



## Grade TSF 1312

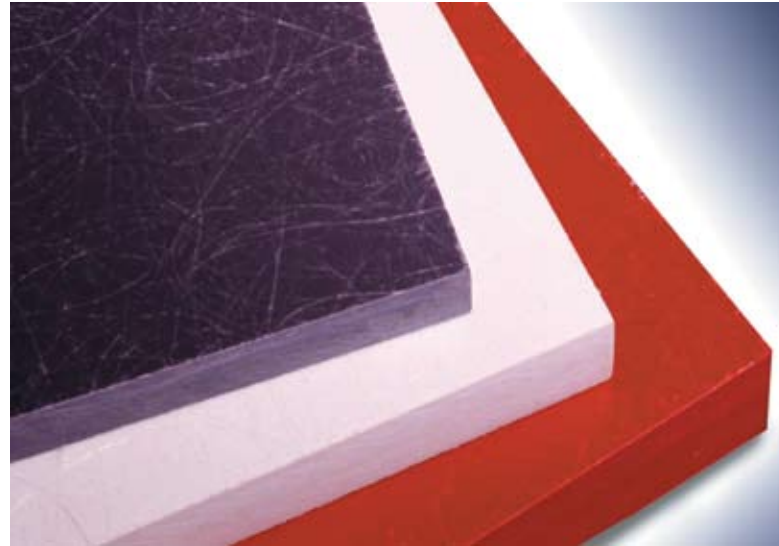
### General-Purpose Laminate

- 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 Röchling Glastic Composites. It is also a NEMA GPO-1 Laminate and UL Recognized.

Grade TSF 1312 is a Class F material with a UL temperature index of 130° C Electrical and 130° C Mechanical. It is available in the brown, and in thicknesses of 1/2 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.

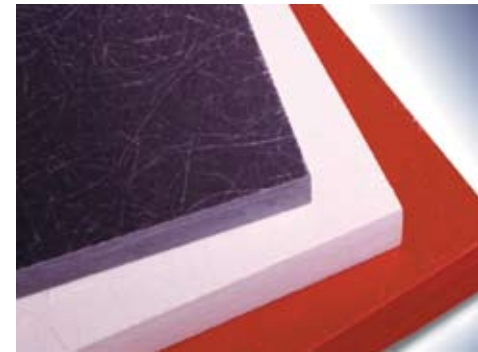




## Grade TSF 1312

	UNIT	ASTM/UL Number	Grade TSF
<b>General Information</b>			
Part Number			1312
Standard Color			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
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/°F	C177	1.8
UL Temperature Index			
– Electrical	°C	UL 746B	130
– Mechanical	°C	UL 746B	160
UL Recognition File Number	–	–	E23525

Typical average values for testing 0.063" thick material. Values will vary somewhat from thickness to thickness within a material grade.



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