



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:	GPO3 Glass Polyester Laminate		
Description:	GPO3 is a UL recognized product (QMFZ2.E101063) offering excellent track, arc, and flame resistance. It has good mechanical and thermal performance at an affordable price. The low smoke generation and flame spread characteristics make it a preferred choice for transit applications.		
Standards:	NEMA LI-1 Grade GPO-3 IEC 60893 UP GM 203		
Availability:	Laminate Sheets:	Thickness:	English Units 0.118" to 2.0" SI Units 3 mm to 50.8 mm
		Standard Sheet Sizes:	36" x 72" 48" x 96"
	Channels and Angles:	Four basic shapes (channels, hat-shaped channels, angles, & terminal strips) in various widths and thicknesses, please see the Angles & Channels selection chart	
	Fabricated Parts:	The Gund Company custom fabricates insulation materials to the exact specifications and drawings of our customers	

Key Characteristics	Units - English (SI)	Typical Values
Standard Color		Red ¹
Specific Gravity	lb/in ³ (g/cc)	0.065 (1.8)

¹Custom colors available upon request

NEMA LI-1 GPO-3 Required Properties

Key Characteristics	Test Method	Units	NEMA Required	Typical Values
Breakdown Voltage (0.062") Condition A Condition D-48/50	ASTM D-229	kV	40.0 min 15.0 min	45.0 25.0
Perpendicular Electric Strength (0.062"), in oil S/T	ASTM D-229	V/mil	300 min	550
Arc Resistance	ASTM D-229	sec	150 min	192
Flexural Strength (0.062") Condition E-48/50 LW CW	ASTM D-229	ksi (MPa)	18 min 18 min	23 20
IZOD Impact Strength LW CW	ASTM D-229	ft.-lb/in Notched	8.0 min 8.0 min	9.3 9.5
Tensile Strength	ASTM D-229	ksi	8.0 min	9.0
Compressive Strength, FW	ASTM D-229	ksi	30.0 min	34.0
Bonding Strength (0.500") Condition A Condition E-48/50	ASTM D-229	Lb	850 min 800 min	1840 1800
Moisture Absorption (0.125") Condition D24/30	ASTM D-570	%	0.60 max	0.25
Flammability Rating	UL94	Class	V-0	V-0
Tracking Resistance	D2303	min	300 min	1000

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.

IEC 60893-2 UPGM 203 Required Properties

Key Characteristics	Test Method	Units	IEC Required	Typical Values
Flexural Strength @ Room Temp @ 130°C	ISO 178	MPa	130 min 65 min	152 90
IZOD Impact Strength Parallel to Laminations	ISO 180	kJ/m ²	35 min	40
Perpendicular Electric Strength (90°C in Oil, 1.5mm)	IEC 60243-1	kV/mm	12 min	19
Parallel Breakdown Voltage (Stepped, 90°C in Oil, 3mm)	IEC 60243-1	kV	35 min	45
Insulation Resistance (after Water Immersion)	IEC 60167	MΩ	5 x 10 ² min	10 ³
Comparative Tracking Index (CTI)	IEC 60112	V	500	600
Flammability Rating	UL94	Class	V-0	V-0
Water Absorption (1.5mm)	--	mg	55 max	45

Additional Engineering Properties

Key Characteristics	Test Method	Units - English (SI)	Typical Values
Shear Strength (punch type, 0.062")	ASTM D732	ksi (MPa)	13.0 (90)
Thermal Class	UL 746B	°C	130
Glow/Hot Wire Flammability	IEC 60695-2-11	No visible flame after 30sec @ 960°C	
High Voltage Tracking Rate	UL746A	mm/min	0
High Voltage Arc Resistance	UL746A	seconds	300+
Volume Resistivity	ASTM D257	Ω– cm	10 ¹³ - 10 ¹⁴

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