



## Grade UTR Arc/Track & Flame Resistant Laminate

- 1,000 Minutes Track Resistance
- Electrically Insulating
- Highly Flame Resistant
- Low Smoke & Smoke Toxicity
- UL® Recognized
- NEMA Grade GPO-3

Grade UTR is a fiberglass reinforced thermoset polyester material. It is available in sheet form as well as a wide selection of channel, angle, and tube sizes. These materials are the industry standard for flame and arc/track resistant electrical insulation. In addition, the excellent combination of high strength, flame resistance, and low smoke generation has given it application in many other areas such as transit and marine where safe, yet economical materials are required. Additional information and samples can be obtained through Röchling Glastic Composites Customer Service or your local authorized distributor.



Low-Profile Switchgear Cabinet – Interphase and end barriers are fabricated from Grade UTR Laminate.

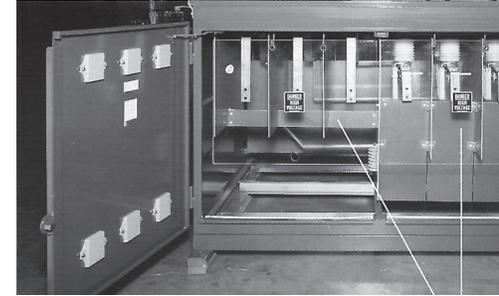
	UNIT	Procedure	Typical Value <sup>1</sup>
<b>General Information</b>			
Part Number	1491, 1493, 1494, 1495, 1497		
Standard Color	White, Red, Black		
NEMA Grade Li 1-1989	NEMA LI-1	GPO-3	
<b>Mechanical Properties</b>			
Tensile Strength	Psi	ASTM D638	8,000
Tensile Modulus	Psi X 10 <sup>6</sup>	ASTM D638	1.7
Flexural Strength	Psi	ASTM D790	22,100
Flexural Strength – 130°C	Psi	ASTM D790	13,100
Compressive Strength	Psi	ASTM D695	33,100
Shear Strength	Psi	ASTM D732	11,600
IZOD Impact Strength (notched)	ft. lb./in.	ASTM D256	8.9
Water Absorption	% by wt.	ASTM D570	0.4
Specific Gravity	–	ASTM D792	1.81
<b>Electrical Properties</b>			
Electrical Strength – Perpendicular S/T in air	V <sub>pm</sub>	ASTM D149	450
Electrical Strength – Perpendicular S/T in oil	V <sub>pm</sub>	ASTM D149	584
Electrical Strength – Parallel S/S in oil	kV	ASTM D149	47
Arc Resistance	Sec.	ASTM D495	180
Inclined Plane Track Resistance – 1/4" thick @ 2.5 kV		ASTM D2303	1,000
IEC Track Resistance (CTI) @ 3 mm thickness	V.	UL746A	>600
UL High Voltage Track Rate	In./Min.	UL746A	0
Permittivity, 60 Hz	–	ASTM D150	4.1
Dissipation Factor, 60 Hz	–	ASTM D150	0.013
Permittivity, MHz	–	ASTM D150	4.1
Dissipation Factor, MHz	–	ASTM D150	0.010
Insulation Resistance	Ohm x 10 <sup>12</sup>	ASTM D257	3.1





## Grade UTR

Flame & Smoke Characteristics			
UL Subject 94	0.094" & Thicker	UL94	V0
Oxygen Index	%O <sub>2</sub>	D2863	35
Flame Resistance		ASTM D229-	
Ignition Time	sec.	II	85
Burn Time	sec.	—	49
Tunnel Test		ASTM E 84/ UL 723	
Flame Spread			25
Smoke Density			115
Fuel Contributed			0
Cone Calorimeter		ASTM E 1354	
Time to Ignition	Sec.		109
Peak Rate of Heat Release	kW / m <sup>2</sup>		168.6
Heat Release Rate @ 300 sec.	kW / m <sup>2</sup>		77.2
Caloric Content	MJ / kg		7.13
Average Smoke Extinction Area	m <sup>2</sup> / kg		336.1
Radiant Panel Flame Spread		ASTM E 162	11
Specific Optical Density of Smoke		ASTM E662	
Ds @ 4.0 min. (Average)			Non-Flaming   Flaming
Dm(corr) (Average)			0.3   10.7
			3.1   128.4
Composition of Smoke			
Procedure reported in U.S. Testing Co. report #83413 of the Bureau of Ships; and referenced in MIL-M-14G	Material:		
	Hydrogen Chloride		0
	Aldehydes as HCHO		4
	Ammonia		0
	Carbon Monoxide	ppm	220
	Carbon Dioxide		3,275
	Oxides of Nitrogen as NO <sub>2</sub>		10
Cyanides of HCN		0	
Thermal Properties			
Coefficient of Thermal Expansion	in/in/°C X 10 <sup>-5</sup>	ASTM D696	2
Thermal Conductivity	BTU/HR/Ft <sup>2</sup> /In/°F	ASTM C177	1.9
UL Temperature Index			
– Electrical	°C	UL 746B	130
– Mechanical	°C	UL 746B	160
UL Recognition File Number	—	—	E81928



†Typical average values for 0.063" thick laminate. Properties vary with material thickness and form.

### Röchling Glastic Composites

4321 Glenridge Road  
Cleveland, OH 44121 USA

Tel: 216-486-0100

Fax: 216-486-1091

www.glastic.com

All of the information, suggestions, and recommendations pertaining to the properties and uses of the Röchling Glastic Composites products described 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, EXPRESS 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.

Glastic® is a registered trademark of Röchling Glastic Composites. UL® is a registered trademark of Underwriters Laboratories, Inc.

©2013 Röchling Glastic Composites. All Rights Reserved. Printed in USA.