



# FRANKLIN

*Composites for Today's Challenges*

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## Lamitex® XX Tubes

Lamitex® XX paper phenolic convolute wrapped tubes are a mechanical grade composite with good electrical properties in moderate humidity conditions. It is frequently used in transformer designs, as winding tubes in the metal foil industries and as carrier tubes for polishing brushes.

<u>Mechanical Properties</u>	<u>Standard</u>	<u>Test Specimen</u>	<u>Values</u>	
Flexural Strength	ISO 178	id>100 mm	130 MPa / 18,850 psi	*1
Compressive Strength, Axial	ISO 604		140 MPa / 20,300 psi	*1
Cohesion between layers	EN 61212-2 5.3	id<100 mm	160 MPa / 23,200 psi	*1

<u>Electrical Properties</u>				
Electric Strength in oil @ 90°C:				
Perpendicular to Laminations	IEC 243-1	3 mm wall thk	8.3 kV/mm - 210 Vpm	*2
Parallel to Laminations	IEC 243-1	≥3 mm wall thk	25 kV/25 mm - 25.4 kV/in	*2
Insulation resistance after immersion in water	IEC 167	id>8mm and or od>10mm	10 MΩ	*4
Permittivity 50 Hz	IEC 250		5.0	*3
Dissipation Factor 50 Hz	IEC 250		0.040	*3

<u>Physical and Thermal Properties</u>				
Temperature index @ 20,000 hrs (T.I)	IEC 20621	≥3 mm	120°C	
Density	IEC 1183-A	All	1.25 g/cm <sup>3</sup>	*1
Water Absorption	IEC 62-1		4.5 mg/cm <sup>2</sup>	*4

Standards: NEMA LI-1                      Grade XX  
Mil-I-24768                      / 11 Type PBG  
EN 61212-3-1:                      PF CP 23  
Din 7735                              Hgw 2065

Conditioning IEC 212:  
1: 24h @ 23°C & 50%RH  
2: 24h @ 23°C & 50%RH + 1hr in oil at 90°C  
3: 96h @ 105°C + 1hr @ 23°C & 20%RH  
4: 24h @ 50°C + 24hr in water at 23°C

Availability: Grade XX is also manufactured as laminated sheet,  
molded channel, angle, square and rectangular tubes and fabricated custom parts

The standard mm length(s) for inside diameters 3 - 8.4 mm is 1500, 8.5 -10 mm is 1350, IDs >10 to 100 mm is 1350, 1500, or 1650 and >100 - 1250 mm is 1220, 1350, or 1650 mm.

*All information and suggestions pertaining to the properties and uses of the materials described herein are based upon tests and data believed to be accurate; however, the final determination regarding the suitability of any material for such use is the sole responsibility of the user. No warranty is expressed or implied, including, without limitation, warrant of merchantability or fitness for a particular purpose. Under no circumstances shall Franklin Fibre - Lamitex Corp be liable for incidental or consequential loss or damage.*

**Composite Tubes • Bearings • Molded Shapes • Rotary Vanes • Fabricated Parts • Vulcanized Fibre • High Temp Insulation**

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