

Arlon CuClad 250 PTFE/Woven Fiberglass Laminate Microwave Printed Circuit Board Substrate

Category : Polymer , Thermoplastic , Fluoropolymer , PTFE

Material Notes:

CuClad 250 uses a higher fiberglass/PTFE ratio to provide mechanical properties approaching those of conventional substrates. Better dimensional stability and lower thermal expansion in all directions are other significant benefits. The electrical properties of CuClad 250GT and CuClad250GX are tested at 1 MHz and 10GHz respectively. Cross Plied Woven Fiberglass, alternating plies are oriented 90° to each other. High PTFE to Glass Ratio. Better dielectric constant uniformity than comparable non-woven fiberglass reinforced laminates. Benefits: Electrical and Mechanical isotropy in the X-Y Plane. Extremely Low Loss. Well Suited for EMI Sensitive Circuits. Typical Applications: Military Electronics (Radars, ECM, ESM) Microwave Components (Filters, Couplers, LNAs, etc.) Information provided by Arlon Materials for Electronics (MED).

Order this product through the following link:

http://www.lookpolymers.com/polymer_Arlon-CuClad-250-PTFEWoven-Fiberglass-Laminate-Microwave-Printed-Circuit-Board-Substrate.php

Physical Properties	Metric	English	Comments
Density	2.31 g/cc	0.0835 lb/in ³	ASTM D792 Method A
Water Absorption	0.030 %	0.030 %	IPC TM-650 2.6.2.2
Outgassing - Total Mass Loss	0.00 %	0.00 %	Collected Volatiles; NASA SP-R-0022A
	@Pressure <=1.33e-10 MPa, Temperature 125 °C	@Pressure <=1.93e-8 psi, Temperature 257 °F	
	0.00 %	0.00 %	Water Vapor Recovered; NASA SP-R-0022A
	@Pressure <=1.33e-10 MPa, Temperature 125 °C	@Pressure <=1.93e-8 psi, Temperature 257 °F	
	0.010 %	0.010 %	NASA SP-R-0022A
	@Pressure <=1.33e-10 MPa, Temperature 125 °C	@Pressure <=1.93e-8 psi, Temperature 257 °F	

Mechanical Properties	Metric	English	Comments
Tensile Strength	141 MPa	20500 psi	Cross; ASTM D882
	179 MPa	26000 psi	Machine; ASTM D882
Modulus of Elasticity	3.94 GPa	572 ksi	Cross; ASTM D638
	5.00 GPa	725 ksi	Machine; ASTM D638
Flexural Modulus	>= 3.14 GPa	>= 456 ksi	ASTM D790

Compressive Modulus Mechanical Properties	2.36 GPa Metric	342 ksi English	ASTM D695 Comments
Peel Strength	2.45 kN/m	14.0 pli	After Thermal Stress; IPC TM-650 2.4.8

Thermal Properties	Metric	English	Comments
CTE, linear	18.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature 0.000 - 100 $^\circ\text{C}$	10.0 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 32.0 - 212 $^\circ\text{F}$	x direction; IPC TM-650 2.4.24
	19.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature 0.000 - 100 $^\circ\text{C}$	10.6 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 32.0 - 212 $^\circ\text{F}$	y direction; IPC TM-650 2.4.24
CTE, linear, Transverse to Flow	177 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature 0.000 - 100 $^\circ\text{C}$	98.3 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 32.0 - 212 $^\circ\text{F}$	z direction; IPC TM-650 2.4.24
Thermal Conductivity	0.254 W/m-K @Temperature 100 $^\circ\text{C}$	1.76 BTU-in/hr-ft ² - $^\circ\text{F}$ @Temperature 212 $^\circ\text{F}$	ASTM E1225
Flammability, UL94	V-0	V-0	Vertical Burn

Electrical Properties	Metric	English	Comments
Volume Resistivity	8.00e+15 ohm-cm	8.00e+15 ohm-cm	C96/35/90; IPC TM-650 2.5.17.1
Surface Resistance	1.50e+14 ohm	1.50e+14 ohm	C96/35/90; IPC TM-650 2.5.17.1
Dielectric Constant	2.4 - 2.6 @Frequency 1.00e+6 Hz	2.4 - 2.6 @Frequency 1.00e+6 Hz	C23/50; IPC TM-650 2.5.5.3
	2.4 - 2.6 @Frequency 1.00e+10 Hz	2.4 - 2.6 @Frequency 1.00e+10 Hz	C23/50; IPC TM-650 2.5.5.5
Dielectric Breakdown	≥ 45000 V	≥ 45000 V	D48/50; ASTM D149
Dissipation Factor	0.0018 @Frequency 1.00e+10 Hz	0.0018 @Frequency 1.00e+10 Hz	C23/50; IPC TM-650 2.5.5.5
	≥ 180 sec	≥ 180 sec	D48/50; ASTM D495

Descriptive Properties	Value	Comments
Temperature Coefficient of Dielectric (ppm/ $^\circ\text{C}$)	-170	IPC TM-650 2.5.5.5 (-10 - 140 $^\circ\text{C}$)

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