MANUFACTURERS OF
ELECTRICAL INSULATION MATERIALS

INSULATING COMPONENTS FOR POWER SYSTEMS EQUIPMENT

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MATERIAL DATA SHEET

Item: NEMA Grade G-10/FR4 Glass Epoxy Laminate

Description: NEMA Grade G-10/FR4 material is a continuous filament woven fiberglass sheet bonded with epoxy resin. The material has the ability to maintain excellent mechanical, electrical, and physical properties at elevated temperatures to 130°C

Standards:

NEMA LI-1	Grade FR4
IEC 60893	EP GC 202
MIL-I-24768	27 GEE - F

Availability:

		English Units	SI Units
Laminate Sheets:	Thickness:	.006" to 5.0"	0.15 mm to 127 mm
	Sheet Sizes:	36" x 48", 39" x 48"	91.4 cm x 122 cm, 99 cm x 122 cm
		36" x 72", 48" x 48"	91.4 cm x 182.2 cm, 122 cm x 122 cm
		48" x 96", 48" x 108"	122 cm x 243.8 cm, 122 cm x 274.3 cm

Convolute Tubing: Available in an infinite number of inner diameter/outer diameter combinations as per customer requirements.

Fabricated Parts: The Gund Company custom fabricates insulation materials to the exact specifications and drawings of our customers

Key Characteristics	Test Method	Units - English (SI)	Typical Values
Specific Gravity	--	lb./in.^{3} (g/cc)	0.067 (1.85)
Rockwell Hardness (.50")	--	M Scale	98
Moisture Absorption (.062")	ASTM D-570	%	0.10
Tensile Strength (.125") LW CW	ASTM D-638	psi (MPa)	40,000 (275) 32,000 (220)
Compressive Strength, Flatwise (.50")	ASTM D-695	psi (MPa)	66,000 (455)
Flexural Strength (.062") LW CW	ASTM D-790	psi (MPa)	65,000 (448) 52,000 (358)
Flexural Modulus (.062") LW CW	ASTM D-790	ksi (MPa)	2,900 (19,995) 2,600 (17,926)
Shear Strength, Perpendicular (.062")	ASTM D-732	psi (MPa)	21,500 (148)
IZOD Impact Strength LW CW	ASTM D-256	ft.-lbs./in. Notched	7.9 7.3
Bonding Strength (.50")	ASTM D-229	lb. (kg)	2,300 (1,043)
Breakdown Voltage (.062") Condition A D-48/50	ASTM D-149	kV	66 65
Dielectric Strength (.062") Condition A D-48/50	ASTM D-149	V/mil	800 750
Comparative Tracking Index (.125")	ASTM D-3638	--	300
Arc Resistance (.125")	ASTM D-495	Seconds	130

All of the information, suggestions, and recommendations pertaining to the properties and uses of the products herein are based upon tests and data believed to be accurate; however, the final determination regarding the suitability of any material described herein for the use contemplated, the manner of such use, and whether the use infringes any patents is the sole responsibility of the user. There is no warranty, expressed or implied, including, without limitation warranty of merchantability or fitness for a particular purpose. Under no circumstances shall we be liable for incidental or consequential loss or damage.