

3M™ Heat Shrink Tubing FP-301

Flexible Polyolefin

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Data Sheet

November 2008

Description

3M™ Heat Shrink Tubing FP-301 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 is rated for continuous operation at -55°C (-67°F) to 135°C (275°F), and is designed to withstand elevated temperatures to 300°C (572°F) for short periods. Minimum shrink temperature for all FP-301 tubing is 100°C (212°F).

Agency Approvals, Self Certifications, MIL Specs

Meets requirements of:

- SAE-AMS-DTL-23053/5, Class 1, Class 2 (Clear)
- AMS-3636, AMS-3637
- UL Recognized, File E-39100, at 600 volts maximum @ 125°C
- CSA Certified, CSA LR38227, at 600 volts maximum @ 125°C
- ABS

***Formerly MIL-I-23053/5 and MIL-DTL-23053/5**

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.



3M™ Heat Shrink Tubing FP-301, Flexible Polyolefin

Typical Properties

Data is not for specifications. Values are typical and should not be considered minimum or maximum. Properties measured at room temperature 73° F (~23° C) unless otherwise stated.

Physical

Property	Typical Value US units (metric)
Tensile Strength	2400 psi
Elongation (% at break)	400%
Longitudinal change	±5%
Specific Gravity	1.3 (Opaque) .93 (Clear)
Operating Temperature	-67° to 275°F (-55° to +135°C)
Shrink Temperature (minimum)	212°F (100°C)
Heat Aging (336 hrs. @ 175° C)	Elongation 175%
Heat shock (4 hrs. @ 250° C)	No dripping, flowing, cracking, passes mandrel wrap test
Low Temperature Flexibility (4 hrs @ -55° C)	No cracking
Scant Modules (2%)	13,000 psi
Flammability Self-extinguish, Meets UL 224 All-Tubing Flame Test (Except Clear)	Pass

Electrical

Property	Typical Value
Dielectric Strength	900 V/mil
Volume Resistivity	10 ¹⁵ ohm-cm

Chemical

Property	Typical Value
Corrosive Resistance	Non-corrosive
Solvent Resistance	Excellent
Water Absorption	0.2%
Fungus Resistance	Non-nutrient

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

3M™ Heat Shrink Tubing FP-301, Flexible Polyolefin

Standard Sizes and Dimensions

Ordering Size	Expanded I.D. (Minimum) in. (mm)	Recovered I.D. (Maximum) in. (mm)	Recovered Wall Thickness (Nominal) 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)

Shrink Ratio

3M™ Heat Shrink Tubing FP-301 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 is proportional to the degree of recovery.

Shelf Life & Storage

This product has a 10-year shelf life from date of manufacture when stored in a humidity controlled storage (50°F/10°C to 80°F/27°C and <75% relative humidity).

Availability

Standard Packaging:

Four-foot lengths, large spools (21" diameter) and small spools (8½" diameter).

Standard Colors:

FP-301 tubing, Class 1 (flame retardant) – black, white, red, blue, green (3/64" – 1" green only) and yellow.

FP-301 tubing, Class 2 (non-flame retardant) –clear.

*Other colors available are subject to factory quotation.

For availability, please contact your local distributor. Names and addresses are available from 3M.com/electrical [Where to Buy], or call 1-800-676-8381.

3M™ Heat Shrink Tubing FP-301, Flexible Polyolefin

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Important Notice

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

Warranty; Limited Remedy; Limited Liability:

This product will be free from defects in material and manufacture at the time of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. **Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.**

3M is a trademark of 3M Company.

