FEP

FEP – Fluorinated Ethylene Propylene

OVERVIEW

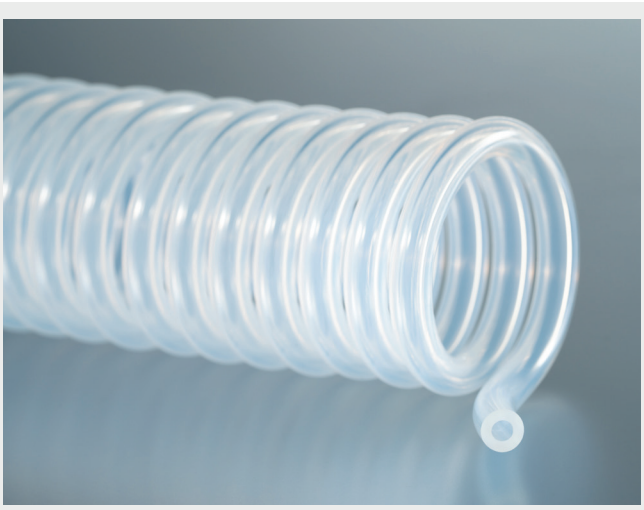
The development of PTFE (Polytetrafluoroethylene) was a significant breakthrough in polymer science. The special processing requirements of PTFE led researchers to develop a melt-processable version of PTFE resulting in FEP. This new resin was compatible with existing processing methods and equipment. Melt processability also allowed for long continuous extrusions of FEP in applications such as wire and cable.

While similar to PTFE in many of its properties, FEP has its own preferred attributes. It has a slightly higher coefficient of friction, lower continuous service temperature, and is more transparent than PTFE. FEP also offers lower gas and vapor permeability properties and excellent UV resistance.

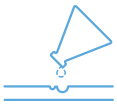
FEP's excellent attributes make it ideal for a diverse range of applications from environmental monitoring equipment to medical devices.

Fillers available with FEP extrusions:

- *Radio-opaque (Bismuth & Barium)*
- *Carbon*
- *UV inhibitors*
- *Pigments*
- *More available upon request*



FEP tubing also can be formed post-extrusion for a variety of industry applications and customized solutions.



CHEMICAL RESISTANCE

DIELECTRIC STRENGTH

GAS PERMEABILITY

APPLICATIONS

- *Catheter componentry*
- *Wire and cable insulation*
- *Analytical and fluid management tubing*
- *Protection for fiber optics*

PRODUCTS

- *Tubing*
- *Sub-Lite-Wall® tubing and heat shrink*
- *Custom profiles*
- *Heat shrink AS23053™/11*
- *Monofilament*
- *Drawn fiber*
- *Multi-Lumens*
- *Co-extrusions*
- *Convoluted tubing (AS 81914)*
- *Coated optical fiber*

KEY PROPERTIES

- *Excellent coefficient of friction*
- *Chemically resistant*
- *Gamma, ETO, e-beam and autoclave sterilizable*
- *Maximum working temperature 400 °F / 200 °C*
- *Lower gas/vapor permeability than PTFE*
- *Increased translucence as compared to PTFE*
- *Biocompatible: USP Class VI Certified*

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The information presented in this publication is believed to be accurate and is not intended to constitute a specification. Property characteristics are dramatically impacted by geometry and processing method, thus properties of extruded parts may vary. In some instances, data may not be available for publication and will be notated as "na" where applicable. These tables are meant to serve as a general guideline only. Users should evaluate the material to determine suitability for their own particular application.

PHYSICAL	ASTM	FEP
Density (g/cc)	D792	2.12 - 2.17
Water Absorption (%)	D570	≤ 0.01
Oxygen Index (%)	D2863	≥ 95

ELECTRICAL	ASTM	FEP
Volume Resistivity (Ω - cm)	D257	$< 1.0 \times 10^{18}$
Dielectric Constant 1 MHz	D150	2.03 - 2.10
Dielectric Strength (V/mil)	D149	500 - 2023

MECHANICAL	ASTM	FEP
Hardness, Shore D	D2240	55 - 56
Ultimate Tensile Strength (MPa)	D638	19.6 - 34.32
Elongation at Break (%)	D638	300 - 400
Modulus of Elasticity (GPa)	D638	343
Flexural Modulus (GPa)	D790	539 - 637
Coefficient of Friction	D1894	0.04 - 0.06

THERMAL	ASTM	FEP
Thermal Conductivity (W/m - K)	C177	0.250
Maximum Service Temp, Air (°C)		200
Melt Temp (°C)	D4591	260 - 275
Decomposition Temp (°C)	AIR	450
Coefficient of Thermal Expansion, linear 20° (µm/m-°C)	D696	83 - 112