ca

8125 North Fraser Way  
Burnaby, BC V5J 5M8  
Canada



# MATERIAL SPECIFICATION SHEET



## **Brass Insert Fittings and Crimp Rings for CANPEX™, CANPEX™ ULTRA and CANPEX™ OXY Barrier SDR-9 Cross-Linked Polyethylene (PEX)**

### **SCOPE:**

This product specification designates the requirements for brass insert fittings and black copper crimp rings to be used as connections for CANPEX, CANPEX *ULTRA* and CANPEX *OXY* Barrier tubing. The connections are assembled with a full-circle crimp tool designed specifically for this purpose. These fittings are approved for use with ASTM Standard F876/F877 (PEX tubing/PEX Distribution Systems).

### **MATERIALS:**

Brass insert fittings are manufactured from extruded or forged brass with some fittings supplied in copper. All fittings are precision made to tight tolerances for a consistent fit with PEX tubing. All fittings meet the rigorous requirements of ANSI/NSF 61 for lead extraction.

The black copper crimp rings are manufactured from UNS C10200 or UNS C12200 copper alloy. Rings are annealed to 35-45 Rockwell 15T scale for ease of crimping. The black coating is not a paint, but a surface treatment which does not add to the dimensions of the ring.

### **MARKING & CERTIFICATION:**

Brass insert fittings and rings are manufactured and certified to the requirements of ASTM F 1807. All fittings and rings are marked with the F 1807 designation, PEX manufacturer's mark, and required mark(s) of third party certification organizations. Fittings meet the requirements of ANSI/NSF 61 for health effects and are suitable for contact with potable water. NSF International and other certification organizations conduct random on-site inspections of manufacturing facilities and independently test fittings for compliance with physical, performance and toxicological specifications.

### **RECOMMENDED USES:**

CB Supplies' brass insert fittings are designed to be used with CANPEX, CANPEX *ULTRA* and CANPEX *OXY* Barrier tubing for hot and cold water conveyance systems operating up to 180°F @ 100 psi. Applications include, but are not limited to, potable water distribution and hydronic heating systems. Brass insert fitting system components are interchangeable with components and tubing from other PEX suppliers provided they are manufactured to the same ASTM specifications, and certified by a recognised third party certifying organization. Because CB Supplies has no control over the quality of other manufacturers' products, it does not extend any warranty to those components that are not supplied by CB Supplies.

For information on other hot and cold applications not listed here, consult your CB Supplies representative.

## Brass Insert Fittings and Crimp Rings for CANPEX™, CANPEX™ ULTRA™ and CANPEX™ OXY Barrier PEX Tubing

Quality Assurance: When the product is marked with the ASTM F 1807 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.

### FRICITION LOSS

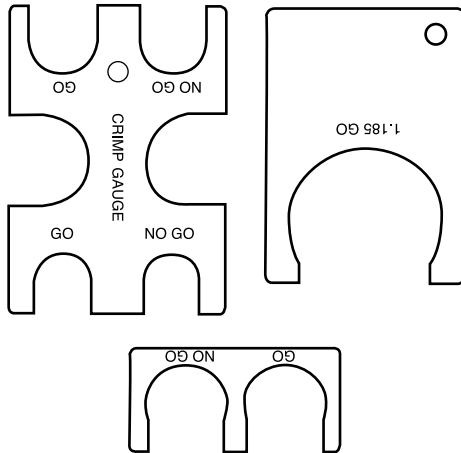
Equivalent Feet of SDR9 PEX Tubing

Size	Coupling	90° Elbow	Run Tee	Tee Branch
3/8"	2.9	9.2	2.9	9.4
1/2"	2.0	9.4	2.2	10.4
5/8"	2.5	9.4	2.2	10.0
3/4"	0.6	9.4	1.9	8.9
1"	1.3	10	2.3	11

This information is based on tubing nominal flow rate. (8 fps flow velocity)

### GO/NO GO GAUGES

CB Supplies offers GO/NO GO gauges for easy testing of the finished crimp.

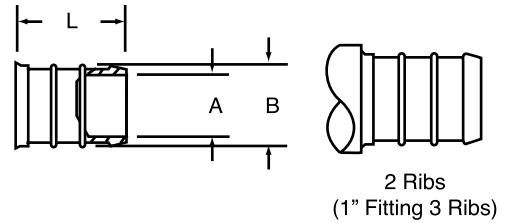


### BRASS INSERT FITTINGS

Typical Fitting Insert Dimensions

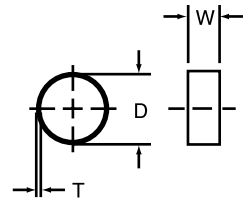
Size	A	B	L
3/8"	.242	0.345 ± .004	.630
1/2"	.361	0.471 ± .004	.630
5/8"	.454	0.570 ± .003	.630
3/4"	.546	0.667 ± .004	.630
1"	.719	0.856 ± .004	.630

NOTE: Dimensions are in English units.



### COPPER CRIMP RING DIMENSIONS BEFORE CRIMPING

Size	D	W	T
3/8"	.630	0.325	.058
1/2"	.750	0.325	.056
5/8"	.875	0.325	.054
3/4"	1.00	0.325	.056
1"	1.25	0.365	.049

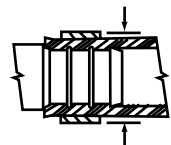


All dimensions shown are nominal.

### CRIMPED DIAMETER DIMENSIONS

Final crimped outside diameters shall fall within these dimensions when measured with a micrometer or caliper.

Size	A	B
3/8"	ø 0.580"	ø 0.595"
1/2"	ø 0.700"	ø 0.715"
5/8"	ø 0.815"	ø 0.830"
3/4"	ø 0.945"	ø 0.960"
1"	ø 1.175"	ø 1.190"



NSF-pw

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

IAPMO Certified

Warnock Hersey Certified to CSA B137.5

Note: All fittings may not be listed with each organization shown.



## MATERIAL SPECIFICATION SHEET



### **PAL Insert Fittings for CANPEX™, CANPEX™ ULTRA and CANPEX™ OXY Barrier SDR-9 Cross-Linked Polyethylene (PEX)**

#### **SCOPE:**

This product specification designates the requirements for PAL insert fittings and black copper crimp rings to be used as connections for CANPEX, CANPEX *ULTRA*, CANPEX *OXY* Barrier tubing in 3/8", 1/2", 3/4" and 1" sizes. The connections are assembled with a full-circle crimp tool designed specifically for this purpose. These fittings are approved for use with ASTM Standard F876/F877 (PEX tubing/PEX Distribution Systems).

#### **MATERIALS:**

All PAL insert fittings are manufactured from a polysulfone/polyphenylsulfone blended polymer (Acudel). The material is listed with NSF International for potable water contact. PAL insert fittings exhibit excellent resistance to the corrosive effects of water and are well suited for hot water applications.

The black copper crimp rings are manufactured from UNS C10200 or UNS C12200 copper alloy. Rings are annealed to 35-45 Rockwell15T scale for ease of crimping. The black coating is not a paint but a surface treatment which does not add to the dimensions of the ring.

#### **MARKING & CERTIFICATION:**

Fittings are marked with F 877 and/or F 2159 ASTM Standards and the NSF-pw mark indicating third party certification by NSF International. NSF conducts random on-site inspections of the manufacturing facilities and independently tests PAL insert fittings for compliance with performance and toxicological standards. Rings are marked with SDR-9 and/or PEX and manufacturer's mark.

#### **RECOMMENDED USES:**

PAL insert fittings and black, copper crimp rings are intended and recommended for use in potable water distribution systems and hydronic radiant heating systems with CANPEX series PEX tubing meeting the requirements of ASTM F876. Maximum design temperature and pressure ratings are 160 psi @ 73°F and 100 psi @ 180°F. For information on other hot and cold applications not listed here, consult with your CB supplies representative.

#### **MATERIAL PROPERTIES:**

Property	ASTM Test Method	English Units	SI Units
Specific Gravity	D 792	1.28	1.28
Melt Flow, g/10min.	D 1238	12	12
Water Absorption, % in 24 hrs.	D 570	0.3	.3
Tensile Strength @ Yield	D 638	11,200 psi	77 MPa
Tensile Modulus (psi MPa)	D 638	387,000 psi	2.67 GPa
Tensile Elongation @ yeild, %	D 638	6.7	6.7
Tensile Elongation @ break, %	D 638	50	50
Flexural Strength @ yeild, (psi MPa)	D 790	19,500 psi	134 MPa
Flexural Modulus, (psi, GPa)	D 790	2402,000 psi	2.77 GPa
Izod Impact (Notched)	D 256	2.0 ft-lb/in	105 J/m
Heat Deflection Temp. @264 psi (1.8 MPa)	D 648	387°F	197°C
Thermal Conductivity	C 177	2.1 Btu-in/ft <sup>2</sup> /hr/°F	0.31 W/m-°C

## PAL Insert Fittings for CANPEX™ Series SDR-9 Tubing

### QUALITY ASSURANCE

When the product is marked with the ASTM F 877 and/ or F2159 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.

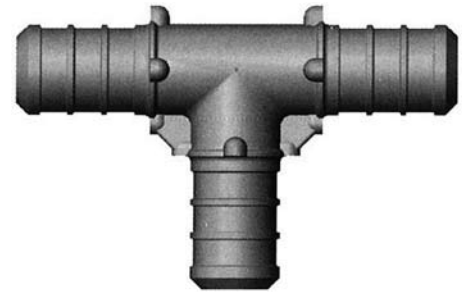
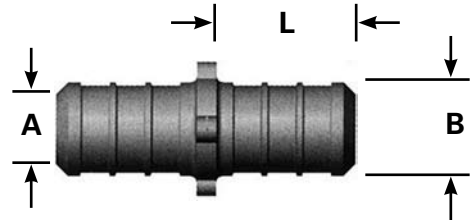
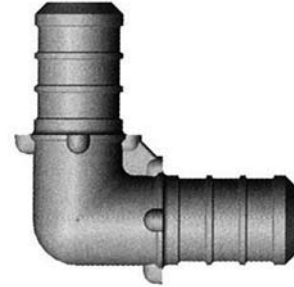
### PRESSURE DROP TABLE FOR PAL INSERT FITTINGS

Expressed in equivalent length of tubing in feet.

Size	Coupling	Elbow	Tee Run	Tee Branch
1/2"	7.1	16.5	7.2	17.9
3/4"	4.8	17.4	6.6	17.7
1"	4.5	18.0	6.0	17.0

### TYPICAL FITTING INSERT DIMENSIONS

Size	A	B	L
1/2"	.320	.473 ± .003	.700-.710
3/4"	.462	.668 ± .003	.700-.710
1"	.610	.856 ± .003	.850-.870



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  
CSA B137.5

Note: All fittings may not be  
listed with each organization  
shown.



## MATERIAL SPECIFICATION SHEET



### CANPEX™ OXY Barrier Hydronic Radiant Heat Tubing

#### SCOPE:

This specification designates the requirements for CANPEX OXYBarrier cross-linked polyethylene (PEX) tubing for use in hydronic radiant heating systems. CANPEX OXYBarrier includes an oxygen barrier layer that helps restrict the passage of oxygen through the wall of the tubing. All CANPEX OXY Barrier is manufactured and tested to the requirements of ASTM F876 and F877 and is CTS-OD (copper tube size outer dimension controlled) with an SDR - (standard dimension ratio) 9 wall thickness.

#### MATERIALS:

CANPEX OXYBarrier 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 extrusion by exposing the tubing to heat and moisture (steam). CANPEX OXYBarrier includes 3 layers. The first layer is the cross-linked, high density polyethylene. The second layer is an adhesive for the third layer, the ethylene vinyl alcohol layer (EVOH oxygen barrier). EVOH is highly resistant to the passage of oxygen.

#### MARKING & CERTIFICATION:

All CANPEX OXYBarrier tubing is marked with the name VPFL as the manufacturer, nominal size, plastic tubing material designation code PEX 5006 (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 OXY Barrier tubing for compliance with physical, performance, and toxicological standards. CANPEX OXY Barrier is also certified to meet the Uniform Plumbing Code, NSF-61, NSF-14, NSF Annex G (Lead Free), CSA (Canadian Standards Association) B137.5 (cNSF), ULC/UL (Underwriters Laboratory) S101/UL263 and ULC S102 through Warnock Hersey.

#### RECOMMENDED USES:

CANPEX OXYBarrier tubing is recommended for hydronic radiant heating, cooling, and snow melting systems utilizing water or a water/glycol mix as the heat or cold transfer medium. 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. CANPEX OXYBarrier may also be used as transfer lines for baseboard heating systems with a maximum operating temperature of 200°F @ 80 psi.

#### HANDLING AND INSTALLATION:

Install CANPEX OXYBarrier 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. CANPEX OXYBarrier comes with a 90 day UV protection. For information on the suitability for other applications, contact your CB Supplies representative.

#### MATERIAL PROPERTIES:

Property	ASTM Test Method	English Units	SI Units
Density	D 792	-	0.952 g/cc
Melt Index <sup>1</sup>	D 1238	-	2.0 g/10min
Flexural Modulus <sup>2</sup>	D 638	150,000 psi	1000 MN/m <sup>2</sup>
Tensile Strength @ Yield (2 in/min)	D 638	3,900 psi	.26 MN/m <sup>2</sup>
Coefficient of Expansion @ 68° F	D 696	8 x 10 <sup>-4</sup> /°F	1.4 x 10 <sup>-4</sup> /°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	C 177	2.7 Btu/hr/ft <sup>2</sup> /°F	1.1x10 <sup>-3</sup> cal/sec/cm/°C

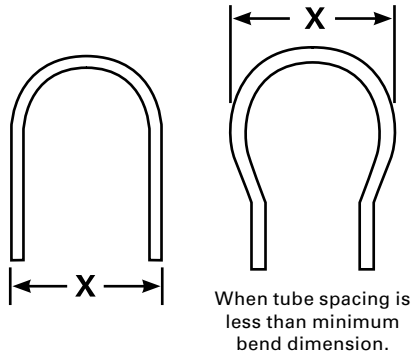
1. Before Crosslinking  
2. 73°F

## CANPEX™ OXY Barrier

### QUALITY ASSURANCE

CANPEX OXY Barrier tubing is manufactured and tested to the requirements of ASTM F876 and F877. The degree of cross-linking of finished tubing is determined by method ASTM D2765.

When the tube spacing is less than the minimum recommended bending dimension, the loop 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.

CANPEX OXY Barrier Oxygen Permeation: All sizes have less than 0.1 grams/m<sup>3</sup>/day

NOTE: CANPEX OXY Barrier tubing meets DIN 4726 requirement for oxygen tight pipes.

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"

### PRESSURE DROP TABLE

Expressed per/ft.

	Size							
	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"	1-1/2"
GPM	PSI Head Loss	PSI Head Loss	PSI Head Loss	PSI Head Loss	PSI Head Loss	PSI Head Loss	PSI Head Loss	PSI Head Loss
.1	.002	.005	.001	.001				
.2	.009	.021	.004	.008	.001	.001		
.3	.018	.042	.017	.002	.004	.001	.002	
.4	.031	.072	.013	.030	.003	.007	.001	.002
.5	.047	.109	.020	.045	.004	.010	.002	.004
.6	.066	.152	.027	.063	.006	.014	.003	.006
.7	.088	.203	.036	.084	.008	.019	.003	.008
.8		.047	.108	.011	.024	.004	.010	.002
.9		.058	.134	.013	.030	.005	.012	.002
1		.070	.1626	.016	.037	.007	.015	.003
1.5			.034	.078	.014	.032	.006	.015
2			.058	.133	.024	.055	.011	.025
3				.050	.116	.023	.052	.007
4				.085	.197	.030	.089	.011
6				.181	.417	.082	.189	.024
8					.140	.322	.041	.095
10					.211	.487	.062	.143
12					.296	.683	.087	.201
14							.042	.098
16							.052	.123
18							.065	.151
20							.078	.182
22							.093	.217
24							.108	.252
26								.045
28								.105
30								.052
32								.121
								.060
								.140
								.067
								.156
								.075
								.175

### SDR-9 PEX TUBING

ASTM F876/F877/CTS-OD SDR-9

Tubing Size	O.D.	Wall Thickness	Nom. I.D.	Weight Per Ft.	Volume (Gal)/100 ft.
5/16"	0.430 ± .003	.064 ± .010	0.292	.0340	0.34
3/8"	0.500 ± .003	.070 ± .010	0.350	.0413	0.50
1/2"	0.625 ± .004	.070 ± .010	0.475	.0535	0.92
5/8"	0.750 ± .004	.083 ± .010	0.574	.0752	1.34
3/4"	0.875 ± .004	.097 ± .010	0.671	.1023	1.82
1"	1.125 ± .005	.125 ± 0.10	0.863	.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

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

CANPEX OXY Barrier tubing is available in both straight lengths and coils.

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

ANNEX G Lead-free



CB SUPPLIES LTD.  
www.cbsupplies.ca

PHONE: 1-888-PIPE PEX (747-3739)  
EMAIL: sales@cbsupplies.ca

8125 North Fraser Way  
Burnaby, BC V5J 5M8  
Canada