

# Grade TSF 1312

## General-Purpose Laminate

- NEMA GPO-1
- Extremely Cost-Effective
- Outstanding Punchability
- Ideal For A Variety Of Applications
- UL Recognized
- Easily Fabricated
- Asbestos-Free

Grade TSF 1312 General-Purpose Laminate is the most cost-effective fiberglass-reinforced laminate sheet available from Glastic®. It is also a NEMA GPO-1 Laminate and UL Recognized.

Glastic Grade TSF 1312 is a UL Recognized material with a temperature index of 130° C Electrical and 130° C Mechanical. It is available in the brown, and in thicknesses of 1/32 of an inch through 1-1/4 inches.

Grade TSF 1312 exhibits outstanding punchability in thin thicknesses. It is widely used in motors and dry-type transformers, as well as a variety of other applications.



# Grade TSF 1312

## General-Purpose Laminate

### GLASTIC LAMINATES PROPERTY TABLE

#### TYPICAL AVERAGE VALUES<sup>1</sup>

GENERAL INFORMATION	UNIT	ASTM/UL NUMBER	GLASTIC GRADE TSF
Part Number			1312
Color, Standard			Brown
<b>MECHANICAL PROPERTIES</b>			
NEMA Grade	—	—	GPO-1/GPO-1P
Tensile Strength	Psi	D638	9,400
Tensile Modulus	Psi x 10 <sup>6</sup>	D638	1.7
Flexural Strength	Psi	D790	22,300
Flexural Strength - 130° C	Psi	D790	15,400
Compressive Strength	Psi	D695	38,900
Shear Strength	Psi	D732	13,400
IZOD Impact Strength (notched)	ft.lb./in.	D256	8.0
Water Absorption	% by wt.	D570	0.3
Specific Gravity	—	D792	1.78
<b>ELECTRICAL PROPERTIES</b>			
Electrical Strength - Perpendicular S/T in air	Vpm	D149	417
Electrical Strength - Perpendicular S/T in oil	Vpm	D149	493
Electrical Strength - Parallel S/S in oil	kV	D149	44
Arc Resistance	Sec.	D495	127
Permittivity, 60 Hz	—	D150	4.2
Dissipation Factor, 60 Hz	—	D150	0.0095
Permittivity, MHz	—	D150	4.2
Dissipation Factor, MHz	—	D150	4.2
Insulation Resistance	Ohm x 10 <sup>12</sup>	D257	2.4
<b>FLAME-RESISTANCE PROPERTIES</b>			
UL Subject 94	—	UL94	HB
Oxygen Index	%O <sub>2</sub>	D2863	21.8
<b>THERMAL PROPERTIES</b>			
Coefficient of Thermal Expansion	In/In/° C x 10 <sup>-5</sup>	D696	2.2
Thermal Conductivity	BTU/hr/ft <sup>2</sup> /In <sup>2</sup> F	C177	1.8
UL Temperature Index			
- Electrical	° C	UL 746B	130
- Mechanical	° C	UL 746B	130
UL Recognition File Number	—	—	E 23525

<sup>1</sup> Typical average values for testing 0.063 inch thick material. Values will vary somewhat from thickness to thickness within a material grade.



### GLASTIC CORPORATION

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