

Rogers Corporation RT/duroid® 6010.2LM 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
Low Z-axis expansion. Provides reliable plated through holes in multi-layer boards
Tight dielectric constant and thickness control for repeatable circuit performance
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-60102LM-Ceramic-PTFE-Composite-Microwave-Laminate.php

Physical Properties	Metric	English	Comments
Density	3.10 g/cc	0.112 lb/in ³	ASTM D792
Moisture Absorption at Equilibrium	0.010 % @Temperature 50.0 °C, Time 173000 sec	0.010 % @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	0.26 % @Pressure 7.00 MPa, Temperature 50.0 °C	0.26 % @Pressure 1020 psi, Temperature 122 °F	Z direction; 24 hrs; ASTM D621
	1.37 % @Pressure 7.00 MPa, Temperature 150 °C	1.37 % @Pressure 1020 psi, Temperature 302 °F	Z direction; 24 hrs; ASTM D621

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	13.0 MPa	1890 psi	Y direction; 0.1/min strain rate; ASTM D638
	17.0 MPa	2470 psi	X direction; 0.1/min strain rate; ASTM D638
Elongation at Break	7.0 - 14 %	7.0 - 14 %	Y direction; 0.1/min strain rate; ASTM D638
	9.0 - 15 %	9.0 - 15 %	X direction; 0.1/min strain rate; ASTM D638
Flexural Strength	32.0 MPa	4640 psi	Y direction, Condition A; ASTM D790
	36.0 MPa	5220 psi	X direction, Condition A; ASTM D790
Flexural Modulus	3.751 GPa	544.0 ksi	Y direction, Condition A; ASTM D790

Mechanical Properties	Metric	English	Comments
Compressive Yield Strength	47.0 MPa @Strain 25.0 %	6820 psi @Strain 25.0 %	Z direction; 0.05/min strain rate; ASTM D695
Compressive Modulus	2.144 GPa	311.0 ksi	Z direction; 0.05/min strain rate; ASTM D695
Peel Strength	2.16 kN/m	12.3 pli	Copper, after solder float; IPC-TM-650 2.4.8

Thermal Properties	Metric	English	Comments
CTE, linear	24.0 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$ @Temperature 0.000 - 100 $^{\circ}\text{C}$	13.3 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$ @Temperature 32.0 - 212 $^{\circ}\text{F}$	X-Direction; 5 $^{\circ}\text{C}/\text{min}$; ASTM D3386
	24.0 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$ @Temperature 0.000 - 100 $^{\circ}\text{C}$	13.3 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$ @Temperature 32.0 - 212 $^{\circ}\text{F}$	Y-Direction; 5 $^{\circ}\text{C}/\text{min}$; ASTM D3386
	47.0 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$ @Temperature 0.000 - 100 $^{\circ}\text{C}$	26.1 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$ @Temperature 32.0 - 212 $^{\circ}\text{F}$	Z-Direction; 5 $^{\circ}\text{C}/\text{min}$; ASTM D3386
Specific Heat Capacity	1.00 J/g- $^{\circ}\text{C}$	0.239 BTU/lb- $^{\circ}\text{F}$	calculated
Thermal Conductivity	0.860 W/m-K @Temperature 80.0 $^{\circ}\text{C}$	5.97 BTU-in/hr-ft 2 - $^{\circ}\text{F}$ @Temperature 176 $^{\circ}\text{F}$	ASTM C518
Decomposition Temperature	500 $^{\circ}\text{C}$	932 $^{\circ}\text{F}$	TGA; ASTM D3850
Flammability, UL94	V-0	V-0	

Electrical Properties	Metric	English	Comments
Volume Resistivity	5.00e+12 ohm-cm	5.00e+12 ohm-cm	Condition A; IPC 2.5.17.1
Surface Resistance	5.00e+12 ohm	5.00e+12 ohm	Condition A; IPC 2.5.17.1
Dielectric Constant	9.95 - 10.45 @Frequency 1.00e+10 Hz	9.95 - 10.45 @Frequency 1.00e+10 Hz	Z direction; IPC-TM-650 2.5.5.5
	10.9 @Frequency 8.00e+9 - 4.00e+10 Hz	10.9 @Frequency 8.00e+9 - 4.00e+10 Hz	Differential Phase Length Method
Dissipation Factor	0.0023 @Frequency 1.00e+10 Hz	0.0023 @Frequency 1.00e+10 Hz	Z direction; IPC-TM-650 2.5.5.5

Electrical Properties	Metric	English	Comments
Descriptive Properties	Value	Comments	
Thermal Coefficient of Dielectric Constant	-425 ppm/°C	IPC-TM-650 2.5.5.5; 10 GHz; -50°C to 170°C; Z-Direction	

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