

# Plamaron Heat-Shrink Endcaps

Heat-Shrink Endcaps with Lamina Grip-to-Fit technology to insulate connections in varnish impregnated electric motors



- 30% shrink comprehensively secures and insulates components, wires and connections
- 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



## Shrink-on security for electrical connections

Plamaron Heat-Shrink Endcaps prevent 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.

Plamaron Heat-Shrink Endcaps maintain 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.

## More features

- Available with internal diameters from 2.5mm to 65.0mm
- Wall thicknesses from 0.240mm
- Colour coding allows fast identification of sizes and components in motor windings
- Tight manufacturing tolerances and product resilience suits bulk process engineering environments
- Lamina Grip-to-Fit technology enhances product performance under overload conditions

## Lamina Grip-to-Fit technology

Lamina Grip-to-Fit technology uses a fast-shrinking heat-shrink layer to crimp a high performance DuPont™ Nomex® insulator around a vulnerable component or connection.

It radically increases the durability of varnished motor windings. The strength and resistive properties of the Lamina Grip-to-Fit crimp are designed to be enhanced by the subsequent absorption of varnish during the manufacturing process.

## Better by design



For more information or to order contact us:  
email: [sales@lamina.uk.com](mailto:sales@lamina.uk.com)  
tel: +44 (0) 1403 78 31 31

[www.lamina.uk.com](http://www.lamina.uk.com)

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TUBULAR TECHNOLOGY

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## Technical Data

Lamina Grip-to-Fit technology is based on two laminae: 3 layers of high performance heat-shrink polyester and 2 crimped, wicking layers of DuPont™ Nomex®

### Outer Lamina: DuPont™ Mylar®

#### Electrical Properties

Property of Base Film	Typical Value	Test Condition	Test Method
	37.5 HS film (37 µm)		
Dielectric strength (minimum kV)	3.5	-	ASTM D 149

#### Physical Properties

Further information on DuPont™ Mylar® HS grade heat shrinkable film available from DuPont™

Property of Base Film	Typical Value		Test Condition	Test Method
	37.5 HS film (37 µm)			
Tensile Strength (Mpa)				
Machine Direction (MD)	190		-	ASTM D 882
Transverse Direction (TD)	260		-	ASTM D 882
Yield (m <sup>2</sup> /kg)	19.10		-	
Modulus (Mpa)	MD	2,100	-	ASTM D 882
	TD	3,600	-	ASTM D 882
Elongation (%)	MD	170	-	ASTM D 882
	TD	110	-	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 (cc/m <sup>2</sup> /24 hrs)	75		Before shrinkage	ASTM D 3985
	30-45		After shrinkage	ASTM D 3985

#### Thermal Properties

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

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

#### Electrical Properties

Property of Base Material	Material Thickness		Test Condition	Test Method
	0.130mm	0.180mm		
Dielectric Strength (kV/mm)	12	12	AC Rapid Rise	ASTM D 149
Dielectric Constant	1.3	1.3	10 <sup>3</sup> Hz	ASTM D 150
Dissipation Factor	0.005	0.005	10 <sup>3</sup> Hz	ASTM D 150

#### Physical Properties

Property of Base Material	Typical Value	Test Condition	Test Method
Tensile Strength (N/cm)			
MD	17	28	ASTM D 828-60
TD	9	17	ASTM D 828-60
Elongation			
MD	3.5	3.5	ASTM D 828-60
TD	4.8	5	ASTM D 828-60