Circudep Black Knight

Advanced Dielectric Metallization Process

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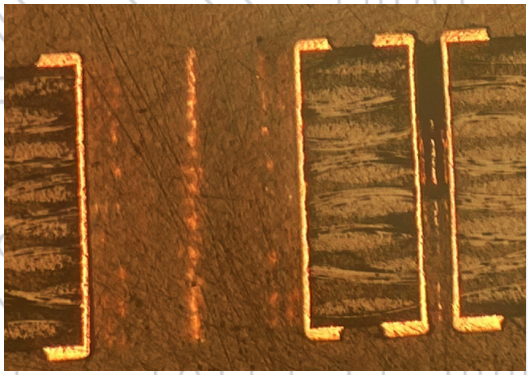
Colloidal Graphite Process

Technic's Circudep Black Knight is an exclusive colloidal graphite process meticulously crafted to make dielectric material conductive, facilitating effective copper plating. Tailored for single-pass coverage, this formulation tackles the intricacies presented by challenging dielectric materials like PTFE, LCP, and polyimide.

The unique formulation of Circudep Black Knight addresses stability and coverage concerns associated with outdated direct metallization processes. Serving as the alternative to electroless copper, it not only improves the reliability essential for critical applications but also streamlines the process steps, leading to an overall reduction in costs.



10/1 aspect ratio
No desmear
1 Pass in Graphite
Standard plating

Features

- Superior adhesion to Cu and dielectric materials
- Elimination of heavy metals, formaldehyde
- Reduced water usage
- Simple 4 step process with easy process control
- Fine particle size
- Unique, proprietary additives
- Resistant to contamination

Benefits

- Unsurpassed reliability
- "Green" process eliminating environmental and health hazards
- High productivity with significant cost savings in production time and process control
- Excellent coverage of difficult to plate materials like PI, PTFE & LCP
- Long bath life yielding cost savings and consistent coverage

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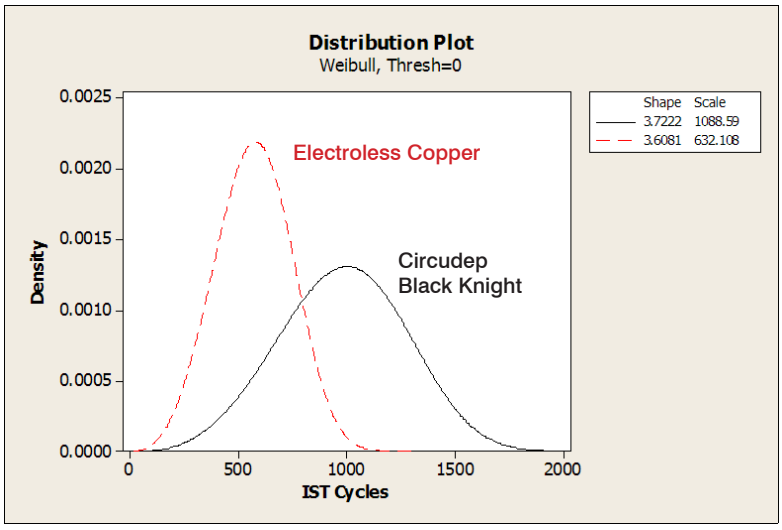
Reliability Results

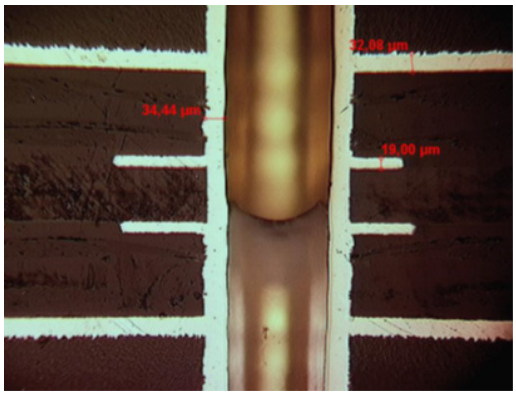
The Black Knight process improves reliability, making it possible to produce advanced technology at an overall cost savings. Rigid, flex, PI, PTFE, LCP, complex design, HDI, BV, high aspect ratios do not matter, Black Knight makes it possible.

Reliability Test	Test Conditions	Acceptability Criteria	Circudep Black Knight Results
Hot Oil Shock	• 260 °C/20 sec :cooling • 10 sec • 20 times	Drop less than 10% in resistance	Pass
Thermal Shock	• 125 °C / 40 °C • 15 min • 500 times	Drop less than 10% in resistance	Pass
Reflow	• Max 260 °C • 20 sec • 12 times	Drop less than 10% in resistance	Pass
Solder Float	• 288 °C • 10 sec • 6 times	Drop less than 10% in resistance	Pass
IST	• 125 °C/ - 40°C • 15 min hold time	Drop less than 10% in resistance	Black Knight exceeds most electroless copper results with average of ~1000 cycles

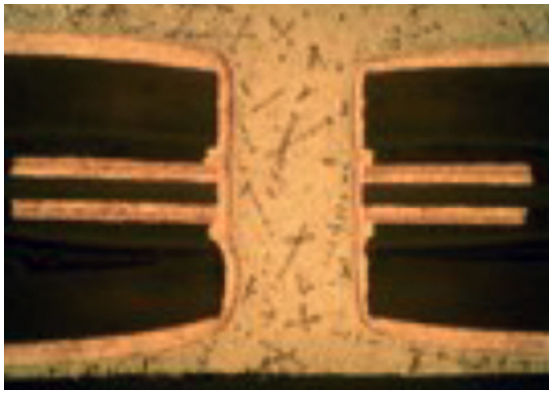
Black Knight vs. Electroless Cu IST Distributions



Circudep Black Knight averages 1000 IST Cycles



IST test coupon after 1000 cycles



Solder shock PI flex multilayer

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