ROGERS CORPORATION
Advanced Circuit Materials

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Data Sheet
1.4730 LoPro Antenna Grade Laminate

RO4730™ LoPro™ Antenna Grade Laminates

Features:	**Benefits:**
RO4730™ LoPro™ laminate (low loss dielectric with low profile foil)	• Reduced PIM • Low insertion loss • Match DK to 3.0 materials
Unique filler / closed microspheres	• Low density/lightweight - ~30% lighter than PTFE/ glass
Low Z-Axis CTE ~40 ppm/°C High Tg (same as RO4000® laminate - >280°C)	• Design flexibility • Automated assembly compatible
Low TCDk ~23° ppm/°C	• Consistent circuit performance
Specially formulated thermoset resin system/filler	• Low TCDk • 3.0 DK • Ease of fabrication • PTH process capability
Environmentally friendly	• Halogen free • Lead free process compatible • RoHS compliant
Typical Applications:	
• Base Station Antennas	

RO4730 LoPro antenna grade laminates are fully compatible with conventional FR4 and high temperature lead-free solder processing. These laminates do not require the special treatment needed on traditional PTFE-based laminates for plated through hole preparation. This product is an affordable alternative to more conventional antenna technologies, thus allowing designers to maximize the price and performance of their antennas.

The resin systems of RO4730 dielectric materials are designed to provide the necessary properties for ideal antenna performance. The coefficients of thermal expansion (CTEs) in both the X and Y directions are similar to that of copper. The good CTE match reduces stresses in the printed circuit board antenna. The typical glass transition temperature of RO4730 materials exceeds 280°C (536°F), leading to a low Z-axis CTE and excellent plated through hole reliability.

RO4730 LoPro laminate has excellent thermo-mechanical properties, and electrical characteristics that antenna designers need. The laminates have a dielectric constant (Dk) of 3.0 and a loss tangent (Df) of 0.0023 measured at 2.5 GHz. These values allow antenna designers to realize substantial gain values while minimizing signal loss. Materials are available with a demonstrated low PIM performance, with values better than -154 dBc (Using Rogers' internal test method).

RO4730 LoPro Antenna Grade Laminates - Preliminary Data Sheet					
Property	**Typical Value [1]**	**Direction**	**Units**	**Condition**	**Test Method**
Dielectric Constant, ε_r	3.00 ± 0.08	Z		10 GHz/23°C 2.5 GHz	IPC-TM-2.5.5.5
Dissipation Factor	0.0033 0.0023	Z		10 GHz/23°C 2.5 GHz	IPC-TM-650, 2.5.5.5
Thermal Coefficient of ε_r	23	Z	ppm/°C	-100°C to 250°C	IPC-TM-650, 2.5.5.5
Volume Resistivity (0.030")	1.40E+13		MΩ•cm	COND A	IPC-TM-650, 2.5.17.1
Surface Resistivity (0.030")	5.50E+12		MΩ	COND A	IPC-TM-650, 2.5.17.1
PIM [2]	<-154		dBc		
Electrical Strength	620	Z	V/mil		IPC-TM-650, 2.5.6.2
Tensile Modulus	N/A (thin <10 mil)		MPa (kpsi)	RT	ASTM D638
Tensile Strength	N/A (thin <10 mil)		MPa (kpsi)	RT	ASTM D638
Flexural Strength	1.34E+04		MPa (kpsi)		IPC-TM-650, 2.4.4
Dimensional Stability	-0.14/-0.145	X,Y	mm/m (mils/inch)		IPC-TM-650, 2.4.39A
Coefficient of Thermal Expansion	19	X	ppm/°C		IPC-TM-650, 2.1.41
	17	Y			
	40	Z			
Thermal Conductivity	0.52		W/m/K		IPC-TM-650 2.5.2.1
Moisture Absorption	0.13		%		IPC-TM-650 2.6.2.1 ASTM D570
Tg	>280		°C TMA		ASTM D3850
Td	441		°C TGA		ASTM D3850
Density	1.45		gm/cm3		ASTM D792
Copper Peel Strength	7.7 (1 oz LoPro)		pli		IPC-TM-650 2.4.8
Flammability	Non FR				UL
Lead-Free Process Compatible	YES				

[1] Typical values are a representation of an average value for the population of the property. For specification values contact Rogers Corporation.
[2] Using Rogers' internal test method.

Standard Thickness	Standard Panel Size:	Standard Copper Cladding
0.0307" (0.780mm) 0.0407" (1.034mm) 0.0607" (1.542mm)	24"X18" (610 X 457 mm) 48"X36" (1.224 X 0.915mm)	LoPro Reverse Treated EDC Foil: ½ (18μm), 1 oz (35μm)

Prolonged exposure in an oxidative environment may cause changes to the dielectric properties of hydrocarbon based materials. The rate of change increases at higher temperatures and is highly dependent on the circuit design. Although Rogers' high frequency materials have been used successfully in innumerable applications and reports of oxidation resulting in performance problems are extremely rare, Rogers recommends that the customer evaluate each material and design combination to determine fitness for use over the entire life of the end product.

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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