

# Plamon Non-Shrink Tube

Precision made electrical insulator and protective tube for Class H applications



## Key Benefits

- Available with internal diameters from 2.0mm to 200mm
- Sizes available include a variety of wall thicknesses, from 0.105mm to 0.8mm
- Tube may be supplied in white with a coloured line for identification purposes
- Constructed from UL recognised material
- DuPont Nomex® construction is suitable for Class H applications and temperatures up to 180°C



## Precision wound insulator provides heat and chemical resistance

Multilayered precision-wound protective tube made from grade 410 DuPont™ Nomex® calendered aramid paper. Plamon Non-Shrink Tube maintains its resistive properties, shape, cut through and tear-strength at high temperatures.

Plamon Non-Shrink Tube is suitable for protecting wiring and connection in electric motors, in aerospace and automotive applications. Consistent characteristics and ease of application give manufacturers a cost efficient means to boost the mechanical reliability of electrical systems. It is also used as bolt insulation in the oil, gas and chemical industries.



## More features

- DuPont™ Nomex® calendered construction maintains high dielectric strength (10mil retains 780V/mil at 96% humidity)
- Resists chemical and solvent attack
- Available to match metric or imperial bolt sizes
- Construction using 0.050mm, 0.080mm or 0.125mm aramid paper to suit the application at hand

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TUBULAR TECHNOLOGY

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## Technical Data

### Electrical Properties

Property of Base Material	50µm (2 mil)	75µm (3 mil)	125µm (5 mil)	Test Method
Dielectric strength (AC Rapid Rise) (V/mil)	430	550	680	ASTM D149*
Dielectric constant at 60Hz	1.6	1.6	2.4	ASTM D3426

\*Corresponds with IEC 243-1, 9.1m except for electrode set up of 50mm.

### Physical Properties

Property of Base Material	50µm (2 mil)	75µm (3 mil)	125µm (5 mil)	Test Method
Weight g/m <sup>2</sup>	41	63	116	ASTM D646
Density [g/cc]	0.72	0.08	0.13	-

### Mechanical Properties

Property of Base Material	50µm (2 mil)	75µm (3 mil)	125µm (5 mil)	Test Method
<b>Tensile Strength (Newtons/cm)</b>				
Along machine direction (MD)	39	65	137	ASTM D828
Across machine direction (TD)	18	32	66	
<b>Elongation Before Failure (%)</b>				
MD	9	11	15	ASTM D828
TD	6	8	12	
<b>Elmendorf Tear (N)</b>				
MD	0.8	1.2	3.4	TAPP1-414
TD	1.6	2.3	5.2	
<b>Initial Tear Strength (Newtons)</b>				
MD	11	16	33	TAPP1-414
TD	6	8	17	
<b>Shrinkage at 300°C (%)</b>				
MD	2.2	1.1	0.9	ASTM D1004
TD	0.1	0.0	0.0	

### Effects of humidity on performance of DuPont™ Nomex® Grade 410

Electrical Properties	Oven Dry	50%	96%	Test Method
<b>DuPont™ Nomex® grade 410 - 0.25mm</b>				
Dielectric Strength (AC Rapid Rise) kV/mm (V/mil)	33.5 (850)	32.1 (815)	30.7 (780)	ASTM D149
<b>Dielectric Constant</b>				
at 60Hz	2.5	2.7	3.2	ASTM D150
at 1KHz	2.3	2.6	3.1	
<b>Dissipation Factor</b>				
at 60Hz(x10 <sup>-3</sup> )	6	6	11	-
at 1KHz (x10 <sup>-3</sup> )	13	14	25	-
Volume Resistivity (ohm/cm)	6x10 <sup>16</sup>	2x10 <sup>16</sup>	2x10 <sup>14</sup>	ASTM D257
Physical Properties	Oven Dry	50%	65%	95%
<b>DuPont™ Nomex® grade 410 - 0.08mm</b>				
<b>Expansion (%)</b>				
Along machine direction (MD)	0	0.4	0.6	0.9
Across machine direction (TD)	0	0.5	0.8	1.6
Moisture Regain (%)	0	2.9	4.9	7.7
<b>DuPont™ Nomex® grade 410 - 0.08mm</b>				
<b>Expansion (%)</b>				
Along machine direction (MD)	0	0.4	0.6	1.1
Across machine direction (TD)	0	0.5	0.9	1.8
Moisture Regain (%)	0	3.5	5.1	8.4