



# Processing Guide

## Dicy Cured Material

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***Laminate/ Prepreg : TC-97/PP-97***

***Grace Electron Corp.***

***Tech. & QA Dept.***

## Grace Declaration:

The parameters and the processing guide contained in this document were developed through in-house evaluation result and field experience, and PCB makers should need some necessary additional adjustment for the parameters by themselves, to make sure that the parameters could meet the actual manufacture quality requirement. Grace could provide technical support when customers using any type of Grace products.

## Part1 Prepreg storage

### Prepreg storage suggestion (Vacuum package unbroken):

Condition A: 23°C ↓, 50%↓RH for three months.

Condition B: lower than 5°C for 6 months from date of manufacture.

### Prepreg usage suggestion:

- 1.1 Upon receipt, all prepreg should be immediately moved to a both temperature and humidity controlled environment. A FIFO (first-in-first-out) inventory management system should be used.
- 1.2 Prepreg has a lower lifetime; exposure in the air may have its properties degrade. Hold time after shearing had better no more than 24 hours. The remain prepreg must be vacuum packaged, and a remove moisture treatment is necessary when the second time use.
- 1.3 In shearing process, all prepreg panel sheets should be kept cleaning.

### Note:

1. Grace suggests the prepreg must be used as soon as possible from after shearing to lamination.
2. Prepreg exceeding shelf life must be retested and re-certified to agree upon specifications.

## Part2 Laminate storage

### Laminate storage suggestion (Package unbroken):

2.1 Upon receipt, all laminate should be immediately moved to a catalytic environment such as UV light or excessive radiation.

2.2 All laminate should be used as soon as possible to avoid oxides on the surface.

### Laminate baking suggestion:

In order to holding the dimensional stability of the laminate after shearing into panel sheets, the baking is recommendation.

<b>Materials</b>	<b>TC-97</b>
<b>Temperature</b>	<b>140°C</b>
<b>Time</b>	<b>2~4 hrs</b>

Note: When the storage of laminate is over one year, the properties must be retested and re-certified to agree upon specifications.

## Part3 Lamination process

### 3.1 Black or brown oxide treatment

#### Chemistry suitability:

3.1.1 Both chemistry of black or brown oxide treatment are suitable.

3.1.2 After oxide treatment, the baking panel sheets is recommended and should no scratch or impurity contain on the surface. Please dry before lamination process for reducing moisture if inner layer boards absorb moisture.

3.1.3 The board holds time had better no more than 12 hours after oxide treatment process.

Note: Grace suggests the board must be used as soon as possible from after oxide treatment to lamination.

### 3.2 Lamination suggestion

#### Prepreg and core prepare:

The PCB makers use the prepreg and core must be the same kind of product and from the same suppliers.

#### Prepreg lamination condition:

Materials	Heating rate	Curing condition
TC-97	Heating rate : 1.2~2.5°C/min (Material temperature from 90°C~130°C)	170°C, over 40min

Note: All values mentioned above are just for reference, the parameters can be modified depend upon board design, machine as well as other factors.

## Part4 Drilling process

The drilling parameters should be well adjustment to avoid excessive roughness after drilling and meet the requirement of the quality.

### Drilling parameters suggestion:

Diameter (mm)	Speed (KRPM)	Infeed (IPM)	Chipload ( $\mu\text{m}/\text{rev}$ )	Max. Hit
$\varnothing < 0.3$	150~155	70~80	11~13	2000~3000
$0.3 < \varnothing < 1.0$	60~120	110~140	29~46	3000~4000
$\varnothing > 1.0$	40~50	70~100	45~50	4000~5000

Note: All values mentioned above are just for reference, the parameters can be modified depend upon different materials, layer counts, thickness, inner layer copper thickness as well as other factors.

## Part5 Desmear and weight loss

The desmear parameters of TC-97 material are similar to standard FR4. The PTH back light should be over 8 grades.

### Weight loss suggestion:

Materials	Weight loss ( $\text{mg}/\text{dm}^2$ )
TC-97	25~35

## Part6 Routing

The routing parameters of TC-97 material are similar to standard FR4.

## **Part7 Package and shipment of PCB**

The PCB should be in a moisture proof packing with desiccant and avoid any physical damages during transport. If PCB absorbs moisture during transport, the risk of delamination might occur in SMT reflow assembly or another heating process. Please dry it more than 2 hours at 120°C.