WEBINAR Q&A
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MacDermid Alpha ELECTRONICS SOLUTIONS

Unlocking a Sustainability Win in PCB Fabrication Using Less Power, Water and Chemicals

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Mark S Edwards answers questions from our exclusive webinar, exploring the benefits of direct metallization as a sustainable alternative process technology to electroless copper.

Who is MacDermid Alpha Electronics Solutions and how are you involved in the PCB supply chain?

MacDermid Alpha is a global electronic materials manufacturer consisting of Circuitry Solutions (wet chemistry for plating bare boards and forming PCB circuits), Semiconductor and Assembly Solutions (assembly materials including solders, adhesives, coatings; plus chip fabrication and wafer-level packaging materials), and Films & Smart Surface Solutions (flexible and formable electronic materials for the human machine interface - "HMI").

How long has direct metallization been used in PCB production?

Since the mid-1980s. The 1990s saw improved capability and greater adoption and it has been growing ever since. Interest in this process has grown recently as electronic OEMs, their Tier 1s and the PCB fabricators work together to reduce CO_2 emissions and water consumption in the electronic component supply chain.

In what regions is this technology available?

All major regions where bare board fabrication volumes are significant, especially in Asia.

Is direct metallization used on one board type over another (e.g., rigid, flex, or rigid flex)?

Direct metallization is used on all three board types: rigid, rigid flex and flexible PCB types, with a wide variety of laminates.

Is the CO_2 data from a best practice recommendation or from actual customer data?

MacDermid Alpha's data is a hybrid of best practice process/equipment and actual, high-volume PCB shops.

Do many fabricators use the closed-loop, rinse water recycling option?

PCB fabricators commonly recycle as much rinse water as possible depending on facility design, discharge restrictions, and local water supply limits. Wide adoption of closed-loop rinse water recycling specifically for direct metallization, though, is the exception, not the standard approach.

During the presentation, formaldehyde was mentioned. Isn't that banned in certain places?

Formaldehyde importation and manufacturing restrictions exist today in major production regions, but we are not aware of any bans at this time.

Can you give a comparison of the reliability tests used for electroless copper and direct metallization?

Common industry standard tests, as well as other niche/customer tests, are applied to the direct metallization technology as on electroless copper. They include Interconnect Stress Testing (IST), OM Testing, Via Pull Testing, Air-to-Air Thermal Cycling, Hot Oil Testing. Many of these reference IPC TM-650-2.6.xx series tests. Direct metallization passes these tests and more.

In which market segments (consumer, automotive, health, etc.) is direct metallization used by OEMs?

Some of the larger market segments using direct metallization include, but are not limited to mobile device, automotive, telecom, and computing.

Is direct metallization a continuous line or is it a hoist-type of line?

Direct metallization is deployed on plating equipment lines using both vertical hoist designs and horizontal lines. The latter being most common in Asia. Vertical lines being more common in the Americas and Europe.

Can direct metallization be used in place of electroplating?

No. Direct metallization can be used instead of electroless copper in the primary metallization step (a.k.a. the activation step), but not instead of electrolytic copper plating.

If you missed the webinar, click to watch now!

Discover more about the benefits of direct metallization!

Green Electronics - Environmentally Responsible Alternatives to Traditional PCB Fabrication

by Mark S Edwards

The Sustainability Impact of Using Direct Metallization

POWER
57% Reduction

WASTE TREATMENT
69% Reduction

WATER
76% Reduction

If all PCB fabricators used direct metallization, it would reduce yearly global CO_2 output by approximately **700,000 tons.**

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