



MANUFACTURERS OF
ELECTRICAL INSULATION MATERIALS

INSULATING COMPONENTS FOR
POWER SYSTEMS EQUIPMENT

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MATERIAL DATA SHEET

Item: NEMA Grade X Paper Phenolic Laminate

Description: NEMA Grade X is a paper based laminate with a phenolic resin binder. Paper phenolic insulating materials provide low cost electrical and mechanical properties. They are widely used for switchboards, panel boards, insulating washers and intricate punched parts.

Standards: NEMA LI-1 Grade X
IEC 60893 PF CP 201
MIL-I-24768 / 12 - PBM

Availability:	Laminate Sheets:	Thickness:	English Units .008" to 4.0"	SI Units 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"	122 cm x 243.8 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
Moisture Absorption (.062")	ASTM D-570	%	1.80
Rockwell Hardness (.062")	--	M Scale	90
Tensile Strength (.125") LW CW	ASTM D-638	psi (MPa)	17,000 (117) 13,000 (89)
Compressive Strength, Flatwise (.50")	ASTM D-695	psi (MPa)	35,000 (241)
Flexural Strength (.062") LW CW	ASTM D-790	psi (MPa)	34,000 (234) 28,000 (193)
Shear Strength, Perpendicular (.062")	ASTM D-732	psi (MPa)	15,000 (103)
IZOD Impact Strength LW CW	ASTM D-256	ft.-lbs./in.	0.82 0.76
Breakdown Voltage (.062") Condition A	ASTM D-149	kV	40
Bond Strength (.500")	ASTM D-229	lb. (kg)	1,000 (454)
Maximum Operating Temperature	Multiple ASTM	°C	130
Flammability Rating	UL 94	--	HB
Arc Resistance (.125")	ASTM D-495	Seconds	90
Electric Strength	Condition A	V/mil	600

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