

## RT/duroid® 6202PR High Frequency Laminates

### Features:

- Low loss for excellent high frequency performance.
- Tight  $\epsilon_r$  and thickness control.
- Excellent electrical and mechanical properties.
- Extremely low thermal coefficient of dielectric constant.
- In-plane expansion coefficient matched to copper.
- Very low etch shrinkage.

### Some Typical Applications:

- Phase Array Antennas
- Ground Based and Airborne Radar Systems
- Global Positioning System Antennas
- Power Backplanes
- High Reliability Complex Multilayer Circuits
- Commercial Airline Collision Avoidance Systems
- Beam Forming Networks

RT/duroid® 6202PR high frequency circuit material is a low loss and low dielectric constant laminate offering superior electrical and mechanical properties essential in designing complex microwave structures which are mechanically reliable and electrically stable and used for planar resistor applications.

Excellent dimensional stability (0.05 to 0.07 mils/inch) is achieved by the addition of limited woven glass reinforcement. This enables the manufacture of tight toleranced planar resistors.

¼ oz. to 2 oz./ft.<sup>2</sup> electrodeposited copper foil, ½ oz. and 1 oz. rolled copper foil and ½ oz. and 1 oz. electrodeposited copper foil with a resistive layer, may be specified as cladding on dielectric thicknesses from 0.005" to 0.030" (0.127 to 0.762 mm).

Applications particularly suited to the unique properties of RT/duroid 6202PR material include flat and non-planar structures such as antennas and complex multilayer circuits with interlayer connections.



## Typical Values

## RT/duroid® 6202PR Laminates

PROPERTY	VALUE		DIRECTION	UNITS(1)	CONDITION(2)	TEST METHOD
	Thickness	Tolerance				
Dielectric Constant, $\epsilon_r$	0.005 "	2.90 ± 0.04	Z		10 GHz/23°C	IPC-TM-650, 2.5.5.5
	0.010"	2.98 ± 0.04				
	0.015"	3.00 ± 0.04				
	0.020"/0.030"	2.90 ± 0.04				
Dissipation Factor, Tan $\delta$	0.0020		Z		10 GHz/23°C	IPC-TM-650, 2.5.5.5
Thermal Coefficient of $\epsilon_r$	+13**			ppm/°C	10 GHz/1-100°C	IPC-TM-650, 2.5.5.6
Volume Resistivity	10 <sup>10</sup>		Z	Mohm Cm	A	ASTM D257
Surface Resistivity	10 <sup>9</sup>		X,Y,Z	Mohm	A	ASTM D257
Tensile Modulus	1007 (146)		X,Y	MPa (kpsi)	23°C	ASTM D638
Ultimate Stress	30 (4.3)					
Ultimate Strain	4.9					
Compressive Modulus	1035 (150)		Z	MPa (kpsi)		ASTM D638
Moisture Absorption	0.1		-	%	D24/23	IPC-TM-650, 2.6.2.1
Thermal Conductivity	0.68		-	W/mK	80°C	ASTM C518
Coefficient of Thermal Expansion	15		X,Y	ppm/°C	(10K/min)	ASTM D3386
	30		Z			
Td	500			°C TGA		ASTM D3850
Initial Design Values for Resistive Foil	Foil Nominal	Laminate Nominal		ohms/square		
	25	27				
	50	60				
	100	157				
Density	2.1			gm/cm <sup>3</sup>		ASTM D792
Specific Heat	0.93 (0.22)**			J/g/K (BTU/lb/°F)		Calculated
Dimensional Stability	0.07		X,Y	mm/m (mil/inch)	after etch +E2/150	IPC-TM-650 2.4.3.9
Flammability	V-0					UL94
Lead Free Process Compatible	Yes					

[1] S1 units given first, with other frequently used units in parentheses, [2] References: Internal TRs 3824, 5016, 5017, 5035. Tests were at 23°C unless otherwise noted. Typical values are a representation of an average value for the population of the property. For specification values contact Rogers Corporation.

STANDARD THICKNESS:	STANDARD PANEL SIZE:	STANDARD COPPER CLADDING:
0.005" (0.127mm)	12"X18" (305 X 457mm)	Resistive Foils: ½ oz. (17µm), 1 oz. (35µm)
0.010" (0.254mm)	24"X 18" (610 X 457mm)	Electrodeposited: ¼ oz. (8 µm), ½ oz. (17µm), 1 oz. (35µm)
0.015" (0.381mm)	Larger sizes available up to 24"X 54" (610mm X 1.37m)	Rolled: ½ oz (17µm), 1oz. (35µm)
0.020" (0.508mm)		Thick claddings are available. Contact customer service for more information.
0.030" (0.762mm)		

The information in this data sheet is intended to assist you in designing with Rogers' circuit material laminates. It is not intended to and does not create any warranties express or implied, including any warranty of merchantability or fitness for a particular purpose or that the results shown on this data sheet will be achieved by a user for a particular purpose. The user should determine the suitability of Rogers' circuit material laminates for each application.

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