

# Shadow<sup>®</sup> Plus

Advanced Direct Metallization

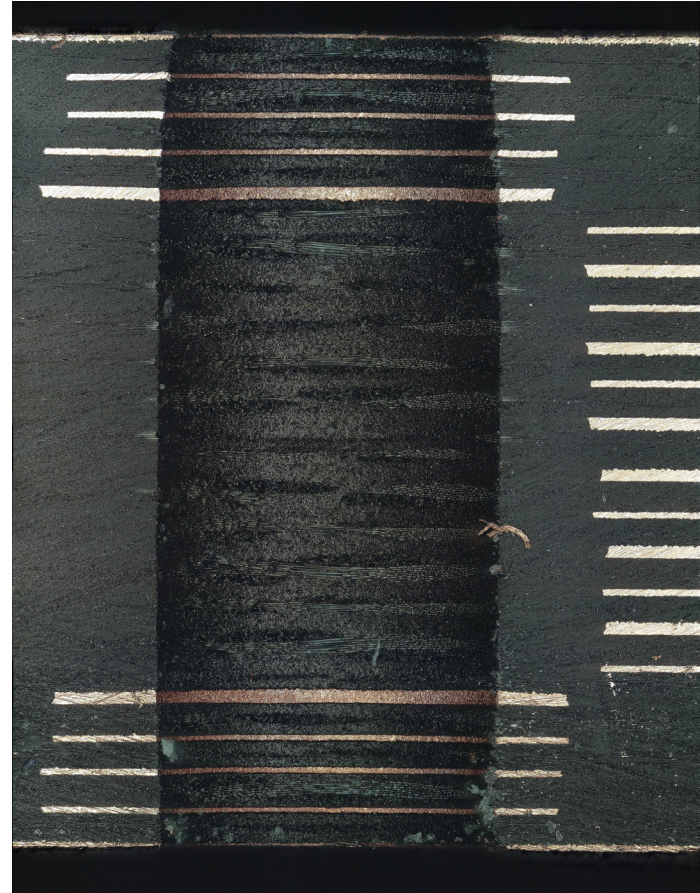
## Shadow Plus is our Fastest Throughput and Most Reliable Alternative to Electroless Copper

**Shadow Plus** enables the plating of microvias and through hole structures using graphite-based colloids and proprietary additives to make holes conductive. This direct metallization process allows designers to integrate microvias and any-layer HDI using high performance and exotic materials.

Shadow Plus is a more consistent process that uses less power and runs at lower operating temperatures when compared to electroless copper. Additionally, with no formaldehyde and lower chemical consumption, it is safer for operators and reduces maintenance. This direct metallization process can handle the most demanding designs used in critical applications.

## KEY FEATURES

- Higher throughput via faster propagation
- Advanced formula eliminates sludge formation
- Reliability proven by OM, Thermal Cycling, and IST
- Reduced power consumption lowers the carbon footprint

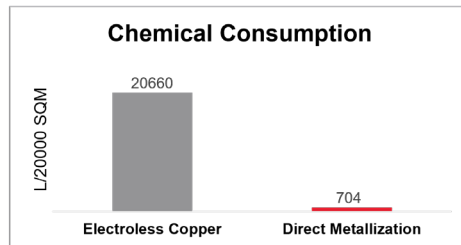
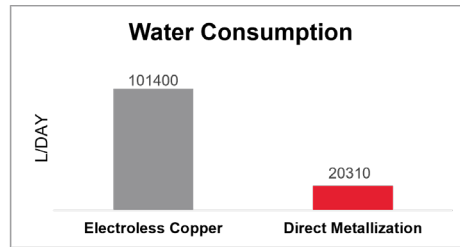
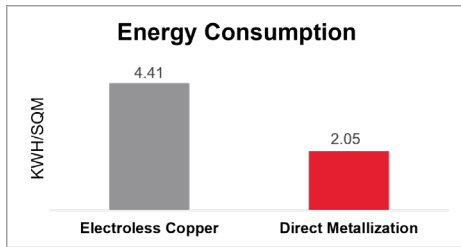


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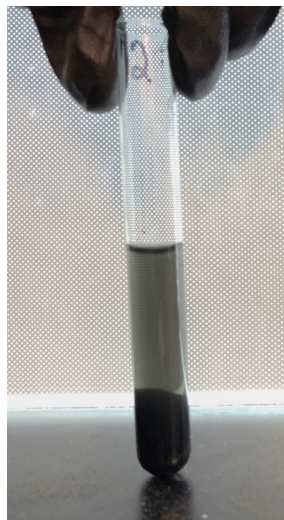
## Environmentally Friendly Value

Shadow Plus is a proven alternative to electroless copper. Utilizing fewer rinse steps, Shadow Plus delivers savings and sustainability. Non-dynamic chemistry and reduced process steps enable less analysis and easy line start / stops.



Shadow Plus has wide material compatibility including both PCB substrates and exotic materials. This primary metallization technology is ideal for advanced substrates with high aspect ratios, blind, buried and stacked vias, tight lines and spaces, and more. Any-layer HDI and mSAP designs are plated with ease by Shadow Plus.

## Shadow Plus Eliminates Sludge Formation



Sludge build-up observed in traditional Direct Metallization tanks causes need for greater bath maintenance.



Shadow Plus eliminates sludge formation, reducing bath maintenance and down time.

