



MANUFACTURERS OF
ELECTRICAL INSULATION MATERIALS
 INSULATING COMPONENTS FOR
 POWER SYSTEMS EQUIPMENT

The Gund Company, Inc
 St. Louis, Missouri – USA
 TEL - 314.423.5200
 FAX - 314.423.9009

MATERIAL DATA SHEET

Item: NEMA Grade X Paper Phenolic Laminate

Description: NEMA Grades 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	SI Units
			.008" to 4.0"	0.2 mm – 101.6 mm
		Sheet Sizes:	36" x 48", 39" x 48"	91.4cm x 122cm, 99cm x 122cm
			36" x 72", 48" x 48"	91.4cm x 182.8, 122cm x 122cm
			48" x 96"	122cm x 243.8

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
Rockwell Hardness (.062")		M Scale	90
Moisture Absorption (.062")	ASTM D570	%	1.8
Tensile Strength (.125") LW CW	ASTM D638	psi (MPa)	17,000 (117) 13,000 (89)
Compressive Strength flatwise (.500")	ASTM D695	psi (MPa)	35,000 (241)
Flexural Strength (.062") (Lengthwise)	ASTM D790	psi (MPa)	34,000 (234)
(Crosswise)			28,000 (193)
Shear Strength (perpendicular) (.062")	ASTM D732	psi (MPa)	15,000 (103)
Impact Strength IZOD LW CW	ASTM D256	ft-lbs/in	.82 .76
Arc Resistance (.125")	ASTM D495	Sec	90
Flexural Modulus (.125") LW CW		ksi	1,900 1,400
Bond Strength (.500")	ASTM D229	Lb (kg)	1000 (454)
Maximum Operating Temperature	Multiple ASTM	°C	130
Coefficient of Thermal Expansion X-axis (.062") Y-axis		" / °C x 10 ⁻⁶	13.0 17.0

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.



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Flammability Rating –U.L.94		Class	HB
Breakdown Voltage Condition A (.062")	ASTM D149	kV	40
Electric Strength	Condition A (.062")	V/mil	600

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