MANUFACTURERS OF
ELECTRICAL INSULATION MATERIALS

INSULATING COMPONENTS FOR POWER SYSTEMS EQUIPMENT

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MATERIAL DATA SHEET

Item: NEMA Grade XXX Paper Phenolic Laminate

Description: NEMA Grade XXX Paper Phenolic Laminate provides good electrical properties such as high dielectric strength and arc resistance. Grade XXX laminate and tubing are used in switchgear and transformers as switchboards, panel boards, and insulating washers and bushings.

Standards:

NEMA LI-1	Grade XXX
IEC 60893	PF CP 201
MIL-I-24768	/ 10 - PBE

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”	122 cm x 243.8 cm

Convolute Tubing: Available in an infinite number of inner diameter/outer diameter combinations as per customer requirements.

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	%	1.30
Rockwell Hardness (.062”)	--	M Scale	101
Tensile Strength (.125”) LW CW	ASTM D-638	psi (MPa)	14,000 (96) 12,000 (82)
Compressive Strength, Flatwise (.50”)	ASTM D-695	psi (MPa)	30,000 (206)
Flexural Strength (.062”) LW CW	ASTM D-790	psi (MPa)	20,000 (137) 15,000 (103)
Shear Strength, Perpendicular (.062”)	ASTM D-732	psi (MPa)	12,800 (88)
IZOD Impact Strength LW CW	ASTM D-256	ft.-lbs./in. Notched	0.55 0.45
Dielectric Strength	ASTM D-149	V/mil	700
Breakdown Voltage (.062”) Condition A D-48/50	ASTM D-149	kV	40 10
Permittivity (.062”) Condition D-24/23	--	--	6.10
Bond Strength (.50”)	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	110

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.