



Lamitex® FR4 Tube Technical Data

Lamitex FR-4 epoxy convolute wrapped tubes are reinforced with woven glass fabric. They are used for mechanical, electrical and electronic applications where extremely high mechanical strength at moderate temperatures is required. FR-4 meets NEMA FR4 self extinguishing requirements and has very good electrical properties in high humidity environments.

<u>Mechanical Properties</u>	<u>Test Method:</u>			<u>Conditioning</u>	
	<u>EN 61212-2</u>	<u>Standard</u>	<u>Test Specimen</u>	<u>IEC 212</u>	<u>Values</u>
Flexural Strength	4.1	ISO 178	id>100 mm	1	350 Mpa
Compressive Strength, Axial	4.2	ISO 604		1	230 MPa
Cohesion between layers	4.3	EN 61212-2	id<100 mm	1	400 MPa
<u>Electrical Properties</u>					
Electric Strength in oil @ 90C:					
Perpendicular to Laminations	5.1	IEC 243-1	3 mm wall thk	2	10.0 kV/mm
Parallel to Laminations	5.1	IEC 243-1	>3 mm wall thk id>8mm and or od>10mm	2	50 kV/25 mm
Insulation resistance after immersion in water	5.2	IEC 167		4	10,000 M ohm
Permittivity: 50Hz	5.3	IEC 250		3	4.5
1 MHz	5.3	IEC 250		3	4.5
Dissipation Factor: 50Hz	5.3	IEC 250		3	0.01
1 MHz	5.3	IEC 250		3	0.01
<u>Physical and Thermal Properties</u>					
Thermal endurance index @ 20,000 hrs	6.0	IEC 216		-	150°C T.I.
Density	7.2	IEC 1183-A	All	1	1.8 g/cm ³
Water Absorption	7.1	IEC 62-1		4	0.3 mg/cm ²

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
 5: 96h @ 105°C + 1hr in oil at 90°C

The standard length(s) for IDs 3 mm to 15 mm is 1220 mm and for IDs >15 mm to 1250 mm is 1220 mm and 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 Lamitex, LLC be liable for incidental or consequential loss or damage.

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