

## Rogers Corporation RT/duroid® 6006 Ceramic-PTFE Composite Microwave Laminate

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

### Material Notes:

Features: High dielectric constant for circuit size reduction  
Low loss - Ideal for operating at X-band or below  
Tight dielectric constant and thickness control for repeatable circuit performance  
Low moisture absorption. Reduces effects of moisture on electrical loss  
Cladding - EDC or rolled copper foil, also thick aluminum, brass or copper plate (one side)  
Lead-free process compatible  
Typical Applications: Space Saving Circuitry  
Patch Antennas  
Ground Radar Warning Systems  
Satellite Communications Systems  
Power Amplifiers  
Aircraft Collision Avoidance Systems  
Information provided by Rogers Corporation.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Rogers-Corporation-RTduroid-6006-Ceramic-PTFE-Composite-Microwave-Laminate.php](http://www.lookpolymers.com/polymer_Rogers-Corporation-RTduroid-6006-Ceramic-PTFE-Composite-Microwave-Laminate.php)

Physical Properties	Metric	English	Comments
Density	2.70 g/cc	0.0975 lb/in <sup>3</sup>	ASTM D792
Moisture Absorption at Equilibrium	0.050 % @Temperature 50.0 °C, Time 173000 sec	0.050 % @Temperature 122 °F, Time 48.0 hour	0.05 in.; IPC-TM-650 2.6.2.1
Thickness	127 - 2540 microns	5.00 - 100 mil	Range of Standard Thicknesses
Deformation	0.33 % @Pressure 7.00 MPa, Temperature 50.0 °C	0.33 % @Pressure 1020 psi, Temperature 122 °F	Z direction; 24 hrs; ASTM D621
	2.1 % @Pressure 7.00 MPa, Temperature 150 °C	2.1 % @Pressure 1020 psi, Temperature 302 °F	Z direction; 24 hrs; ASTM D621

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	17.0 MPa	2470 psi	Y direction; 0.1/min strain rate; ASTM D638
	20.0 MPa	2900 psi	X direction; 0.1/min strain rate; ASTM D638
Elongation at Break	4.0 - 6.0 %	4.0 - 6.0 %	Y direction; 0.1/min strain rate; ASTM D638
	12 - 13 %	12 - 13 %	X direction; 0.1/min strain rate; ASTM D638
Tensile Modulus	3.56 GPa	517 ksi	Y direction; 0.1/min strain rate; ASTM D638
	4.32 GPa	627 ksi	X direction; 0.1/min strain rate; ASTM D638

Flexural Strength Mechanical Properties	38.0 MPa Metric	5510 psi English	Condition A; ASTM D790 Comments
Flexural Modulus	1.951 GPa	283.0 ksi	Y direction, Condition A; ASTM D790
	2.634 GPa	382.0 ksi	X direction, Condition A; ASTM D790
Compressive Yield Strength	54.0 MPa @Strain 33.0 %	7830 psi @Strain 33.0 %	Z direction; 0.05/min strain rate; ASTM D695
Compressive Modulus	1.069 GPa	155.0 ksi	Z direction; 0.05/min strain rate; ASTM D695
Peel Strength	2.51 kN/m	14.3 pli	Copper, after solder float; IPC-TM- 650 2.4.8

Thermal Properties	Metric	English	Comments
CTE, linear	34.0 $\mu\text{m}/\text{m}\cdot\text{C}^\circ$	18.9 $\mu\text{in}/\text{in}\cdot\text{F}^\circ$	Y-Direction; 5°C/min; ASTM D3386
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
	47.0 $\mu\text{m}/\text{m}\cdot\text{C}^\circ$	26.1 $\mu\text{in}/\text{in}\cdot\text{F}^\circ$	
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	X-Direction; 5°C/min; ASTM D3386
	117 $\mu\text{m}/\text{m}\cdot\text{C}^\circ$	65.0 $\mu\text{in}/\text{in}\cdot\text{F}^\circ$	Z-Direction; 5°C/min; ASTM D3386
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
Specific Heat Capacity	0.970 J/g·°C	0.232 BTU/lb·°F	calculated
Thermal Conductivity	0.490 W/m·K	3.40 BTU-in/hr-ft <sup>2</sup> ·°F	ASTM C518
	@Temperature 80.0 °C	@Temperature 176 °F	
Decomposition Temperature	500 °C	932 °F	TGA; ASTM D3850
Flammability, UL94	V-0	V-0	

Electrical Properties	Metric	English	Comments
Volume Resistivity	2.00e+13 ohm-cm	2.00e+13 ohm-cm	Condition A; IPC 2.5.17.1
Surface Resistance	7.00e+13 ohm	7.00e+13 ohm	Condition A; IPC 2.5.17.1
Dielectric Constant	6.0 - 6.3	6.0 - 6.3	Process, Clamped stripline, Z- direction; IPC-TM-650 2.5.5.5
	@Frequency 1.00e+10 Hz	@Frequency 1.00e+10 Hz	
	6.45	6.45	Design, Z-direction; Differential Phase Length Method
	@Frequency 8.00e+9 - 4.00e+10 Hz	@Frequency 8.00e+9 - 4.00e+10 Hz	

Electrical Properties	Metric	English	Comments
Dissipation Factor	@Frequency 1.00e+10 Hz	@Frequency 1.00e+10 Hz	Z direction; IPC-TM-650 2.5.5.5

Descriptive Properties	Value	Comments
Thermal Coefficient of Dielectric Constant	-410 ppm/°C	IPC-TM-650 2.5.5.5; 10 GHz; -50°C to 170°C; Z-Direction

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