

Processing Guide

Available Prepreg Thicknesses

Arlon Part Number	Glass Style	Resin (%)	Scaled Flow Hf (mils)	100% Cu Ratio Pressed Thickness (mils)
86H0677	106	77%	1.93 ± 0.3	2.40
86H6769	1067	69%	1.89 ± 0.3	2.15
86H8663	1086	63%	2.58 ± 0.3	3.00
86H3357	3313	57%	3.45 ± 0.3	3.80
86H2653	2116	53%	3.87 ± 0.3	4.50

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. The use of brown oxide or alternative oxide treatment is highly recommended prior to lamination. Bake inner layers in a rack and in an air circulating oven for a minimum of 60 minutes at 225°F-250°F (107°C-121°C) immediately prior to lay-up.

Lamination Cycle for Low Temperature Cure (Meets IPC-4101/40):

- 1) Pre-vacuum for 30-45 minutes
- 2) Control the heat rise to 4.5-6.5°C (8.0-12.0°F) per minute between 90-160°C (194-320°F).
- 3) Set cure temperature 204°C (400°F). Start cure time when temperature reaches 200°C (392°F).
- 4) Cure time 80 minutes at or above 200°C (392°F).
- 5) Step pressures are highly recommended for controlled dimensional stability of product.
 - a) First pressure of 70-100 psi for when product temperature reaches 60°C (140°F).
 - b) Second pressure of 140-250 psi @ 60-80°C (140-176°F).
 - c) Third pressure of 350-450 psi @ 90-115°C (194-239°F).

Panel Size		Pressure	
in.	mm	psi	kg/cm2
12 x 18	305 x 457	350	21
16 x 18	406 x 457	400	28
18 x 24	457 x 610	450	32

Recommended starting pressures may vary depending on complexity of product.

6) Cool down rate of between 215-120°C (419-248°F) of <2°C (4°F) under contact pressure if possible.

Lamination Cycle for High Temperature Cure (Meets IPC-4101/41):

- 1) Pre-vacuum for 30-45 minutes
- 2) Control the heat rise to 4.5-6.5°C (8.0-12.0°F) per minute between 90-160°C (194-320°F).
- 3) Set cure temperature 215°C (419°F). Start cure time when temperature reaches 205°C (400°F).
- 4) Cure time 80 minutes at or above 215°C (419°F).
- 5) Step pressures are highly recommended for controlled dimensional stability of product.
 - a) First pressure of 70-100 psi when product temperature reaches 60°C (140°F).
 - b) Second pressure of 140-250 psi @ 60-80°C (140-176°F).
 - c) Third pressure of 350-450 psi @ 90-115°C (194-239°F).

Panel Size		Pressure	
in.	mm	psi	kg/cm2
12 x 18	305 x 457	350	21
16 x 18	406 x 457	400	28
18 x 24	457 x 610	450	32

Recommended starting pressures may vary depending on complexity of product.

6) Cool down rate of between 215-120°C (419-248°F) of <2°C (4°F) under contact pressure if possible.

86HP

Mechanical Drilling Recommendations:

Drill Size (mm)	Spindle (krpm)	In-feed (inch/min)	Retract (inch/min)	S.F.M. (ft/min)	Chip Load (mil/rev.)	Max Hit count
0.25	100	70	500	258	0.7	1000
0.30	87	81	500	270	0.93	1000
0.35	78	90	500	282	1.15	1000
0.40	71	96	500	294	1.35	1000
0.45	66	101	500	306	1.53	1000
0.50	78	132	500	400	1.7	1000
0.55	71	131	500	400	1.85	1000
0.60	65	129	500	400	1.99	1000
0.65	60	126	500	400	2.11	1000
0.70	55	123	500	400	2.21	1000
0.75	52	119	500	400	2.3	1000
0.80	49	115	500	400	2.37	1000
0.85	46	111	500	400	2.43	1000
0.90	43	106	500	400	2.47	1000

Undercut drill bits are recommended.

The above drill parameters and hit counts are for reference only. Modification and adjustments should be evaluated based on board thickness, copper weight and hole size to ensure proper hole wall quality.

De-smear using alkaline permanganate or plasma with setting appropriate for polyimide; plasma is preferred for positive etchback.

Conventional plating processes are compatible with 86HP.

Standard profiling parameters may be used

Bake for 1-2 hours at 250°F (121°C) prior to any thermal excursions (reflow or HASL).