

## Arlon EP2 Enhanced Polyimide Laminate and Prepreg

Category : Polymer , Thermoset , Polyimide, TS

### Material Notes:

High reliability and high temperature material EP2 Enhanced Polyimide is the next generation of polyimide and prepreg products, engineered for improved properties and processing and for applications requiring optimum thermal performance. EP2 is a filled product, yet with significantly improved copper adhesion compared to traditional polyimides. Reduced water absorption, higher thermal conductivity and reduced CTE are all achieved while maintaining the full 250°C Tg of polyimide for thermal stability through process and application. Reduced cure cycle compared to traditional polyimides offers reduced process times throughout. Lower electrical loss results in improved signal integrity Toughened, non-MDA chemistry resists drill fracturing Fully compatible with lead-free solder processing Typical Applications: PCBs that are subjected to high temperatures during processing and rework, such as lead-free soldering. Reduced risk of latent PTH damage due to low Z-direction CTE Applications with significant service life expectations at high temperatures, such as aircraft engine instrumentation, on-engine applications, down-hole drilling and industrial sensor packages, under-hood automotive controls and burn-in testing of ICs (Burn-in-Boards) 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-EP2-Enhanced-Polyimide-Laminate-and-Prepreg.php](http://www.lookpolymers.com/polymer_Arlon-EP2-Enhanced-Polyimide-Laminate-and-Prepreg.php)

Physical Properties	Metric	English	Comments
Density	1.60 g/cc	0.0578 lb/in <sup>3</sup>	ASTM D792 Method A
Water Absorption	0.16 %	0.16 %	IPC TM-650 2.6.2.1

Mechanical Properties	Metric	English	Comments
Tensile Strength	241 MPa	35000 psi	IPC TM-650 2.4.18.3
Modulus of Elasticity	27.6 GPa	4000 ksi	IPC TM-650 2.4.18.3
Flexural Strength	400 MPa	58000 psi	crosswise; IPC TM-650 2.4.4
	496 MPa	72000 psi	lengthwise; IPC TM-650 2.4.4
Poissons Ratio	0.19	0.19	y; ASTM D3039
	0.21	0.21	x; ASTM D3039
Peel Strength	1.40 kN/m	8.00 pli	To Copper (1 oz./35 micron); At Elevated Temperatures; IPC TM-650 2.4.8.2
	1.47 kN/m	8.40 pli	To Copper (1 oz./35 micron); After Process Solutions; IPC TM-650 2.4.8
	1.49 kN/m	8.50 pli	To Copper (1 oz./35 micron); After Thermal Stress; IPC TM-650 2.4.8

Thermal Properties	Metric	English	Comments
CTE, linear	13.0 - 14.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	7.22 - 7.78 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	x, y direction; IPC TM-650 2.4.41
CTE, linear, Transverse to Flow	25.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	13.9 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	z (< Tg); IPC TM-650 2.4.24
	@Temperature $\leq 250$ $^\circ\text{C}$	@Temperature $\leq 482$ $^\circ\text{F}$	
	150 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	83.3 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	z (> Tg); IPC TM-650 2.4.24
	@Temperature $\geq 250$ $^\circ\text{C}$	@Temperature $\geq 482$ $^\circ\text{F}$	
Thermal Conductivity	0.450 W/m-K	3.12 BTU-in/hr-ft <sup>2</sup> - $^\circ\text{F}$	ASTM E1461
Glass Transition Temp, Tg	250 $^\circ\text{C}$	482 $^\circ\text{F}$	TMA; IPC TM-650 2.4.24
Decomposition Temperature	363 $^\circ\text{C}$	685 $^\circ\text{F}$	Onset; IPC TM-650 2.3.41
	424 $^\circ\text{C}$	795 $^\circ\text{F}$	5 percent; IPC TM-650 2.3.41
Flammability, UL94	V-0	V-0	

Electrical Properties	Metric	English	Comments
Volume Resistivity	2.80e+14 ohm-cm	2.80e+14 ohm-cm	C96/35/90; IPC TM-650 2.5.17.1
	3.90e+14 ohm-cm	3.90e+14 ohm-cm	E24/125; IPC TM-650 2.5.17.1
Surface Resistance	1.20e+14 ohm	1.20e+14 ohm	C96/35/90; IPC TM-650 2.5.17.1
	1.30e+14 ohm	1.30e+14 ohm	E24/125; IPC TM-650 2.5.17.1
Dielectric Constant	4.2	4.2	May vary with resin %; IPC TM-650 2.5.5.3
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
Dielectric Strength	55.1 kV/mm	1400 kV/in	IPC TM-650 2.5.6.2
Dielectric Breakdown	65000 V	65000 V	IPC TM-650 2.5.6
Dissipation Factor	0.0060	0.0060	IPC TM-650 2.5.5.3
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
Arc Resistance	$\geq 120$ sec	$\geq 120$ sec	IPC TM-650 2.5.1

Descriptive Properties	Value	Comments
IPC Delamination - T260 (minutes)	> 60	IPC TM-650 2.4.24.1
IPC Delamination - T288 (minutes)	15	IPC TM-650 2.4.24.1

IPC Delamination - T300 (minutes) Descriptive Properties	10 Value	IPC TM-650 2.4.24.1 Comments
Z-Axis Expansion (%)	0.65	IPC TM-650 2.4.24 (50-260°C)

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