

# Tubing



- Nylon, Polyurethane and Polyolefin Tubing
- Standard and Metric Sizes Available
- Different Types for Various Applications
- Multitude of Color Choices





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# Nylon Tubing

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Nylon was developed more than half a century ago and is considered to be the first man-made thermoplastic available. Deemed a rugged engineering plastic, its properties make it an ideal choice for a variety of applications. Nylon does not depend on moisture for flexibility and will not become brittle or swell because of water. therefore, it has excellent low moisture absorption and dimensional stability characteristics.



**Nylon tubing for pneumatic applications is made from Nylon 11, and more recently Nylon 12. Nylon 12 has virtually the same physical properties and performance as Nylon 11.**

**SMC mainly uses Nylon 12. Nylon 11 is offered by request.**

## Properties

- ▲ Dimensional stability
- ▲ Low moisture absorption
- ▲ Elastic memory
- ▲ High impact resistance
- ▲ High thermal resistance
- ▲ Light weight
- ▲ Wide temperature range
- ▲ High abrasion resistance
- ▲ Good flexibility
- ▲ Broad chemical resistance



For general use



## Dimensions

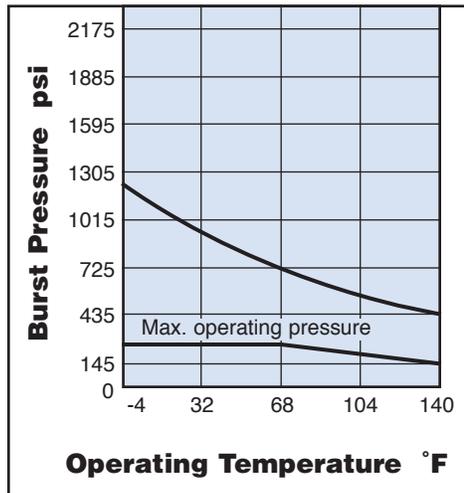
Inch	Series TIA							
	Model	TIA01	TIA05	TIA07	TIA11	TIA13		
Tube OD (Inches)	1/8	5/32	3/16	1/4	5/16	3/8	1/2	
Tube ID (Inches)	0.086	0.098	0.137	0.18	0.236	0.275	0.378	
Min. bending radius (Inches)	0.59	0.51	0.79	1.18	1.89	2.36	2.95	

\*For 5/32 and 5/16 tubing, please refer to 4mm (T0425) and 8mm (T0806) tubing on page 6.

## Specifications

Operating Fluid	Air, Water
Max. Operating Pressure	220 psi (1.5MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 140°F (-20° to 60°C) Water: 40° to 105°F (5° to 40°C)
Material	Nylon 12
Hardness	Shore D 70

## Burst Pressure Characteristics Chart



## How To Order

Nylon **TIA** **07** **B** - **33**

Inch Size      Color Indication      Length Per Roll

Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
01	1/8	B	Black	33	100ft
See Note*	5/32	W	White	153	500ft
05	3/16	R	Red	305	1000ft
07	1/4	BU	Blue		
See Note*	5/16	Y	Yellow		
11	3/8	G	Green		
13	1/2				

Longer lengths available upon request

Note\* - For 5/32 and 5/16 size tubing, please refer to 4mm (T0425) and 8mm (T0806) "How to Order" information on page 6

## Caution

1. Can be used with general industrial water. For other fluids, please consult SMC.
2. Max. operating pressure and minimum bending radius are measured at 68°F.
3. When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

## Packaging Design

Length	Inch Size Tubing							
	1/8	5/32	3/16	1/4	5/16	3/8	1/2	
100ft	Bag	Refer to	Bag	Bag	Refer to	Bag	Bag	
500ft	Bag	4mm	Bag	Bag	8mm	Reel	Reel	
1000ft	Reel	Tubing	Reel	Reel	Tubing	Reel	Reel	

# Nylon Tubing

# Series T (Metric)

For general use



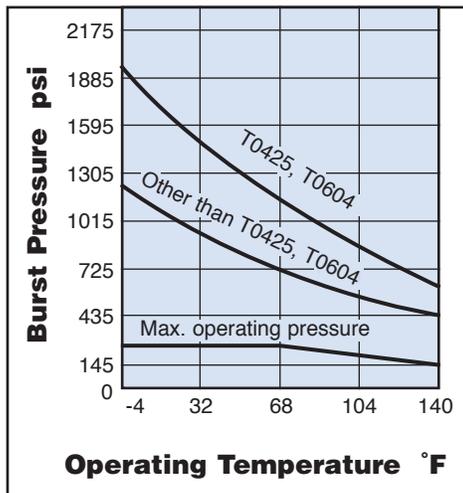
## Dimensions

Metric	Series T							
Model	T0425	T0403	T0604	T0645	T0806	T1075	T1209	T1613
Tube OD (mm)	4	4	6	6	8	10	12	16
Tube ID (mm)	2.5	3	4	4.5	6	7.5	9	13
Min. bending radius (mm)	13	25	24	36	48	60	75	100

## Specifications

Operating Fluid	Air, Water
Max. Operating Pressure	220 psi (1.5MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 140°F (-20° to 60°C) Water: 40° to 105°F (5° to 40°C)
Material	Nylon 12
Hardness	Shore D 70

## Burst Pressure Characteristics Chart



## How To Order

Nylon **T** **0604** **B** - **20**

Metric Size		Color Indication		Length Per Roll	
Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
0425	4mm (5/32")	B	Black	20	20m
0403	4mm	W	White	100	100m
0604	6mm	R	Red		
0645	6mm	BU	Blue		
0806	8mm (5/16")	Y	Yellow		
1075	10mm	G	Green		
1209	12mm				
1613	16mm				

Longer lengths available upon request

## Packaging Design

Length	Metric Size Tubing					
	4mm	6mm	8mm	10mm	12mm	16mm
20m	Bag	Bag	Bag	Bag	Bag	Bag
100m	Bag	Bag	Bag	Box	Box	Reel

## Caution

1. Can be used with general industrial water. For other fluids, please consult SMC.
2. Max. operating pressure and minimum bending radius are measured at 68°F.
3. When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

All-purpose tubing using soft Nylon compound for added flexibility



## Dimensions

Inch	Series TISA						
	Model	TISA01	TISA05	TISA07	TISA11	TISA13	
Tube OD (Inches)	1/8	5/32	3/16	1/4	5/16	3/8	1/2
Tube ID (Inches)	0.086	0.098	0.137	0.18	0.236	0.275	0.378
Min. bending radius (Inches)	0.47	0.47	0.59	0.91	0.91	1.18	1.57

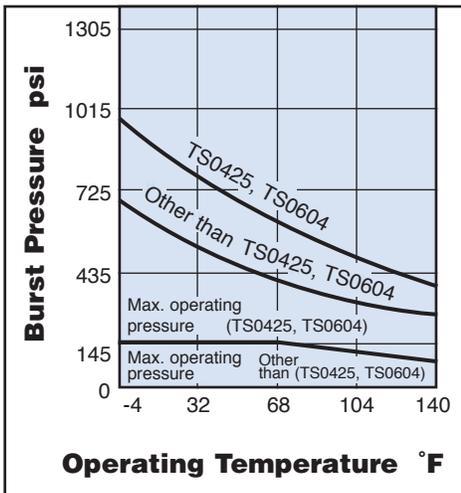
\*For 5/32 and 5/16 tubing, please refer to 4mm and 8mm tubing.

Metric	Series TS					
	Model	TS0425	TS0604	TS0806	TS1075	TS1209
Tube OD (mm)	4	6	8	10	12	16
Tube ID (mm)	2.5	4	6	7.5	9	12
Min. bending radius (mm)	12	15	23	27	31	60

## Specifications

Operating Fluid	Air
Max. Operating Pressure	145 psi (1MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	-4° to 140°F (-20° to 60°C)
Material	Nylon 12
Hardness	Shore D 56

## Burst Pressure Characteristics Chart



## How To Order

**TISA 07 B - 100**

Soft Nylon

Inch Size		Color Indication		Length Per Roll	
Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
01	1/8	B	Black	20	20m
See Note*	5/32	W	White	100	100m*
05	3/16	R	Red		
07	1/4	BU	Blue		
See Note*	5/16	Y	Yellow		
11	3/8	G	Green		
13	1/2				

Longer lengths available upon request

\*Black & White Only

Note\* - For 5/32 and 5/16 size tubing, please refer to 4mm and 8mm "How to Order" information

**TS 0604 W - 100**

Soft Nylon

Metric Size		Color Indication		Length Per Roll	
Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
0425	4mm	B	Black	20	20m
0604	6mm	W	White	100	100m*
0806	8mm	R	Red		
1075	10mm	BU	Blue		
1209	12mm	Y	Yellow		
1612	16mm	G	Green		

Longer lengths available upon request

\*Black & White Only

## Caution

- Do not use with general industrial water. Water will cause the O.D. to shrink, which could cause leaks or the possible release of the tubing from the one-touch® fitting.
- Max. operating pressure and minimum bending radius are measured at 68°F.
- When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

Packaging Design	Inch Size Tubing							
	Length	1/8	5/32	3/16	1/4	5/16	3/8	1/2
20m	Bag	Refer to	Bag	Bag	Refer to	Bag	Bag	
100m	Reel	4mm	Reel	Reel	8mm	Reel	Reel	

Packaging Design	Metric Size Tubing						
	Length	4mm	6mm	8mm	10mm	12mm	16mm
20m	Bag	Bag	Bag	Bag	Bag	Bag	
100m	Bag	Bag	Bag	Box	Box	Reel	

# Polyurethane Tubing

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Polyurethane tubing is fast becoming the ideal choice for pneumatic applications. It combines the elasticity of rubber with the chemical resistance normally reserved for plastics. Polyurethane can be put into two classifications, ester based and ether based. SMC offers both.

Ether based polyurethane is the preferred tubing material for general pneumatic applications due to its immunity to hydrolysis and its higher resistance to fungus and microorganism attacks. The Ester based polyurethane is a stronger compound but tends to hydrolyze with moisture. This hydrolysis process will degrade the material over time.



**SMC's primary line of polyurethane tubing is ether based, made from the highest quality compound available, to ensure the longest tubing life. The ester based TUH series is the exception. This product line was developed to take advantage of the greater strength offered by this compound.**

## Properties

- ▲ Cut resistant
- ▲ Excellent memory
- ▲ Wide temperature range
- ▲ Low compression set
- ▲ Low gas permeability
- ▲ Kink resistant
- ▲ Tear resistant
- ▲ Abrasion resistant
- ▲ Extreme flexibility
- ▲ Good chemical resistance



For general use



## Dimensions

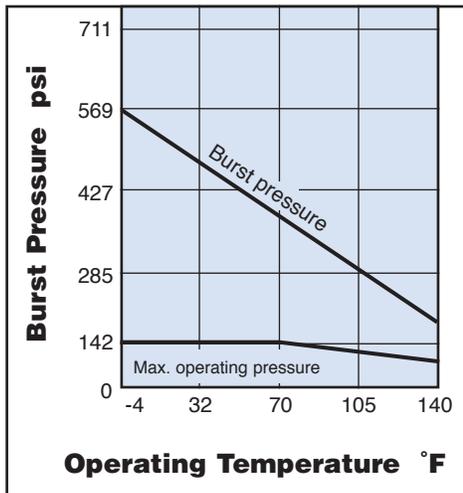
Inch	Series TIUB						
	Model	TIUB01	TIUB05	TIUB07	TIUB11	TIUB13	
Tube OD (Inches)	1/8	5/32	3/16	1/4	5/16	3/8	1/2
Tube ID (Inches)	0.08	0.1	0.13	0.17	0.2	0.25	0.33
Min. bending radius (Inches)	0.39	0.39	0.6	0.91	0.79	1.06	1.38

\*For 5/32 and 5/16 tubing, please refer to 4mm and 8mm tubing on page 10.

## Specifications

Operating Fluid	Air, Water
Max. Operating Pressure	115 psi (0.8MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 140°F (-20° to 60°C) Water: 40° to 105°F (5° to 40°C)
Material	Polyurethane
Hardness	Shore A 95

## Burst Pressure Characteristics Chart



## How To Order

Polyurethane **TIUB** **05** **BU** - **33**

Inch Size      \*Color Indication      Length Per Roll

Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
01	1/8	B	Black	20	66ft
See Note*	5/32	W	White	33 <sup>1</sup>	100ft
05	3/16	R	Red	153 <sup>1</sup>	500ft
07	1/4	BU	Blue	305 <sup>1</sup>	1000ft
See Note*	5/16	Y	Yellow	Longer lengths available upon request	
11	3/8	G	Green	<sup>1</sup> Stocked item	
13	1/2	C	Clear		
		YR	Orange		

Note\* - For 5/32 and 5/16 size tubing, please refer to 4mm and 8mm "How to Order" information on page 10.

\* - Quick ship colors indicated, see chart on page 31 for other available colors

## Caution

- Can be used with general industrial water. For other fluids, please consult SMC.
- Max. operating pressure and minimum bending radius are measured at 68°F.
- When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

## Packaging Design

Length	Inch Size Tubing						
	1/8	5/32	3/16	1/4	5/16	3/8	1/2
66ft	Bag	Refer to 4mm tubing	Bag	Bag	Refer to 8mm tubing	Bag	Bag
100ft	Bag		Bag	Bag		Reel	Reel
500ft	Bag		Bag	Bag		Reel	Reel
1000ft	Reel		Reel	Reel		Reel	Reel

# Polyurethane Tubing

# Series TU (Metric)

For general use



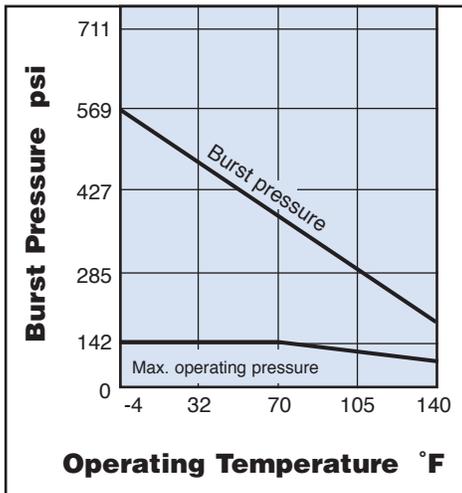
## Dimensions

Metric	Series TU				
Model	TU0425	TU0604	TU0805	TU1065	TU1208
Tube OD (mm)	4	6	8	10	12
Tube ID (mm)	2.5	4	5	6.5	8
Min. bending radius (mm)	10	15	20	27	35

## Specifications

Operating Fluid	Air, Water
Max. Operating Pressure	115 psi (0.8MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 140°F (-20° to 60°C) Water: 40° to 105°F (5° to 40°C)
Material	Polyurethane
Hardness	Shore A 95

## Burst Pressure Characteristics Chart



## How To Order

**TU** **0604** **BU** - **20**

Polyurethane → TU  
Metric Size → 0604  
\*Color Indication → BU  
Length Per Roll → 20

Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
0425	4mm (5/32")	B	Black	20'	20m
0604	6mm	W	White	33	33m
0805	8mm (5/16")	R	Red	100'	100m
1065	10mm	BU	Blue	153	153m
1208	12mm	Y	Yellow	305	305m
		G	Green	500'	500m*
		C	Clear		
		YR	Orange		

Longer lengths available upon request  
 † Stocked item  
 \* 4mm, 6mm, 8mm

\* - Quick ship colors indicated, see chart on page 31 for other available colors

## Caution

1. Can be used with general industrial water. For other fluids please consult SMC.
2. Max. operating pressure and minimum bending radius are measured at 68°F.
3. When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

## Packaging Design Metric Size Tubing

Length	4mm	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag	Bag
33m	Bag	—	Bag	—	—
100m	Bag	Bag	Bag	Box	Box
153m	Bag	—	Box	—	—
305m	Reel	—	Reel	—	—
500m	Reel	Reel	Reel	—	—

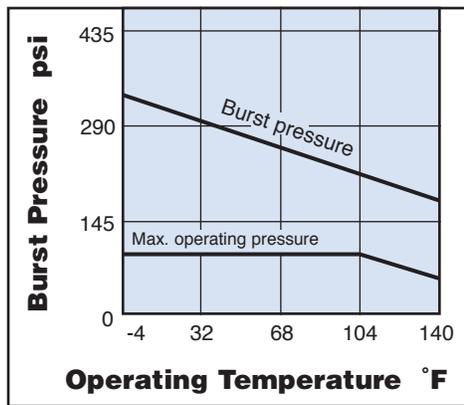
# Series TUS

# Soft Polyurethane Tubing

Suitable for environments where extreme flexibility is required



## Burst Pressure Characteristics Chart



## Dimensions

Metric	Series TUS				
Model	TUS0425	TUS0604	TUS0805	TUS1065	TUS1208
Tube OD (mm)	4	6	8	10	12
Tube ID (mm)	2.5	4	5	6.5	8
Min. bending radius (mm)	8	15	15	22	29

## Specifications

Operating Fluid	Air
Max. Operating Pressure	87 psi (0.6MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic curve
Operating Temperature	-4° to 140°F (-20° to +60°C)
Material	Polyurethane
Hardness	Shore A 89

## How To Order

Soft Polyurethane **TUS** **1065** **BU** - **100**

Metric Size		Color Indication		Length Per Roll	
Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
0425	4mm	B	Black	20	20m
0604	6mm	W	White	100	100m
0805	8mm	R	Red		
1065	10mm	BU	Blue		
1208	12mm	Y	Yellow		
		G	Green		
		N	Translucent		
		YB	Yellow Brown		

Longer lengths available upon request

## Packaging Design

Length	Metric Size Tubing				
	4mm	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag	Bag
100m	Reel	Reel	Reel	Reel	Reel

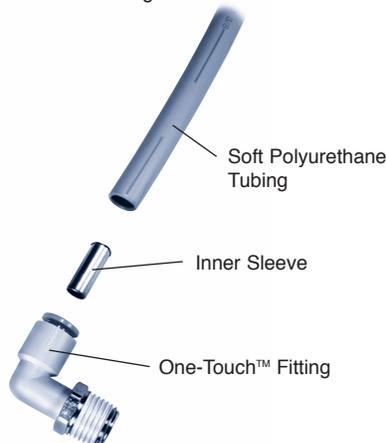
## Series TJ Inner Sleeve

### TUS related accessories

Reinforces soft polyurethane tubing. Insert an inner sleeve into the end of soft polyurethane tubing when used with a One-Touch™ fitting.

### Caution

- Do not use with general industrial water.
- Max. operating pressure and minimum bending radius are measured at 68°F.
- When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.
- Always use inner sleeve (Series TJ) in safety circuit or critical area.



## Model

Part No.	Applicable Tube Model	Length
TJ-0425	TUS0425	18
TJ-0604	TUS0604	19
TJ-0805	TUS0805	20.5
TJ-1065	TUS1065	23
TJ-1208	TUS1208	24

## Specifications

Material	C2700T (Electroless nickel plating)
Wall thickness	0.2mm

## Standard

Increased flow capability as compared to SMC's standard polyurethane tubing



## Dimensions

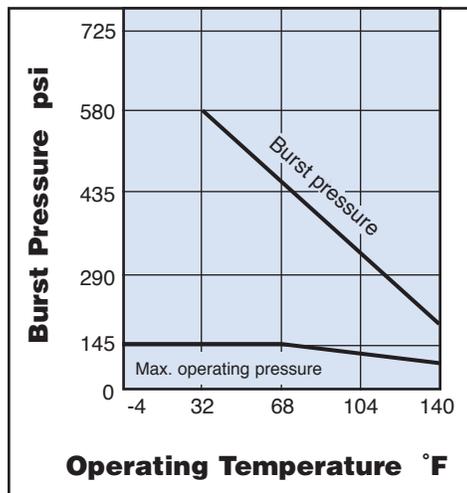
Metric	Series TUH				
	Model	TUH0428	TUH0644	TUH0858	TUH1073
Tube OD (mm)	4	6	8	10	12
Tube ID (mm)	2.8	4.4	5.8	7.3	8.8
Min. bending radius (mm)	10	18	24	30	36

## Specifications

Operating Fluid	Air
Max. Operating Pressure	115 psi (0.8MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	-4° to 140°F (-20° to 60°C)
Material	Polyurethane
Hardness	Shore D 57

Note) Cannot be used for water due to the occurrence of hydrolysis.

## Burst Pressure Characteristics Chart



## How To Order

Hard Polyurethane **TUH** **0644** **BU** - **100**

Metric Size      Color Indication      Length Per Roll

Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
0428	4mm	B	Black	20	20m
0644	6mm	W	White	100	100m
0858	8mm	BU	Blue		
1073	10mm	N	Translucent		
1288	12mm				

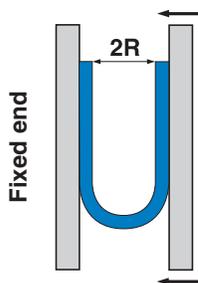
Longer lengths available upon request

## Packaging Design

Length	Metric Size Tubing				
	4mm	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag	Bag
100m	Bag	Bag	Bag	Box	Box

## Caution

- Do not use with general industrial water due to the occurrence of hydrolysis.
- Max. operating pressure and minimum bending radius are measured at 68°F.
- When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.



Bend the tube into U-form at a temperature of 68°F. Fix one end and close loop gradually. Measure 2R when the tubing starts to kink.

## High Pressure

Operating pressure is 25% higher than standard TUH tubing



## Dimensions

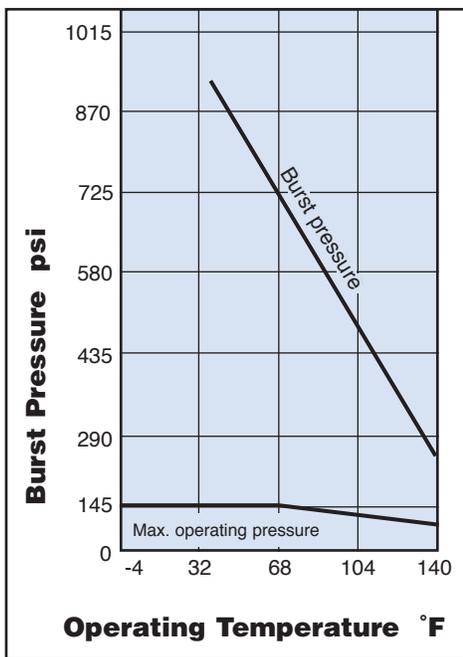
Metric	Series TUH				
Model	TUH0425	TUH0604	TUH0805	TUH1065	TUH1208
Tube OD (mm)	4	6	8	10	12
Tube ID (mm)	2.5	4	5	6.5	8
Min. bending radius (mm)	10	15	20	27	35

## Specifications

Operating Fluid	Air
Max. Operating Pressure	145 psi (1.0MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	-4° to 140°F (-20° to 60°C)
Material	Polyurethane
Hardness	Shore D 57

Note) Can not be used for water due to the occurrence of hydrolysis

## Burst Pressure Characteristics Chart



## How To Order

Hard Polyurethane **TUH** **0604** **BU** - **100**

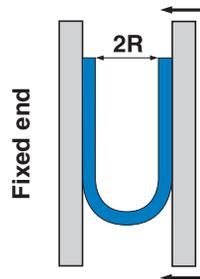
Metric Size      Color Indication      Length Per Roll

Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
0425	4mm	B	Black	20	20m
0604	6mm	W	White	100	100m
0805	8mm	BU	Blue		
1065	10mm	N	Translucent		
1208	12mm				

Longer lengths available upon request

## Packaging Design

Length	Metric Size Tubing				
	4mm	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag	Bag
100m	Bag	Bag	Bag	Box	Box



Bend the tube into U-form at a temperature of 68°F. Fix one end and close loop gradually. Measure 2R when the tubing starts to kink.

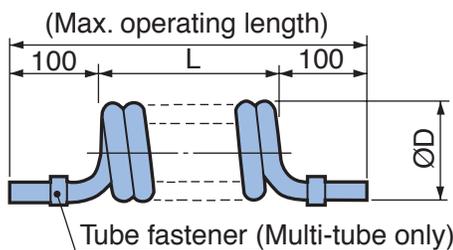
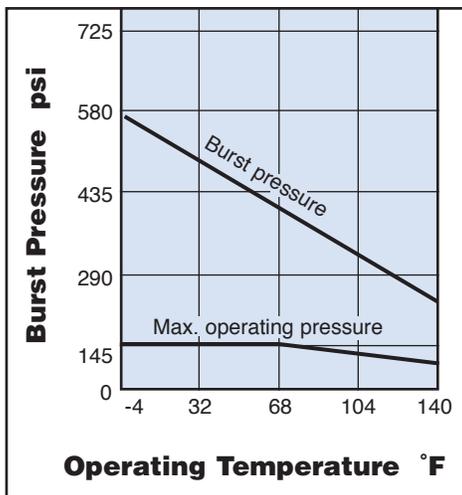
## Caution

- Do not use with general industrial water due to the occurrence of hydrolysis.
- Max. operating pressure and minimum bending radius are measured at 68°F.
- When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

Ideal for use with robotics and pneumatic pick and place applications



## Burst Pressure Characteristics Chart



\*Dimensions subject to change due to material

## Caution

- Contact SMC regarding other fluids.
- Max. operating pressure and minimum bending radius are measured at 68°F.
- When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

## Dimensions

Metric	Series TCU						
	TCU 0425B-1	TCU 0425B-2	TCU 0425B-3	TCU 0604B-1	TCU 0604B-2	TCU 0604B-3	TCU 0805B-1
Number of Tubes	1	2	3	1	2	3	1
Tube OD (mm)	4	4	4	6	6	6	8
Tube ID (mm)	2.5	2.5	2.5	4	4	4	5

## Specifications

Operating Fluid	Air
Max. Operating Pressure	115 psi (0.8MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	-4° to 140°F (-20° to 60°C)
Material	Polyurethane
Hardness	Shore A 95

## How To Order

Coil Tubing **TCU 0425 B - 2**

Metric Size: **0425** (Symbol: 0425, Tube Size: 4mm)

Color Indication: **B** (Symbol: B, Color: Black)

Number of Tubes: **2** (Symbol: 2, Number of Tubes: 2)

Symbol	Tube Size
0425	4mm
0604	6mm
0805	8mm

Symbol	Color
B	Black
C	Clear
BU	Blue
W	White
Y	Yellow
R	Red
G	Green
YR	Orange

Symbol	Number of Tubes
1	1
2	2
3	3

## Coil Dimensions

### Specifications

Part No.	Tube Size (mm)		Dimension of Coil (mm)		Number of Tubes	Number of Coil Windings Per Tube Length	Maximum Operating Length (m)
	O.D.	I.D.	L	ØD			
TCU0425B-1	4	2.5	210	18	1	52	1.5
TCU0425B-2			280	28	2	35	
TCU0425B-3			265	28	3	22	
TCU0604B-1	6	4	325	24	1	54	2
TCU0604B-2			305	37	2	27	1.5
TCU0604B-3			305	37	3	17	1
TCU0805B-1	8	5	330	31	1	41	2

## Made To Order

Consult SMC for detailed specifications, dimensions and delivery.

### Change of Coil Turns / Color Change

Part No.	Tube Size (mm)		Dimension of Coil (mm)		Number of Tubes	Number of Coil Windings Per Tube Length	Maximum Operating Length (mm)
	O.D.	I.D.	L*	ØD			
TCU0425□-1-N-X6	4	2.5	N X 4	18	1	3 to 90	LX5.9+200
TCU0425□-2-N-X6			N X 8	28	2	3 to 90	LX4.4+200
TCU0425□-3-N-X6			N X 12	28	3	3 to 63	LX2.9+200
TCU0604□-1-N-X6	6	4	N X 6	24	1	3 to 90	LX5.3+200
TCU0604□-2-N-X6			N X 12	37	2	3 to 66	LX3.8+200
TCU0604□-3-N-X6			N X 18	37	3	3 to 44	LX2.5+200
TCU0805□-1-N-X6	8	5	N X 8	31	1	3 to 90	LX5.2+200
TCU0805□-2-N-X6			N X 16	42	2	3 to 40	LX3+200
TCU1065□-1-N-X6	10	6.5	N X 10	52	1	3 to 45	LX5+200
TCU1065□-2-N-X6			N X 20	52	2	3 to 35	LX3+200
TCU1208□-1-N-X6	12	8	N X 12	67	1	3 to 35	LX5+200
TCU1208□-2-N-X6			N X 24	67	2	3 to 30	LX3+200

□ = B (Black), W (White), R (Red), BU (Blue), Y (Yellow), G (Green), C (Clear), YR (Orange)

\*L is calculated by the number of coils (N) X O.D.

# Series TFU

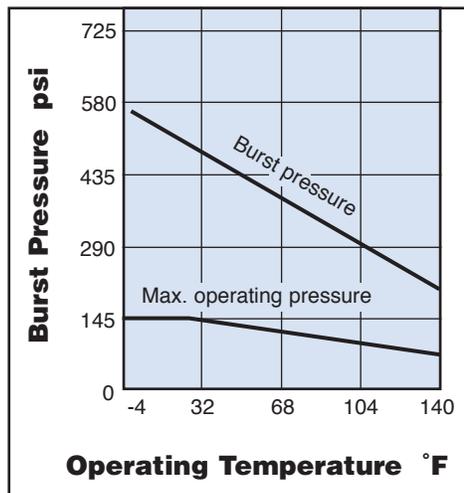
# Polyurethane Flat Tubing

Eliminates the need for jacketing or spiral wrapping of multiple tubes



8 Tube Custom Order

## Burst Pressure Characteristics Chart



## Caution

- Contact SMC regarding other fluids.
- Max. operating pressure is measured at 68°F.
- When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

## Dimensions

Metric	Series TFU					
	TFU 0425B-2	TFU 0425B-3	TFU 0604B-2	TFU 0604B-3	TFU 0805B-2	TFU 0805B-3
Model	TFU 0425B-2	TFU 0425B-3	TFU 0604B-2	TFU 0604B-3	TFU 0805B-2	TFU 0805B-3
Number of Tubes	2	3	2	3	2	3
Tube OD (mm)	4	4	6	6	8	8
Tube ID (mm)	2.5	2.5	4	4	5	5

## Specifications

Operating Fluid	Air
Max. Operating Pressure	115 psi (0.8MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	-4° to 140°F (-20° to 60°C)
Material	Polyurethane
Hardness	Shore A 95

## How To Order

Flat Tubing **TFU** **0425** **B** - **2**

Metric Size

Symbol	Tube Size
0425	4mm
0604	6mm
0805	8mm

Color Indication

Symbol	Color
B	Black

Number of Tubes

Symbol	Number of Tubes
2	2
3	3

## Made to Order

Consult SMC for detailed specifications, dimensions and delivery.

Model	TFU0425	TFU0604	TFU0805	TFU1065	TFU1208
Tube O.D.	4	6	8	10	12
Tube I.D.	2.5	4	5	6.5	8

Number of Tubes	2	3	4	5	6	7	8
		●	△	△	△	●	●

● : 10m roll    △ : 50m roll    □ : 100m roll

### 1. Color Change (10m roll)

Suffix "X4" to the end of the part number. Ex.) TFU0604BU-2-10-**X4**

Note) W: White, R: Red, BU: Blue, Y: Yellow, G: Green, C: Transparent, YR: Orange (All tubes are same color)

### 2. Longer roll length (50m or 100m roll)

Suffix "X3" to the end of the part number.

Ex.) TFU0425B-2-50-X3,  
TFU0425BU-3-100-**X3**

### 3. Number of Tubes (10m roll)

Suffix "X4" to the end of the part number.

Ex.) TFU0604B-4-10-X4,  
TFU0604YR-4-10-**X4**

# Clean Series Tubing

## Polyurethane Tubing

## Series 10-TU

### How To Order

**10 - TU 0604 BU - 20**

Clean Series

Metric Size

Symbol	Tube Size
0425	4mm
0604	6mm
0805	8mm
1065	10mm
1208	12mm

Color Indication

Symbol	Color
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green
C	Clear
YR	Orange

Length Per Roll

Symbol	Roll Size
20	20m

### Dimensions

#### Metric

#### Series TU

Model	10-TU0425	10-TU0604	10-TU0805	10-TU1065	10-TU1208
Tube OD (mm)	4	6	8	10	12
Tube ID (mm)	2.5	4	5	6.5	8
Min. bending radius (mm)	10	15	20	27	35

### Specifications

Operating Fluid	Air, Water
Max. Operating Pressure	115 psi (0.8MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 140°F (-20° to 60°C) Water: 40° to 105°F (5° to 40°C)
Material	Polyurethane
Hardness	Shore A 95

## Polyurethane Coiled Tubing

## Series 10-TCU

### How To Order

**10 - TCU 0425 B - 2**

Clean Series

Metric Size

Symbol	Tube Size
0425	4mm
0604	6mm
0805	8mm

Color Indication

Symbol	Color
B	Black

Number of Tubes

Symbol	Number of Tubes
1	1
2	2
3	3



### Dimensions

#### Metric

#### Series TCU

Model	10-TCU 0425B-1	10-TCU 0425B-2	10-TCU 0425B-3	10-TCU 0604B-1	10-TCU 0604B-2	10-TCU 0604B-3	10-TCU 0805B-1
Number of tubes	1	2	3	1	2	3	1
Tube OD (mm)	4	4	4	6	6	6	8
Tube ID (mm)	2.5	2.5	2.5	4	4	4	5

### Specifications

Operating Fluid	Air
Max. Operating Pressure	115 psi (0.9MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	-4° to 140°F (-20° to 60°C)
Material	Polyurethane
Hardness	Shore A 95

## Polyurethane Flat Tubing

## Series 10-TFU

### How To Order

**10 - TFU 0425 B - 2**

Clean Series

Metric Size

Symbol	Tube Size
0425	4mm
0604	6mm
0805	8mm

Color Indication

Symbol	Color
B	Black

Number of Tubes

Symbol	Number of Tubes
2	2
3	3



### Dimensions

#### Metric

#### Series TFU

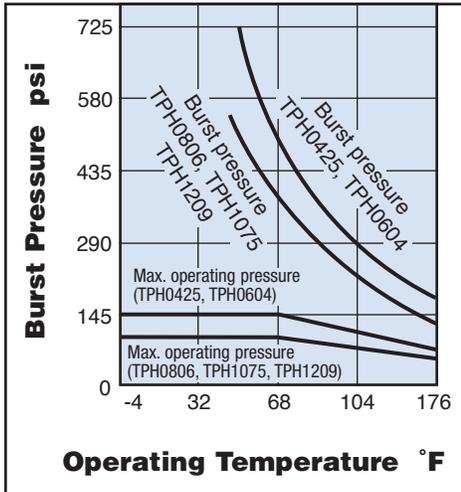
Model	10-TFU 0425B-2	10-TFU 0425B-3	10-TFU 0604B-2	10-TFU 0604B-3	10-TFU 0805B-2	10-TFU 0805B-3
Number of tubes	2	3	2	3	2	3
Tube OD (mm)	4	4	6	6	8	8
Tube ID (mm)	2.5	2.5	4	4	5	5

### Specifications

Operating Fluid	Air
Max. Operating Pressure	115 psi (0.9MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	-4° to 140°F (-20° to 60°C)
Material	Polyurethane
Hardness	Shore A 95

Designed to be used for  
blow-off and washing lines in  
clean room environments

## Burst Pressure Characteristics Chart



## Dimensions

Metric	Series TPH				
Model	TPH0425	TPH0604	TPH0806	TPH1075	TPH1209
Tube OD (mm)	4	6	8	10	12
Tube ID (mm)	2.5	4	6	7.5	9
Min. bending radius (mm)	15	25	35	45	55

## Specifications

Operating Fluid	Air, Nitrogen, Pure Water
Max. Operating Pressure	145 psi (1.0MPa) at 68°F (20°C) for 4mm & 6mm tubing
Max. Operating Pressure	101 psi (0.7MPa) at 68°F (20°C) for other diameter tubing
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 176°F (-20° to 80°C) Water: 40° to 176°F (5° to 80°C)
Material	Polyolefin
Hardness	Shore D 59

## How To Order

**TPH 0604 B - 100**

Polyolefin Metric Size Color Indication Length Per Roll

Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
0425	4mm	B	Black	20	20m
0604	6mm	W	White	100	100m
0806	8mm	R	Red		
1075	10mm	BU	Blue		
1209	12mm	Y	Yellow		
		G	Green		

Longer lengths available upon request

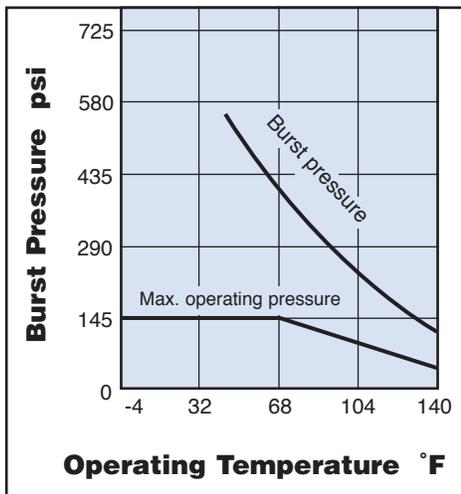
## Packaging Design

Length	Metric Size Tubing				
	4mm	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag	Bag
100m	Bag	Bag	Bag	Bag	Bag

# Soft Polyolefin

# Series TPS

## Burst Pressure Characteristics Chart



## Dimensions

Metric	Series TPS				
Model	TPS0425	TPS0604	TPS0805	TPS1065	TPS1208
Tube OD (mm)	4	6	8	10	12
Tube ID (mm)	2.5	4	5	6.5	8
Min. bending radius (mm)	10	20	25	30	40

## Specifications

Operating Fluid	Air, Nitrogen, Pure Water
Max. Operating Pressure	101 psi (0.7MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 176°F (-20° to 80°C) Water: 40° to 176°F (5° to 80°C)
Material	Polyolefin
Hardness	Shore D 54

## How To Order

**TPS 0604 B - 100**

Soft Polyolefin Metric Size Color Indication Length Per Roll

Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
0425	4mm	B	Black	20	20m
0604	6mm	W	White	100	100m
0805	8mm	R	Red		
1065	10mm	BU	Blue		
1208	12mm	Y	Yellow		
		G	Green		

Longer lengths available upon request

## Packaging Design

Length	Metric Size Tubing				
	4mm	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag	Bag
100m	Bag	Bag	Bag	Bag	Bag

## Caution

- Contact SMC regarding other fluids.
- Max. operating pressure and minimum bending radius are measured at 68°F.
- When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

Flame resistant conductive tubing to minimize problems associated with static electricity



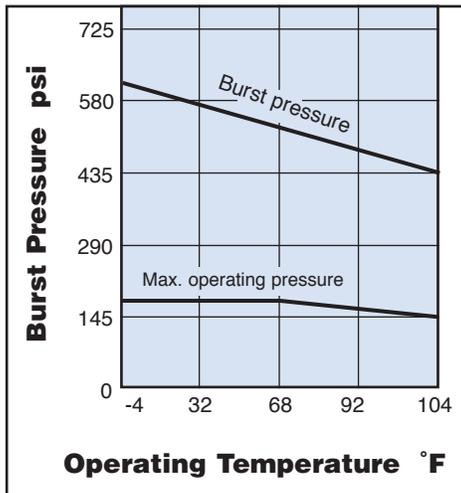
## Dimensions

Metric	Series TAS					
Model	TAS3222	TAS0425	TAS0604	TAS0805	TAS1065	TAS1208
Tube OD (mm)	3.2	4	6	8	10	12
Tube ID (mm)	2.2	2.5	4	5	6.5	8
Min. bending radius (mm)	12	12	15	19	27	32

## Specifications

Operating Fluid	Air
Max. Operating Pressure	174 psi (1.2MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	32° to 104°F (0° to 40°C)
Material	Conductive Nylon + Fire resistant Nylon (UL-standard, V-O)
Surface Resistance	10 <sup>4</sup> to 10 <sup>7</sup> Ohms
Hardness	Shore D 48

## Burst Pressure Characteristics Chart



## How To Order

Anti-static Soft Nylon

**TAS 1065 B - 100**

Metric Size

Symbol	Tube Size
3222	3.2mm
0425	4mm
0604	6mm
0805	8mm
1065	10mm
1208	12mm

Color Indication

Symbol	Color
B	Black

Length Per Roll

Symbol	Roll Size
20	20m
100	100m

Longer lengths available upon request

## Packaging Design

Length	Metric Size Tubing					
	3.2mm	4mm	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag	Bag	Bag
100m	Reel	Reel	Reel	Reel	Reel	Reel

## Caution

- Contact SMC regarding other fluids.
- When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

Conductive tubing minimizes problems associated with static electricity



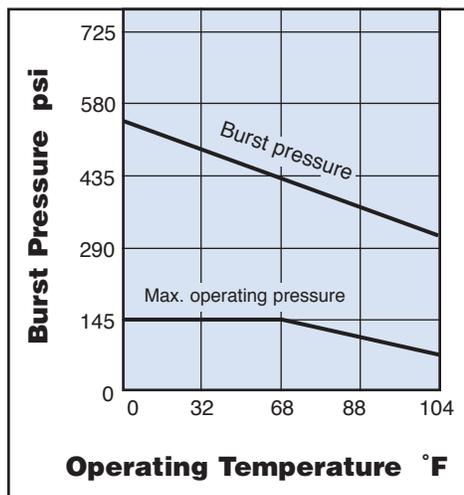
## Dimensions

Metric	Series TAU					
Model	TAU3220	TAU0425	TAU0604	TAU0805	TAU1065	TAU1208
Tube OD (mm)	3.2	4	6	8	10	12
Tube ID (mm)	2	2.5	4	5	6.5	8
Min. bending radius (mm)	10	10	15	20	27	35

## Specifications

Operating Fluid	Air
Max. Operating Pressure	130 psi (0.9MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	32° to 104°F (0° to 40°C)
Material	Conductive polyurethane
Surface Resistance	10 <sup>4</sup> to 10 <sup>7</sup> Ohms
Hardness	Shore A 95

**Burst Pressure Characteristics Chart**



## How To Order

TAU 1065 B - 100

Anti-static Soft Polyurethane

Metric Size

Symbol	Tube Size
3220	3.2mm
0425	4mm
0604	6mm
0805	8mm
1065	10mm
1208	12mm

Color Indication

Symbol	Color
B	Black

Length Per Roll

Symbol	Roll Size
20	20m
100	100m

Longer lengths available upon request

## Packaging Design

Length	Metric Size Tubing					
	3.2mm	4mm	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag	Bag	Bag
100m	Reel	Reel	Reel	Reel	Reel	Reel

## ⚠ Caution

1. Contact SMC regarding other fluids.
2. When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

**Flame resistant tubing for use in spot welding environments**



## Dimensions

Inch	Series TIRS			
	Model	TIRS07	TIRS11	TIRS13
Tube OD (Inches)	1/4	5/16	3/8	1/2
Tube ID (Inches)	0.167	0.2	0.25	0.35
Min. bending radius (Inches)	0.91	0.75	1.06	1.38

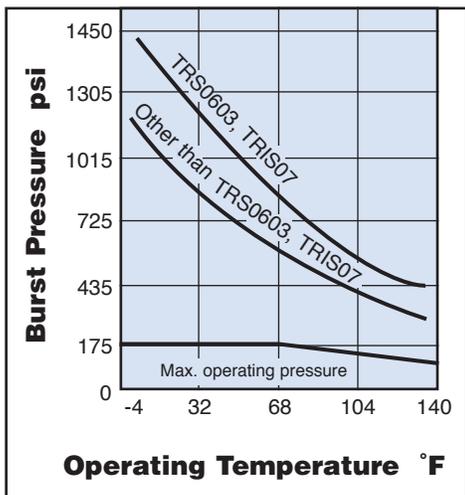
\*When ordering 5/16 tubing, please refer to 8mm tubing.

Metric	Series TRS			
	Model	TRS0603	TRS0805	TRS1065
Tube OD (mm)	6	8	10	12
Tube ID (mm)	3	5	6.5	8
Min. bending radius (mm)	17	19	27	32

## Specifications

Operating Fluid	Air, Water
Max. Operating Pressure	175 psi (1.2MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 140°F (-20° to 60°C) Water: 40° to 140°F (5° to 60°C)
Material	Flame resistant Nylon (UL standard V-O)
Hardness	Shore D 48

## Burst Pressure Characteristics Chart



## How To Order

**TIRS 07 B - 100**

Flame Resistant Soft Nylon

Inch Size		Color Indication		Length Per Roll	
Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
07	1/4	B	Black	20	20m
See Note*	5/16	W	White	100	100m
11	3/8	R	Red		
13	1/2	BU	Blue		
		G	Green		

Longer lengths available upon request

Note\* - For 5/16 size tubing, please refer to 8mm "How to Order" information

**TRS 1065 W - 100**

Flame Resistant Soft Nylon

Metric Size		Color Indication		Length Per Roll	
Symbol	Tube Size	Symbol	Color	Symbol	Roll Size
0603	6mm	B	Black	20	20m
0805	8mm	W	White	100	100m
1065	10mm	R	Red		
1208	12mm	BU	Blue		
		G	Green		

Longer lengths available upon request

## Caution

1. Can be used with general industrial water. For other fluids please consult SMC.
2. Max. operating pressure and minimum bending radius are measured at 68°F.
3. When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.

## Packaging Design Inch Size Tubing

Length	1/4	3/8	1/2
20m	Bag	Bag	Box
100m	Reel	Reel	Reel

## Packaging Design Metric Size Tubing

Length	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag
100m	Reel	Reel	Reel	Reel

## Nylon

Weld splatter resistant double layer tubing uses flame resistant resin for outer layer



## Dimensions

Metric	Series TRB			
	Model	TRB0604	TRB0806	TRB1075
Inner Tube OD (mm)	6	8	10	12
Inner Tube ID (mm)	4	6	7.5	9
Outer Layer Thickness (mm)	1	1	1	1
Min. bending radius (mm)	15	28	35	45

## Specifications

Operating Fluid	Air, Water
Max. Operating Pressure	145 psi (1MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 140°F (-20° to 60°C) Water: 40° to 140°F (5° to 60°C)
Material Inner Tube	Nylon 11
Material Outer Layer	PVC (Equivalent to UL-94, standard V-O)
Hardness Inner Tube	Shore D 53

## How To Order

**TRB 0806 W - 20**

Flame Resistant  
Double Layer  
Nylon

Color Indication

Symbol	Color
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

Metric Size

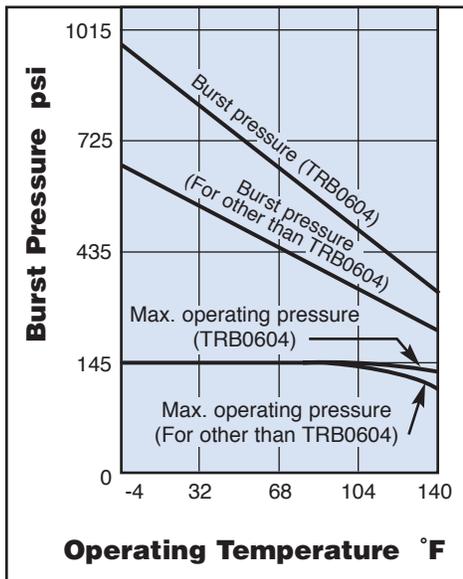
Symbol	Tube Size
0604	6mm
0806	8mm
1075	10mm
1209	12mm

Length Per Roll

Symbol	Roll Size
20	20m
100	100m

Longer lengths available upon request

## Burst Pressure Characteristics Chart

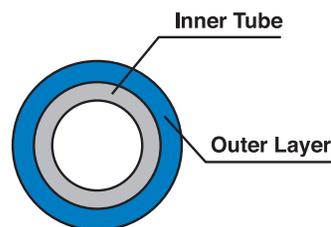


## Packaging Design Metric Size Tubing

Length	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag
100m	Reel	Reel	Reel	Reel

## Caution

1. Can be used with general industrial water. For other fluids please consult SMC.
2. Max. operating pressure and minimum bending radius are measured at 68°F.
3. When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.



FR Double Layer Tubing  
Sectional View

## Polyurethane

Weld splatter resistant double layer tubing uses flame resistant resin for outer layer



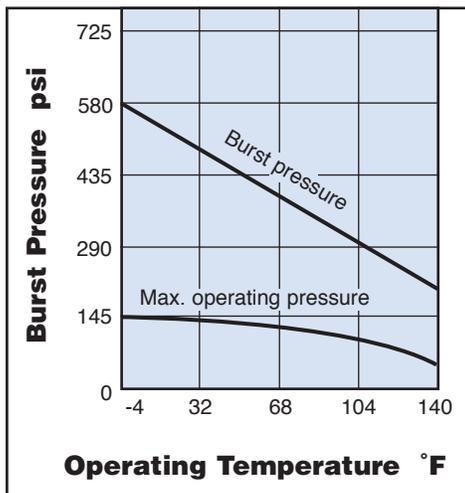
## Dimensions

Metric	Series TRBU			
	Model	TRBU0604	TRBU0805	TRBU1065
Inner Tube OD (mm)	6	8	10	12
Inner Tube ID (mm)	4	5	6.5	8
Outer Layer Thickness (mm)	1	1	1	1
Min. bending radius (mm)	15	20	27	35

## Specifications

Operating Fluid	Air, Water
Max. Operating Pressure	115 psi (0.8MPa) at 68°F (20°C)
Burst Pressure	Refer to burst pressure characteristic chart
Operating Temperature	Air: -4° to 140°F (-20° to 60°C) Water: 32° to 105°F (0° to 40°C)
Material Inner Tube	Polyurethane
Material Outer Layer	PVC (Equivalent to UL-94, standard V-O)
Hardness Inner Tube	Shore A 95

## Burst Pressure Characteristics Chart



## How To Order

**TRBU 1065 W - 100**

Flame Resistant  
Double Layer  
Polyurethane

Symbol	Tube Size
0604	6mm
0805	8mm
1065	10mm
1208	12mm

Color Indication

Symbol	Color
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

Length Per Roll

Symbol	Roll Size
20	20m
100	100m

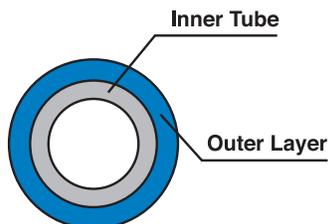
Longer lengths available upon request

## Packaging Design Metric Size Tubing

Length	6mm	8mm	10mm	12mm
20m	Bag	Bag	Bag	Bag
100m	Reel	Reel	Reel	Reel

## Caution

1. Can be used with general industrial water. For other fluids please consult SMC.
2. Max. operating pressure and minimum bending radius are measured at 68°F.
3. When using tubing with SMC fittings, the chemical resistance of the fitting has to be investigated as well.



FR Double Layer Tubing  
Sectional View

## When using TRB/TRBU tubing with SMC One-Touch™ fittings

SMC One-Touch™ fittings are not designed to seal on the outer layer. To make a leak free tubing to fitting connection, one has to remove the outer layer. The fitting will seal on the inner tube. The TRB/TRBU tubing is called out by the diameter of the inner tubing so selection of the correct size fitting will not be a problem.

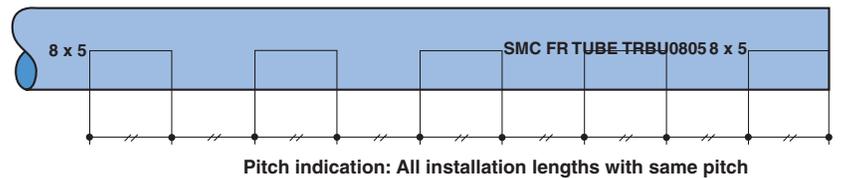
### Example:

**TRBU 1208 W — 100** - Nominal diameter is 12mm and overall outside diameter is 14mm when outer layer is included. Requires a 12mm One-Touch® fitting.

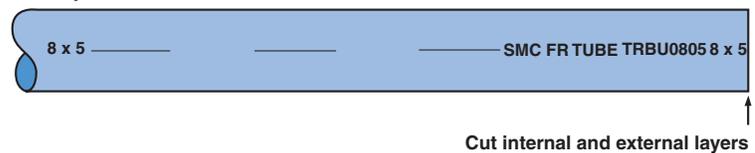
## Instructions

Locate the cut markings on the tubing. The cut markings are represented by simple dashes. The length of a dash as well as the distance between dashes represent the correct stripping length.

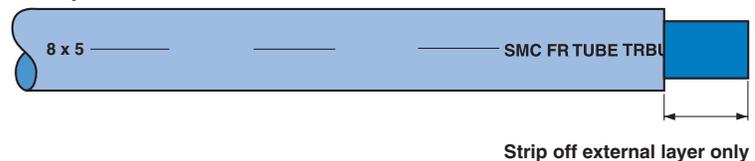
1. Cut the tubing on one of the cut markings. Cut through both inner tubing as well as outer layer.
2. Strip off outer layer using the cut markings as guidance.
3. Install tubing in One-Touch™ fitting



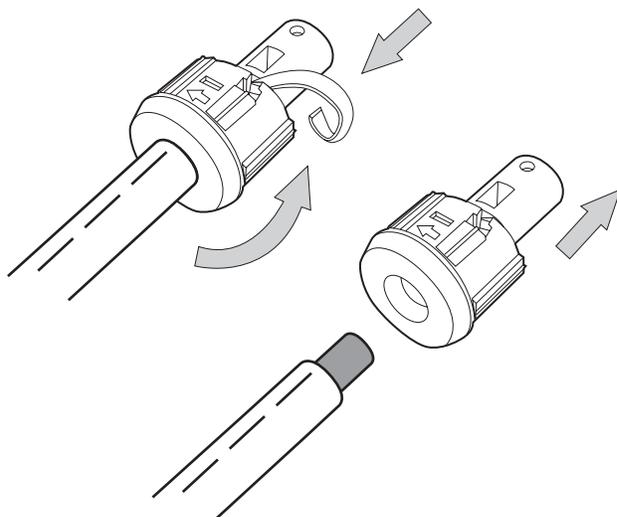
### Step 1



### Step 2

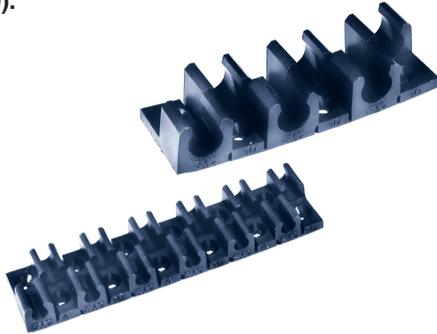


To simplify cutting and stripping of the tubing, SMC offers the TKS line of stripping tools.



## Series TM Multiple Tubing Holder

Can be separated at any position depending on the number of tubes.  
Manufactured from flame resistant resin (Equivalent to UL-94 Standards V-0).



Applicable Tubing O.D.	Model	Number of tubing (MAX.)			Accessory: Phillips countersunk tapping screw	
		6	8	12	Size: Nominal size X length	Number of pieces
4	TM-04			●	2 X 6	4
6	TM-06			●	2.6 X 8	
8	TM-08		●	●		
10	TM-10	●			3 X 8	
12	TM-12	●				

### How To Use

#### ⚠ Caution

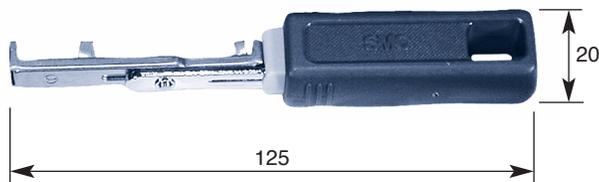
1. The multiple tubing holder can be cut apart according to the number of tubes to be connected.

**CUTTING METHOD**  
Align the cutter with the cutting groove and cut the holder.



2. Cut the multiple tubing holder at a desired position and mount it on the equipment with the attached phillips countersunk tapping screws.
3. Align the tube with the holding position and push down to fit into the holding part.
4. Pull tubing up to remove it from the holder.

## Series TG Tube Releasing



Part No.	Applicable Tube Size	Applicable Tube Material	Color	Weight
TG-1	Metric size ø4, ø6	Nylon, Soft Nylon	Blue	33g
TG-2	Inch size ø1/8", ø1/4"	Polyurethane	Red	

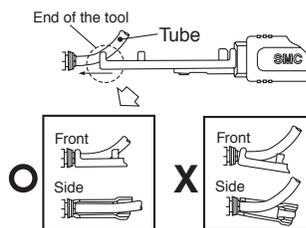
- ▲ Aids in the connection and removal of tubing in applications where One-touch™ fittings are located close together, such as on a valve manifold.
- ▲ Easy one handed operation.
- ▲ Available for two sizes of applicable tubes. Easy exchange with one touch.

### How To Use

#### ⚠ Caution

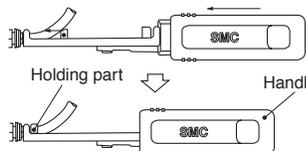
#### Process

Put the end of tool into the release bushing parallel to the tube.



After inserting, grasp the handle tightly and insert the end of the tube to the stroke end.

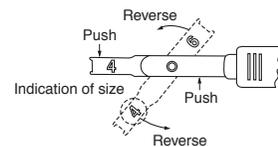
Note) Insert firmly to guard against accidental tube release.



#### Size Change

Push both sides at once to release.

Reversed and fixed at the same position as before. Applicable tube size is indicated on the back side.



After inserting end of tube, relax your grip on the tool. Returning force of spring releases the tube.

## Tubing Cutters

### TK-1

Applicable tubing O.D.: 13mm or less.



### TK-2

Applicable tubing O.D.: 18mm or less.



### TK-3 (Simple type)

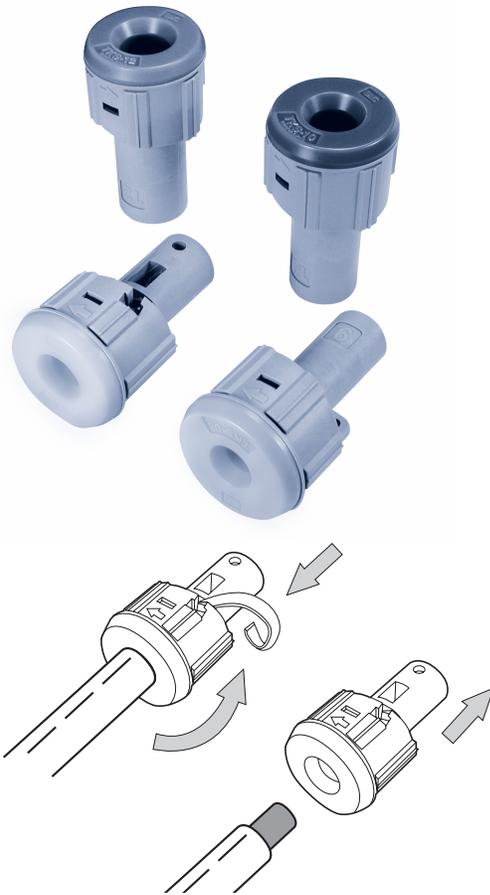
Applicable tubing O.D.: 12mm or less.



## Double Layer Tubing Stripper

### Series TKS

Allows the outer layer of SMC's double layer tubing to be stripped off easily.



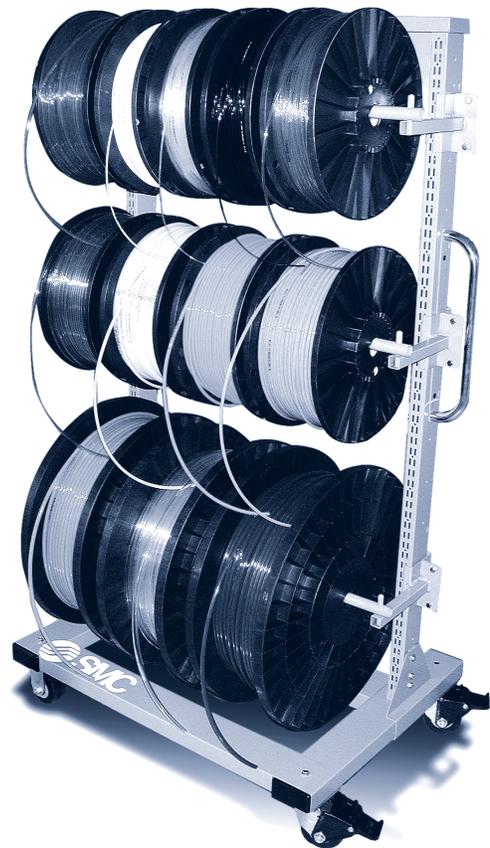
### Variations

Model	Tip Color	Applicable Tubing*
TKS-06	Orange	TRB0604, TRBU0604
TKS-08	Yellow	TRB0806, TRBU0805
TKS-10	Blue	TRB1075, TRBU1065
TKS-12	Green	TRB1209, TRBU1208

\* Inner tubing material / TRB: soft nylon, TRBU: Polyurethane

## Vertical Tubing Stand

### Series TB-3VS



Dimensions: 37-1/4" w x 27-9/16" d x 68-11/16" h

Designed for high capacity and reel size flexibility. This stand comes with two cross bars. A third cross bar can be ordered separately (TB-3CB).

*This chart does not apply to soft Nylon tubing*

*This chemical resistance chart is meant to be used as a guideline only.*

Due to variables such as temperature and chemical mixture, it is essential to test under actual conditions.

Category	Concentration	Test Temperature	
		%	23°C
<b>Inorganic Base</b>			
Caustic soda	50	●	△
Caustic potash	50	●	△
Aqueous ammonia	High	●	●
Ammonia		●	●
<b>Inorganic Acid</b>			
Chromic acid	10	X	X
Hydrochloric acid	1	△	X
Hydrochloric acid	10	X	X
Nitric acid	10	X	X
Phosphoric acid	50	○	X
Sulfuric acid	1	○	△
Sulfuric acid	10	○	X
Sulfuric anhydride		△	X
<b>Inorganic Base</b>			
Aluminum sulfate	Paste	●	●
Ammonium sulfate	Paste	●	△
Barium chloride	Paste	●	●
Calcium arsenate	Paste	●	●
Calcium chloride	Paste	●	●
Copper sulfate	Paste	●	●
Ammonium phosphate	Paste	●	△
Magnesium chloride	50	●	●
Potassium nitrate	Paste	○	X
Potassium sulfate	Paste	●	●
Sodium carbonate	Paste	●	△
Sodium chloride	Saturated	●	●
Sodium sulfate	Paste	●	△
Sodium phosphate	Paste	●	●
Zinc chloride	Saturated		△
<b>Inorganic Compound</b>			
Agricultural chemical		●	-
Bromide		X	-
Chlorine		X	X
Carbon		X	X
Hydrogen		●	●
Hydrogen peroxide	20	●	-
Bleaching agent (Chlorus acid solution)		△	X
Mercury		●	●
Oxygen		●	△
Ozone		△	X
Potassium permangana	5	X	-
Sea water		●	●
Sulfur		●	-
Water		●	●
Carbonate water		●	●
<b>Organic Base</b>			
Aniline	Pure	△	X
Diethanolamie	20	●	○
Pyridine	Pure	△	X
Urea		●	△
<b>Organic Acid</b>			
Acetic acid	50	X	X
Acetic acid anhydride		△	X
Citric acid	Saturated	●	△
Formic acid	98	X	X
Lactic acid		●	●
Oleic acid		●	●
Oxalic acid		●	△
Pirric acid		△	X
Stearic acid	Saturated	●	●
Tartaric acid		●	●
Uric acid		●	●
<b>Hydrocarbon Group</b>			
Acetylene		●	●
Benzene	100	●	△
Butane		●	●
Cyclohexane	100	○	X
Decaline		●	●
Freon 12		●	-
Freon 22		●	-
Methane		●	●
Naphthalene		●	●
Propane		●	●
Styrene		●	-
Toluene	100	●	△
Xylene	100	●	△
Benzyl alcohol		△	X
Butyl alcohol		○	X
Ethyl alcohol	Pure	○	△
Glycerin	Pure	X	

Category	Concentration	Test Temperature	
		%	23°C
<b>Alcohol Group - con't</b>			
Glycol		X	○
Methyl alcohol	Pure	○	△
<b>Aldehyde Ketone</b>			
Acetaldehyde		●	X
Acetone	Pure	○	△
Benzealdehyde	100	X	X
Formalin	Industrial Use	●	X
Methylethyl ketone	100	○	△
Methylisobutyl Ketone		X	△
<b>Chloride Solvent Group</b>			
Carbontetrachloride	100	X	X
Methylbromide		●	-
Methylchloride	100	X	-
Perchloroethylene		△	-
Trichloroethane		△	-
Trichloroethylene	100	△	X
<b>Phenol Group</b>			
	Saturated	X	X
<b>Organic Base, Ether / Ester Group</b>			
Amylacetate		●	●
Butylacetate	100	●	●
Dioctylphosphate		●	●
Dioctylphthalate		●	●
Ethylacetate	100	●	○
Fatty acid ester		●	●
Methylacetate		●	●
Methylsulfate		●	-
Sulfuric ether		●	-
Tributyl phosphate		●	●
Tribledyl phosphate		●	●
<b>Other Organic Compound</b>			
Anethole		●	-
Carbon disulfide		○	X
Diacetone alcohol		●	△
Ethylene oxide		●	△
Furfural		●	△
Glucose		●	○
Glucose chloride		X	-
Tetraethyl lead		●	-
<b>Other</b>			
City gas		●	-
Oil		●	-
Grease		●	-
Regular gasoline		●	○
High-octane gasoline		●	○
Diesel Oil		●	○
Naphtha solvent		●	○
Kerosene		●	○
Crude oil		●	●
Styrene		●	-
Seasoning		●	-
2, 4-D solvent		●	-
Linderene-DDT		●	-
Oxyquinoline		●	-
Soapy water		●	○
Turpentine oil		●	-
Edible vinegar		X	
Thinner			
Freon 23 (Subject to condition)		●	
Grease (Tubing could harden)			

***This chemical resistance chart is meant to be used as a guideline only.***

Due to variables such as temperature and chemical mixture, it is essential to test under actual conditions.

Category	Concentration %	Test Temperature	
		23°C	60°C
<b>Inorganic Base</b>			
Caustic soda	10	○	-
Caustic soda	50	△	-
Aqueous ammonia	100	○	△
<b>Inorganic Acid</b>			
Hydrochloric acid	10	△	X
Hydrochloric acid	High	X	-
Nitric acid	50	X	-
Phosphoric acid	85	X	X
Sulfuric acid	10	△	X
Sulfuric acid	50	X	-
<b>Inorganic Compound</b>			
Hydrogen sulfide	Low	○	△
Chlorine	100	X	-
Sulfur dioxide	Low	○	△
Hydrogen peroxide	30	△	X
Carbon disulfide	100	○	△
Sulfur	100	●	○
Water		○	○
<b>Organic Base</b>			
Aniline	100	△	-
Pyridine	100	△	-
Urea	Saturated	○	△
<b>Organic Acid</b>			
Acetic acid	50	△	△
Citric acid	Saturated	○	△
Formic acid	98	△	X
Oleic acid		○	△
Nucleic acid		○	△
Tannic acid		○	△
Glacial acid	100	△	X
<b>Alcohol Group</b>			
Cyclohexanol	100	○	△
Butyl alcohol	100	○	○
Ethyl alcohol	100	△	△
Glycerin	100	○	△
2-ethylhexanol	100	○	△
Methyl alcohol	100	△	△
Ethylene glycol	50	○	○
Ethylene glycol	100	○	△
Cresol	100	△	-
<b>Aldehyde Ketone</b>			
Acetone	40	△	△
Formaldehyde	100	△	-
Benzaldehyde	100	X	-
Dimethylformaldehyde	100	X	X
Methyl ethyl ketone	100	X	X
<b>Chloride Solvent</b>			
Carbon tetrachloride	100	△	-
Ethylenechloride	100	X	-
Methylenechloride	100	X	-
Chloroform	100	△	X
Trichloroethylene	100	△	X
<b>Phenol Group</b>			
Phenolnitro	Saturated	○	△
Nitrobenzene	100	△	-
<b>Ester/Ether Group</b>			
Ethylether	100	○	△
Butyl acetate	100	X	X
Diocetyl phthalate		△	-
Ethylacetate	100	X	X
Petroleumether	100	○	△
Dibutylphthalate		△	-
Tricledylphosphate		△	-
1,4-dioxin	100	○	△
Tetrahydrofuran	100	X	X
<b>Hydrocarbon Group</b>			
Benzene	100	△	X
Butane	100	○	△
Hexane	100	○	△
Isocane	100	○	△
Cyclohexane	100	△	X
Toluene	100	X	X
Xylene	100	△	△
Freon 12		○	-
Thinner		X	X

Category	Concentration %	Test Temperature	
		23°C	60°C
<b>Oil Group</b>			
Brake oil	Saturated	○	○
ASTM oil	100	○	○
ASTM fuel	100	○	△
Machine oil	100	○	○
Gasoline	100	○	△
Diesel oil	100	○	○
Petroleum oil		○	△
Kerosene		○	△
Vegetable oil		○	○
Turpentine oil			△
JIS No. 1 oil (100°C)			○
JIS No. 3 oil (100°C)			△
<b>Food Group</b>			
Beer		○	-
Brandy		○	-
Rum		○	○
Juice		○	○
Butter		○	○
Margarine		○	○
Jelly		○	○
Salad oil		○	○
Sausage		○	○
Sugar		○	○
Tea		○	○
<b>Other</b>			
Aqueous alum	100	○	○
Synthetic detergent		○	○
Lanolin		○	○
Paraffin		●	○
Ink		○	△
Liquid developer		○	△
Sea water		○	○

(Note) ●: No change; ○: Resistance for practical use; △: Gradually deteriorated; X: Deteriorated (21 days immersion)

**This chemical resistance chart is meant to be used as a guideline only.**

Due to variables such as temperature and chemical mixture, it is essential to test under actual conditions.

Category	Concentration	Test Temperature	
		20°C	60°C
Acetaldehyde*	100	△	X
Acetone*	100	△	X
Aniline	100	△	X
Amyl alcohol*	100	○	X
Ammonia water	0.88 spgr liquid	○	○
Ammonia	Dry gas	○	○
Sodium aluminate	—	○	○
Linseed oil*	100	△	X
Sodium benzoate	Saturation	○	○
Sodium nitrite	—	○	○
Sodium sulfite	—	○	○
Carbon monoxide	—	○	○
Sulfur	—	○	△
Yeast	—	○	—
Ethyl alcohol	<96	○	○
Ether	100	△	△
Ethylene glycol	—	X	—
Chlorine	—	△	△
Chlorine water	Dry gas	△	X
Chlorine	Liquid 100%	X	X
Chlorine water	2%	○	○
Calcium chlorate	Saturation	○	△
Potassium chlorate	Saturation	○	○
Hydrochloric acid	10	○	X
Aniline chloride	—	X	—
Aluminum chloride	—	○	△
Zinc chloride	Saturation	○	○
Barium chloride	Saturation	○	○
Calcium chloride	—	○	○
Copper chloride	—	○	○
Iron chloride	Saturation	○	○
Magnesium chloride	Saturation	○	○
Mercury chloride	Saturation	○	○
Nickel chloride	Saturation	○	○
Potassium chloride	Saturation	○	○
Sodium chloride	Saturation	○	○
Tin chloride	Saturation	○	○
Ammonium chloride	Saturation	○	○
Methyl chloride	—	X	X
Phosphorus oxychloride	—	X	X
Diethyl ether*	—	X	—
Ammonium persulfate	—	○	○
Potassium persulfate	—	○	○
Potassium permanganate	—	○	○
Sodium peroxide	—	○	○
Hydrogen peroxide	—	○	○
Sea water	—	○	○
Formic acid	80 or less	○	○
Formic acid	100	△	△
Xylene*	100	X	X
Metallic soap*	—	○	—
Beef tallow	—	○	—
Milk	—	○	○
Chloroform*	100	△	X
Chlorosulfonic acid	—	X	X
Chromic acid	Electrolyte	○	○
Potassium chromate	Saturation	○	○
Chrome alum	Saturation	○	○
Citric acid	—	○	○
Creosote*	—	X	—
Cresol*	—	X	—
Cresylic acid	50	○	○
Glycerol	—	○	△
D-glucose	—	○	○
Silicofluoric acid	—	○	—
Antimony pentachloride	—	○	○
Phosphorus pentoxide	100	○	○
Mineral oil*	—	△	X
Soda	—	○	—
Salicylic acid	—	○	○
Acetic acid	<10	○	○
Acetic acid	10~50	○	△
Acetic acid	60 or less	△	X
Amyl acetate*	—	X	—
Ethyl acetate	—	△	X
Methyl acetate	—	X	X
Sodium acetate	—	○	○
Lead acetate	Saturation	○	○
Phosphorus trichloride	100	○	—
Antimony trichloride	—	○	○
Boron trifluoride	—	○	—

Category	Concentration	Test Temperature	
		20°C	60°C
Oxygen	100	○	X
Zinc oxide	—	○	○
Cyclohexanol	—	△	△
Cyclohexanone	—	X	—
Copper cyanide	—	○	○
Silver cyanide	—	○	○
Potassium cyanide	Saturation	○	○
Sodium cyanide	Saturation	○	○
Mercury cyanide	Saturation	○	○
Nitric acid	5~25	○	△
Nitric acid	50	△	X
Nitric acid	70~98	X	X
Ammonium nitrate	Saturation	○	○
Calcium nitrate	Condensation	○	○
Copper nitrate	—	○	○
Potassium nitrate	Saturation	○	○
Silver nitrate	—	○	○
Stronium nitrate	—	○	○
Magnesium nitrate	Saturation	○	○
Nickel nitrate	Condensation	○	○
Salt water (Brine)	—	○	○
Cane sugar	—	○	○
Oxalic acid	Saturation	○	○
Tartaric acid	10	○	○
Tartaric acid	Saturation	○	△
Vegetable oil*	—	△	X
Bromine	Dry gas	X	X
Hydrobromic acid	50	○	○
Hydrobromic acid	100	○	○
Methyl bromide	—	X	X
Potassium bromide	Saturation	○	○
Potassium bromate	—	○	○
Ammonium bicarbonate	—	○	○
Sodium bicarbonate	Saturation	○	○
Potassium bicarbonate	Saturation	○	○
Sodium hydrogen sulfate	Saturation	○	○
Potassium hydrogen sulfate	—	○	○
Sodium bisulfate	Saturation	○	○
Potassium bisulfate	—	○	○
Potassium dichromate	Saturation	○	○
Sodium hypochlorite	15	○	○
Calcium hypochlorite	15	○	○
Sodium hyposulfite	—	○	○
Tetraethyl lead	—	○	—
Carbon tetrachloride	100	X	X
Camphor oil*	—	X	X
Silicon fluid*	—	△	X
Developer	—	○	○
Emulsifier	—	○	—
Hydrogen	100	○	○
Aluminum hydroxide	—	○	○
Barium hydroxide	Saturation	○	○
Calcium hydroxide	—	○	○
Potassium hydroxide	<50	○	○
Potassium hydroxide	Condensation*	○	○
Sodium hydroxide	<40	○	○
Sodium hydroxide	Condensation*	○	○
Magnesium hydroxide	Condensation	○	○
Ammonium hydroxide	—	○	○
Mercury	—	○	○
Stearic acid	100	○	X
Cetyl alcohol*	—	○	—
Soapy water	—	○	○
Petroleum ether	—	X	X
Petroleum	—	X	X
Tannic acid	10	○	○
Ammonium carbonate	—	○	○
Barium carbonate	Saturation	○	○
Calcium carbonate	—	○	○
Magnesium carbonate	Saturation	○	○
Sodium carbonate	Condensation	○	○
Potassium carbonate	—	○	○
Ammonium thiocyanate	Saturation	○	○
Potassium thiosulfate	—	○	○
Sodium thiosulfate	Saturation	○	○
Starch	Saturation	○	○
Turpentine oil*	100	X	X
Dextrose	Saturation	○	○
Trichloroethylene*	100	X	X
Triethanolamine*	100	○	X
Animal oil*	—	△	X
Soft soap*	—	○	○

Category	Concentration	Test Temperature	
		20°C	60°C
Nitrobenzene*	—	△	X
Diethyl ether*	—	△	△
Carbon dioxide	100	○	○
Carbon disulfide	100	X	X
Ethylene dichloride*	100	X	X
Sulfur dioxide	Dry gas	○	○
Sulfur dioxide	Humid gas	○	△
Potassium dichromate	—	○	○
Emulsifier	—	○	○
Lactic acid	—	○	○
Paraffin	—	△	X
Hydroquinone	—	○	○
Beer	—	○	○
Castor oil*	—	X	—
Arsenic acid	100	○	○
Lead arsenate	—	○	—
Picric acid	1	○	○
Picric acid	Alcohol 10%	○	○
Surface active agent*	—	○	○
Butyl alcohol*	100	○	X
Diocetyl phthalate*	—	△	X
Dibutyl phthalate*	100	△	X
Phenol*	—	X	—
Sodium ferricyanide	Saturation	○	○
Sodium ferrocyanide	Saturation	○	○
Grape sugar (Glucose)	—	○	○
Fluorine	—	△	X
Aluminum fluoride	—	○	○
Copper fluoride	—	○	○
Potassium fluoride	—	○	○
Sodium fluoride	Saturation	○	○
Hydrofluoric acid	<60	○	○
Hydrofluoric acid	75	○	△
Benzaldehyde*	—	X	—
Benzene*	—	X	X
Benzenesulfonic acid	—	X	—
Benzyl alcohol	—	X	—
Boric acid	—	○	○
Sodium borate	—	○	○
Potassium borate	—	○	○
Formaldehyde	40	○	○
Water	—	○	○
Methyl alcohol	<50	○	○
Methyl alcohol	100	△	△
Methyl ethyl ketone*	100	△	X
Ammonium metaphosphate	Saturation	○	○
Sodium metaphosphate	—	○	○
Alum	—	○	○
Monochloroacetic benzene	—	X	X
Sulfuric acid	10~60	○	△
Sulfuric acid	70	○	X
Sulfuric acid	80	△	X
Sulfuric acid	98	X	X
Aluminum sulfate	—	○	○
Barium sulfate	Saturation	○	○
Calcium sulfate	—	○	○
Copper sulfate	Saturation	○	○
Iron sulfate	—	○	—
Magnesium sulfate	Saturation	○	○
Manganese sulfate	—	○	○
Nickel sulfate	Saturation	○	○
Potassium sulfate	Condensation	○	○
Sodium sulfate	Saturation	○	○
Zinc sulfate	Saturation	○	○
Ammonium sulfate	Saturation	○	○
Aniline sulfate	—	X	X
Barium sulfide	Saturation	○	○
Potassium sulfide	Condensation	○	○
Sodium sulfide	25	○	○
Sodium sulfide	Saturation	○	○
Hydrogen sulfide	—	○	—
Ammonium sulfide	Saturation	○	○
Phosphoric acid	<90	○	X
Phosphoric acid	95	△	X
Calcium phosphate	—	○	○
Potassium phosphate	—	○	○
Sodium phosphate	—	○	○
Tricresyl phosphate	—	X	X
Sodium dihydrogen phosphate	100	○	○

(Note) ○: Resistant; △: Slightly deteriorated or absorbed; X: Non-resistant; \*: Possibility of stress cracks



## Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by a label of “**Caution**”, “**Warning**” or “**Danger**”. To ensure safety, be sure to observe ISO 4414<sup>Note 1)</sup>, JIS B 8370<sup>Note2)</sup> and other safety practices.



**Caution:** Operator error could result in injury or equipment damage



**Warning:** Operator error could result in serious injury or loss of life



**Danger:** In extreme conditions, there is a possible result of serious injury or loss of life

Note 1) ISO 4414: Pneumatic fluid power - Recommendations for the application of equipment to transmission and control systems.

Note 2) JIS B 8370: General Rules for Pneumatic Systems.



## Warning

### 1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements.

### 2. Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

### 3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.

1. Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
2. When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
3. Before machinery/equipment is re-started, take measures to prevent shooting-out of the cylinder piston rod etc. (Bleed air into the system gradually to create back-pressure.)

### 4. Contact SMC if the product is to be used in any of the following conditions:

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, press applications, or safety equipment.
3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

## Selection

### **Warning**

#### 1. Confirm the specifications

The products appearing in this catalog are designed for use only in compressed air systems (Including vacuum).

Do not use outside the specified ranges of pressure, temperature, etc., as this may cause damage or malfunction (Refer to specifications).

### **Caution**

1. Use tubing at or above the minimum bend radius. Using below the minimum bend radius can cause breakage or kinking of the tube.

## Mounting

### **Caution**

1. Before mounting confirm the model and size, etc. Also confirm that there are no blemishes, nicks or cracks in the product.
2. When connecting tubing, consider factors such as changes in the tubing length due to pressure and allow sufficient leeway.
3. Mount so that fittings and tubing are not subjected to twisting, pulling or moment loads. This can cause damage to fittings and kinking, bursting or disconnection of tubing, etc.
4. Mount so that tubing is not damaged due to tangling or abrasion. This can cause kinking, bursting or disconnection of tubing, etc.

## Applications

### **Warning**

1. Refer to chemical resistance charts

## Operating Environment

### **Warning**

1. Do not use ordinary fittings and tubing in locations where static electric charge will cause a problem. This can cause defects or failure of the system, etc. In this kind of location, the use of antistatic fittings (Series KA) and antistatic tubing (Series TA) is recommended.
2. Do not use ordinary One-touch fittings in locations where spatter is generated. There is a danger of spatter causing a fire. In this kind of location, the use of flame resistant fittings (Series KR, KRM) and flame resistant tubing (Series TRS, TRB, TRBU) is recommended.

## Maintenance

### **Caution**

1. Make periodic inspections to check for the following problems, and replace parts as necessary
  - A) Blemishes, nicks, abrasions, corrosion
  - B) Air leakage
  - C) Twisting, kinking or tangling of the tubing
  - D) Hardening, deterioration or softening of the tubing

