Spherolyte® Ni

All liquid ECD Ni electrolyte

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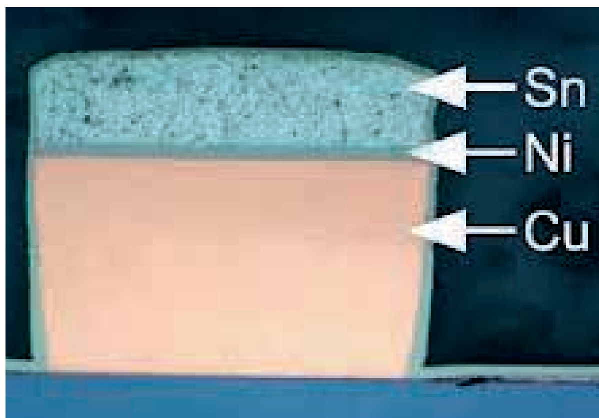
All liquid ECD Ni electrolyte for highly uniform plating

All liquid Ni plating process for various applications

Spherolyte® Ni electrolyte allows the plating of Ni for a broad set of applications such as Ni diffusion barrier, NiFe permalloy, Ni micropillars and Ni TSV. To allow easy handling under clean room conditions, the pH can be adjusted by adding a liquid acid – no powder handling is required.



Excellent uniformity and barrier layer function

Spherolyte® Ni deposits show excellent uniformities and hence allow the controlled deposition of Ni on the substrate. In pillar applications, the deposited Ni barrier prevents the diffusion of Cu into the solder material and therewith the formation of Cu/Sn alloys. As these intermetallic phases are known to grow uncontrollably, the use of Spherolyte® Ni significantly enhances the device reliability.

Features and benefits

- All liquid product – no powder handling necessary
- Excellent diffusion barrier for Cu
- Usable for NiFe alloy-permalloy-plating / Ni TSV application
- Excellent uniformity / throwing power performance
- Long bath life / good stability
- Easily analysable and maintainable plating system
- Wide operating window

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Spherolyte® Ni – Wide operating window and long batch life

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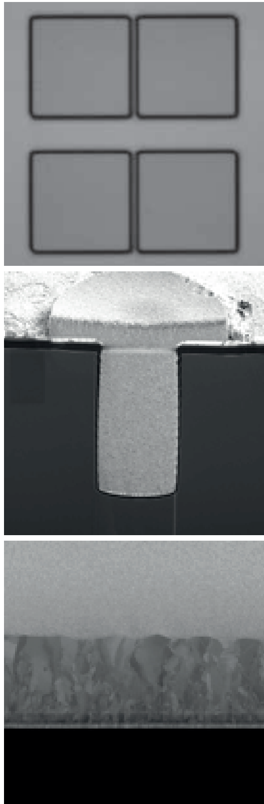

Figure 1-3:
Spherolyte® Ni plated –
1) NiFe pads (top view);
2) Ni TSV (FIB cross section);
3) Ni layer (FIB cross section)

Robust process and outstanding properties of the deposits

Spherolyte® Ni allows a wide operating window with regards to general plating conditions such as pH and temperature. The chemical composition enables a long batch life and good stability. Additionally, the system is easy to analyse and maintain, thus allowing the precise deposition of pure Ni layers which act as excellent diffusion barriers.

Extended additive suite for a broad variety of applications and parameter adjustments

To allow the broad applicability of the Ni electrolyte, a broad range of additive exists that allows the tuning of the process to the required needs. As such, next to leveler and accelerator, which allow to tune the via filling capabilities, a broad range of additives exists. For example, the Spherolyte® Ni Additive reduces internal stress in the deposits, while the Spherolyte® Ni Solution promotes nickel anode dissolution and prevents anode passivation, and the Spherolyte® Ni Iron Additive acts as Fe source to allow NiFe alloy plating.

Contact us to get to know more about the available additives.

Basic conditions

- Current density: 0.5 – 10 ASD
- Plating efficiency: 95 – 98% (at 2 ASD)
- pH: 4.0 (3.5 – 4.5)
- Temperature 50 °C (45 – 65°C)
- Deposition rate: 0.4 µm/min (at 2 ASD)
- Ni anodes: (S*-round or –pellets) / Ti basket
- Filtration: PP or HDPP filter (mesh size 1 µm)
- Compatible with fountain and paddle plater

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