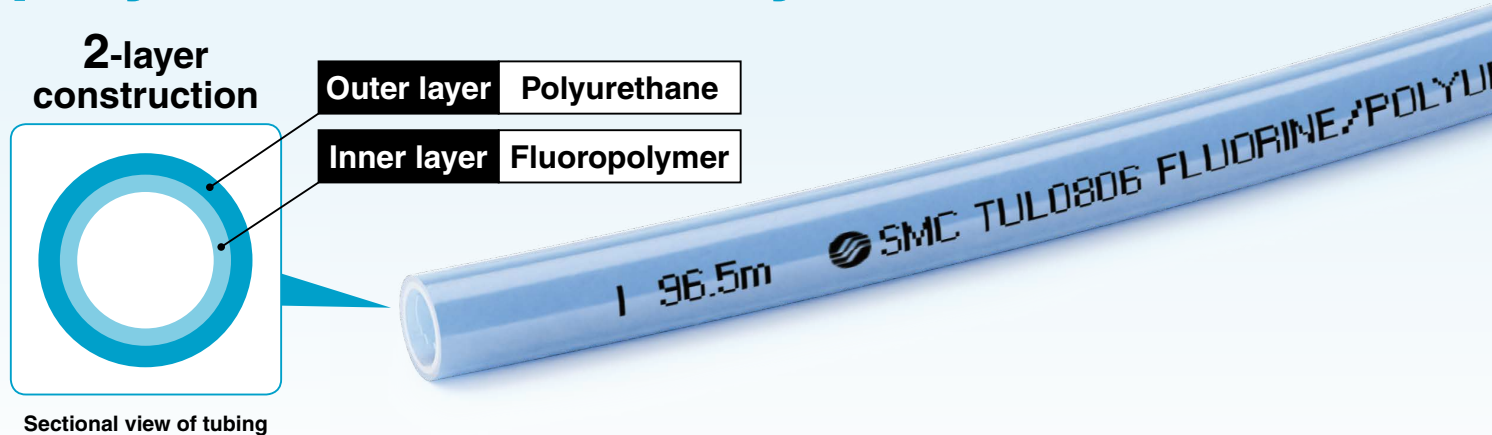


2-Layer Fluoropolymer Polyurethane Tubing

New
RoHS

Flexible 2-layer tube with polyurethane outer layer



Tubing I.D.

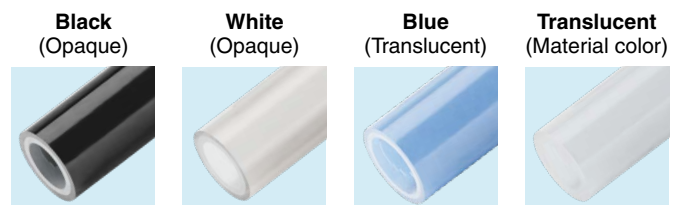
Cross-section ratio increased by **44%**

(Compared to TU0805)

TUL: 28.3 mm² ← TU: 19.6 mm²

Wide Color Variations

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



Applications



Series Variations

Model	TUL0425	TUL0604	TUL0806	TUL1075	TUL1209
O.D. [mm]	4	6	8	10	12
I.D. [mm]	2.5	4	6	7.5	9
20 m roll	○	○	○	○	○
100 m roll	○	○	○	○	○

TUL Series

SMC
CAT.ES50-42A[Ⓐ]

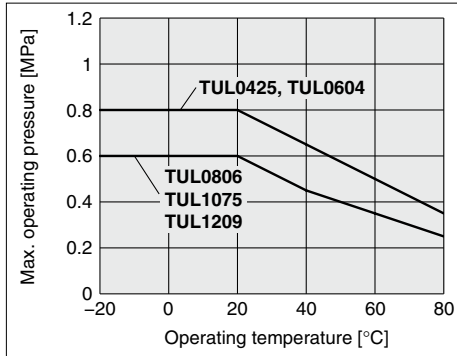
2-Layer Fluoropolymer Polyurethane Tubing

TUL Series

RoHS

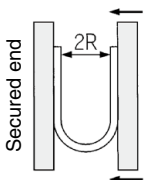


Max. Operating Pressure



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

Model		TUL0425	TUL0604	TUL0806	TUL1075	TUL1209
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*1, *2, *3 and applicable fittings*1, *2, *3		Fluid: Air, Water, Class 1 turbine oil (ISO VG32), Inert gas				
		Fittings: Insert fittings KFG2 series				
Max. operating pressure [MPa]	20°C or less	0.8	0.8	0.6	0.6	0.6
	40°C	0.65	0.65	0.45	0.45	0.45
	60°C	0.5	0.5	0.35	0.35	0.35
	80°C	0.35	0.35	0.25	0.25	0.25
Min. bending radius [mm]*4	Recommended radius	18	25	50	60	65
	Tube close bend radius	12	20	32	40	45
Operating temperature*1		Air, Inert gas: -20 to 80°C Water, Class 1 turbine oil (ISO VG32): 0 to 70°C (No freezing)				
Material	Inner layer	Fluoropolymer				
	Outer layer	Polyurethane				

- *1 Assure that the tubing is only used under either the tubing or fitting max. operating pressure and temperature.
- *2 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.
- *3 Avoid using the tubing in conditions whereby it will thrash about. 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 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.

How to Order

TUL0604 N - 100

Tubing model ●

Color ●

Length per roll ●

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

Symbol	Length
20	20 m roll
100*1	100 m roll

*1 Black and translucent only



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


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


○: Applicable △: Not recommended ×: Inapplicable

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.

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

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

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

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots – Safety.
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. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

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.

Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Safety Instructions

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

SMC Corporation