Current Industrial Composites

Sheeting · Tubes · Rods · Fabricated Parts · Epoxy · Phenolic

MATERIAL DATA SHEET

Material: Grade FR-4 Glass/Epoxy Sheet

Description: FR-4 epoxy laminated sheet is reinforced with 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. 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.

Standards: NEMA LI-1 Grade G-10/FR-4

MIL-I-24768 / 27 Type GEE-F

Physical Properties	Test Condition		ASTM	Typical Values
For Thickness				.125"
Specific Gravity			D792	1.85
Rockwell Hardness (M Scale)			D785	115
Water Absorption (maximum)			D229	.1%
Flexural Strength	Condition A:	Lengthwise Crosswise	D229	55,000 psi 45,000 psi
Tensile Strength	Condition A:	Lengthwise Crosswise		50,000 psi 40,000 psi
Compressive Strength (.500" thick)	Condition A:	Flatwise Edgewise	D695	70,000 psi 25,000 psi
Izod Impact Strength (.500" thick)	E48/40:	Lengthwise Crosswise	D229	7.0 ft-lb/in.(notch) 5.5 ft-lb/in.(notch)
Bond Strength (.500" thick)	Condition A D 48/50		D229	1600 lbs. 1500 lbs.

Thermal & Electrical Properties	Test Condition	ASTM	Typical Values
Temperature Index Electrical / Mechanical			140° C
Volume resistivity			$5x10^6$ megohms-cm
Surface resistivity			$1x10^7$ megohms
Dielectric Breakdown Voltage (step x step)	Condition A / D 48/50	D229	45kV
Maximum Permittivity @ 1 MHz	Condition A / D 24/23	D229	5.5
Maximum Dissipation @ 1 MHz	Condition A / D 24/23 / D48 / 50	D229	0.045
Dielectric Strength (short time)	Condition A	D229	550 Vpm
Arc Resistance	Condition A	D 495	120Seconds