

High Performance Polyimide

Arlon's 86HP is best in class for high temperature applications. Compared to conventional epoxy or polyimide resin systems, 86HP has lower Z-axis expansion ($\leq 1\%$) and twice the thermal conductivity of conventional epoxy or polyimide systems.

Ideal for high layer count, HDI multiple sequential lamination cycles, and anti-CAF performance. Arlon's unique polyimide resin system offers a lower Dk/Df than conventional polyimide resin systems and formulated to meet UL-94-V0 flame requirements.

This exceptional resin system is designed to replace high temperature epoxy systems where high thermal exposures and long service life for aerospace, industrial and military applications are required.

- Features:**
- 86HP meets the requirements of IPC-4101/40/41
 - Best-in-Class thermal properties
 - Tg=>250°C
 - Decomposition temperature >430°C
 - T300>60 minutes
 - Extremely low Z-axis
 - $\leq 1\%$ between 50-260°C (vs. 2.5-3.0% for typical high-performance epoxy resin systems)
 - Minimizes the risk of latent PTH defects caused during solder reflow device attachment
 - Anti-CAF passes 1000 hours at 85% RH/85°C
 - 3X thermal conductivity of conventional polyimide resins (0.6 W/mk)
 - Suitable for HDI PWB's- Dk/Df of 3.5/0.005@1 GHz
 - Toughened chemistry resists resin fracturing
 - Exceptional drill life compared to conventional polyimide resin systems
 - Halogen-free chemistry
 - Compatible with lead-free processing
 - Meets UL-94 V0
 - RoHS/WEEE compliant/WEEE compliant

Typical Properties:

Property	Units	Value	Test Method
Electrical Properties			
Dielectric Constant @ 1 GHz	70% RC	3.5	IPC-TM-2.5.5.9
Dissipation Factor @ 1 GHz	70% rc	0.005	IPC-TM-2.5.5.9
Volume Resistivity			
C96/35/90	MΩ-cm	>10 ¹⁰	IPC TM-650 2.5.17.1A
Surface Resistivity			
C96/35/90	MΩ	>10 ⁹	IPC TM-650 2.5.17.1A
Electrical Strength	Volts/mil	1800	IPC TM-650 2.5.6.2A
Arc Resistance	sec	196	IPC TM-650 2.5.1B
Thermal Properties			
Glass Transition Temperature (Tg)			
TMA	°C	≥250	IPC TM-650 2.4.24C
Decomposition Temperature			
Initial	°C	380	IPC TM-650 2.4.24.6
5% weight loss	°C	430	IPC TM-650 2.4.24.6
T260	min	>60	IPC TM-650 2.4.24.1
T288	min	>60	IPC TM-650 2.4.24.1
T300	min	>60	IPC TM-650 2.4.24.1
CTE (X,Y)	ppm/°C	16,14	IPC TM-650 2.4.41
CTE (Z)			
< Tg	ppm/°C	24	IPC TM-650 2.4.24C
> Tg	ppm/°C	174	IPC TM-650 2.4.24C
z-axis Expansion (50-260°C)	%	≤1	IPC TM-650 2.4.24C
Mechanical Properties			
Peel Strength to Copper (0.5oz/17.5 micron)			
RTF	lbs/in	5.5	IPC TM-650 2.4.8
HVLP	lbs/in	4.4	IPC TM-650 2.4.8
1.0oz/35 micron STD	lbs/in	9	IPC TM-650 2.4.8
Young's Modulus CD/MD	Gpa	25/27	ASTM E111
Tensile Strength CD/MD	kpsi (MPa)	35 (241)	ASTM D3039
Poisson's Ratio	-	0.17	ASTM E13204
Physical Properties			
Water Absorption (0.059")	%	0.12	IPC TM-650 2.6.2.1A
Density	g/cm ³	1.6	ASTM D792 Method A
Thermal Conductivity	W/mK	0.6	ASTM D5470
Flammability	class	V-0	UL-94
Anit-CAF (IPC 9254)	100 VDC	>1000 hours	IPC TM-650 2.6.25

Results listed above are typical properties, provided without warranty, expressed or implied, and without liability. Properties may vary, depending on design and applications. Arlon reserves the right to change or update these values.