

# Tubes

**Flat Tubes**  
PUTMF  
PUTMFL

Material: Polyurethane

Part Number	Number of Bores	Standard Length (m)	Configurable Length (0.5m Increment)	I.D. (mm)	Min. Bending Radius (mm)	Mass (kg/m)	Standard		Configurable Length			
							Unit Price	Volume Discount Rate	Unit Price/m	Volume Discount Rate/m		
PUTMF (Standard Length) PUTMFL (Configurable Length)	4	2	0.5-19.5	2	15	0.022	1 pc.	2-4	1 pc.	2-4		
		3										
	6	2		4	25	0.038	1 pc.	2-4	1 pc.	2-4		
		3										
	8	2		5	40	0.076	1 pc.	2-4	1 pc.	2-4		
		3										
	10	2		6.5	55	0.111	1 pc.	2-4	1 pc.	2-4		
		3										
	12	2		8	65	0.148	1 pc.	2-4	1 pc.	2-4		
		3										
	Color Matching: 2-Bore=Clear, Blue; 3-Bore=Clear, Blue, Light Green; 4-Bore=Clear, Blue, Light Green, Green											

**Water Resistant Polyurethane Spiral Tubes**  
PUTSP

Material: Polyurethane

Part Number	Type	O.D. (mm)	Operating Limit Length (m)	Tube Color	I.D. (mm)	D	L	A	B	Min. Bending Radius (mm)	O.D. Accuracy (mm)	Mass (kg/m)	Unit Price/m	
													1-4 pc(s)	5-10
PUTSP	Standard Length	4	700	B (Black)	2	21	460	60	5	15	±0.1	0.009	1 pc.	2-4
			1000											
		6	1300		4	38	580	180	12	0.019				
			850											
		8	1300		5	42	640	240	15	0.037				
			1750											
	10	1000	6.5	52	700	300	25	0.055						
		1900												
	12	1500	8	67	760	360	28	0.076						
		2200												

Operating Limit Length is the overall length (L) of the tube when extended to a serviceable maximum. Minimum bending radius is based on operation of bending the straight parts at both ends.

**Multi-Spiral Tubes**  
PUTMSP

Material: Polyurethane

Part Number	Type	O.D. (mm)	Number of Bores	Nominal Length (mm)	Operating Limit Length (m)	I.D. (mm)	Min. Bending Radius (mm)	D	L	A	B	Unit Price/m		
												1 pc.	2-4	
PUTMSP	Standard Length	4	2	700	2	15	21	529	129	200	15	27	594	194
				800										
		6	1100	4	25	44	693	293	200					
			900											
		8	1200	5	40	52	739	339	200					
			1400											
	10	1600	6.5	55	63	909	509	200						
		1400												
	12	1700	8	65	67	805	405	200						
		1900												

Operating Limit Length is the overall length (L) of the tube when extended to a serviceable maximum. Minimum bending radius is based on operation of bending the straight parts at both ends.

**Slit Spiral Tubes With Fluoresin Insulated Wire**  
PUTHSP

Material: Polyurethane

Part Number	Type	O.D. (mm)	Nominal Length (mm)	Wire (mm)	L	Operating Limit Length (m)	I.D. (mm)	Min. Bending Radius (mm)	A	B <sub>1</sub>	B <sub>2</sub>	G	H	Unit Price/m	
														1 pc.	2-4
PUTHSP	Standard Length	4	500	0.15	445	535	2.5	40	135	150	250	35	300	1 pc.	2-4
			800												
		6	700	4	65	130	150	250	49	300					
			800												
		8	900	5	90	180	150	250	66	300					
			1200												

Operating Limit Length is the overall length (L) of the tube when extended to a serviceable maximum. Minimum bending radius is based on operation of bending the straight parts at both ends.

Features: The tube can flex and follow the movements of linear slide units, etc. Electrical wire can easily be inserted and removed from the slit on the side.

**Sputtering Resistant Tubes**  
PUTS  
PUTSL

Material: Incombustible Polyurethane

Part Number	Type	O.D. (mm)	Standard Length (m)	Configurable Length (0.5m Increment)	Tube Color	I.D. (mm)	Min. Bending Radius (mm)	O.D. Accuracy (mm)	Mass (kg/m)	Standard		Configurable Length	
										Unit Price	Volume Discount Rate	Unit Price/m	Volume Discount Rate/m
PUTS (Standard Length) PUTSL (Configurable Length)	6	10	20	0.5-9.5	B (Black)	4	15	±0.1	0.019	1-4 pc(s)	5-10	1-4 pc(s)	5-10
	10	10	20		R (Red)	5	20	0.037					
									12	10	20	G (Green)	6.5
	12	10	20		8	30	0.076						

**Vacuum Tubes**  
PUVFN  
PUVFLN

Material: Soft Polyurethane

Part Number	Type	O.D. (mm)	Standard Length (m)	Configurable Length (0.5m Increment)	I.D. (mm)	Min. Bending Radius (mm)	O.D. Accuracy (mm)	Mass (kg/m)	Standard		Configurable Length				
									Unit Price	Volume Discount Rate	Unit Price/m	Volume Discount Rate/m			
PUVFN (Standard Length) PUVFLN (Configurable Length)	4	10	20	0.5-9.5	2.5	12	±0.1	0.009	1-4 pc(s)	5-10	1-4 pc(s)	5-10			
													6	10	20

Use Inserts for Soft Tubes on (P.1390) when connecting these tubes to One-Touch Couplings.

Ordering Example

Part Number - Number of Bores - Length  
 PUTMF4 - 3 - 20  
 PUTMSP6 - 4 - 900

Part Number - Length - Color  
 PUTSL8 - 1.5 - R

For characteristics, see P.1383.

**Antistatic Tubes**  
PUAS  
PUASL

Material: Conductive Polyurethane

Part Number	Type	O.D. (mm)	Standard Length (m)	Configurable Length (0.5m Increment)	I.D. (mm)	Min. Bending Radius (mm)	O.D. Accuracy (mm)	Mass (kg/m)	Standard		Configurable Length	
									Unit Price	Volume Discount Rate	Unit Price/m	Volume Discount Rate/m
PUAS (Standard Length) PUASL (Configurable Length)	4	10	20	0.5-9.5 10.5-19.5	2.5	10	±0.1	0.009	1-4 pc(s)	5-10	1-4 pc(s)	5-10
	8	10	20		5	20		0.037				
									10	10	20	6.5
	12	10	20		8	30		-0.15				

**Polyolefin Tubes**  
PORF  
PORFL

Material: Polyolefin Resin

Part Number	Type	O.D. (mm)	Standard Length (m)	Configurable Length (0.5m Increment)	I.D. (mm)	Min. Bending Radius (mm)	O.D. Accuracy (mm)	Mass (kg/m)	Standard		Configurable Length	
									Unit Price	Volume Discount Rate	Unit Price/m	Volume Discount Rate/m
PORF (Standard Length) PORFL (Configurable Length)	4	10	20	0.5-9.5 10.5-19.5	2.5	8	±0.1	0.0069	1-4 pc(s)	5-10	1-4 pc(s)	5-10
	8	10	20		4	14		0.0141				
									10	10	20	5
	12	10	20		6.5	25		0.0408				
									12	10	20	8.0

**Fluoresin Tubes**  
PUTF  
PUTFL

Material: Fluoresin (PFA)

Part Number	Type	O.D. (mm)	Standard Length (m)	Configurable Length (0.5m Increment)	I.D. (mm)	Min. Bending Radius (mm)	O.D. Accuracy (mm)	Max. Operating Pressure (MPa)	Burst Pressure (MPa)	Mass (kg/m)	Standard		Configurable Length	
											Unit Price	Volume Discount Rate	Unit Price/m	Volume Discount Rate/m
PUTF (Standard Length) PUTFL (Configurable Length)	3.2	10	20	0.5-9.5 10.5-19.5	1.6	32	±0.1	1.1	4.5	0.013	1-4 pc(s)	5-10	1-4 pc(s)	5-10
	6	10	20		4	50		1.7	7	0.034				
											8	10	20	6
	10	10	20		8	120		+0.1	0.75	3				
											12	10	20	10

Maximum operating pressure and burst pressure shown are values at ambient temperature.

**Flexible Fluoresin Tubes**  
PUFN

Material: Fluoresin (PFA)

Part Number	Type	Outer Dia. (mm)	L Selection (mm)	Inner Dia. (mm)	Min. Bending Radius (mm)	O.D. Accuracy (mm)	Max. Operating Pressure (MPa)	Burst Pressure (MPa)	Mass (kg/m)	Unit Price/m	
										1-4 pc(s)	5-10
PUFN	Standard Length	6	300	4	10	±0.1	1.7	7	0.034	1-4 pc(s)	5-10
			500								
		8	500	6	10		1.1	4.5	0.047		
			1000								
		10	300	8	15		0.8	3.5	0.061		
			500								
	12	500	10	15	0.7	3	0.074				
		1000									

Minimum bending radius shown is based on static state. When tubing in the dynamic state, the rough standard is the value of 3 times higher than that of static. O.D. accuracy is the value of straight parts at both ends. Maximum operating pressure and burst pressure shown are values at ambient temperature.

**Soft Fluoresin Tubes**  
PUJTF  
PUJTL

Material: Fluoresin (ETFE)

Urethane Type Elastomer  
Tetra-fluoro Fluoresin (ETFE)

Part Number	Type	O.D. (mm)	Standard Length (m)	Configurable Length (0.5m Increment)	I.D. (mm)	Min. Bending Radius (mm)	O.D. Accuracy (mm)	Normal Pressure (MPa) at 20°C	Normal Pressure (MPa) at 80°C	Standard		Configurable Length	
										Unit Price	Volume Discount Rate	Unit Price/m	Volume Discount Rate/m
PUJTF (Standard Length) PUJTL (Configurable Length)	4	10	20	0.5-9.5 10.5-19.5	2	12	±0.1	0-0.6	0-0.2	1-4 pc(s)	5-10	1-4 pc(s)	5-10
	9	10	20		6	36							
								12	10	20	8	48	

Features: The laminated structure realizes better flexibility than conventional fluoresin tubes (PUTF, PUTFL) and increases workability.

**Spiral Tubes**  
PUSP

Material: Soft Polyethylene (White)

Part Number	Type	No.	Operating Binding Dia. (mm)	Length (m)	Unit Price	
					1-4 pc(s)	5-10
PUSP	Standard Length	4	4-8	100	1-4 pc(s)	5-10
		9	9-18	50		
		20	20-40	25		

\* The length is the value when nothing is inserted inside the spiral tube.