

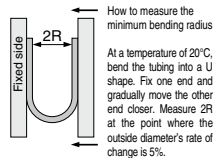
High Purity Fluoropolymer Tubing TL/TIL Series

Material: Super PFA
 Flame resistant (Equivalent to UL-94 Standard V-0)
 Compatible with the Food Sanitation Law
 • Compatible with the test conforming to the Food Sanitation Law based on the 370th notice given by the Ministry of Health and Welfare in 1959.
 • Complies with FDA (Food and Drug Administration) §177.1550 dissolution test.

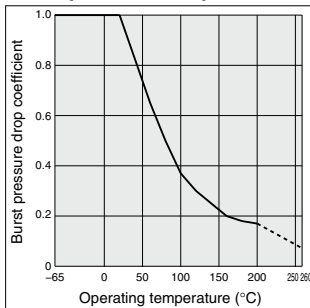
Series and Specifications

Tubing model	Metric sizes (TL series)						Inch sizes (TIL series)								
	TL0403	TL0604	TL0806	TL1008	TL1210	TL1916	TIL01	TILB01	TIL05	TIL07	TIL11	TIL13	TIL19	TIL25	
Nominal diameter	—	—	—	—	—	—	1/8"	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"	
Tubing size	ø4 x ø3	ø6 x ø4	ø8 x ø6	ø10 x ø8	ø12 x ø10	ø19 x ø16	1/8" x 0.086"	1/8" x 1/16"	3/16" x 1/8"	1/4" x 5/32"	3/8" x 1/4"	1/2" x 3/8"	3/4" x 5/8"	1" x 7/8"	
O.D. (mm)	Basic diameter 4	6	8	10	12	19	3.18	3.18	4.75	6.35	9.53	12.7	19.05	25.4	
Thickness (mm)	Basic diameter Tolerance	±0.05	±0.1			±0.15	±0.05	±0.08	±0.08	±0.12	±0.15				
Bundle	10 m	—	—	—	—	—	—	—	—	—	●	●	—	—	
	20 m	●	●	●	●	●	●	—	—	—	●	●	●	●	
	50 m	●	●	●	●	●	●	—	—	—	●	●	●	●	
	100 m	●	●	●	●	●	●	—	—	—	●	●	●	—	
	16 m (50 ft)	—	—	—	—	—	—	—	—	—	●	●	●	1"	
33 m (100 ft)	—	—	—	—	—	—	—	—	—	●	●	●	●		
Straight pipe	2 m	●	●	●	●	●	●	—	—	●	●	●	●	●	
Color	Translucent (color of material)														
Applicable fluid	Refer to the applicable fluid in page 511.														
Applicable fittings	Fluoropolymer Fittings LQ series: One-touch fittings KQ2, KQ2G, KQB2, Clean One-touch fittings KP, KP□ Insert fittings KF, KFG2, Miniature fittings M, MS (Hose nipple type)														
Max. operating pressure (MPa)	20°C or less	1.0	1.0	1.0	0.9	0.7	0.6	1.0	1.0	1.0	1.0	1.0	1.0	0.7	0.5
	100°C	0.45	0.64	0.43	0.33	0.27	0.24	0.59	0.92	0.62	0.73	0.62	0.43	0.26	0.19
	200°C	0.21	0.29	0.20	0.15	0.12	0.11	0.27	0.42	0.28	0.34	0.28	0.20	0.12	0.09
	260°C	0.09	0.12	0.08	0.06	0.05	0.05	0.11	0.17	0.12	0.14	0.12	0.08	0.05	0.04
Burst pressure (MPa at 20°C)	4.9	6.9	4.7	3.6	2.9	2.6	6.4	9.9	6.7	7.9	6.7	4.6	2.8	2.0	
Min. bending radius (mm)	Recommended radius	35	35	60	100	130	220	20	10	25	35	60	95	220	400
	Tube close bend radius	20	20	40	65	110	160	12	6	20	20	30	60	160	290
Operating temperature (fixed usage)	-65 to 260°C														
Material	Super PFA														

- Note 1) When using the product at a temperature other than those shown in the table above, use it at a maximum operating pressure or less that is calculated from the following formula.
 (Max. operating pressure) = 1/4 x (burst pressure drop coefficient) x (burst pressure at 20°C)
 Note 2) When using a fluid in liquid form, the surge pressure must be no more than the maximum operating pressure. A surge pressure higher than the maximum operating pressure can cause breakage of the fitting or bursting of the tubing. Furthermore, abnormal temperature rise caused by adiabatic compression may result in the tube bursting.
 Note 3) Do not use this product in a manner in which the tube is not fixed. Observe the lesser value of the maximum operating pressure between the tubing and fitting. A material change over a long duration or due to high-temperature may cause leakage. Perform periodic maintenance and replace with a new product immediately when abnormalities are detected. (Refer to "Maintenance" of the tubing precautions on page 514.)
 For other precautions, refer to "Fittings & Tubing Precautions" on pages 13 to 17. When using the fluoropolymer fittings, refer to the precautions on pages 445 and 446.
 Note 4) Minimum bending radius is measured as shown left as representative values. • Use a tube above the recommended minimum bending radius. • The tube may be bent if used under the recommended minimum bending radius. Therefore, refer to the tube close bend radius and make sure that the tube is bent or flattened. • Please note that the tube close bend radius is not warranted because of the value when 2R is measured by the method in the right figure if the tube is bent or flattened, etc. • The minimum bending radius shown above does not apply to the straight pipe (2 m).
 Note 5) As for other commercial items, there are some cases it is not able to connect due to tolerance of dimensions.
 Note 6) Fluid varies depending on the applicable fittings.



Burst pressure drop curve

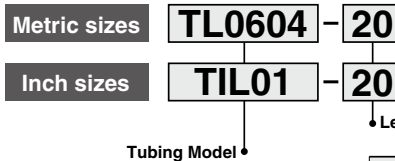


Eluting fluorine ion amount ^{Note 7)} (μg/g)

Type	Fluorine ion
Eluting amount	0.1 or less

A 15 g piece of fluorosin tubing is cut off, washed in DI water (pur water) and immersed in 15 mL of 25% methyl alcohol extract at room temperature for 24 hours. Then the extract is diluted with DI water (pur water) to be subjected to a quantitative analysis of fluorine ions.

How to Order



Symbol	Type	Length
10	Roll	10 m
20		20 m
50		50 m
100		100 m
2S	Straight	2 m

Eluting metal ion amount ^{Note 7)} (ng/cm²)

Type	Al	Fe	Ni	Na	Ca
Eluting amount	4.5	0.3	0.2	7.1	1.3

The interior of the fluorosin tubing is washed with super deionized water. Approximately 20 g of super high purity hydrofluoric acid (48%) is measured and injected into the tubing. The interior wall of the tubing is immersed at normal temperature for one week with both ends of the tubing plugged. Then the extract was diluted with super deionized water to be subjected to a quantitative analysis on Al, Fe, Ni, Na and Ca by the stripping method.

Length Applicable to inch size only

Symbol	Type	Length
16	Roll	16 m (50 ft)
33		33 m (100 ft)

Please refer to the "Series and Specifications" above, as the tubing length differs depending on each size.

Note 7) Figures shown in tables are representative values, not guaranteed values.