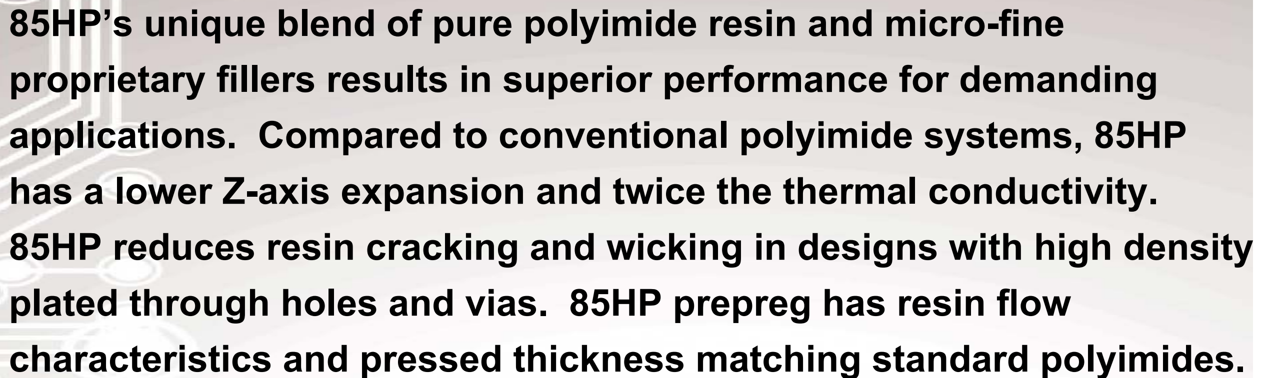
85HP

ARLON ELECTRONIC MATERIALS

High Performance Polyimide



85HP's unique blend of pure polyimide resin and micro-fine proprietary fillers results in superior performance for demanding applications. Compared to conventional polyimide systems, 85HP has a lower Z-axis expansion and twice the thermal conductivity. 85HP reduces resin cracking and wicking in designs with high density plated through holes and vias. 85HP prepreg has resin flow characteristics and pressed thickness matching standard polyimides.

Features:

- Validated IPC4101/40, /41 and /43 description and specification
  - Pure polyimide, no secondary resin
  - No epoxy added, blended or reacted
- Best-in-Class thermal properties
  - Tg=> 250°C
  - Decomposition temperature 430°C
  - Tc = 0.5 W/mK, 2x thermal conductivity
  - T300>60 min.
- Low Z-axis expansion
- Longer time to delamination
- Lower loss tangent than conventional polyimide resin systems
- Minimizes cracking and wicking
- Balanced glass weave
- RoHS/WEEE compliant

Typical Applications:

- High process or assembly temperatures (lead-free soldering)
- Designs with high layer counts and MLB complexity
- Equipment exposed to extreme temperatures
  - Defense systems
  - Aircraft engine instrumentation
  - Semiconductor testing (burn-in boards)
  - Petroleum exploration (down-hole drilling)
  - Under-hood automotive
  - Industrial sensor systems
  - Space and satellites

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Typical Properties:

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Availability:

Arlon Part Number	Glass Style	Resin (%)	Ho (mils)	Scaled Flow Hf (mils)	Scaled Flow ∆ H (mils)
85H6770	1067	70	2.40	2.00	0.40
85H8663	1086	63	3.25	2.80	0.45
85H3358	3313	58	4.40	3.90	0.50
85H2654	2116	54	5.00	4.45	0.55

Recommended Process Conditions:

Vacuum desiccate the prepreg for 8 - 12 hours prior to lamination.
Process inner-layers through develop, etch, and strip using standard industry practices. Use brown oxide or alternatives on inner layers. Adjust dwell time in the oxide bath to ensure uniform coating. Bake inner layers in a rack for 60 minutes at 107°C - 121°C (225°F - 250°F) immediately prior to lay-up.

Lamination Cycle: (Steps 1-5)

1) Pre-vacuum for 30 - 45 minutes

2) Control the heat rise to 4.5°C - 6.5°C (8°F - 12°F) per minute between 100°C and150°C (210°F and 300°F). Vacuum lamination is preferred. Start point vacuum lamination pressures are shown in the table below:

Panel Size		Pressure	
in.	mm	psi	kg/cm2
12 x 18	305 x 457	275	19
16 x 18	406 x 457	350	25
18 x 24	457 x 610	400	28

3) Product temperature at start of cure = 218°C (425°F)

4) Cure time at temperature = 2.0 hours

5) Cool down under pressure at ≤ 5°C/min (10°F/min)

Drill at 350-400 SFM. Undercut bits are recommended for vias 0.0 18” (0.45mm) and smaller De-smear using alkaline permanganate or plasma with settings appropriate for polyimide; plasma is preferred for positive etchback

Conventional plating processes are compatible with 85HP

Standard profiling parameters may be used;

Bake for 1 - 2 hours at 250°F (121°C) prior to solder to reflow of HASL

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