Stannacid® HS-N

Semi-bright tin process

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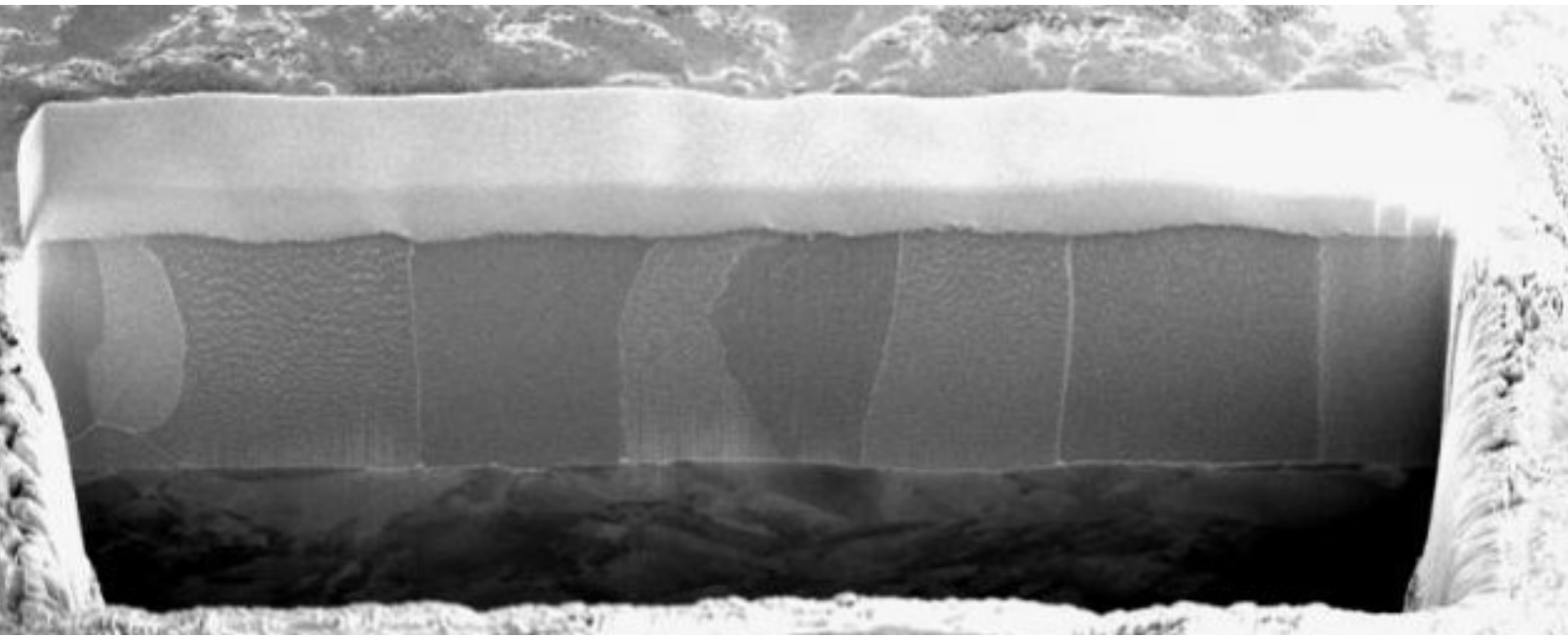

Semi-bright tin process based on sulfuric acid

Stannacid® HS-N

Stannacid® HS-N is a fully sustainable, fluoroborate-free, pure tin electrolyte based on sulfuric acid that is specifically developed for continuous plating of strips, wires, connectors, and lead frames in modern reel-to-reel and spot installations.

The electrolyte also shows excellent results using rack and barrel applications.

Properties

- Semi-bright white deposits
- Low tendency towards whisker formation
- Temperature range: 20 – 50 °C
- Current density range: 0.5 – 25 A/dm^2
- Good solderability and good reflow behavior
- Sustainable and NPE-free

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Stannacid® HS-N – Semi-matte tin process

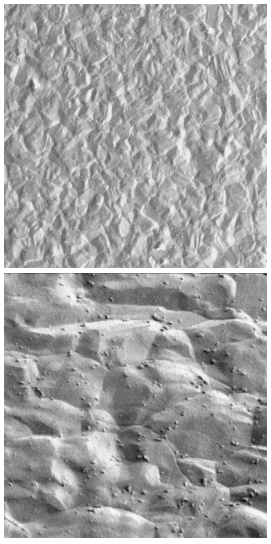

Figure 1+2:
SEM investigation with
(1) 1000x magnification &
(2) 5000x magnification

Advantages of sulfuric acid-based tin processes

Sulfuric acid-based electrolytes offer a significant cost advantage compared to MSA-based processes. Cost savings of up to 40 % can be realized. The electrolyte is free of any Nonyl-phenol ethoxylate (NPE) and complies with the EU directive 2003/53/CE on NP, NPE, and Cr6+cement marketing and restrictions.

Technology in detail

Stannacid® HS-N can be applied at high-speed and rack and barrel applications. The electrolyte consists of Stannacid® HS-N additive creating the regular large flat grain structure. To avoid the formation of stannic tin, antioxidant SN-R is added.

High-speed sample test plating of Stannacid® HS-N at 25 A/dm² shows great semi-bright to bright and even pure tin deposits. The process has a current efficiency of 90 – 100 %.

Rack and barrel sample tests show great semi-bright results. The best results are achieved when the additive concentration is limited to 50 ml/l. These processes also deliver current efficiencies of 90 – 100 %.

Parameter	Rack	Barrel	High Speed
Temperature	20 – 50 °C	20 – 50 °C	40 – 50 °C
pH	< 1, does not need to be monitored	< 1, does not need to be monitored	< 1, does not need to be monitored
Voltage	max. 6 V	max. 6 V	max. 6 V
Current density	cathodic: 0.5 – 3 A/dm² anodic: max. 3 – 4 A/dm²	cathodic: 0.2 – 2 A/dm² anodic: max. 3 – 4 A/dm²	cathodic: 5 – 25 A/dm² anodic: max. 3 – 4 A/dm²
Current efficiency	90 – 100 % (depends on application used)	90 – 100 % (depends on application used)	90 – 100 % (depends on application used)
Rate of deposition	about 1.0 µm/min at 2 A/dm²	about 0.4 µm/min at 1 A/dm²	about 10 µm/min at 20 A/dm²