



FRANKLIN

Composites for Today's Challenges

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Lamitex® FR4 Tube

Lamitex® FR-4 epoxy tubes are reinforced with a woven glass fabric. They are primarily used for mechanical, electrical and electronic applications where extremely high mechanical strengths are required at room and moderate temperatures. Lamitex FR-4 meets or exceeds NEMA FR-4 and Mil-I-24768/27 specifications, has excellent resistance to chemicals and retains its' electrical properties in dry and high humidity environments.

<u>Mechanical Properties</u>	<u>Standard</u>	<u>Test Specimen</u>	<u>Conditioning</u>	
			<u>IEC 212</u>	<u>Values</u>
Flexural Strength	ISO 178	id>3.937 inches	1	50,763 psi
Compressive Strength, Axial	ISO 604		1	33,358 psi
Cohesion between layers	EN 61212-2	id<3.937 inches	1	58,015 psi
 <u>Electrical Properties</u>				
Electric Strength in oil @ 90C:				
Perpendicular to Laminations	IEC 243-1	.118 inch wall thk	2	254 Vpm
Parallel to Laminations	IEC 243-1	>.118 inch wall thk	2	50.8 kV/ inch
Insulation resistance after immersion in water	IEC 167	id>.315 inch and or od>.394 inchs	4	10,000 M ohm
Permittivity:				
50Hz	IEC 250		3	4.5
1 MHz	IEC 250		3	4.5
Dissipation Factor:				
50Hz	IEC 250		3	0.01
1 MHz	IEC 250		3	0.01
 <u>Physical and Thermal Properties</u>				
Thermal endurance index @ 20,000 hrs	IEC 216		-	150°C T.I.
Density	IEC 1183-A	All	1	1.8 g/cm ³
Water Absorption	IEC 62-1		4	0.3 mg/cm ²
Thermal Conductivity				1.2 x 10 ⁻⁴ Calories/Second/cm ² /(°C/cm)

- Conditioning:
- 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

The standard length(s) for IDs .118" to .591" is 48 inches and for IDs >.591" to 49.2" is 48 inches and 65 inches

All values are average test results from extensive testing of typical production material. No warranty is implied or guaranteed and testing is recommended for each application.

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

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