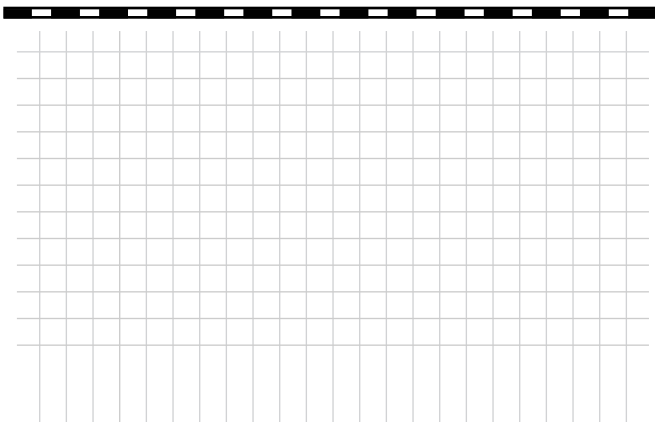


# Chemical Process Piping Systems

## Polypropylene Socket Fusion Dimensional Data

*Corrosion Resistant Fluid and  
Air Handling Systems.*

**SIMTECH**



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# PureTech Piping Systems - Dimensional Data

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# PureTech Piping Systems - Dimensional Data

## SIMTECH GUIDE SPECIFICATION ALPHAPLUS POLYPROPYLENE PIPING SYSTEM

### 1.0 PIPE

#### 1.1 Material

Pipe shall be extruded from Group 1, Class 2, Alpha nucleated homopolymer pigmented material in accordance with ASTM D-4101. AP polypropylene resin shall achieve a minimum tensile strength of 300 bar when tested at 23°C according to ASTM D 638. Material shall allow continuous operating temperatures to 95° C. AP resin shall comply with relevant food substance regulation, US FDA guidelines as specified in Code of Federal Regulators (CFR), Title 21, Chapter 1: Section 177.1520 and Section 178.3297 suitable for contact with foodstuff, pharmaceutical use and potable water.

#### 1.2 Stress Relieved

Pipe shall be stress relieved by post-extrusion annealing to eliminate inherent stresses in the pipe wall created by the extrusion process.

#### 1.3 Pressure Rating

Pipe shall be pressure rated in accordance with ASTM D-2837 and Din 8077 for hydrostatic design basis. Pipe shall be manufactured to an SDR (standard dimension ratio) in order to provide the same pressure rating in all diameters. Pipe shall be:

$$\text{SDR 11} = 150 \text{ PSI (PN10)*}$$

\*PN = Nominal Pressure Rating in Bar

### 2.0 FITTINGS

#### 2.1 Material

See material under PIPE section 1.0

#### 2.2 Pressure Fittings

All pressure pattern fittings from 1/2" (20 mm) through 4" (110 mm) shall be injection molded and shall have the same pressure rating as the pipe. Fittings 1/2" (20mm) through 2 1/2" (75mm) shall be injection molded socket fusion type. Fittings larger than 2 1/2" shall be butt fusion type.

#### 2.4 Dimensions and Tolerances

Socket fusion fittings dimension are in accordance with ISO 7279 and DIN 16962. Butt fusion conform to SDR (standard dimension ratio) series that defines the wall thickness and outer diameter

#### 2.4 Joining

All joints 1/2" (20 mm) through 2 1/2" (75 mm) shall be interference fit socket fusion type. Butt fusion joints may be used on pipe and fittings above 2 1/2". All fusion-welded joints to be performed in accordance with ASTM D-2657 and piping manufacturers recommendations. All installers shall be factory certified by a representative of the manufacturer.

### 3.0 MANUFACTURER

SIMTECH

877-777-2467

www.SimtechUSA.com

# PureTech Piping Systems - Dimensional Data

## Material Information

### Material Type - Polypropylene (PP)

SIMTECH'S SR Series Polypropylene piping is extruded from A Group 1, Class 1, Grade 0 Polypropylene Homopolymer material per ASTM-D4101, Federal Specifications L-P-39413 and Military Spec Mil P 461096. PP material to be heat stabilized UV stabilized and pigmented to RAL 7032. Temperature stabilizers are added to provide the material with enhanced resistance to aggressive media at elevated temperatures.

### Stress Relieved

SIMTECH'S SR Series pipe is Stress Relieved, through a post extrusion annealing process. This process allows the pipe to perform to its fullest potential. SR Series pipe possess higher impact strength, higher quick burst pressures, improved resistance to oxidizing acids and longer service life expectancy, compared to pipe that is not subject to a post extrusion annealing process.

### Material Characteristics, PP

Properties	Test Standard	Test Method Test Specimen	Dimension	PP Type 1
<b>Mechanical Properties</b>				
Density	DIN 53479	Method C	g/cm <sup>3</sup>	0.91
Melting Index Group	DIN 16776	MFI 190-5	Group	006
Tensile Test	DIN 53455	Test Bar 3	—	—
Yield Stress	—	Test Speed 50 mm/min	N/mm <sup>2</sup>	33
Elongation At Yield Stress	—	—	%	15
Elongation At Rupture	—	—	%	70
Bending Test	DIN 53457	Test Bar	—	—
Bending Modulus E	1 min.	120 x 10 x 4 mm	N/mm <sup>2</sup>	1200
Impact Bending Test	DIN 53453	Charpy	—	—
Impact Strength	—	Standard Miniature Bar	kJ/m <sup>2</sup>	Without Break
Notched Bar Impact Strength	—	Standard Miniature Bar With U-Notch	kJ/m <sup>2</sup>	7
<b>Surface Hardness</b>				
Ball Impression Hardness	DIN 53456	H 358/30	N/mm <sup>2</sup>	70
Shore Hardness	DIN 53505	D	—	72
<b>Thermal Properties</b>				
Crystallite Melting Range	—	Polarization Microscope	K (°C)	160 - 165
Mean Thermal Coefficient Of Linear Expansion	DIN 53752	—	K (°C)	1.6 x 10 <sup>-4</sup>
Thermal Conductivity	DIN 52612	Two-Plate Method	W/m x K	0.22
<b>Electrical Properties</b>				
Dielectric Strength	DIN 53481	K 20/P 50	kV/mm	52
Impedance	DIN 53482	Annular Electrode	Ohm x cm	> 10 <sup>16</sup>
Surface Resistance	DIN 53482	Electrode A	Ohm	10 <sup>14</sup>
Leakage Path Resistance	DIN 53480	Method KC	Step	> 600
<b>Other Properties</b>				
Flammability	DIN 4102	—	Class	B2
Water Absorption	DIN 53495	Method C	% / 24h	< 0.01
Physiologically Harmless	Recommendation	BGA/KTW	—	YES
Chemical Resistance	DIN 8078 Addendum	—	—	Complies

# PureTech Piping Systems - Dimensional Data

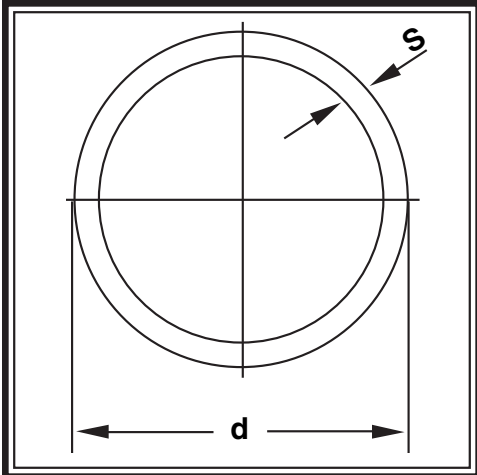
## Permissible Gauge Pressure For SIMTECH Homopolymer Polypropylene Depending Upon Temperature and Time

Temperature		Operation Years	PN10 / SDR 11 PSI
F	C		
68°	20°	1	222
		5	203
		10	194
		25	184
		50	180
86°	30°	1	175
		5	165
		10	158
		25	151
		50	145
104°	40°	1	144
		5	129
		10	123
		25	115
		50	110
122°	50°	1	117
		5	106
		10	100
		25	94
		50	88
140°	60°	1	96
		5	84
		10	78
		25	71
		50	65
158°	70°	1	78
		5	68
		10	64
		25	51
		50	46
176°	80°	1	64
		5	49
		10	38
		25	30
		50	22
203°	95°	1	42
		5	24
		10	17

NOTE: The continuous permissible operating pressures shown above are reflective of the improved properties of the Stress Relieved Homopolymer Resin Pipe produced by SIMTECH. Ratings include a safety factor of 1.7 at 50 years service life.

# PureTech Piping Systems - Dimensional Data

## PRESSURE PIPE



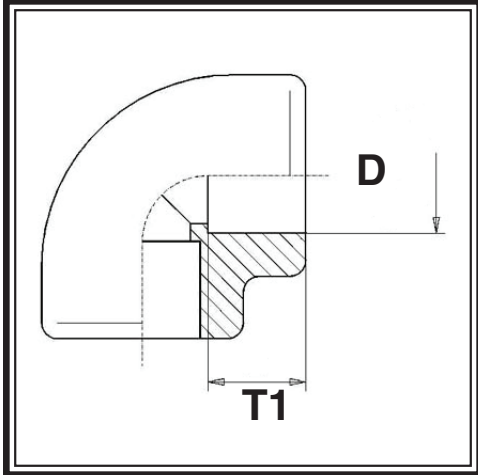
Description: Pressure Pipe  
PN10 / SDR 11 - 150psi

Material: AlphaPlus® Polypropylene

Connection: Butt Fusion

Nominal Size	Actual OD Size	d in	S in	Weight (lbs./ m)	Weight Lbs. Foot	Part Number
3/8"	0.630 (16mm)	0.630	0.087	0.209	0.065	PP05000016
1/2"	0.787 (20mm)	0.787	0.075	0.235	0.074	PP05000020
3/4"	0.984 (25mm)	0.984	0.091	0.361	0.113	PP05000025
1"	1.260 (32mm)	1.260	0.114	0.574	0.179	PP05000032
1 1/4"	1.575 (40mm)	1.575	0.146	0.906	0.283	PP05000040
1 1/2"	1.969 (50mm)	1.969	0.181	1.404	0.439	PP05000050
2"	2.480 (63mm)	2.480	0.228	2.222	0.694	PP05000063
2 1/2"	2.953 (75mm)	2.953	0.268	3.102	0.969	PP05000075
3"	3.543 (90mm)	3.543	0.323	4.466	1.396	PP05000090
4"	4.331 (110mm)	4.331	0.394	6.622	2.069	PP05000110

# PureTech Piping Systems - Dimensional Data



## 90° Elbow

Description: 90° Elbow  
PN10 / SDR 11 - 150psi

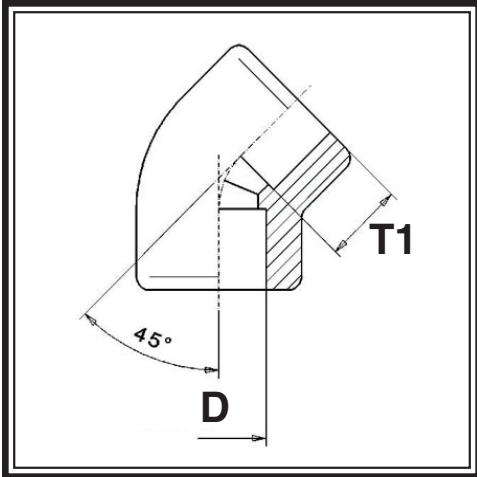
Material: AlphaPlus® Polypropylene

Connection: Socket Fusion

Nominal Size	Actual ID Size	D in	T1 in	Weight lbs	Part Number
3/8"	0.630 (16mm)	0.630	0.512	0.033	PP07010016
1/2"	0.787 (20mm)	0.787	0.591	0.046	PP07010020
3/4"	0.984 (25mm)	0.984	0.630	0.068	PP07010025
1"	1.260 (32mm)	1.260	0.709	0.108	PP07010032
1 1/4"	1.575 (40mm)	1.575	0.827	0.198	PP07010040
1 1/2"	1.969 (50mm)	1.969	0.945	0.295	PP07010050
2"	2.480 (63mm)	2.480	1.063	0.552	PP07010063
2 1/2"	2.953 (75mm)	2.953	1.220	0.616	PP07010075
3"	3.543 (90mm)	3.543	1.417	1.100	PP07010090
4"	4.331 (110mm)	4.331	1.654	1.903	PP07010110

# PureTech Piping Systems - Dimensional Data

## 45° Elbow



Description: 45° Elbow  
PN10 / SDR 11 - 150psi

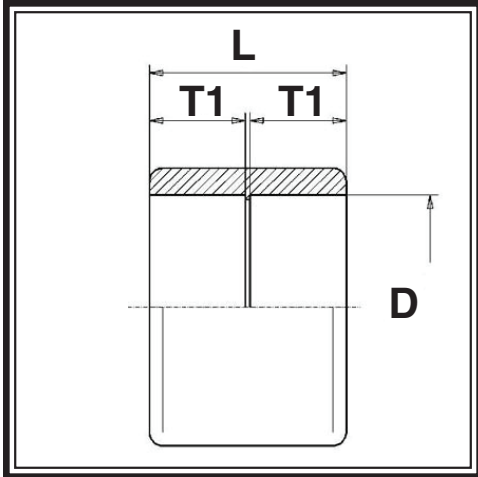
Material: AlphaPlus® Polypropylene

Connection: Socket Fusion

Nominal Size	Actual ID Size	D in	T1 in	Weight lbs	Part Number
3/8"	0.630 (16mm)	0.630	0.512	0.009	PP07020016
1/2"	0.787 (20mm)	0.787	0.591	0.042	PP07020020
3/4"	0.984 (25mm)	0.984	0.630	0.059	PP07020025
1"	1.260 (32mm)	1.260	0.709	0.088	PP07020032
1 1/4"	1.575 (40mm)	1.575	0.827	0.165	PP07020040
1 1/2"	1.969 (50mm)	1.969	0.945	0.242	PP07020050
2"	2.480 (63mm)	2.480	1.063	0.403	PP07020063
2 1/2"	2.953 (75mm)	2.953	1.220	0.473	PP07020075
3"	3.543 (90mm)	3.543	1.417	0.781	PP07020090
4"	4.331 (110mm)	4.331	1.654	1.342	PP07020110



# PureTech Piping Systems - Dimensional Data



## Coupling

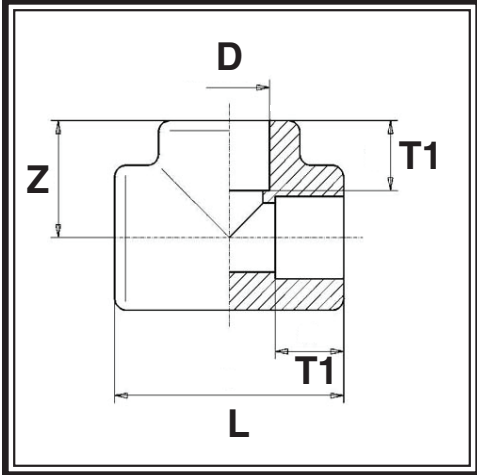
Description: Coupling  
PN10 / SDR 11 - 150psi

Material: AlphaPlus® Polypropylene

Connection: Socket Fusion

Nominal Size	Actual ID Size	D in	T1 in	L in	Weight lbs	Part Number
3/8"	0.630 (16mm)	0.630	0.512	1.142	0.220	PP07110016
1/2"	0.787 (20mm)	0.787	0.591	1.260	0.031	PP07110020
3/4"	0.984 (25mm)	0.984	0.630	1.378	0.046	PP07110025
1"	1.260 (32mm)	1.260	0.709	1.535	0.062	PP07110032
1 1/4"	1.575 (40mm)	1.575	0.827	1.732	0.103	PP07110040
1 1/2"	1.969 (50mm)	1.969	0.945	1.969	0.174	PP07110050
2"	2.480 (63mm)	2.480	1.063	2.283	0.290	PP07110063
2 1/2"	2.953 (75mm)	2.953	1.220	2.598	0.370	PP07110075
3"	3.543 (90mm)	3.543	1.417	2.992	0.662	PP07110090
4"	4.331 (110mm)	4.331	1.654	3.465	0.935	PP07110110

# PureTech Piping Systems - Dimensional Data



## Tee

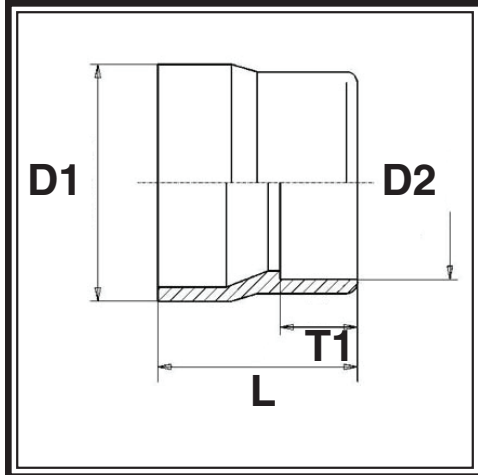
Description: Tee  
PN10 / SDR 11 - 150psi

Material: AlphaPlus® Polypropylene

Connection: Socket Fusion

Nominal Size	Actual ID Size	D in	L in	T1 in	Z in	Weight lbs	Part Number
3/8"	0.630 (16mm)	0.630	1.693	0.512	0.866	0.044	PP07030016
1/2"	0.787 (20mm)	0.787	2.008	0.591	1.004	0.064	PP07030020
3/4"	0.984 (25mm)	0.984	2.323	0.630	1.161	0.099	PP07030025
1"	1.260 (32mm)	1.260	2.756	0.709	1.378	0.141	PP07030032
1 1/4"	1.575 (40mm)	1.575	3.268	0.827	1.634	0.246	PP07030040
1 1/2"	1.969 (50mm)	1.969	3.898	0.945	1.949	0.370	PP07030050
2"	2.480 (63mm)	2.480	4.724	1.102	2.362	0.684	PP07030063
2 1/2"	2.953 (75mm)	2.953	5.472	1.220	2.736	0.770	PP07030075
3"	3.543 (90mm)	3.543	6.417	1.417	3.209	1.320	PP07030090
4"	4.331 (110mm)	4.331	7.677	1.654	3.839	2.266	PP07030110

# PureTech Piping Systems - Dimensional Data



## Reducer Bushing

Description: Reducer Bushing  
PN10 / SDR 11 - 150psi

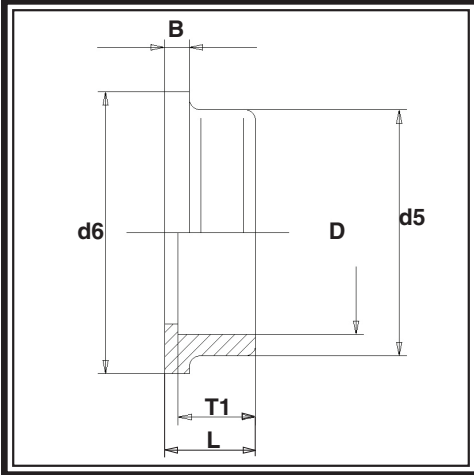
Material: AlphaPlus® Polypropylene

Connection: Socket Fusion

Nominal Size	Actual ID Size	D1 in	D2 in	T1 in	L in	Weight lbs	Part Number
½" x ⅜"	0.787 (20mm) x 0.630 (16mm)	0.787	0.630	0.512	1.063	0.022	PP0704020016
¾" x ⅜"	0.984 (25mm) x 0.630 (16mm)	0.984	0.630	0.512	1.220	0.022	PP0704025016
¾" x ½"	0.984 (25mm) x 0.787 (20mm)	0.984	0.787	0.591	1.220	0.024	PP0704025020
1" x ½"	1.260 (32mm) x 0.787 (20mm)	1.260	0.787	0.551	1.693	0.044	PP0704032020
1" x ¾"	1.260 (32mm) x 0.984 (25mm)	1.260	0.984	0.630	1.457	0.040	PP0704032025
1¼" x ½"	1.575 (40mm) x 0.787 (20mm)	1.575	0.787	0.551	1.890	0.044	PP0704040020
1¼" x ¾"	1.575 (40mm) x 0.984 (25mm)	1.575	0.984	0.630	1.890	0.057	PP0704040025
1¼" x 1"	1.575 (40mm) x 1.260 (32mm)	1.575	1.260	0.709	1.732	0.068	PP0704040032
1½" x ½"	1.969 (50mm) x 0.787 (20mm)	1.969	0.787	0.551	2.126	0.088	PP0704050020
1½" x ¾"	1.969 (50mm) x 0.984 (25mm)	1.969	0.984	0.630	2.067	0.066	PP0704050025
1½" x 1"	1.969 (50mm) x 1.260 (32mm)	1.969	1.260	0.709	2.067	0.081	PP0704050032
1½" x 1¼"	1.969 (50mm) x 1.575 (40mm)	1.969	1.575	0.827	2.142	0.117	PP0704050040
2" x ¾"	2.480 (63mm) x 0.984 (25mm)	2.480	0.984	0.630	2.520	0.132	PP0704063025
2" x 1"	2.480 (63mm) x 1.260 (32mm)	2.480	1.260	0.709	2.500	0.130	PP0704063032
2" x 1¼"	2.480 (63mm) x 1.575 (40mm)	2.480	1.575	0.807	2.500	0.220	PP0704063040
2" x 1½"	2.480 (63mm) x 1.969 (50mm)	2.480	1.969	0.945	2.500	0.194	PP0704063050
2½" x 2"	2.953 (75mm) x 2.480 (63mm)	2.953	2.480	1.063	2.776	0.246	PP0704075063
3" x 2"	3.543 (90mm) x 2.480 (63mm)	3.543	2.480	1.063	3.287	0.396	PP0704090063
3" x 2½"	3.543 (90mm) x 2.953 (75mm)	3.543	2.953	1.220	3.287	0.343	PP0704090075
4" x 3"	4.331 (110mm) x 3.543 (90mm)	4.331	3.543	1.417	3.957	0.603	PP0704110090

# PureTech Piping Systems - Dimensional Data

## Stub End



Description: Stub End  
PN10 / SDR 11 - 150psi

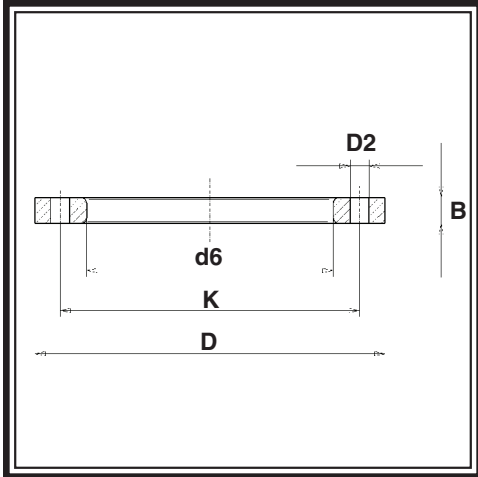
Material: AlphaPlus® Polypropylene

Connection: Socket Fusion

Nominal Size	Actual ID Size	D in	d5 in	d6 in	B in	L in	T1 in	Weight lbs	Part Number
½"	0.787 (20mm)	0.787	1.024	1.732	0.394	0.846	0.591	0.040	PP07060020
¾"	0.984 (25mm)	0.984	1.260	2.126	0.394	0.858	0.630	0.055	PP07060025
1"	1.260 (32mm)	1.260	1.535	2.480	0.394	0.974	0.709	0.070	PP07060032
1¼"	1.575 (40mm)	1.575	1.890	2.874	0.433	1.102	0.827	0.143	PP07060040
1½"	1.969 (50mm)	1.969	2.362	3.248	0.472	1.280	0.945	0.213	PP07060050
2"	2.480 (63mm)	2.480	2.835	3.976	0.551	1.447	1.102	0.334	PP07060063
2½"	2.953 (75mm)	2.953	3.346	4.173	0.394	1.388	1.220	0.352	PP07060075
3"	3.543 (90mm)	3.543	4.173	4.921	0.433	1.722	1.417	0.473	PP07060090
4"	4.331 (110mm)	4.331	4.882	5.906	0.472	1.811	1.634	0.792	PP07060110

# PureTech Piping Systems - Dimensional Data

## Backing Ring



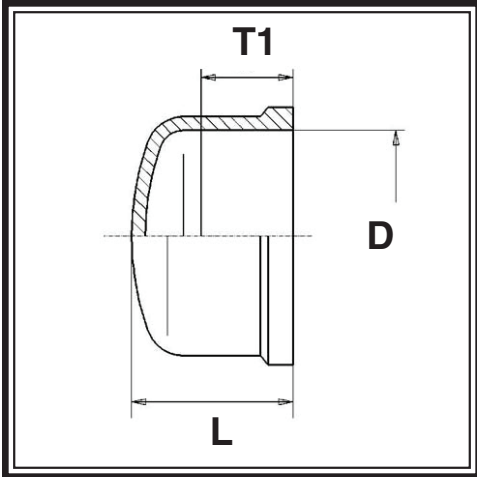
Description: Backing Ring  
150 lbs. ANSI Drilling

Material: Glass Filled Polypropylene with Steel Core

Nominal Size	Actual ID Size	B in	D in	D2 in	d6 in	K in	# Holes	Weight lbs	Part Number
½"	0.787 (20mm)	0.47	3.50	0.63	1.24	2.36	4	0.48	PP99070020
¾"	0.984 (25mm)	0.47	3.86	0.63	1.32	2.76	4	0.66	PP99070025
1"	1.260 (32mm)	0.63	4.25	0.63	1.63	3.11	4	0.97	PP99070032
1¼"	1.575 (40mm)	0.63	4.61	0.63	1.99	3.50	4	1.19	PP99070040
1½"	1.969 (50mm)	0.71	5.00	0.63	2.42	3.86	4	1.25	PP99070050
2"	2.480 (63mm)	0.71	5.98	0.75	3.05	4.76	4	1.78	PP99070063
2½"	2.953 (75mm)	0.71	7.01	0.75	3.48	5.51	4	2.42	PP99070075
3"	3.543 (90mm)	0.71	7.48	0.75	4.25	5.98	4	2.33	PP99070090
4"	4.331 (110mm)	0.71	9.02	0.75	5.04	7.52	8	4.05	PP99070110

# PureTech Piping Systems - Dimensional Data

## End Cap



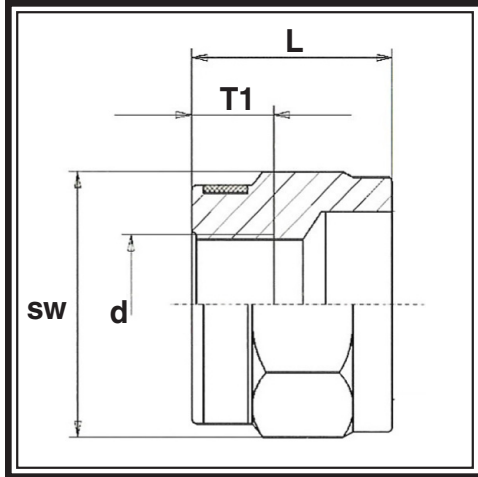
Description: End Cap  
PN10 / SDR 11 - 150psi

Material: AlphaPlus® Polypropylene

Connection: Socket Fusion

Nominal Size	Actual ID Size	D in	L in	T1 in	Weight lbs	Part Number
½"	0.787 (20mm)	0.787	0.886	0.591	0.024	PP07090020
¾"	0.984 (25mm)	0.984	1.063	0.630	0.037	PP07090025
1"	1.260 (32mm)	1.260	1.220	0.709	0.057	PP07090032
1¼"	1.575 (40mm)	1.575	1.417	0.827	0.086	PP07090040
1½"	1.969 (50mm)	1.969	1.693	0.945	0.141	PP07090050
2"	2.480 (63mm)	2.480	2.047	1.063	0.207	PP07090063
2½"	2.953 (75mm)	2.953	2.323	1.220	0.306	PP07090075
3"	3.543 (90mm)	3.543	2.717	1.417	0.554	PP07090090
4"	4.331 (110mm)	4.331	3.228	1.654	0.906	PP07090110

# PureTech Piping Systems - Dimensional Data



## Female Adapter

Description: Threaded Female Adapter  
PN10 / SDR 11 - 150psi

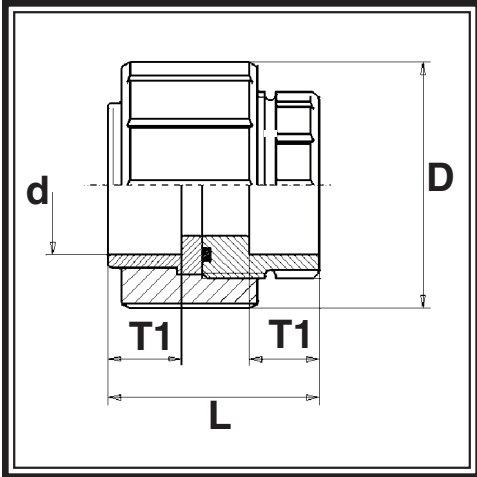
Material: AlphaPlus® Polypropylene

Connection: Butt Fusion

Nominal Size	Actual ID Size	d in	L in	SW in	T1 in	Weight lbs	Part Number
½"	0.787 (20mm)	0.787	1.378	1.260	0.512	0.040	PP07140020
¾"	0.984 (25mm)	0.984	1.535	1.417	0.591	0.068	PP07140025
1"	1.260 (32mm)	1.260	1.772	1.811	0.630	0.088	PP07140032
1¼"	1.575 (40mm)	1.575	2.087	2.165	0.709	0.119	PP07140040
1½"	1.969 (50mm)	1.969	2.126	2.559	0.827	0.264	PP07140050
2"	2.480 (63mm)	2.480	2.441	3.150	0.945	2.640	PP07140063

# PureTech Piping Systems - Dimensional Data

## Union with EPDM



Description: Union with EPDM O-Ring  
PN10 / SDR 11 - 150psi

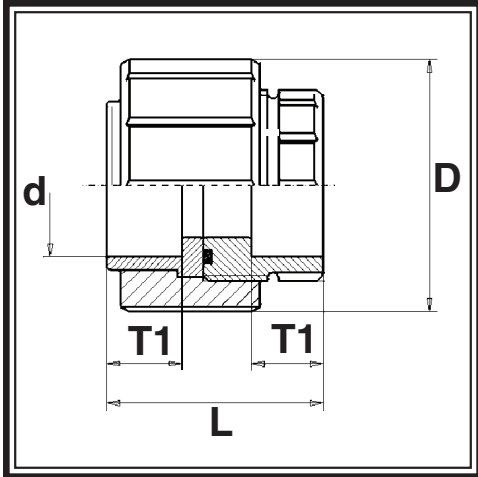
Material: AlphaPlus® Polypropylene

Connection: Butt Fusion

Nominal Size	Actual ID Size	d in	D in	L in	T1 in	Weight lbs	Part Number
½"	0.787 (20mm)	0.787	0.512	1.870	0.591	0.150	PP07100020
¾"	0.984 (25mm)	0.984	0.709	1.949	0.630	0.200	PP07100025
1"	1.260 (32mm)	1.260	0.984	2.087	0.709	0.297	PP07100032
1¼"	1.575 (40mm)	1.575	1.220	2.323	0.827	0.438	PP07100040
1½"	1.969 (50mm)	1.969	1.535	2.638	0.945	0.576	PP07100050
2"	2.480 (63mm)	2.480	1.929	3.150	1.063	0.913	PP07100063



# PureTech Piping Systems - Dimensional Data



## Union with VITON

Description: Union with VITON O-Ring  
PN10 / SDR 11 - 150psi

Material: AlphaPlus® Polypropylene

Connection: Butt Fusion

Nominal Size	Actual ID Size	d in	D in	L in	T1 in	Weight lbs	Part Number
½"	0.787 (20mm)	0.787	0.512	1.870	0.591	0.150	PP07270020
¾"	0.984 (25mm)	0.984	0.709	1.949	0.630	0.200	PP07270025
1"	1.260 (32mm)	1.260	0.984	2.087	0.709	0.297	PP07270032
1¼"	1.575 (40mm)	1.575	1.220	2.323	0.827	0.438	PP07270040
1½"	1.969 (50mm)	1.969	1.535	2.638	0.945	0.576	PP07270050
2"	2.480 (63mm)	2.480	1.929	3.150	1.063	0.913	PP07270063

# PureTech Piping Systems - Dimensional Data

## Support Spacing

Support spacing for plastic pipe is dependent on the pipe material, mean pipe wall temperature, the pipe size and the density of the medium being transported. For simplicity, we have assumed a maximum deflection of:

- $f_{max} = 1\text{cm}$  — PP Type 1 and Type 2
- $f_{max} = 0.5\text{cm}$  — PVDF

The resulting distances for supporting the pipes apply when the pipes are laid horizontally. When the pipes are installed vertically, the distances between pipe shackles can be multiplied by the factor 1.3.

The distances for supporting the pipes under other condition, i.e. when the wall thickness is thinner, when the medium has a different density or when very low sag is required, other factors should be taken into consideration.

### PP Support Spacing

Nominal Diameter (inches)	68° F/ 20° C	86° F/ 30° C	104° F/ 40° C	122° F/ 50° C	140° F/ 60° C	158° F/ 70° C	176° F/ 80° C
1/2	3	2.5	2.5	2	2	2	2
3/4	3	3	2.5	2.5	2.5	2.5	2
1	3.5	3	3	3	3	2.5	2.5
1 1/2	4	3.5	3	3	3	3	3
2	4.5	4	4	3.5	3	3	3
2 1/2	5	4.5	4	4	3.5	3	3
3	5.5	5	4	4	4	3.5	3.5
4	6	5	5	4	4	4	4
6	7	6	6	5	5	4.5	4.5
8	7.5	7	6	6	5.5	5	5
10	8.5	7.5	7	6.5	6	6	5.5
12	9.5	8.5	8	7	7	6.5	6
14	10	8.5	8	7.5	7	6.5	6.5
16	10.5	9.5	8.5	8	7.5	7	6.5
18	11.5	10	9	8.5	8	7.5	7

Distance in Feet

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# PureTech Piping Systems - Dimensional Data

## HANGING PRACTICES

Hanging any thermoplastic system is not that much different than hanging a metal system. Typically the spacing between hangers is shorter, due to the flexibility of plastic. In addition, the type of hanger is important.

### Hanging Distances

Hangers should be placed based on the spacing requirements. Since thermoplastic materials vary in strength and rigidity, it is important to select hanging distances based on the material you are hanging. Also, operating conditions must be considered. If the pipe is operated at a higher temperature, then the amount of hangers will be increased. Finally, if the system is exposed to thermal cycling, the placement of hangers, guides, and anchors is critical. In these cases, the hanger locations should be identified by the system engineer and laid out to allow for expansion and contraction of the pipe over its life of operation.

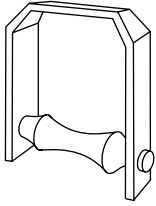
### Hanger Types

When selecting hangers for a system, it is important to avoid using a hanger that will place a pinpoint load on the pipe when tightened. For example, a U-bolt hanger is not recommended for thermoplastic piping.

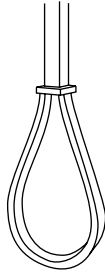
Hangers that secure the pipe 360° around the pipe are preferred. Thermoplastic clamps are also recommended over metal clamps, as they are less likely to scratch the pipe in the event of movement. If metal clamps are specified for the project, they should be inspected for rough edges that could damage the pipe. Ideally, if a metal clamp is being used, an elastomeric material should be used in between the pipe and the clamp. This is a must for PVDF and E-CTFE systems, which are less tolerant to scratching. Figure 2 illustrates some recommended hanger types.

# PureTech Piping Systems - Dimensional Data

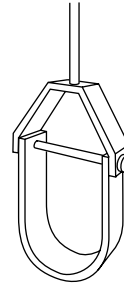
## Typical Plastic Piping Restraints / Hangers



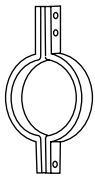
Roller Hanger



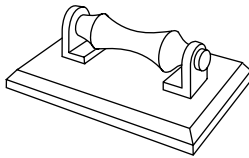
Adjustable Solid Ring  
(swivel type)



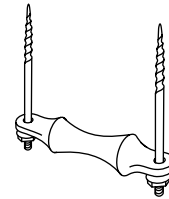
Clevis Hanger



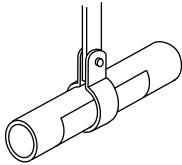
Double-Bolt Clamp



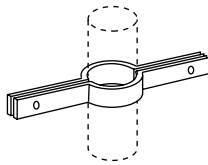
Pipe Roller and Plate



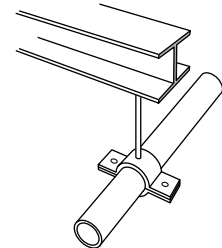
Single Pipe Roller



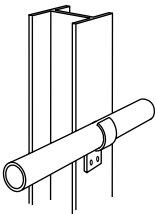
Band Hanger with  
Protective Sleeve



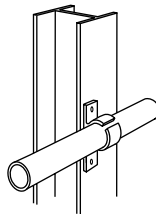
Riser Clamp



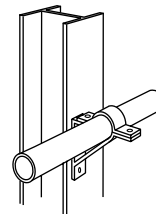
Suspended Ring Clamp



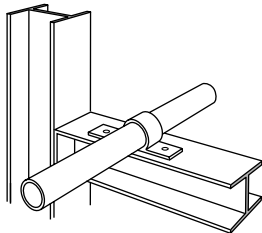
Vertical Clamp



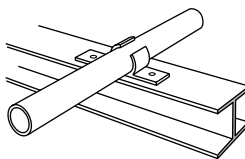
Vertical Pipe Clip



Vertical Offset Clamp



U-Type Clamp



Horizontal Pipe Clip

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# **PureTech Piping Systems - Dimensional Data**

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