

# IT-140G

Halogen-free Material,  $T_g \geq 150^\circ\text{C}$ , With Fillers, Lead-free process Compatible

## Process Guideline

### 1. Prepreg Handling & Storage

- (1) Shelf life is at least 3 months when prepreg stored in a cool dry environment (Temperature:  $<20^\circ\text{C}$  Humidity:  $<50\%$ ).
- (2) Prepreg exposed to humidity should be resealed to minimize moisture of absorption.
- (3) Prepreg should be stored in controlled environment for 12 hours prior to use.
- (4) Prepreg supplied in rolls or panels should be stored horizontally. To avoid damage, no stacking is recommended.

### 2. Laminate Handling & Storage

- (1) Laminates should be stored in a dry environment.
- (2) Laminate should always be stored flat.

### 3. Inner Layer Process

- (1) First around must be taken and find a suitable parameter (as dimension compensation, etc) before mass production.
- (2) Inner layers should be baked for at least 40 min at  $120^\circ\text{C}$  after black or brown oxides treatment.  
Note: The material temperature is not allowed to  $>200^\circ\text{C}$  in lamination process if oxide treatment.

### 4. Lamination Overview

- (1) Stacks must be prepared in lay-up room to avoid moisture absorption.
- (2) Stacks with the core and prepreg are recommended to use the vacuum process for 30 minutes before heated. Recommended pressure ranges should be as follows:  
Hydraulic: 350~400psi  
Vacuum Hydraulic: 300~400psi
- (3) For Lien Chieh Machinery, heating rate is  $1.6\sim 2.0^\circ\text{C}/\text{min}$  from  $80^\circ\text{C}$  to  $140^\circ\text{C}$ , and for Burkle Machinery, the heating rate is  $1.6\sim 3.0^\circ\text{C}/\text{min}$  from  $80^\circ\text{C}$  to  $140^\circ\text{C}$ . Cooling rate is below  $3^\circ\text{C}/\text{min}$ .
- (4) When the board temperature reaches  $185^\circ\text{C}$  during the pressing process, hold for at least 60 minutes.

### 5. Drilling

Drilling parameters are mainly dependent on hole size, layer thickness, layer number, copper thickness and stack height. The following drilling parameters are reference for you only. Typical drilling parameters for 0.4~1.0 mm drills are following:

Spindle speed: 45-105KRPM                      Feed rate: 50-150IPM  
Retract rate: 500-1000IPM                      Max. hit count:  $<1000$  HITS  
Stack height:  $\leq 2$ pnl (2-6layers), 1pnl ( $\geq 8$ layers) Entry Material: 0.2mm Aluminum  
Back-up Material: 1.5mm phenolic laminate                      Drilling Machine: Hitachi-ND-6L210E  
Baking condition: After Drilling:  $150^\circ\text{C} / 2$  hours

### 6. Desmear

The following desmear parameter is reference only:

Horizontal (ATO)  
Swell:  $60\sim 75^\circ\text{C}$  for 190s                      Mn+7: 55-65g/l at  $85^\circ\text{C}$  for 360s  
Horizontal (JETCHEM)  
Swell:  $75^\circ\text{C}$  for 100s                      Mn+7: 55-65g/l at  $85^\circ\text{C}$  for 180s  
Vertical (ROHMHAAS)  
Swell:  $65^\circ\text{C}$  for 365s                      Mn+7: 55-65g/l at  $75^\circ\text{C}$  for 750s

Normally, the typical parameters used to desmear FR-4 product may not produce optimum hole topography for IT-140G, so you should consult with your chemistry to optimize your desmear condition, as desmear time or adjust other parameter, etc.

### 7. Others

IT-140G material can not be reworked by alkaline solution after solder mask process.