



THE GUND COMPANY

Manufacturers & fabricators of engineered material solutions

Item:	Phenolic Resin Cotton Cloth (NEMA Grades C, CE & LE)				
Description:	NEMA Grades C, CE & LE are cotton based phenolic laminates that provide more mechanical strength than paper grades. The finer surface allows for better machinability. These characteristics make phenolic resin cotton cloth materials ideal for mechanical applications such as gears, pinions, bearings, etc.				
Standards:	NEMA LI-1: Grades C, CE & LE IEC 60893: PFCC 201, 203, 305 MIL-I-24768: 16 - FBM, 14 - FBG, 13 - FBE				
Availability:	Laminate Sheets:		English Units (in)	SI Units (cm)	
		Sheet Size:	36 x 48, 39 x 48, 36 x 72 48 x 48, 48 x 96, 48 x 108	91.4 x 122, 99 x 122, 91.4 x 182.2 122 x 122, 122 x 243.8, 122 x 274.3	
		Thickness:	0.008 - 4.0	0.2 mm - 101.6 mm	
	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			
			NEMA C	NEMA CE	NEMA LE	
Standard Color	--	--	Natural	Natural	Natural/Black	
Specific Gravity	--	--	1.37	1.37	100	
Moisture Absorption	ASTM D-570	%	3.5	2.0	1.90	
Tensile Strength (0.125")	Lengthwise	ASTM D-638	ksi (MPa)	12 (83)	11 (75)	13 (90)
	Crosswise			9.7 (67)	9 (62)	9 (62)
Compressive Strength, Flatwise (0.5")	ASTM D-695	ksi (MPa)	34 (234)	34 (234)	36 (248)	
Flexural Strength	Lengthwise	ASTM D-695	ksi (MPa)	18 (124)	17.5 (121)	22 (152)
	Crosswise			17 (117)	15 (103)	16 (110)
Shear Strength	ASTM D-732	ksi (MPa)	14 (97)	14 (96)	13.5 (93)	
Bond Strength	Lengthwise	ASTM D-732	lb (kg)	2,500 (1,134)	1,700 (634)	1,900 (709)
	Crosswise			2,300 (1,043)		
IZOD Impact Strength (0.50")	Lengthwise	ASTM D-732	ft-lb/in	1.95	1.95	1.35
	Crosswise			1.75	1.75	1.10
Arc Resistance	ASTM D-495	Seconds	15	15	15	
Maximum Operating Temperature	--	°C	125	125	125	
Breakdown Voltage (0.062")	Condition A	kV	20	40	40	
	Condition D - 48/50		5	3	3	
Rockwell Hardness	--	M Scale	100	100	--	
Flammability Rating	UL 94	Class	HB	HB	HB	
Dielectric Strength (0.062")	Condition A	V/mil	400	550	50	
	Condition D - 48/50		150	300	5	