Precautions in Process

● Etching
   Cupric chloride, ferric chloride or ammonium persulfate is generally used. After etching, wash the laminates carefully with clean running water. If washing is insufficient, residual ions (copper ions, iron ions, etc.) may degrade electric characteristics, lower copper foil adhesiveness and discolor laminates.

● Removing etching resist
   To prevent boards from discoloration or other changes, minimize processing time. After processing, wash the materials well with water and then dry them thoroughly.

● Punching
   The following three principles are necessary for MCL punching.
   ① The minimum hole diameter shall be more than 1/2 of the board thickness.
   ② The minimum distance between holes shall be more than 2/3 of the board thickness.
   ③ The minimum distance between a hole and the nearest board edge shall be more than twice the board thickness.

● Drilling
   Pay attention to the total stacked thickness (t) of the MCLs to be drilled and the effective length (d) of the drill: d is 1.5 mm or more longer than (t). A spade type is suitable for glass fabric-based. Since hole quality varies with the type of drill used, the drilling machine and drilling conditions, examine these conditions carefully when setting or changing them.

● Plating
   Carefully control the composition and temperature of the plating solution and plating time when plating MCLs. After taking them out of the plating bath, wash them carefully with running water immediately then dry them sufficiently.

● Use of UV Ink
   The surface state of MCL influences adhesion and wettability of the UV ink, so pay attention to the following points:
   ① Polish the MCL surfaces sufficiently.
   ② After polishing, wash them sufficiently with running water.
   ③ Do not store them for a long time.
   ④ If stored for a long time, polish again, wash with water and dry them before use.

● Heating
   Heat MCL uniformly, not partially, as much as possible. When heating them to temperature higher than the glass-transition temperature, warpage and deflection can be reduced by using a horizontal rack. When heating them at high temperature for more than 30 minutes, the laminates may become discolored. So, determine the optimum time in advance.