

## Material Data Sheet

- Item:** NEMA Grades G-10 & G-11 Glass Epoxy Laminates
- Description:** NEMA Grade G-10 & G-11 materials are both fine weave, continuous filament, fiberglass sheets bonded with epoxy resin. Both materials have the ability to maintain excellent mechanical, electrical, and physical properties at elevated temperatures, while G-11 performs better at temperatures in excess of 250 degrees Fahrenheit.
- Availability:**
- Laminate Sheets:** Thickness: .006" - 5.0"  
 Sheet Sizes: 36" x 48", 39" x 48", 36" x 72"  
 48" x 48", 48" x 96", 48" x 108"
- Convolute Tubing:** Available in an infinity of inner diameter / outer diameter combinations per customer requirements.  
 Maximum Standard Wall Thickness: .750"
- Fabricated Parts:** The Gund Company custom fabricates insulation materials to the exact specifications and drawings of our customers.

<b>Typical Properties:</b>	<b>G-10</b>	<b>G-11</b>
Density (lb./in <sup>3</sup> )	.069	.069
Water Absorption (%) 1/2"	0.03	0.05
Hardness (Rockwell M)	112	113
Tensile Strength (PSI)		
Lengthwise	49,000	48,500
Crosswise	41,500	43,500
Compressive Strength (PSI)		
Flatwise	65,000	77,500
Edgewise	25,000	-----
Flexural Strength (PSI)		
Lengthwise	71,500	70,000
Crosswise	67,000	62,000
Bonding Strength (PSI)	2,550	2,200
Heat Resistance		
Short Time	350 F <sup>o</sup> (175 C <sup>o</sup> )	400 F <sup>o</sup> (205 C <sup>o</sup> )
Continuous	250 F <sup>o</sup> (120 C <sup>o</sup> )	300 F <sup>o</sup> (150 C <sup>o</sup> )
Dielectric Strength (VPM, Short Time)		
Perp. to Laminations, 1/16"	810	710
Perp. to Laminations, 1/8"	550-570	530
Parallel to Lam., Cond. A.	50	43
Parallel to Lam., Cond. D., 48/50	60	45
Dissipation Factor (@ 10 <sup>6</sup> Cycles/Sec.)	0.012-0.20	0.015-0.017
Dielectric Constant (@ 10 <sup>6</sup> Cycles/Sec.)	4.8-5.0	4.5-5.2
Arc Resistance (Seconds)	100-120	120-127

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.