



## Lamitex® FR-4 Sheet

Lamitex® FR-4 epoxy laminated sheet is reinforced with a woven glass fabric. It is 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>Physical Properties</u>	<u>Test Condition</u>	<u>ASTM</u>	<u>Values</u>
Thickness			.125"
Specific Gravity		D792	1.85
Rockwell Hardness (M Scale) .250" buildup		D785	98
Moisture Absorption (maximum) .062"	D 24/23	D570	0.10%
Flexural Strength (.062")	Condition A: Lengthwise Crosswise	D790	65,000 psi / 448.2 MPa 52,000 psi / 358.5 MPa
Flexural modulus (.062")	Condition A: Lengthwise Crosswise	D790	2,900 kpsi / 20.0 GPa 2,600 kpsi / 17.9 GPa
Tensile Strength (0.125")	Condition A: Lengthwise Crosswise	D638	40,000 psi / 275.8 MPa 32,000 psi / 220.6 MPa
Compressive Strength (.500" thick)	Condition A: Flatwise	D695	66,000 psi / 455.1 MPa
Izod Impact Strength (.500" thick)	E48/50: Lengthwise Crosswise	D256	7.9 ft-lb/in. / 4.22 J/cm 7.3 ft-lb/in. / 3.90 J/cm
Bond Strength (.500" thick)	Condition A	D229	2,300 lbs / 1,043.3 kg
Shear Strength (Perpendicular to Laminations)	Condition A	D732	21,500 psi / 148.2 MPa

## Thermal & Electrical Properties

Temperature Index	Electrical	UL Bulletin 746b	130° C
	Mechanical		140° C
Coefficient of Thermal Expansion (0.125")		x- axis/y-axis	10.0/13.0 in/in/°C/ x 10 <sup>-6</sup>
U.L.® 94 Flammability Rating			94-V0
Glass Transition (Tg) by DMA (.500" thick)			130° C
Dielectric Voltage (.062")	Condition A	D149	66.0 kV
	D-48/50	D149	65.0 kV
Relative Permittivity @ 1 MHz (.062")	D-24/23	D150	4.80
Dissipation Factor @ 1 MHz (.062")	D-24/23	D150	0.032
Arc Resistance	Condition A	D495	130 Seconds
Comparative Tracking Index (CTI)		D3638	150 Volts
Dielectric Strength (.062")	Condition A	D149	670 Vpm
	D 48/50	D149	650 Vpm
Standards: NEMA LI-1	Grade FR4	Availability: Grade FR4 is also manufactured as round tubes (convolute wound),	
Mil-I-24768	/ 27 Type GEEF	molded round tubes, rods, channel, angle, square and rectangular tubes	
EN 60893	EP GC 202	and fabricated custom parts.	
Din 7735	Hgw 23/2.2		

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.

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