



# THE GUND COMPANY

Manufacturers & fabricators of engineered material solutions

Item:	Gund G-11H		
Description:	Gund G-11H Grade is a continuous filament woven fiberglass sheet bonded with high temperature epoxy resin. The material has the ability to maintain excellent mechanical, electrical, and physical properties at elevated temperatures to 180°C. Gund G-11H from The Gund Company is RoHS, REACH, EPA and TSCA compliant to ensure reliability, safety, and consistency.		
Standards:	NEMA LI-1 IM 60000: G-12	IEC 60893: EP GC 308 & 203 (sheet) IEC 61212: EPGC22 (tube)	
Availability:	Laminate Sheets:	Thickness:	English Units (in) SI Units (mm/cm)
		Standard Sheet Sizes:	.010 to 5.0 0.25 to 127 (mm)
	Fabricated Parts:	The Gund Company custom fabricates insulation materials to the exact specifications and drawings of our customers.	
		Convolute Tubing:	NEMA Grade G-11 (G-12) 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	--	Green <sup>2</sup>
Specific Gravity	lbs./in <sup>3</sup> (g/cc)	0.069 (1.9)

<sup>2</sup> Custom colors available upon request

## Engineering Properties

Key Characteristics	Test Method	Units - English (SI)	Typical Values
Tensile Strength (0.125") - LW	ASTM D-638	ksi (MPa)	41 (283)
Compressive Strength - <u>⊥</u> (0.500")	ASTM D-695	ksi (MPa)	70 (483)
Flexural Modulus (0.062") LW CW	ASTM D-790	ksi (GPa)	4,200 (29) 4,000 (27.6)
Coefficient of Thermal Expansion	--	" / °C x 10 <sup>-6</sup>	10
Comparative Tracking Index (0.125")	ASTM D-3638	V	180
Dielectric Strength (0.062") Condition A, Oil	ASTM D-149	V/mil	485

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Material Data Sheet

## Gund G-11H

### NEMA LI-1 IM 60000 G-12 Required Properties

Key Characteristics	Test Method	Units	NEMA Required	Typical Values
Breakdown Voltage (0.062") // Condition A Condition D-48/50	ASTM D-149	kV	45.0 min 40.0 min	>50 >50
Permittivity @ 1MHz (0.125") Condition A Condition D-24/30	ASTM D-150	--	5.20 5.40	4.7 4.8
Dissipation Factor@ 1MHz (0.187") Condition A Condition D-24/30	ASTM D-150	--	0.025 max 0.035 max	0.014 0.017
IZOD Impact Strength (0.125") LW Condition E-48/50 CW Condition E-48/50	ASTM D-256	ft.-lb/in Notched	7.0 min 5.5 min	11 10
Flexural Strength (0.062") LW Condition A CW Condition A LW Condition E-150-T150	ASTM D-790	ksi (MPa)	60.0 (414) min 50.0 (345) min 30.0 (207) min	80.0 (552) 70.0 (486) 40.0 (276)
Bonding Strength (0.500") Condition A Condition D-48/50	ASTM D-229	Lb (kg)	1,600 min 1,500 min	2,200 (998) 2,000 (907)
Moisture Absorption (0.062")	ASTM D-570	%	0.25 max	0.01
Flammability (0.250")	UL94	Class	HB	VO <sup>3</sup>

<sup>3</sup> G-11H (G-12) from The Gund Company is VO at 0.25" and greater thickness. Below this thickness is HB

### IEC 60893 EPGC 308 Required properties

Flammability	Test Method	Units	IEC Required	Typical Values
Flexural Strength LW Condition A LW Condition E-150/T-150	ISO 178	MPa	340 min 170 min	486 276
Charpy Impact Strength	ISO 180	kJ/m <sup>2</sup>	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 <sup>4</sup> min	>10 <sup>7</sup>
Thermal Endurance	IEC 60216	°C	180	180
Water Absorption (4mm)	ISO 62	mg	19 max	4.2