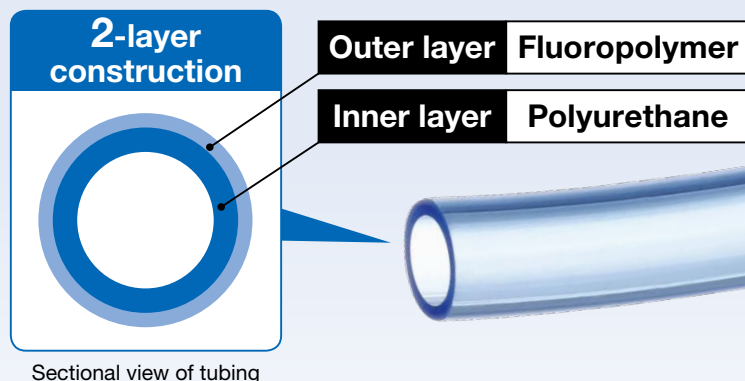


# 2-Layer Fluoropolymer Polyurethane Tubing

New

RoHS

## 2-layer tube with excellent environmental resistance and flexibility



### Tubing I.D.

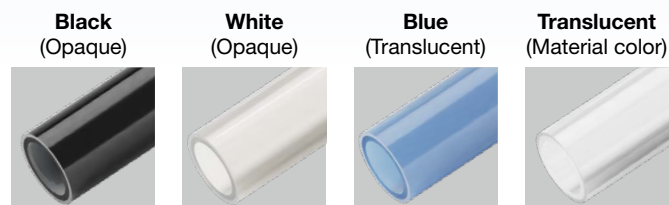
Cross-section ratio increased by **44%**

(Compared to TU0805)

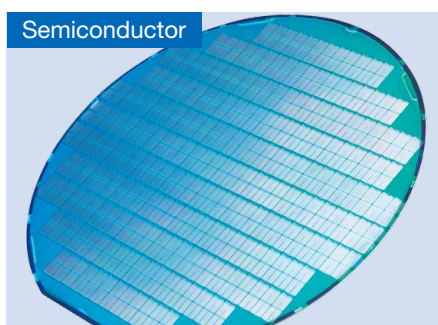
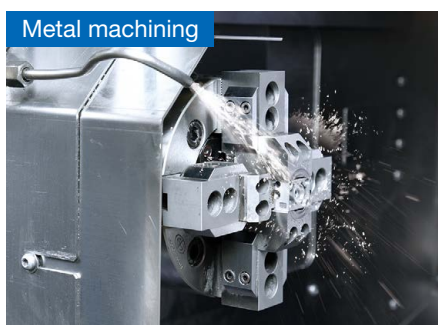
**TUE: 28.3 mm<sup>2</sup> ← TU: 19.6 mm<sup>2</sup>**

### Wide Color Variations

Available in black, white, blue, and translucent colors.



### Environmental Resistant Applications



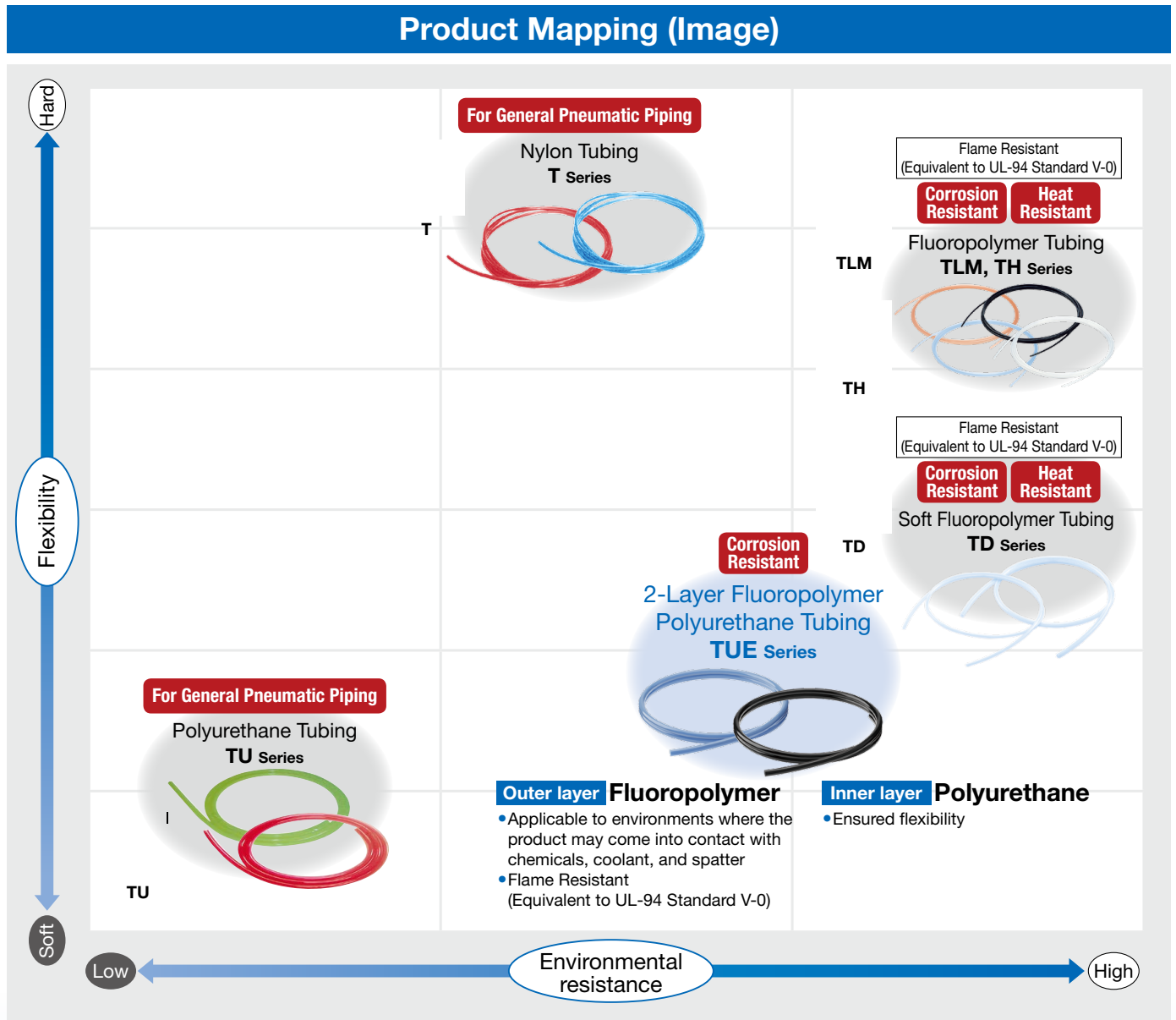
\* Please use the product in accordance with the specifications provided in the catalogs/operation manuals. It is your responsibility to check the suitability for your workpiece and equipment.

## TUE Series



CAT.ES50-46A

# 2-Layer Fluoropolymer Polyurethane Tubing *TUE Series*



### Variations

Model	TUE0425	TUE0604	TUE0806	TUE1075	TUE1209
O.D. [mm]	4	6	8	10	12
I.D. [mm]	2.5	4	6	7.5	9
20 m roll	○	○	○	○	○

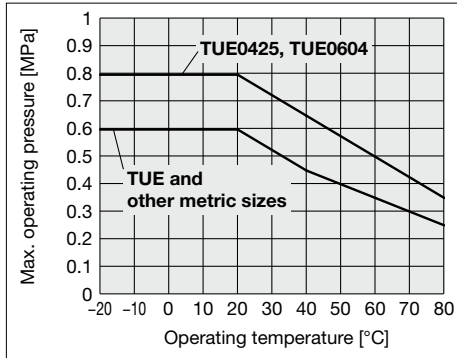


# 2-Layer Fluoropolymer Polyurethane Tubing

## TUE Series



### Max. Operating Pressure



● Flame Resistant (Equivalent to UL-94 Standard V-0)

### How to Order

**TUE0604 N - 20**

Tubing model

Color

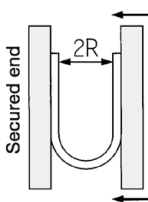
Symbol	Color
B	Black (Opaque)
W	White (Opaque)
BU	Blue (Translucent)
N	Translucent (Material color)

Length per roll

Symbol	Length
20	20 m roll

### ⚠ Precautions

Be sure to read this before handling the products. For the safety instructions and the fitting/tubing precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" found on the SMC website.



At a temperature of 20°C, the tubing is bent into a U shape with one end fixed in position and the other end is gradually moved closer to the other end. The 2R measurement is made at the point where there is a 10% change in the outer diameter of the tube.

### Model

● 20 m roll

Model	TUE0425	TUE0604	TUE0806	TUE1075	TUE1209
O.D. [mm]	4	6	8	10	12
I.D. [mm]	2.5	4	6	7.5	9
Outer layer color	Black (B)	●	●	●	●
	White (W)	●	●	●	●
	Blue (BU)	●	●	●	●
	Translucent (N)	●	●	●	●

### Specifications

Fluid and applicable fittings*1, *2		Fluid: Air, Water, Inert gas				
		Brass One-touch fittings: KQB2 series One-touch fittings, Stainless steel 316: KQG2 series Insert fittings: KF series Stainless steel 316 insert fittings KFG2 series				
Max. operating pressure [MPa]	20°C or less	0.8			0.6	
	40°C	0.65			0.45	
	60°C	0.5			0.35	
	80°C	0.35			0.25	
Operating vacuum pressure*3	kPa	-101.3				
Min. bending radius [mm]*4	Recommended radius	14	24	53	55	61
	Tube close bend radius	11	19	36	39	44
Operating temperature*1		Air, Inert gas: -20 to 80°C Water: 0 to 70°C (No freezing)				
Material	Inner layer	Polyurethane				
	Outer layer	Fluoropolymer				

\*1 Assume that the tubing is only used under either the tubing or fitting max. operating pressure and temperature. The table below shows the applicable fittings and their operating temperature range.

### Operating Temperature Range (○: Applicable —: Not applicable)

Applicable fitting	Fluid	Operating temperature [°C]											
		-20	-10	-5	0	10	20	30	40	50	60	70	80
KQB2 KQG2	Air, Inert gas	—	○	○	○	○	○	○	○	○	*2	*2	*2
	Water	—	—	—	○	○	○	○	○	○	○	○	—
KF (Nylon sleeve)	Air, Inert gas	—	○	○	○	○	○	○	○	○	○	—	—
	Water	—	—	—	○	○	○	○	○	○	○	—	—
KF (Brass sleeve)	Air, Inert gas	—	○	○	○	○	○	○	○	○	○	○	○
	Water	—	—	—	○	○	○	○	○	○	○	○	—
KFG2	Air, Inert gas	○	○	○	○	○	○	○	○	○	○	○	○
	Water	—	—	—	○	○	○	○	○	○	○	○	—

\*2 Mount an inner sleeve (TJ or TJG series) when using metal One-touch fittings in high-temperature environments of 60°C or more.

\*3 As the operating vacuum pressure varies depending on the applicable fittings, be sure to check the fitting specifications beforehand.

\*4 The values of the min. bending radius are only representative values when measured as shown to the left. Assure that the tubing is used above the recommended min. bending radius. The tubing will be abnormally bent when used under the recommended min. bending radius. Please refer to the tube close bend radius and assure that the tubing does not have an abnormal bend or becomes flattened when in use. Please use caution in that the values of the tube close bend radius are not guaranteed. The values shown here are only representative values when 2R was measured and the tubing was abnormally bent or flattened at that value when measured as shown to the left.



## TUE Series

# Applicable Fluid List

Chemicals in the list below are chemically inert\*1, to fluorine material. Possible physical effects may occur such as penetration and swelling due to temperature, pressure and chemical concentration.

The list below does not guarantee the performance of the tubing. When using the tube in a chemical environment, please make sure to test under application conditions in the same environment and confirm that no issues arise.

Chemical	Outer layer	Inner layer	Chemical	Outer layer	Inner layer
	Fluorine	Polyurethane		Fluorine	Polyurethane
<b>Hydrochloric acid</b>	○	×	<b>Citric acid</b>	○	△
<b>Sulfuric acid</b>	○	×	<b>Stearic acid</b>	○	○
<b>Nitric acid</b>	○	×	<b>Formic acid</b>	○	×
<b>Caustic soda</b>	○	△	<b>Ethyl acetate</b>	○	×
<b>Caustic potash</b>	○	△	<b>Butyl acetate</b>	○	×
<b>Ammonium hydroxide</b>	○	△	<b>Methyl alcohol</b>	○	△
<b>Hydrogen peroxide</b>	○	×	<b>Ethyl alcohol</b>	○	△
<b>Water</b>	○	○	<b>Butyl alcohol</b>	○	○
<b>Phenol</b>	○	△	<b>Isopropyl alcohol</b>	○	△
<b>Benzene</b>	○	×	<b>Ethylene glycol</b>	○	△
<b>Toluene</b>	○	×	<b>Hexane</b>	○	×
<b>Xylene</b>	○	△	<b>Cyclohexane</b>	○	×
<b>Carbon tetrachloride</b>	○	△	<b>Mineral oil ASTM No.3</b>	○	×
<b>Acetone</b>	○	△	<b>Naphtha</b>	○	×
<b>Methyl ethyl ketone</b>	○	×			

\* "Chemically inert" means – not to cause any chemical reaction.

○: Applicable △: Not recommended ×: Inapplicable



## **TUE Series**

# **Specific Product Precautions**

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For fittings and tubing precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website.


### **Selection**


#### **Caution**


1. When the tubing media is liquid, assure that the surge pressure does not exceed the max. operating pressure. Surge pressures higher than the max. operating pressure can result in broken fittings or ruptured tubing.  
  
Furthermore, an abnormal temperature increase due to adiabatic compression can also result in ruptured tubing.
2. Avoid using the tubing in conditions whereby it will thrash about.
3. Following long-term usage or under high-temperature conditions, leaking may occur due to material deterioration over time. Assure that periodic inspections are made and if any leaks are found, please replace with new tubing immediately.
4. This product is designed for use in pressure fluid systems. The fluoropolymer on the outer layer of the tube has chemical resistance, but is subject to physical effects such as osmosis or swelling in some operating environments. For applications such as chemical immersion, we recommend the use of fluoropolymer tubing such as the TL or TLM series.

## Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\*1), and other safety regulations.

 **Danger :** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

 **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

\*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components  
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components  
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements  
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots etc.

### Warning

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

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

#### 2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

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

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

#### 4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

### Caution

**We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.**

**Use in non-manufacturing industries is not covered.**

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

### Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

#### Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\*2)  
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

\*2) **Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

#### Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

## Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.

**SMC Corporation**