



PROCESSING GUIDELINES

Laminate: Autolad2G

Prepreg: Autolad2GB

High Tg, High CTI, Halogen Free & High Reliability Automotive Base Material



This product process guideline uses IPC-4101 Standard as a reference, and Shengyi keeps the right to update according to the product features in PCB applications as to making it more suitable for use.

Halogen-free: Cl≤900ppm, Br≤900ppm, Cl + Br ≤1500ppm (0.15%)

1. Storage condition

1.1 Laminate (core)

1.1.1 Storage condition

- Pack with original forms on the platform or on the appropriate storage rack, avoiding stress, preventing sheet deformation caused by inappropriate storage which may impact the subsequent PCB processes.

1.1.2 Storage environment

- Sheets should be stored in ventilated, dry, at room temperature under environment control, avoiding direct sunlight, rain and avoid erosion of corrosive gas (stored environment directly affect the quality of material).
- For double-sided copper clad laminates (cores), to minimize shifting as to avoid scratching the surface of the product, with suitable environment and condition for storage, the shelf life can be up to 2 years.
- For single-sided copper clad laminates, with a suitable environment and condition for storage, the shelf life can be up to 1 year.

1.1.3 Operation manual

- Wear clean gloves and carefully operate the cores. Copper foil collisions, sliding will cause damage of the cores. Bare hands action will cause contamination to copper foil surface. These defects are likely to cause adverse effects.

1.2 Prepreg

1.2.1 Storage method

- Levels stored in original packaging form, avoiding stress, prevent sheet deformation caused by inappropriate storage condition.
- Leftover or cut Prepregs should pack and seal with vacuum foil packaging and put it back in the original packaging tray.

1.2.2 Storage environment

- Prepreg sealed packaging should be stored in free of UV irradiation environment, specific storage conditions and the storage period as follows:
 - Condition 1: 90 days when stored at <23°C and <50% RH.
 - Condition 2: 180 days when stored at <5°C.
- Note: Relative humidity affect prepreg quality the most, pay special attention on weather (conduct dehumidification process is necessary for wet weather).

1.2.3 Cutting guideline

- It's best to leave the professional staff to handle the cutting with proper equipment, clean gloves is required during the operation to avoid contamination of surface; operation must be careful to prevent prepreg wrinkle or crack.

1.2.4 Prepregs usage recommendations

- Due to different density, it is necessary to adjust the resin content of prepreg in order to achieve similar cured thickness when compared to standard FR-4. Please take care of this for stack up design.
- If moving from a low temperature storage space to a higher temperature or ambient temperature storage space, it must go through the temperature settle process, (8 - 24 hours, settle time is varies depending on temperature variation in between two storage conditions). Open package after temperature settle process is completed as to avoid moisture condensation which would affecting the quality and adhesion of prepregs.
- For PP package stored in above conditions 1 or 2, use up as soon as possible. For packages opened more than 3 day, it must be re-inspected to ensure quality before using.
- Leftover or cut prepregs should be packed and sealed with vacuum foil packaging and put it back in the above stated storage condition 1 or 2.
- For IQC inspection, PP test should be finished within 5 days from the date of acceptance according to IPC-4101 specification, and the test temperature of Gel Time of prepregs is generally 190°C.

2. PWB Processing

2.1 Panel cutting

- Sawing (preferred) and shearing method is recommended. Be careful of potential edge cracks when using roller cutter or caused by improper gap or cutter blade abrasion.

2.2 Thin core baking

- Thin core baking depends on actual need. If bake after cutting, it's recommended to rinse cutting panels first, which is able to remove resin powder brought by cutting and avoid etching problem.
- Baking condition: 150°C/4-8h, be sure to avoid contact directly with heat supply.

2.3 Brown/Black oxide

- Suitable for brown oxidation
- In order to avoid excessive moisture absorption, baking after brown oxidation is recommended at the condition of 120°C/1h and press within 4 hours.

2.4 Lay-up

- Ensure prepreg direction of warp and fill at lay-up process. Avoid prepreg reversal or overturn in case of multilayer board warpage after lamination.

2.5 Press process



- Curing rate: 1.0-2.5°C/min when the temperature of top layer ranges 80-140 °C.
- Full pressure setting is recommended at the range of 300 – 420 PSI (oil heated), specified value should be determined by multilayer feature (lay-up construction and resin filled area).
- Apply full pressure when the temperature of top layer ranges 90-110 °C.
- Curing condition: 185~195°C, >60min.
- If pressed by Adara machine, please inform us for more information.
- When adopted single-sided or dummy panel for multilayer, be sure to roughen the unclad surface before use, otherwise poor bonding might happen due to smooth surface. Etching double sided board for that purpose is one optional approach.

2.6 Drilling

- Autolad2G/Autolad2GB is high Tg & high fillers system, please adjust drill parameters according to other high Tg FR-4. New drill bit, single stack and less hit count (for example, 500-1000 hits for 0.30mm or 0.40mm hole diameter) is recommended for getting better hole wall quality. Besides, run FA to get optimal drill parameters are necessary.
- For dense holes area or hole size <0.6mm, LE aluminum cover is recommended.

2.7 Desmear

- Autolad2G belongs to PN curing system + inorganic filler type products, Ultrasonic rinse is recommended to be used for desmear. As the desmear weight loss is less than normal FR-4, it is suggested run FA to make the optimal parameters.
- 150°C/2-4h baking after drilling is beneficial to strengthen the Desmear effect and further improve the dimensional stability of PCB board.

2.8 Solder mask

- Be careful of panel distortion or warpage due to improper stack-up at pose baking process.

2.9 HAL

- Suitable for lead free HAL process.

2.10 Punching/Routing

- Not suitable for punching process.
- Routing process is recommended. Reduce routing speed to prevent edge cracks from outburst mechanical force.

2.11 Packaging

- Suggest bake finished boards at 125°C/4-8h before packaging to prevent moisture effect on the heat resistance of base material
- Aluminum pack is recommended for PCB packing with moisture indicator.



3. PWB Soldering

3.1 Shelf life of PWB

- 3 months with packaging protection (depends on surface treatment type).
- Baking at 125°C/4~8h before assembly is recommended if stored for long (depends on surface treatment).

3.1 Reflow

- Suitable for lead free reflow process

3.2 Manual soldering

- For separated or connected pad, manual soldering temperature should range 350-380°C and hold less than 3s for single point.

This process guide is for reference only! Should you have any questions, please feel free to contact us. SYTECH will support you with prompt and effective service.