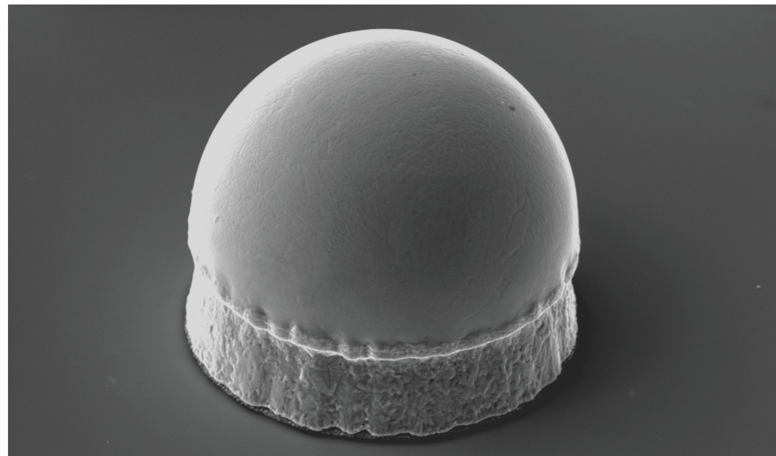
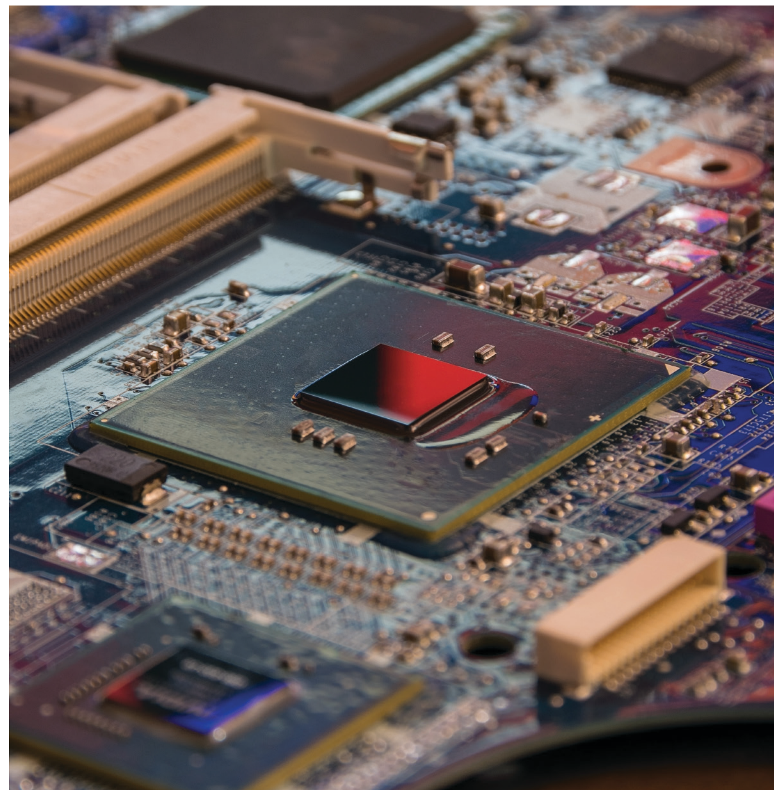
MICROFAB® TS-650

Tin-Silver Bump Metallization for Wafer Level Packaging

Pre Reflow Uniformity, Wide Process Window Tin-Silver Capping



In wafer bumping, next generation tin-silver alloys are providing the benefits of pure tin without the drawbacks. MacDermid Enthone's **MICROFAB® TS-650** is the tin-silver bump, pillar and capping metallization process to choose for your WLP designs when coplanarity, bond strength, and process throughput are your goals. The tunable tin-silver alloy produced by the TS-650 removes the propensity for whiskering while providing a lower melting point for reflow and a higher resistance to mechanical stress. Developed to perform alongside the MacDermid Enthone industry-leading copper pillar plating technologies, the TS-650 is the coating of choice for excellent solderability of chip or package to substrate.



Integration of MICROFAB® TS-650 with MacDermid Enthone's leading wafer level packaging processes provides unique options to fabricators in FO-WLP and other advanced design paradigms.

KEY FEATURES

- High deposition rate, lead-free process
- Smooth and uniform deposit
- Adjustable silver composition
- Excellent post reflow WID bump uniformity
- Horizontal or vertical equipment
- For bumping and capping applications
- Foam-free and stable electrolyte

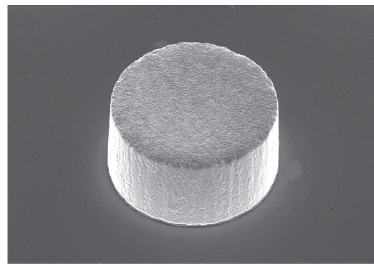
MacDermid Enthone

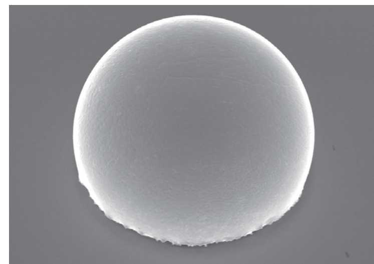
MICROFAB® TS-650

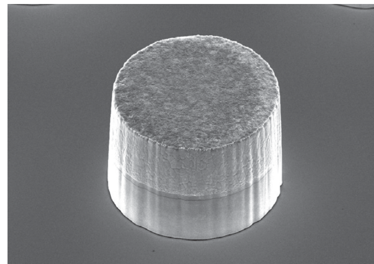
Tin-Silver Bump Metallization for Wafer Level Packaging

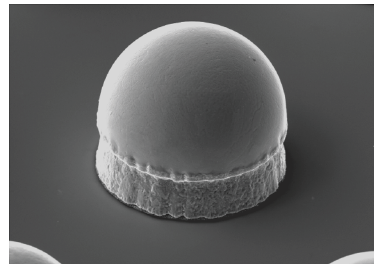
Excellent Morphology Before and After Reflow

In the fast-changing world of wafer level packaging, having the flexibility to meet new and complex requirements is becoming more important than ever. The highly dependable performance provided by **MICROFAB® TS-650** allows for suitability with a wide range of applications. With high speed plating capability of up to 12 ASD, the process is able to provide a smooth and regular coating of highly solderable tin-silver on a multitude of fine-pitch packaging designs.





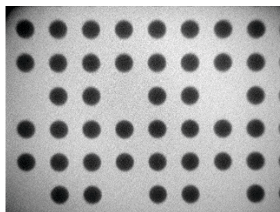


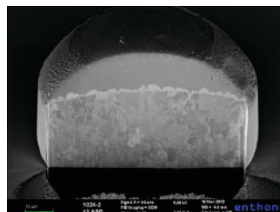


Before Reflow

After Reflow

High Speed, Consistent and Void Free

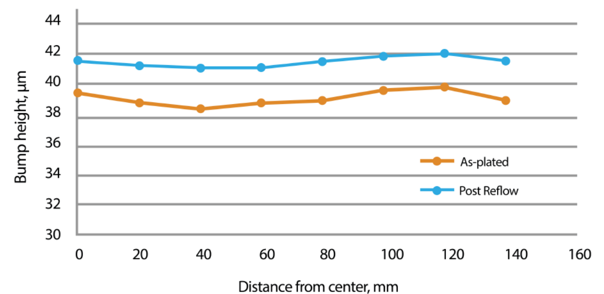




(Left) The TS-650 process provides consistent void free assembly through 100AH/L bath life.

(Right) FIB cross-section of TS-650 post reflow capping at 12 ASD.

Bump Height Distribution



Highly reproducible bump height distribution ensures consistent Within Die and Within Wafer uniformity before and after reflow.

macdermidalpha.com

January, 2019

MacDermid Enthone is a product brand of MacDermid Alpha Electronics Solutions.