**The Gund Company, Inc.**
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# Material Data Sheet

**Item:** Woven Glass Fabric / Paper Base Phenolic Laminate, NEMA Grades CEM-1

**Description:** NEMA Grade CEM-1 is a composite material of woven glass fabric surfaces and paper core combined with epoxy resin. It is used primarily in the printed circuit board industry. CEM-1 provides easy punching and excellent electrical properties. CEM-1 also provides higher flexural strength than paper based grades.

**Availability:**

**Laminate Sheets:**
Thickness: .025" - .125"
Sheet Sizes: 48" x 72", 48" x 84"

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

| **Typical Properties:** | **CEM-1** |
|---|---|
| Water Absorption (%) .062" | 0.25 |
| Hardness (Rockwell M) | 102 |
| Tensile Strength (PSI) | |
| Lengthwise | 44,900 |
| Crosswise | 34,100 |
| Compressive Strength (PSI) | |
| Flatwise | 50,000 |
| Flexural Strength (KPSI) | |
| Lengthwise | 2,500 |
| Crosswise | 2,100 |
| Bonding Strength (.500")lb | 1,400 |
| Shear Strength (Perp.) (.062") (PSI) | 12,500 |
| Max Operating Temperature | 130 $C^{o}$ |
| Breakdown Voltage (KV) Condition –A | 60 |
| (.062") D-48/50) | 40 |
| Dissipation Factor (.062") Condition –D-24/23 | .030 |
| Dielectric Constant (@ $10^{6}$ Cycles/Sec.) | 4.8-5.0 |
| Surface Resistivity | $10^{7}$ |
| Arc Resistance (.125") D-495 (sec) | 121 |