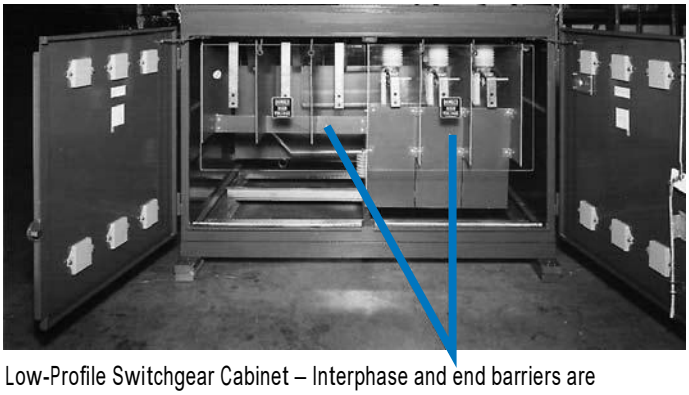
RÖCHLING
Glastic Composites

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 [1]
General Information			
Part Number			1491, 1494, 1497
Standard Color			White, Red, Black
NEMA Grade		NEMA LI-1	GPO-3
Mechanical Properties			
Tensile Strength	Psi	ASTM D638	7,800
Tensile Modulus	Psi X 10^6	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
Electrical Properties			
Electrical Strength – Perpendicular S/T in air	Vpm	ASTM D149	450
Electrical Strength – Perpendicular S/T in oil	Vpm	ASTM D149	584
Electrical Strength – Parallel S/S in oil	kV	ASTM D149	47
Arc Resistance	Sec.	ASTM D495	180
Inclined Plane Track Resistance – ⅛" thick			1,000
IEC Track Resistance (CTI)	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	4.1
Permittivity, MHz	–	ASTM D150	0.013
Dissipation Factor, MHz	–	ASTM D150	0.010
Insulation Resistance	Ohm x 10^{12}	ASTM D257	3.1

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Flame & Smoke Characteristics				
UL Subject 94	0.94" & Thicker Less than 0.93"	UL94	VO	
Oxygen Index	$\%O_2$	D2863	39	
Flame Resistance Ignition Time Burn Time	 Min. Min.	 – –	 85 49	
Tunnel Test Flame Spread Smoke Density Fuel Contributed		ASTM E 84/UL 723	 25 115 0	
Cone Calorimeter Time to Ignition Peak Rate of Heat Release Heat Release Rate @ 300 sec. Caloric Conent Average Smoke Extinction Area	 Sec. kW / m^2 kW / m^2 MJ / kg m^2 / kg	 ASTM E 1354 	 109 168.6 77.2 7.13 336.1	
Radiant Panel Flame Spread		ASTM E 162	11	
Specific Optical Density of Smoke Ds @ 4.0 min.(Average) Dm(corr) (Average)		ASTM E662	Non-Flaming 0.3 3.1	Flaming 10.7 128.4
Compostion of Smoke				
Procedure reported in U.S. Testing Co. report #83413 of the Bureau of Ships; and referenced in MIL-M-14G	Matieral: Hydrogen Chloride Aldehydes as HCHO Ammonia Carbon Monoxide Carbon Dioxide Oxides of Nitrogen as NO_2 Cyanides of HCN	ppm	 0 4 0 220 3,275 10 0	
Thermal Properties				
Coefficient of Thermal Expansion	$In/In/^{\circ}C \times 10^{-5}$	ASTM D696	2	
Thermal Conductivity	$BTU/HR/Ft^2/In/^{\circ}F$	ASTM C177	1.9	

[1]Typical average values for 0.063" thick laminate. Properites vary with material thickness and form.

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