Rogers Corporation RT/duroid® 5880 Glass Microfiber Reinforced PTFE High Frequency Laminate

Category : Polymer , Thermoplastic , Fluoropolymer , PTFE , Polytetrafluoroethylene (PTFE), Glass Filled, Molded

Material Notes:

RT/duroid® 5870 and 5880 glass microfiber reinforced PTFE composites are designed for exacting stripline and microstrip circuit applications. Glass reinforcing microfibers are randomly oriented to maximize benefits of fiber reinforcement in the directions most valuable to circuit producers and in the final circuit applications.The dielectric constant of RT/duroid laminates is uniform from panel to panel and is constant over a wide frequency range. Its low dissipation factor extends the usefulness of RT/duroid 5870 and 5880 laminates to Ku-band and above.RT/duroid 5870 and 5880 laminates are easily cut, sheared and machined to shape. They are resistant to all solvents and reagents, hot or cold, normally used in etching printed circuits or in plating edges and holes.Available with a range of copper cladding options.Features:Lowest electrical loss for reinforced PTFE materialLow moisture absorptionIsotropicUniform electrical properties over frequencyExcellent chemical resistanceLead free process compatibleTypical Applications:Commercial Airline TelephonesMicrostrip and Stripline CircuitsMillimeter Wave ApplicationsMilitary Radar SystemsMissile Guidance SystemsPoint to Point Digital Radio AntennasInformation provided by Rogers Corporation.

Order this product through the following link:
http://www.lookpolymers.com/polymer_Rogers-Corporation-RTduroid-5880-Glass-Microfiber-Reinforced-PTFE-High-Frequency-Laminate.php

Physical Properties	Metric	English	Comments
Density	2.20 g/cc	0.0795 lb/in³	ASTM D792
Moisture Absorption at Equilibrium	0.020 % @Thickness 1.57 mm	0.020 % @Thickness 0.0620 in	D48/50; ASTM D570
Thickness	127 - 3180 microns	5.00 - 125 mil	Range of Thicknesses Available
Deformation	1.0 % @Pressure 14.0 MPa, Temperature 150 °C	1.0 % @Pressure 2030 psi, Temperature 302 °F	Z direction; 24 hrs; ASTM D621

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	18.0 MPa @Temperature 100 °C	2610 psi @Temperature 212 °F	Y direction, Condition A; ASTM D638
	20.0 MPa @Temperature 100 °C	2900 psi @Temperature 212 °F	X direction, Condition A; ASTM D638
	27.0 MPa @Temperature 23.0 °C	3920 psi @Temperature 73.4 °F	Y direction, Condition A; ASTM D638
	29.0 MPa @Temperature 23.0 °C	4210 psi @Temperature 73.4 °F	X direction, Condition A; ASTM D638

Mechanical Properties	Metric	English	Comments
Elongation at Break	4.9 % @Temperature 23.0 °C	4.9 % @Temperature 73.4 °F	Y direction, Condition A; ASTM D638
	5.8 % @Temperature 100 °C	5.8 % @Temperature 212 °F	Y direction, Condition A; ASTM D638
	6.0 % @Temperature 23.0 °C	6.0 % @Temperature 73.4 °F	X direction, Condition A; ASTM D638
	7.2 % @Temperature 100 °C	7.2 % @Temperature 212 °F	X direction, Condition A; ASTM D638
Tensile Modulus	0.379 GPa @Temperature 100 °C	55.0 ksi @Temperature 212 °F	Y direction; ASTM D638
	0.448 GPa @Temperature 100 °C	65.0 ksi @Temperature 212 °F	X direction; ASTM D638
	0.862 GPa @Temperature 23.0 °C	125 ksi @Temperature 73.4 °F	Y direction; ASTM D638
	1.08 GPa @Temperature 23.0 °C	156 ksi @Temperature 73.4 °F	X direction; ASTM D638
Compressive Strength	21.0 MPa @Strain 7.80 %, Temperature 100 °C	3050 psi @Strain 7.80 %, Temperature 212 °F	Y direction, Condition A; ASTM D695
	22.0 MPa @Strain 8.40 %, Temperature 100 °C	3190 psi @Strain 8.40 %, Temperature 212 °F	X direction, Condition A; ASTM D695
	27.0 MPa @Strain 8.50 %, Temperature 23.0 °C	3920 psi @Strain 8.50 %, Temperature 73.4 °F	X direction, Condition A; ASTM D695
	29.0 MPa @Strain 7.70 %, Temperature 23.0 °C	4210 psi @Strain 7.70 %, Temperature 73.4 °F	Y direction, Condition A; ASTM D695
	43.0 MPa @Strain 17.6 %, Temperature 100 °C	6240 psi @Strain 17.6 %, Temperature 212 °F	Z direction, Condition A; ASTM D695
	52.0 MPa @Strain 12.5 %, Temperature 23.0 °C	7540 psi @Strain 12.5 %, Temperature 73.4 °F	Z direction, Condition A; ASTM D695

Mechanical Properties	Metric	English	Comments
Compressive Modulus	0.500 GPa	72.5 ksi	X direction, Condition A; ASTM D695
	@Temperature 100 °C	@Temperature 212 °F	
	0.500 GPa	72.5 ksi	Y direction, Condition A; ASTM D695
	@Temperature 100 °C	@Temperature 212 °F	
	0.670 GPa	97.2 ksi	Z direction, Condition A; ASTM D695
	@Temperature 100 °C	@Temperature 212 °F	
	0.710 GPa	103 ksi	X direction, Condition A; ASTM D695
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	0.710 GPa	103 ksi	Y direction, Condition A; ASTM D695
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	0.940 GPa	136 ksi	Z direction, Condition A; ASTM D695
	@Temperature 23.0 °C	@Temperature 73.4 °F	
Peel Strength	5.47 kN/m	31.2 pli	1 oz EDC foil; after solder float; IPC-TM-650 2.4.8

Thermal Properties	Metric	English	Comments
CTE, linear	31.0 µm/m-°C	17.2 µin/in-°F	X-Direction; IPC-TM-650 2.4.41
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
	48.0 µm/m-°C	26.7 µin/in-°F	Y-Direction; IPC-TM-650 2.4.41
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
	237 µm/m-°C	132 µin/in-°F	Z-Direction; IPC-TM-650 2.4.41
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
Specific Heat Capacity	0.960 J/g-°C	0.229 BTU/lb-°F	calculated
Thermal Conductivity	0.200 W/m-K	1.39 BTU-in/hr-ft²-°F	Z direction; ASTM C518
	@Temperature 80.0 °C	@Temperature 176 °F	
Deflection Temperature at 1.8 MPa (264 psi)	>= 260 °C	>= 500 °F	X, Y direction; ASTM D648
Decomposition Temperature	500 °C	932 °F	TGA; ASTM D3850
Flammability, UL94	V-0	V-0	

Electrical Properties	Metric	English	Comments

Electrical Properties	Metric	English	Comments
Volume Resistivity	2.00e+13 ohm-cm	2.00e+13 ohm-cm	Z direction; C96/35/90; ASTM D257
Surface Resistance	3.00e+13 ohm	3.00e+13 ohm	Z direction; C96/35/90; ASTM D257
Dielectric Constant	2.2 @Frequency 8.00e+9 - 4.00e+10 Hz	2.2 @Frequency 8.00e+9 - 4.00e+10 Hz	Design; Z direction; C24/23/50; IPC-TM-650 2.5.5.5
	2.18 - 2.24 @Frequency 1.00e+10 Hz	2.18 - 2.24 @Frequency 1.00e+10 Hz	Process; Z direction; C24/23/50; IPC-TM-650 2.5.5.5
Dissipation Factor	0.00040 @Frequency 1.00e+6 Hz	0.00040 @Frequency 1.00e+6 Hz	Z direction; C24/23/50; IPC-TM-650 2.5.5.3
	0.00090 @Frequency 1.00e+10 Hz	0.00090 @Frequency 1.00e+10 Hz	Z direction; C24/23/50; IPC-TM-650 2.5.5.5

Descriptive Properties	Value	Comments
Thermal Coefficient of Dielectric Constant	-125 ppm/°C	IPC-TM-650 2.5.5.5; -50°C to 150°C

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