



FP-301 Tubing

Flexible Polyolefin

Data Sheet

Product Description

3M™ FP-301 Tubing offers an outstanding balance of electrical, physical and chemical properties for a wide variety of industrial and military applications. Rated for 135°C continuous operation, all FP-301 Tubing is split resistant, mechanically tough, easily marked and resists cold flow.

FP-301 Tubing meets MIL-DTL-23053/5 Class 1 & 2 and AMS-3636, AMS-3637 requirements. It is UL Recognized and CSA Certified at 600 volts @ 125°C (UL File Nos. E-39100 and E-69751; CSANo. 38227).

FP-301 Tubing is rated for continuous operation from –55°C (–67°F) to 135°C (275°F) and withstands elevated temperatures to 300°C (572°F) for short periods. Minimum shrink temperature for all FP-301 Tubing is 100°C (212°F).

Typical Applications

FP-301 Tubing is typically used as a shrink-fit electrical insulation over cable splices and terminations. It is also used for lightweight wire harness covering, wire marking, wire bundling, component packaging and fire-resistant covering.

Shrink Ratio

FP-301 polyolefin tubing has a 2:1 shrink ratio. When freely recovered, the tubing will shrink to 50% of its as-supplied internal diameter. The recovered wall thickness of the tubing is proportional to the degree of recovery.

High expansion-ratio FP-301 Tubing meeting MIL-DTL-23053/5 Class 1 requirements for overexpansion is available subject to factory quotation.

Standard Colors

FP-301, Class 1 (flame retardant)—black, white, red, blue, green (1/16 "-1" green only) and yellow. FP-301, Class 2 (non-flame retardant)—clear. Other colors available subject to factory quotation.

Standard Packaging

Four-foot lengths, large spools (21" diameter) and small spools (8-1/2" diameter).

Ordering Information

Order FP-301 by product name, size equivalent to expanded inside diameter, package type and color. Always order the largest size that will shrink snugly over the item to be covered.

Example: FP-301, 1/4", 4 ft., white.

Standard Sizes and Dimensions

Ordering Size	Expanded ID Minimum		Recoverd ID Maximum		Recoverd Wall Thickness (Nominal)	
	in.	(mm)	in.	(mm)	in.	(mm)
3/64	.046	(1,17)	.023	(0,58)	.016	(0,41)
1/16	.063	(1,60)	.031	(0,79)	.017	(0,43)
3/32	.093	(2,36)	.046	(1,17)	.020	(0,51)
1/8	.125	(3,18)	.062	(1,57)	.020	(0,51)
3/16	.187	(4,75)	.093	(2,36)	.020	(0,51)
1/4	.250	(6,35)	.125	(3,18)	.025	(0,64)
3/8	.375	(9,53)	.187	(4,75)	.025	(0,64)
1/2	.500	(12,70)	.250	(6,35)	.025	(0,64)
3/4	.750	(19,05)	.375	(9,53)	.030	(0,76)
1	1.000	(25,40)	.500	(12,70)	.035	(0,89)
1-1/2	1.500	(38,10)	.750	(19,05)	.040	(1,02)
2	2.000	(50,80)	1.000	(25,40)	.045	(1,14)
3	3.000	(76,20)	1.500	(38,10)	.050	(1,27)
4	4.000	(101,60)	2.000	(50,80)	.055	(1,40)

Typical Properties

Applicable Specification

MIL-DTL-23053/5, Class 1, 2; AMS-3636, AMS-3637; UL File E-39100, E-69751; CSALR38227; ABS

Physical

Tensile Strength 2400 PSI
Ultimate Elongation 400%
Longitudinal Change ±5%
Secant Modulus (2%) 13,000 PSI
Specific Gravity 1.3 (Black)
.93 (Clear)
Heat Aging Elongation (336 hrs. @ 175°C) 175%
Heat Shock No dripping, (4 hrs. @ 250°C) cracking, passes mandrel wrap test
Low Temperature Flexibility (4 hrs. @ –55°C) No cracking
Flammability Self-extinguish meets UL 224
All-Tubing Flame Test (Class 1 only)

Electrical

Dielectric Strength 900 V/mil
Volume Resistivity 10¹⁵ ohm-cm

Chemical

Corrosive Effect Non-corrosive
Solvent Resistance Tensile Strength 1000 PSI
Dielectric Strength 400 V/mil
Water Absorption 0.2%
Fungus Resistance Non-nutrient

Technical information provided consists of typical product data and should not be used for specification purposes. Unless otherwise noted, all tests are performed at room temperature.