Pressure Ratings for PFA, FEP, and ETFE Tubing- Tech Information

Date: 11-JULY-2023 Last Updated: 19-FEBRUARY-2026

Overview

Laboratory tubing made from fluoropolymers—PFA, FEP, and ETFE—is commonly used in chromatography systems due to its chemical resistance, flexibility, and inertness. Each material has distinct mechanical and temperature-related performance characteristics that affect its maximum recommended working pressure.

The tables summarize pressure data, dimensional tolerances, and important usage considerations for each tubing type.

PFA Tubing (Perfluoroalkoxy)

Material Characteristics

- Extruded from virgin PFA made exclusively by DuPont.
- No additives are incorporated except color particles in solid-colored tubing.
- Wall micro-porosity is lower than in PTFE tubing.

Pressure Ratings (bar/psi)

- 1/16" OD × 0.50 mm ID → 100 / 1450
- 1/16" OD × 0.75 mm ID → 75 / 1075
- 1/16" OD × 1.00 mm ID → 55 / 800
- 1/8" OD × 1/16" ID → 75 / 1075

Dimensional Tolerances

- Up to 2.0 mm: ± 0.05 mm
- 2.0 mm and above: ± 0.10 mm

FEP Tubing (Fluorinated Ethylene Propylene)

Material Characteristics

- Made from virgin FEP polymer.
- Preferred for ion chromatography due to its solvent compatibility.
- Do not use FEP above 80°C, as mechanical stability decreases.

Pressure Ratings (bar/psi)

- 1/16" OD × 0.25 mm ID → 115 / 1650

- 1/16" OD × 0.50 mm ID → 95 / 1375
- 1/16" OD × 0.75 mm ID → 75 / 1075
- 1/16" OD × 1.00 mm ID → 50 / 725
- 1/8" OD × 1/16" ID → 70 / 1000
- 1/4" OD × 4.35 mm ID → 45 / 650

Dimensional Tolerances

- Up to 2.0 mm: ± 0.05 mm
- 2.0 mm and above: ± 0.10 mm

ETFE Tubing (TEFZEL)

Material Characteristics

- Manufactured from virgin ETFE without additives.
- Suitable for low- and medium-pressure laboratory applications due to high burst-pressure strength.
- Not resistant to all solvents—certain organics may cause swelling and lower pressure stability.

Pressure Ratings (bar/psi)

- 1/32" OD × 0.25 mm ID → 150 / 2150
- 1/16" OD × 0.18 mm ID → 200 / 2900
- 1/16" OD × 0.25 mm ID → 185 / 2675
- 1/16" OD × 0.50 mm ID → 150 / 2175
- 1/16" OD × 0.75 mm ID → 115 / 1625
- 1/16" OD × 1.00 mm ID → 85 / 1225
- 1/8" OD × 1/16" ID → 110 / 1600

Dimensional Tolerances

- Up to 2.0 mm: ± 0.05 mm
- 2.0 mm and above: ± 0.10 mm

General Usage Notes

Important Considerations

- Pressure values listed are maximum permanent working pressures at room temperature (non-destructive solvents only).
- Changes in temperature or solvent compatibility can reduce mechanical stability.
- Tubing with tight bends or poor cutting practices can experience lower pressure tolerance.
- Fluoropolymer tubing may soften at elevated temperatures.

Note:

- *The data collected in column 'Pressure' show the recommended permanent maximum working pressure at room temperature for non-destructive solvents.*
- *Change of solvents and temperature may result in lowered mechanical stability.*

- *Keep in mind that tight bends of the tubing, use of wrong tools for cutting and bad connections may result in mechanical damage to the tube and by this reduce the pressure stability.*

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