



Composites For Today's Challenges

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Lamitex® Grade LPF Sheet

Lamitex® Grade LPF Paper Phenolic Laminate sheet. Lamitex® LPF (Low Power Factor) is a NEMA XXX high voltage insulation material with electrical properties superior to those of Lamitex HDE. It is frequently specified for use in high voltage transformers and tap changers because of its excellent moisture absorption values, dimensional stability and high breakdown voltage parallel to its laminations.

Standards: NEMA LI- Grade XXX

MIL-I-24768

EN 60893 PF CP 202

DIN Hp 2064

Availability: Grade LPF is also manufactured as fabricated custom parts.

Physical Properties	Test Method		Test Specimen	Conditioning	
	EN 60893-2	Standard		IEC 212	Typical Values
Flexural Strength	5.1	ISO 178	≥1.6 mm thick	1	20,306 psi
Flexural Strength at Elevated Temperatures	5.1	ISO 178	≥1.6 mm thick	--	--
Modulus of Elasticity	5.2	ISO 178	≥1.6 mm thick	1	1.16 x 10 ⁶ psi
Compressive Strength	5.3	ISO 604	≥5.0 mm thick	1	43,512 psi
Izod Impact Strength Parallel	5.5.3	ISO 180/2A	≥5.0 mm thick	1	1.66 ft.lb-force/in ²
Shearing Strength Parallel	5.6	EN 60893-2	≥5.0 mm thick	1	5,076 psi
Tensile Strength	5.7	ISO 527	≥1.6 mm thick	1	15,954 psi

Electrical Properties

Electric Strength in oil @ 90°C Parallel to Laminations	6.1.2	IEC 243-1	3.0 mm thick	2	356 Vpm
	6.1.3	IEC 243-1	≥3.0 mm thick	2	81 Vpm
Permittivity: 50Hz 1MHz	6.2	IEC 250	≤3.0 mm thick	3	5.0
			≤3.0 mm thick		--
Dissipation Factor: 50Hz 1MHz	6.3	IEC 250	≤3.0 mm thick	3	0.02
			≤3.0 mm thick		--
Insulation Resistance after Immersion in Water 1MHz	6.2	IEC 167	All	4	100 MΩ
Comparative Tracking Index (CTI)	6.4	IEC 112	≥3.0 mm thick	1	100 V
Electrical Properties					
Temperature (Thermal Endurance) Index @ 20,000 hours	7.1	IEC 216	≥3.0 mm thick	-	120°C (248°F)
Flammability		IEC 707	5.0 mm thick	-	--
Density	8.1	IEC 1183-A	All	1	1.35 g/cm ³
Water Absorption	8.2	IEC 62-1	50x50x3 mm	4	0.99 % by wgt.

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

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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