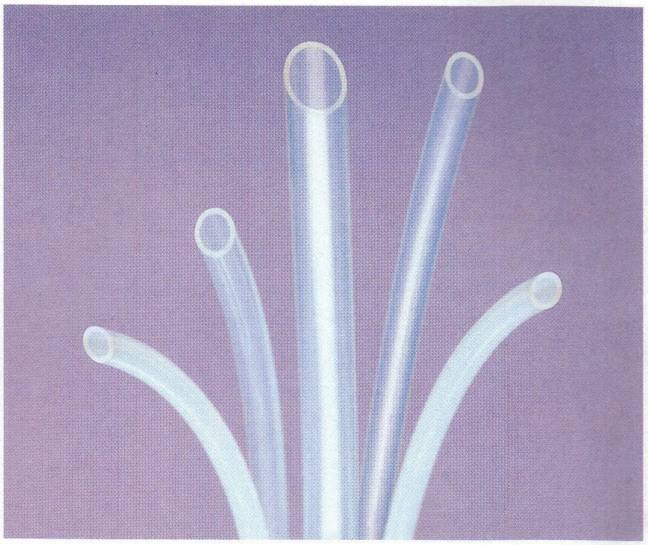
Naflon PTFE/PFA/FEP Tubes

Naflon tubes are pure fluoropolymer tubes, and contain no additives such as fillers or plasticizers. Each of the PTFE, PFA, and FEP tubes has exceptional chemical-resistant, heat-resistant, and weather-resistant features.



Features

- Exceptional anti-adhesive properties prevent most dirtying and scaling.
- Almost no loss of electrical properties under high temperature, high humidity, and high frequency conditions, making these tubes excellent electrical insulators.
- Exceptional weather-resistant properties prevent degradation after use outside for extended periods of time.
- PFA and FEP tubes are extremely transparent.

Specifications

- Maximum usage temperature: 260°C (PTFE/PTA), 200°C (FEP)
- Maximum usage pressure: Refer to page 13, "Maximum Usage Pressure".

Standards

- Meets UL (Underwriters Laboratories) Standard #224
  - PTFE only

Types

- PTFE tubes can be made in a variety of colours.
- ETFE tubes are available upon request.
- PTFE specially shaped tube are available upon request.
  (Please refer to page 5.)

PTFE Tube Room-Temperature Destructive Pressure and Minimum Bend Radius

Inner Diameter × Outer Diameter	Room Temperature Destructive Pressure (MPa) {kgf/cm²G}	Minimum Bend Radius [mm]
2 × 3	5.5 {56}	7
3 × 4	3.6 {37}	10
4 × 6	5.5 {56}	13
6 × 8	3.6 {37}	25
8 ×10	2.7 {28}	48
10×12	2.2 {22}	75
16×19	2.1 {21}	115
1.59 × 3.17	10.8 {110}	4
3.17 × 6.35	11.0 {112}	8
4.35 × 6.36	5.1 {52}	15
6.35 × 9.52	5.5 {56}	20
7.52 × 9.52	2.9 {30}	45
9.52 × 12.7	3.6 {37}	50
10.7 × 12.7	2.1 {21}	80
15.83 × 19.05	2.2 {22}	115

- The values given above are intended as representative values, not standard values.

PFA and FEP Tube Room-Temperature Destructive Pressure and Minimum Bend Radius

Inner Diameter × Outer Diameter	Room Temperature Destructive Pressure (MPa) {kgf/cm²G}	Minimum Bend Radius [mm]
2 × 4	9.8 {100}	15
4 × 6	6.9 {70}	20
6 × 8	4.4 {45}	40
8 ×10	3.4 {35}	65
10 × 12	2.9 {30}	110
20 × 23	2.3 {23}	260
3.17 × 6.35	12.4 {127}	15
4.35 × 6.35	5.6 {57}	20
6.35 × 9.52	6.2 {63}	30
7.52 × 9.52	3.6 {37}	60
9.52 × 12.7	4.3 {44}	60
10.7 × 12.7	2.7 {28}	130
15.88 × 19.05	2.7 {28}	160

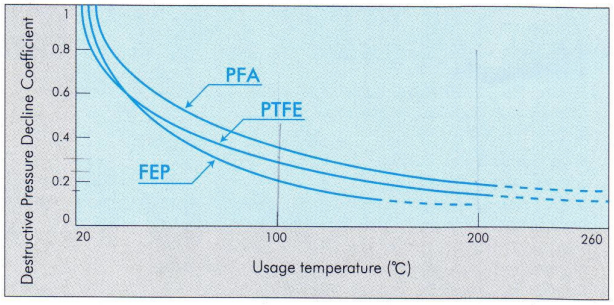
- The values given above are intended as representative values, not standard values.

Maximum Usage Pressure

Please only use our tubes at pressures below PU.T as determined by the following formula:

$P_{U.T} = S \times a \times P_{R.T}$

- $P_{R.T}$: Tube room temperature destructive pressure
- a: Destructive pressure decline coefficient
  - The destructive pressure decline coefficient by material can be obtained from the table to the right.
- S: Safety factor (1/3–1/5)
  - A safety factor of 1/3–1/5 is obtained according to the fluid type (gas or liquid), danger level and the existence of impact pressure levels.
- $P_{U.T}$: Maximum usage pressure at a given temperature.



Tube Size and Flow

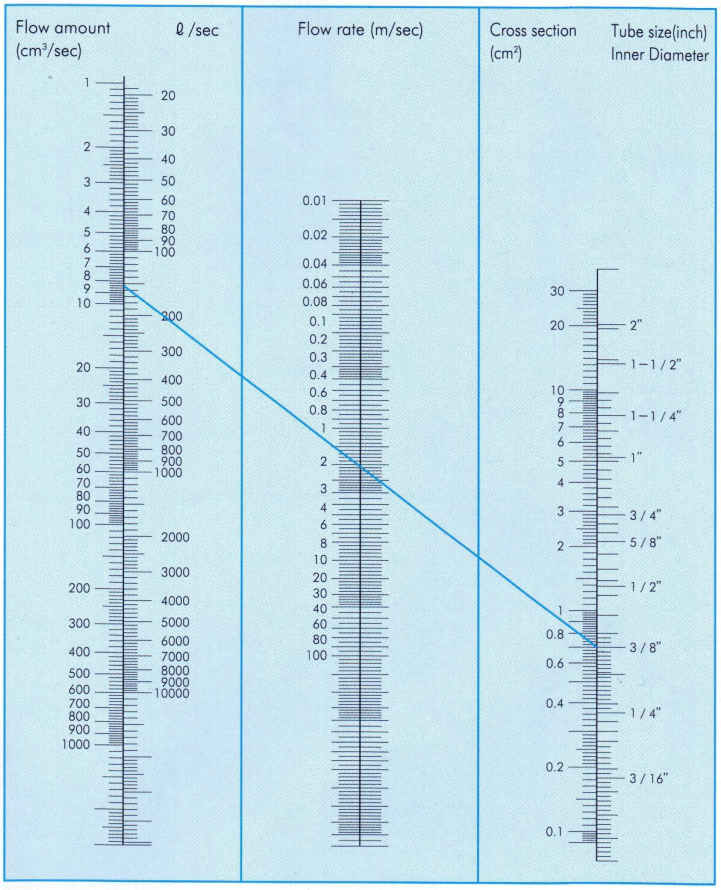
The relationship between tube inner diameter and fluid flow amount and rate is shown in the following equation:

$$\pi \left(\frac{\text{Tube inner diameter}}{2} \right)^2 [\text{cm}^2] = \frac{\text{Flow amount (cm}^3\text{/sec)}}{\text{Flow rate (cm/sec)}}$$

Presenting this relationship in a graph creates a nomograph, allowing one to see the flow permitted by a given tube size.

How to find the tube size required to allow a flow amount of 150 cm³ of pure water per second, at a flow rate of 2m.

In the leftmost column of the graph, find the point which indicates an outflow of 150 cm³/sec, and then in the center column find the point which indicates a flow rate of 2 m/sec. Extend a line which connects these two points to the rightmost column, and read the required tube size from where the line crosses that graph. For the flow described above, for example, the required tube has an interior diameter of 3/8".



⚠ CAUTION

These products are made of fluoropolymers. In order to ensure the original functions and properties are maintained, and to ensure safety in use, please observe the following precautions.

1. Tombo NAFLON tube should never be used for any purpose other than prescribed application.
2. Tombo NAFLON tube should never be recommended when both temperature and pressure are at the maximum listed at this catalogue.
3. Tombo NAFLON tube are not designed or manufactured for use in implantation in the human body fluids or tissues.
4. Vapour and fumes liberated during hot processing should be exhausted completely from the work area.
5. Waste disposal
   - Ensure conformity with all applicable disposal regulations.
   - Do not incinerate or dispose of in fire. Fluorine plastics will give off toxic gas.