

## Non-Shrink Polyester / Nomex Bolt Insulation (Kein Lagerartikel)



**Nomex®**



**Non-Shrink-Polyester**

These Multi-layered spiral wound Bolt Insulation sleeve is designed to fit over Standard Metric and Imperial sized flange bolts. The sleeves are constructed from UL recognized Nomex® and Non-Shrink Polyester materials. Consistent characteristics and ease of application give manufacturers a cost-efficient means to boost mechanical reliability. They offer unrivalled durability, toughness, protection and insulation and can be made in both Metric and Imperial diameter sizes.

Although designed for the pipe flange bolt insulation industry, these products find alternative uses in the insulation of retaining rods in transformers and other electrical apparatus.

Where for technical reasons the clearance between bolt and flange hole diameter is restricted, these products can also be supplied in a high shrink form to overcome assembly difficulties

### More features

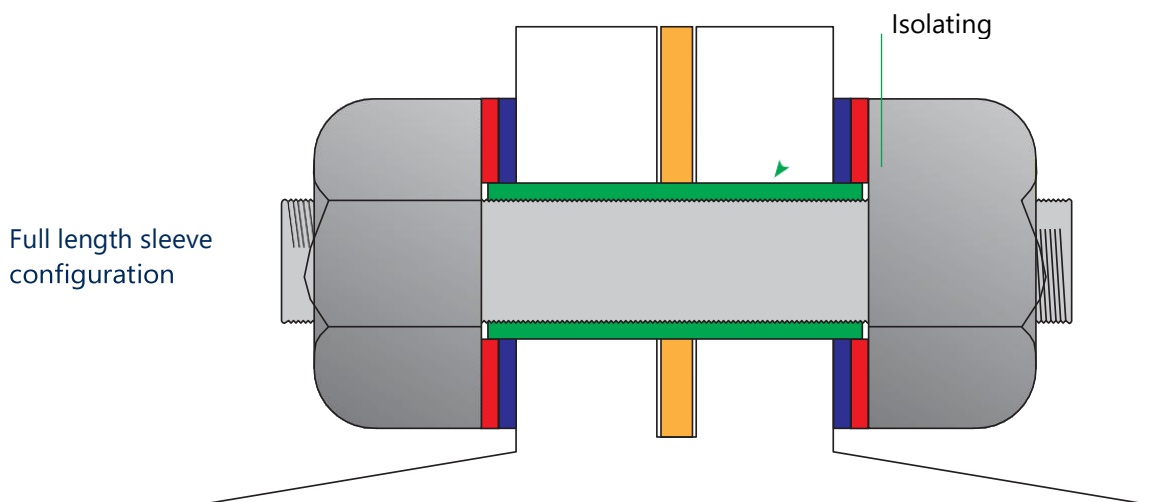
Sizes available in various wall thicknesses depending on either purchasing Imperial or Metric, supplied in 1 or 2 meter lengths.

- Imperial Wall thickness  $\frac{1}{32}$  inch (0.800mm)
- Metric wall thicknesses 0.5mm (0.019")

Standard Metric Bolt diameter sizes range from

4mm (M4) to 100mm (M100) all are made applying industry standard internal diameter clearances. A blue stripe is added to the metric bolt to prevent identity confusion.

Imperial diameter sizes range from  $\frac{1}{2}$ " to  $\frac{3}{4}$ " and all are made applying industry standard internal diameter clearances



## Technical Data

### Electrical Properties - Nomex® Bolt Insulation

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 - Nomex® Bolt Insulation

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 - Nomex® Bolt Insulation

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

### Electrical Properties - Non-Shrink Polyester Bolt Insulation

Property of Base Film	Typical Value	Test Condition	Test Method
Dielectric strength (v)	6400	25°C, 50Hz and 50mm electrode	ASTM D 149-64
Film thickness (mm)	0.0254	25°C, 7500v, 150°C 5000v	-
Surface Resistivity ohms per square	10 <sup>16</sup>	25°C, 30% relative humidity	ASTM D 257-78

### Physical Properties - Non-Shrink Polyester Bolt Insulation

Property of Base Film	Typical Value	Test Condition	Test Method
Tensile Mpa (Machine Direction)	200	25°C	ASTM D 882-80
Elongation % (MD)	130	25°C	ASTM D 882-80
Stress to produce 5% elongation Mpa (MD)	105	25°C	ASTM D 882-80
Moisture absorption	less than 8%	24hrs at 25°C immersion	ASTM D 570-63

### Thermal Properties - Non-Shrink Polyester Bolt Insulation

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

**Technical Data**

Wall thickness 0.5mm

Supplied in standard lengths of 1000mm and 2000mm

Bolt Diameter	Minimum Internal Tube Diameter (mm)	Maximum External Tube Diameter (mm)
8	8.25	9.51
10	10.25	11.51
12	12.25	13.51
14	14.25	15.51
16	16.25	17.51
18	18.25	19.51
20	20.25	21.51
22	22.25	23.51
24	24.25	25.51
26	26.25	27.51
27	27.25	28.51
30	30.50	31.76
33	33.50	34.76
36	36.50	37.76
39	39.50	40.76
42	42.50	43.76
45	45.50	46.76
48	48.75	50.01
52	52.75	54.21
56	56.75	58.21
60	60.75	62.21
64	64.75	66.21
68	68.75	70.21
72	72.75	74.21
76	76.75	78.21
80	80.75	82.21
84	84.75	86.21
88	88.75	90.21
92	92.75	94.21
96	96.75	98.21
100	100.75	102.21