



UVia Laser Process Capabilities

Micron Laser Technology's microvia specifications are based on typical applications and processes developed to IPC. Variations in dielectric and copper thickness and material selection outside the listed standards are possible pending process development.

- I. **External Copper thickness:** 1oz, .5oz, 3/8oz, 1/4oz, and 5um are typical unplated copper thickness processed. The general rule is to have the external foil thickness equal to or less than the target layer copper thickness. This rule can be stack-up compensated through dielectric/reinforcement selection and thickness. Plated copper processing is density and consistency dependent.
- II. **Base or Target Copper Thickness:** Minimum copper thickness is 1/4oz or a plated 5um. Again, external copper thickness and dielectric selection is important.
- III. **Dielectrics:** FR4 all types, Isola, Getek, Nelco, Hitachi, Rogers (Duroid & Teflon), Gore (speedboard), RCC, Ceramics.
- IV. **Reinforcements:** Woven E-glass (106, 1080, 2116, 2113, 2313, etc.), Non-woven glass, Aramid (Thermount etc.), PTFE.
- V. **Chemistries:** Cyanate ester, BCB (benzocyclobutene), PEEK (polyetheretherketone), FEP (fluorinated ethylene propylene), LCP (liquid crystal polymer), PPE (polyphenylene ether), Epoxy, Epoxy blends, Polyimide, Polyester, Acrylics, BT resins.
- VI. **Microvia Tolerances:** Dimensional within +/- .5mils and positional within +/- 1mil.
- VII. **Hole Diameter:** 4mils to 12mils is the standard diameters processed. Larger sizes are manufacturable, but may not be cost effective. 4mil diameters and smaller are feasible, but plating and dielectric/reinforcement dependent. Microvia diameters are PCB manufacture dependant due to plating capabilities. Industry typical aspect ratios range from .5 to .85. Aspect ratios are the length of hole to the diameter of the hole (L/D).
- VIII. **Dielectric Thickness:** Standard thickness range from 1mil to 10mil. This is design, dielectric, and plating dependent. Thicker dielectrics are feasible. Aspect ratio of depth to hole diameter is a determinant.
- IX. **Panel Size:** 24" x 24" is the largest panel size not requiring special fixturing or part manipulation. Standard sizes processed include 20x24, 18x24, 12x18, 12x12, 9x12, 10x12, and 12x12.
- X. **Multiple Layers:** Processing of multiple layers is in consideration of all of the above processing standards. Double Deep vias connect layer n to layer n-2 without connecting N-1. Step vias and stagger vias are processed without issue if design/process guidelines are implemented. In step via (multi-layer connections) processing, layer n-1 via diameter will be 1.5 to 2mils smaller than layer n. In all cases, aspect ratio should be considered.

