MANUFACTURERS OF
ELECTRICAL INSULATION MATERIALS

INSULATING COMPONENTS FOR POWER SYSTEMS EQUIPMENT

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MATERIAL DATA SHEET

Item: NEMA Grade LE, Canvas Based Phenolic Laminate

Description: NEMA Grade LE is a canvas based phenolic laminate. Canvas with phenolic grades provide more mechanical strength than paper grades and have a finer surface with better machinability. These materials are used for gears, pinions, bearings, and many structural insulating applications.

Standards:

NEMA LI-1	Grade LE
IEC 60893	PFCC 305
MIL-I-24768	13 - FBE

Availability:

		English Units	SI Units
Laminate Sheets:	Thickness:	.008” to 4.0”	0.2 mm to 101.6 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
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
Standard Color	--	--	Natural / Black
Specific Gravity	--	M Scale	100
Moisture Absorption (.062”)	ASTM D-570	%	1.90
Tensile Strength (.125”) LW CW	ASTM D-638	psi (MPa)	13,000 (90) 9,000 (62)
Compressive Strength, Flatwise (.50”)	ASTM D-695	psi (MPa)	36,000 (248)
Flexural Strength LW CW	ASTM D-790	psi (MPa)	22,000 (152) 16,000 (110)
Shear Strength (.062”)	ASTM D-732	psi (MPa)	13,500 (93)
Bond Strength (.50”) LW	ASTM D-229	lb. (kg)	1,900 (709)
IZOD Impact Strength (.50”) LW CW	ASTM E-48/50	ft.-lb./in.	1.35 1.10
Arc Resistance (.125”)	ASTM D-495	Seconds	15
Maximum Operating Temperature	--	°C	125
Breakdown Voltage (.125”)	Condition A Condition D-48/50	kV	40 3
Flexural Modulus (.062”) LW CW	--	ksi	16,000 (11,032) 1,200 (8,274)
Coefficient of Thermal Expansion, X-axis Y-axis	--	“/”/°C x 10^6	18.0 19.0
Flammability Rating	UL 94	Class	HB
Dielectric Strength (.062”)	Condition A Condition D-48/50	kV/mil	50 5

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.