



# CP-221 Tubing

General Purpose Polyolefin

## Data Sheet

### Product Description

3M™ CP-221 Tubing, rated at 125°C (257°F), is mechanically tough and provides an economical combination of electrical insulation, flame retardance and chemical properties. In comparison with vinyl tubings, CP-221 Tubing offers higher continuous operating temperature, reduced longitudinal shrinkage, extended shelf-life and superior conformity characteristics.

CP-221 Tubing is rated for continuous operation from -55°C (-67°F) to 135°C (257°F) and withstands higher temperatures for short periods. It is available in standard sizes from 3/64-inch to 2-inch expanded diameter and is readily markable. Minimum shrink temperature for CP-221 Tubing is 121°C (250°F).

### Typical Applications

CP-221 Tubing is recommended as a general purpose heat-shrinkable tubing for new commercial applications as well as for upgrading existing applications where other types of tubings are now used.

### Shrink Ratio

CP-221 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 CP-221 Tubing is available subject to factory quotation.

### Standard Color

Black. Other colors available subject to factory quotation.

### Standard Packaging

Spools. Cut pieces available subject to factory quotation.

### Ordering Information

Order CP-221 Tubing in the size equivalent to the expanded inside diameter required. Always order the largest size that will shrink-fit snugly over the item to be covered. Example: CP-221, 3/16", black, spools.

### Standard Sizes and Dimensions

Ordering Size	Expanded I.D. (Minimum)		Recovered I.D. (Maximum)		Recovered Wall Thickness (Nominal)	
	in.	(mm)	in.	(mm)	in.	(mm)
3/64	.046	(1,19)	.023	(0,58)	.016	(0,41)
1/16	.063	(1,60)	.031	(0,79)	.017	(0,43)
3/32	.093	(2,38)	.046	(1,19)	.020	(0,51)
1/8	.125	(3,18)	.062	(1,57)	.020	(0,51)
3/16	.187	(4,76)	.093	(2,38)	.020	(0,51)
1/4	.250	(6,35)	.125	(3,18)	.025	(0,64)
3/8	.375	(9,53)	.187	(4,76)	.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	(12,20)	.035	(0,89)
1 1/2	1.500	(38,10)	.750	(19,05)	.040	(1,02)
2	2.000	(50,80)	1.000	(25,41)	.045	(1,14)

### Typical Properties

Physical		Electrical	
Tensile Strength	1800 PSI	Dielectric Strength	550 V/mil
Ultimate Elongation	400%	Volume Resistivity	10 <sup>14</sup> ohm-cm
Longitudinal Change	±5%		
Secant Modulus (2%)	30,000 PSI	Chemical	
Specific Gravity	1.1	Corrosion Resistance	Non-corrosive (Copper mirror)
Heat Aging (168 hrs. @ 175°C)	Elongation 150%	Solvent Resistance	
Heat Shock (4 hrs. @ 225°C)	No dripping, or cracking	Tensile Strength	1000 PSI
Low Temperature Flexibility (4 hrs. @ -55°C)	No cracking	Dielectric Strength	400 V/mil
		Water Absorption	0.2%

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.

**Limited Warranty** – 3M expressly warrants that for a period of ninety days from the date of purchase, 3M static control products will be free of defects in materials (parts) and workmanship (labor). Defects occurring during the warranty period will be repaired or products will be replaced at 3M's option and expense, if 3M receives notice during the warranty period. Defective products must be returned to 3M with proof of purchase date.

**Warranty Exclusions** – THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESS AND IMPLIED, INCLUDING FITNESS AND MERCHANTABILITY. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean, or repair products.

**Limit of Liability** – In no event will 3M or Seller be responsible or liable for special, incidental, or consequential losses or damages, whether based in tort or contract. Fulfillment of 3M's warranty obligations will be Customer's exclusive remedy and 3M's and Seller's limit of liability for any breach of warranty or otherwise.

**For your nearest distributor or to order, call 1-800-328-1368**

**3M Electrical Specialties Division**

6801 River Place Blvd.  
Austin, TX 78726-9000

© 3M March 1997