

## Mylar® Heat-Shrink Tube Class B (130 °C)

Cost effective Heat-Shrink Tube for general insulation and use in hermetic electric motors

- 30-35% shrink secures and insulates components, wires and connections
- Available with internal diameters from 1.6 mm to 210 mm
- Wall thicknesses from 0.050 mm to 0.500 mm
- Quick and easy 10 second shrink-on application
- Superb dielectric and cut through strength across operating temperatures
- Constructed from UL approved film
- Compatible with most refrigerant and oil combinations
- Multilayer DuPont™ Mylar® construction suitable for Class B applications and operating temperatures of 130°C to 155°C in continuous use
- Available in cut lengths to suit application



The Mylar® Heat-Shrink Tube prevents line failures in both hermetic motors and in general purpose use by securing and insulating electrical connections. Shrink-on fitting provides comprehensive mechanical and electrical protection, cutting line failures arising from vulnerable connections. This Heat-Shrink Tube maintains high dielectric strength and cut through resistance in the most demanding applications and at temperatures of up to 160°C in short term use. Consistent characteristics and ease of application give manufacturers a cost efficient means to boost the mechanical reliability of electrical systems. The Heat-Shrink Tube is particularly suited to use in hermetic systems due to refrigerant compatibility and low extractables.

### Technical Data

Electrical Properties of Base Film					
Properties of Base Film		Typical Value		Test Condition	Test Method
		16 HS film (16 µm)*	37.5 HS film (37 µm)		
Dielectric strength	[kV]		> 3.5		ASTM D 149

\*1 µm - 0.001 mm, or approximately 4 gauge

Physical Properties of Base Film						
		Typical Value		Test Condition	Test Method	
		16 HS film (16 µm)*	37.5 HS film (37 µm)			
Tensile Strength	MD	[Mpa]	160	190	Machine Direction (MD)	ASTM D 882
	TD		300	260	Transverse Direction (TD)	ASTM D 882
Yield		[m <sup>2</sup> /kg]	44.80	19.10		
Modulus	MD	[Mpa]	1,750	2,100	MD	ASTM D 882
	TD		4,900	3,600	TD	ASTM D 882
Elongation	MD	[%]	180	170	MD	ASTM D 882
	TD		90	110	TD	ASTM D 882
Water Vapour Transmission Rate		[g/m <sup>2</sup> /24 hrs]	40	15	38°C, 90% Relative Humidity	ASTM F 1249
Oxygen Permeability		[cm <sup>3</sup> /m <sup>2</sup> /24 hrs]	125	75	Before shrinkage	ASTM D 3985
			60-75	30-45	After shrinkage	ASTM D 3985

Optical Properties						
Haze		[%]	11.5	15		ASTM D1003, Gardner Hazemeter

**Item number:** IRSMYdddd/www/llll  
 Example: IRSMY0100/005/0500  
 IRSMY = Main number  
 0100 = 1.00 mm Diameter  
 005 = 0.05 mm Wall Thickness  
 0500 = 500 mm Length

## Nomex®/Mylar® Heat-Shrink Tube Class F (155 C)

Heat-Shrink Tube for general insulation in varnish impregnated electric motors

- 30% shrink comprehensively secures and insulates components, wires and connections
- Available with internal diameters from 2.5 mm to 8.0 mm
- Wall thicknesses from 0.240 mm
- Quick and easy 10 second shrink-on application
- Superb dielectric and cut through strength across operating temperatures
- Constructed from UL approved materials
- Five layer DuPont™ Mylar® and DuPont™ Nomex® construction is suitable for Class F applications and operating temperatures of 155 °C in continuous use
- Colour coding allows fast identification of sizes and components in motor windings
- Tight manufacturing tolerances and product resilience suits bulk process engineering environments



The Mylar®/Nomex® Heat-Shrink Tube prevents line failures in electric motors by securing and insulating electrical connections. Rapid shrink-on fitting provides comprehensive mechanical and electrical protection, both in production and in use. This Heat-Shrink Tube maintains high dielectric strength and cut through resistance in the most demanding Class F applications, withstanding short term exposure to temperatures of up to 160 °C. Consistent characteristics and ease of application give manufacturers a proven, cost efficient means to boost the mechanical reliability of varnish impregnated electric motors in particular.

### Technical Data

#### Outer Lamina: DuPont™ Mylar®

Electrical Properties				
Properties of Base Film		Typical Value	Test Condition	Test Method
		37.5 HS film (37 µm)		
Dielectric strength)	[kV]	> 3.5		ASTM D 149

Physical Properties				
Properties of Base Film		Typical Value	Test Condition	Test Method
		37.5 HS film (37 µm)		
Tensile Strength				
	MD	190	Machine Direction (MD)	ASTM D 882
	TD [Mpa]	260	Transverse Direction (TD)	ASTM D 882
Yield	[m <sup>2</sup> /kg]	19.10		
Modulus				
	MD	2,100	MD	ASTM D 882
	TD [Mpa]	3,600	TD	ASTM D 882
Elongation	[%]	170	MD	ASTM D 882
		110	TD	ASTM D 882
Water Vapour Transmission Rate	[g/m <sup>2</sup> /24 hrs]	15	38°C, 90% Relative Humidity	ASTM F 1249
Oxygen Permeability	[cm <sup>3</sup> /m <sup>2</sup> /24 hrs]	75	Before shrinkage	ASTM D 3985
		30-45	After shrinkage	ASTM D 3985

Optical Properties		
Properties of Base Film	Typical Value	Test Method
Melt Point	253-255°C (526-528 K)	ASTM D 3148-82

**Inner Lamina: DuPont™ Nomex® Grade 411**

<b>Electrical Properties</b>				
Property of Base Material	Material Thickness		Test Condition	Test Method
	0.130 mm	0.180 mm		
Dielectric Strength [kV/mm]	12	12	AC Rapid Rise	ASTM D 149
Dielectric Constant	1.3	1.3	1000 Hz	ASTM D 150
Dissipation Factor	0.005	0.005	1000 Hz	ASTM D 150

<b>Physical Properties</b>			
Property of Base Material	Typical Value	Test Condition	Test Method
<b>Tensile Strength</b>			
MD TD [N/cm]	17	28	ASTM D 828-60
	9	17	ASTM D 828-60
<b>Elongation</b>			
MD TD [%]	3.5	3.5	ASTM D 828-60
	4.8	5	ASTM D 828-60

**Item number:** IRSNMddd/ww/llll  
 Example: IRSNM0100/005/0500  
 IRSNM = Main number  
 0100 = 1.00 mm Diameter  
 005 = 0.05 mm Wall thickness  
 0500 = 500 mm Length

## Hostaphan® Heat-Shrink Tube (150 °C)

A specialised and cost-effective heat shrink tube with a low percentage of shrink for use in insulating thermal protectors

- 10% to 16% shrinkage at 150°C which secures and insulates the metal cores of components and batteries
- Excellent dielectric and cut through resistance
- Constructed from UL approved film under E348131
- Wall thickness starts from 0.050mm
- More features available with internal diameters of 2 to 200mm
- Close tolerance of internal diameter and reliable concentricity provide quick and reliable assembly
- Roundness and concentricity lead to automated application, supplied and cut to customer requirements



The Hostaphan® Heat-Shrink Tubing is the preferred material for the insulation of Thermal Protectors and Hermetic Systems. The material remains flexible after shrinking and provides an improved appearance as depicted in the photograph. The Tubing maintains high dielectric strength and cut through resistance, up to temperatures of 160°C.

### Technical Data

Physical Properties			
Tensile Strength MD	[kg/cm <sup>2</sup> ]	2600	ASTMD 882
Yield Strength (FS) MD	[kg/cm <sup>2</sup> ]	1050	ASTMD 882
Ultimate Elongation		MD 110%, TD 70%	ASTMD 882
Modulus MD	[kg/cm <sup>2</sup> ]	35000	ASTMD 882
Coefficient of friction A/B	static	0,40	AST D 1894
	kinetic	0,36	
Shrinkage Properties of Base Film			
		MD 10%, TD 10%	5 mins 105 °C
		MD 16%, TD 16%	5 mins 150 °C
		MD 20%, TD 20%	5 mins 190 °C
Density	[g/cm <sup>3</sup> ]	1,395	ASTM D-1005

MD = machine direction TD = transversal direction

**Item number:** IRSHLdddd/www/IIII  
 Example: IRSHL0100/005/0500  
 IRSHL = Main number  
 0100 = 1.00 mm Diameter  
 005 = 0.05 mm Wall thickness  
 0500 = 500 mm Length