



THE GUND COMPANY

Manufacturers & fabricators of engineered material solutions

Item:	NEMA Grade G-10 Glass Epoxy Laminate		
Description:	NEMA Grade G-10 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. NEMA G-10 is a non-brominated, non-flame retardant grade of glass epoxy laminate. NEMA G-10 from The Gund Company is RoHs and REACH compliant to ensure reliability, safety, & consistency.		
Standards:	NEMA LI-1: Grade G-10	IEC 60893: EP GC 201 (sheet) IEC 61212: EPGC21 (tube)	MIL-I-24768/2 GEE
Availability:	Laminate Sheets:	Thickness:	English Units (in) SI Units (mm/cm)
			.006 to 5.0 0.15 to 127 (mm)
	Sheet Sizes:	30 x 48, 60 x 48 48 x 120	76 x 122, 122 x 152 122 x 305 (cm)
	Fabricated Parts:	The Gund Company custom fabricates insulation materials to the exact specifications and drawings of our customers.	
Convolute Tubing:	NEMA Grade G-10 is available in an infinite number of inner diameter/outer diameter combinations as per customer requirements		

Key Characteristics	Units - English (SI)	Typical Values
Standard Color	--	Light Green ¹
Density	lbs./in ³ (g/cc)	0.067 (1.85)

¹ Custom colors available upon request

Engineering Properties

Key Characteristics	Test Method	Units - English (SI)	Typical Values
Rockwell Hardness (0.062")	--	M Scale	98
Comparative Tracking Index (0.125")	ASTM D-3638	V	200
Arc Resistance (0.125")	ASTM D-495	Seconds	130
Dielectric Strength (⊥)	ASTM D-149	V/mil	485
Punch Shear Strength (0.125")	ASTM D-732	ksi (MPa)	25 (172)

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Material Data Sheet

NEMA Grade G-10

NEMA LI-1 G-10 Required Properties

Key Characteristics	Test Method	Units	NEMA Required	Typical Values
Breakdown Voltage (0.187") // Condition A Condition D-48/50	ASTM D-149	kV	45.0 min 40.0 min	50 47
Permittivity @ 1MHz (0.187") Condition A Condition D-24/30 Condition D-48/50	ASTM D-150	--	5.20 5.40 5.80	4.60 4.60 4.70
Dissipation Factor@ 1MHz (0.187") Condition A Condition D-24/30 Condition D-48/50	ASTM D-150	--	0.025 0.035 0.045	0.018 0.019 0.020
Flexural Strength (0.187") Condition E-48/50 LW CW	ASTM D-790	ksi (MPa)	55 (380) min 45 (311) min	80 (552) 70 (483)
IZOD Impact Strength (0.187") LW (Length-Wise) CW (Cross-Wise)	ASTM D-256	ft.-lb/in Notched	7.0 min 5.5 min	15 10
Bonding Strength (0.5") Condition A Condition E-48/50	ASTM D-229	Lb	2,000 min 1,600 min	2,300 2,200
Moisture Absorption (0.187") Condition D-24/30	ASTM D-570	%	0.15 max	0.02
Flammability	UL94	Class	HB	HB

IEC 60893 EPGC 201 Required properties

Flammability	Test Method	Units	IEC Required	Typical Values
Flexural Strength	ISO 178	MPa	340 min	483
IZOD Impact Strength // Parallel to limitations	ISO 180	kJ/m ²	34 min	45
Perpendicular Electric Strength (90°C in Oil, 1.5mm) ⊥	IEC 60243-1	kV/mm	13 min	15
Parallel Breakdown Voltage // (Stepped 90°C in Oil, 3mm)	IEC 60243-1	kV	35 min	>45
Insulation Resistance (After Water Immersion)	IEC 60167	MΩ	5 x 10 ⁴ min	>10 ⁷
Water Absorption (4mm)	ISO 62	mg	23 max	15