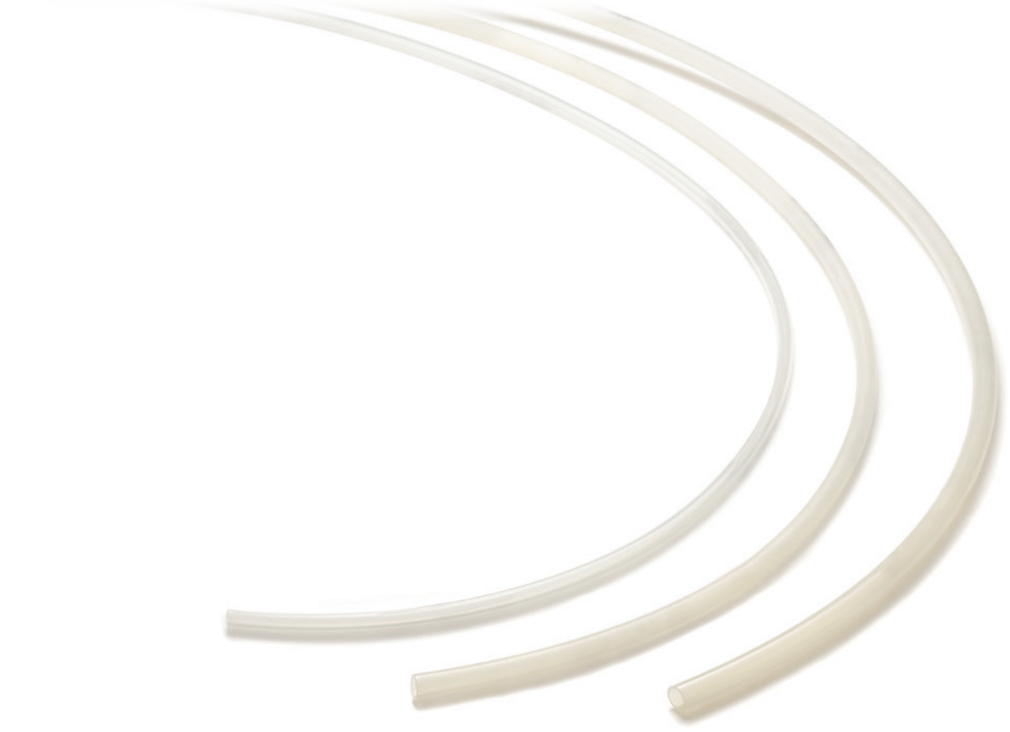
Multi-Layer Tubing



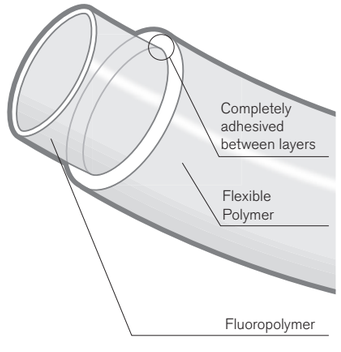
Features

- With the two-layer structure, improvement in flexibility, kink resistance, and abrasion resistance which was difficult to achieve with fluoropolymer tubing is achieved.
- Fluoropolymer with excellent chemical repellency is used for the inner layer.
- The layers are completely attached to each other with monolithic molding.
- The Stainless Fitting US2 Series that prevents twisting during tubing can be used for UP1 with polyurethane on the outer layer.

Use

- Painting equipment tubing
- Dental equipment tubing
- Semiconductor manufacturing equipment tubing
- Solvent transfer tubing
- Hydraulic (oil) and pneumatic equipment tubing
- Food products manufacturing equipment tubing
- Viscous liquid transfer tubing
- Centralized lubrication equipment tubing
- Analysis equipment tubing

Tubing Structure Diagram



Specifications

Type	Fluid Used	Operating Temperature Range	Maximum Operating Pressure※2	Fitting Used	Fluid Used	Fitting Page
Multi Layer Tubing: AP1 Inner Layer: Fluoropolymer Outer Layer: Soft Nylon	Air/Water/ Corrosive Fluid※1	-20~+70℃	Refer to Dimensions Table	Brass Fitting Stainless Fitting	Air/Water/ Corrosive Fluid※1	173~182 193~207
		0~+70℃				
Multi Layer Tubing: UP1 Inner Layer: Fluoropolymer Outer Layer: Polyurethane	Air/Water/ Corrosive Fluid※1	-20~+70℃		Brass Fitting Stainless Fitting: US2		173~182 193, 194, 209~212
		0~+70℃				

*1 Please refer to the Technical Data for the organic solvent resistance of the inner and outer layers. Do not use solvents and chemicals other than those in the table as fluids.

*2 The maximum operating pressure in the dimensions table is pressure under conditions using air at 23℃. It will change depending on the temperature; please refer to page 40 and use it at 1/4 or below the burst pressure by temperature.
If you are using liquid as your fluid, please use the surge pressure as your maximum operating pressure.

Multi-Layer Tubing

AP1 Inner Layer: Fluoropolymer Outer layer: Soft Nylon

RoHS Compliant Product

Part No.	Tube Size O.D.x I.D. (mm)	Burst Pressure 23°C (MPa)	Max. Operating Pressure 23°C (MPa)	Min. Bending Radius (mm)	Standard Length (m)
AP1-0425	4×2.5	8.0	<2.0	15	20 · 100
AP1-0640	6×4	7.2	<1.8	20	20 · 100
AP1-0860	8×6	5.6	<1.4	35	20 · 100
AP1-1080	10×8	4.0	<1.0	50	20 · 100

• Standard Color: Milky-White

UP1 Inner Layer: Fluoropolymer Outer Layer: Polyurethane

RoHS Compliant Product

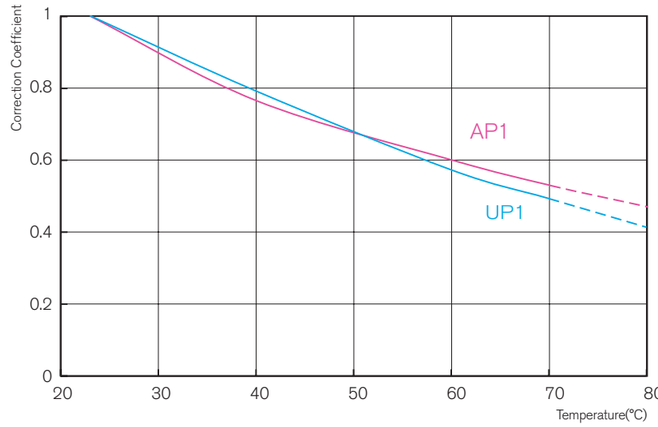
Part No.	Tube Size O.D.x I.D. (mm)	Burst Pressure 23°C (MPa)	Max. Operating Pressure 23°C (MPa)	Min. Bending Radius (mm)	Standard Length (m)
UP1-0425	4×2.5	2.4	<0.6	12	20 · 100
UP1-0640	6×4	2.4	<0.6	20	20 · 100
UP1-0850	8×5	2.4	<0.6	23	20 · 100
UP1-1065	10×6.5	2.4	<0.6	32	20 · 100
UP1-1280	12×8	2.4	<0.6	40	20 · 100

• Standard Color: Milky-White

*Do not use it where solvents and chemical spatter.

Technical Data

How to Calculate the Maximum Operating Pressure by Temperature for Multi-Layer Tubing



Correction Coefficient Graph for Burst Pressure by Temperature for Multi-Layer Tubing

[Burst pressure at certain temperature] = [Burst pressure at 23°C (refer to table)] x [Correction coefficient in graph]

Operating Pressure

Please use it at 1/4 or below the burst pressure by temperature. If you are using liquid as your fluid, please use so that the surge pressure does not exceed the product's maximum operating pressure.

Organic Solvent Resistance of the Multi-Layer Tubing

Type		AP1 Inner Layer	AP1 Outer Layer	UP1 Inner Layer	UP1 Outer Layer
Hydro Carbon	Benzene	◎	△	◎	△
	Toluene	◎	△	◎	△
	Xylene	◎	△	◎	△
	Hexane	○	△	○	△
	Oil	◎	○	◎	○
Hydrocarbon Halides	Methylene Chloride	○	△	○	×
	Trichlorethylene	◎	△	◎	×
Ester	Ethyle Acetate	△	○	△	△
	Acetic Acid-n-Butyl	○	○	○	×
	Amyl Acetate	○	○	○	—

Type		AP1 Inner Layer	AP1 Outer Layer	UP1 Inner Layer	UP1 Outer Layer
Alcohol	Methyl Alcohol	◎	△	◎	△
	Ethyl Alcohol	◎	△	◎	△
	Propyl Alcohol	◎	△	◎	○
	Types of Glycol	◎	○	◎	○
Ketone	Acetone	○	△	○	△
	Methyl Ethyl Ketone	◎	△	◎	△
	Methyl Isobuthyl Ketone	○	△	○	△
Ether	Tetrahydrofurane	○	△	○	×
Others	Water	◎	◎	◎	◎
	Seawater	◎	◎	◎	◎

(◎ No change ○ Practically resistant △ Gradually affected × Affected)