

Arlon 45NK Woven Kevlar® Reinforced Laminate and Prepreg

Category : Polymer , Thermoset , Epoxy , Epoxy/Carbon Fiber Composite

Material Notes:

45NK is a woven Kevlar® aramid fiber reinforced multifunctional epoxy laminate system engineered to provide in-plane CTE values as low as 6 ppm/°C for compatibility with leadless alumina ceramic chip carriers (LCCCs) and other low expansion SMT devices where control of laminate expansion is critical for solder joint reliability. 45NK exceeds the requirements of IPC-4101/50 (Type AFG). High Tg (170°C) for improved reliability through process and in-use. Low Dielectric Constant 3.9 High modulus (19 Mpsi) p-aramid woven fiber reinforcement with CTE of -4 ppm/°C provides superior X-Y CTE of 5-7 ppm/°C. Process compatible with conventional high Tg multifunctional epoxy systems. 100% Organic resin/reinforcement system is suitable for laser drilling. RoHS/WEEE compliant. Typical Applications: SMT Board Designs using LCCCs or other low expansion chip carriers. SMT Designs requiring both low in-plane CTE and laser drilling. This data represents typical values for the production material and should not be used as material specifications. Information provided by ARLON Silicone Technologies Division.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Arlon-45NK-Woven-Kevlar-Reinforced-Laminate-and-Prepreg.php

Physical Properties	Metric	English	Comments
Density	1.50 g/cc	0.0542 lb/in ³	ASTM D792 Method A
Water Absorption	0.80 %	0.80 %	IPC TM-650 2.6.2.1

Mechanical Properties	Metric	English	Comments
Modulus of Elasticity	27.6 GPa	4000 ksi	IPC TM-650 2.4.18.3
Poissons Ratio	0.20	0.20	ASTM D3039
Peel Strength	1.05 kN/m	6.00 pli	To Copper (1 oz./35 micron); After Process Solutions; IPC TM-650 2.4.8
	1.05 kN/m	6.00 pli	To Copper (1 oz./35 micron); After Thermal Stress; IPC TM-650 2.4.8
	1.05 kN/m	6.00 pli	To Copper (1 oz./35 micron); At Elevated Temperatures; IPC TM-650 2.4.8.2

Thermal Properties	Metric	English	Comments
CTE, linear	5.00 - 7.00 µm/m-°C	2.78 - 3.89 µin/in-°F	IPC TM-650 2.4.41
CTE, linear, Transverse to Flow	75.0 µm/m-°C	41.7 µin/in-°F	z, below Tg; IPC TM-650 2.4.24
	225 µm/m-°C	125 µin/in-°F	z, above Tg; IPC TM-650 2.4.24
Thermal Conductivity	0.220 W/m-K	1.53 BTU-in/hr-ft ² -°F	ASTM E1461
Glass Transition Temp, Tg	170 °C	338 °F	DSC; IPC TM-650 2.4.25

Thermal Properties	Metric	English	Comments
Electrical Properties	Metric	English	Comments
Volume Resistivity	1.30e+13 ohm-cm	1.30e+13 ohm-cm	C96/35/90; IPC TM-650 2.5.17.1
Surface Resistance	3.20e+13 ohm	3.20e+13 ohm	C96/35/90; IPC TM-650 2.5.17.1
Dielectric Constant	3.9 @Frequency 1.00e+6 Hz	3.9 @Frequency 1.00e+6 Hz	may vary with resin %; IPC TM-650 2.5.5.3
Dielectric Strength	>= 29.5 kV/mm	>= 750 kV/in	IPC TM-650 2.5.6.2
Dissipation Factor	0.016 @Frequency 1.00e+6 Hz	0.016 @Frequency 1.00e+6 Hz	IPC TM-650 2.5.5.3
Descriptive Properties	Value	Comments	
Z-Axis Expansion (%)	2.8	IPC TM-650 2.4.24 (50-260°C)	

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