

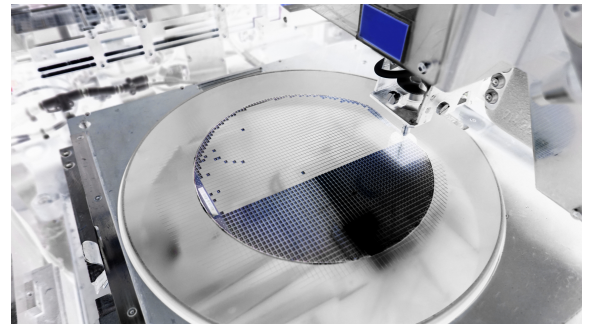
IntraCu® Additives*

Take Advanced Packaging to a completely new level

Umicore's business unit Electroplating have partnered with SHINHAO Materials to provide innovative patented additives* for copper electroplating into the advanced packaging industry.

IntraCu®* as a modular Copper electroplating additive system embodies an integral part of our joint product offering. It is manufactured in state-of-the-art clean room environment to meet quality standards of the semiconductor industry.

IntraCu®* additives can be seen as a POR replacement for Microbumps in IC packages, RDL in wafer level packaging and Pillar in flip-chip packaging.



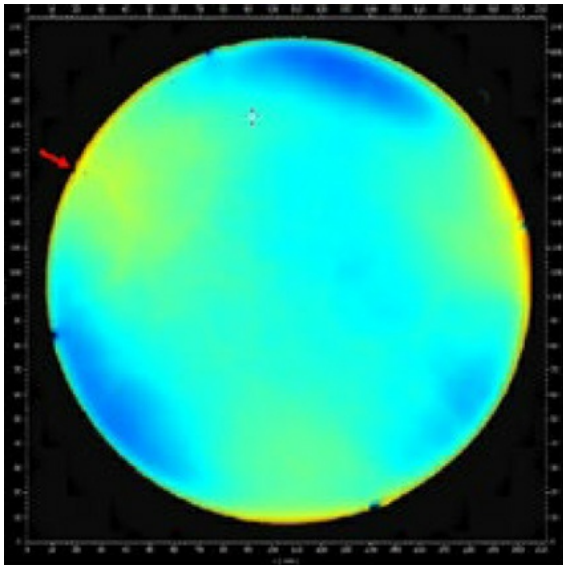
* Not available in Europe

Advantages

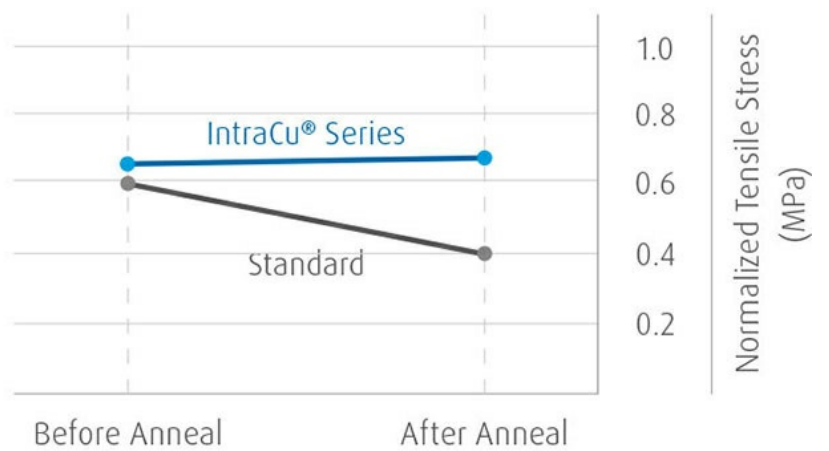
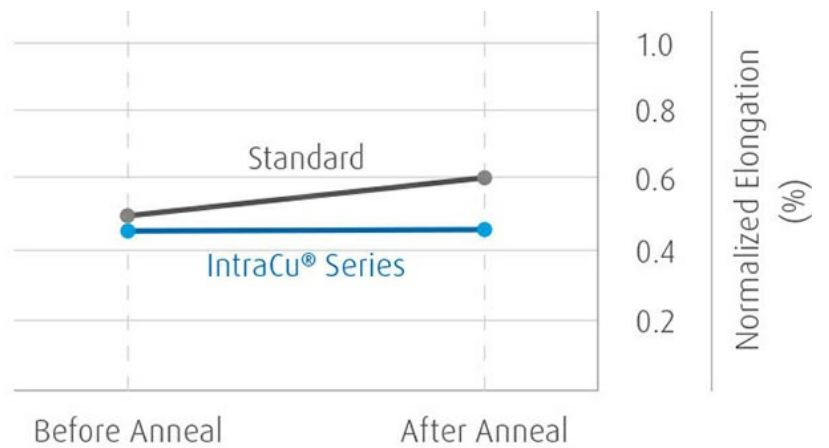
- Bamboo-like structure
- Matte Cu, Ra < 0.2 μm
- Flat topography
- Stable tensile strength
- Resistant to grain grow pdf-rowth
- Resistant to etching
- Bright Cu, Ra < 0.03 μm
- $\pm 50\%$ process window for Cu pillar and RDL
- Total in-film organics < 11 ppm
- Excellent KV-less performance

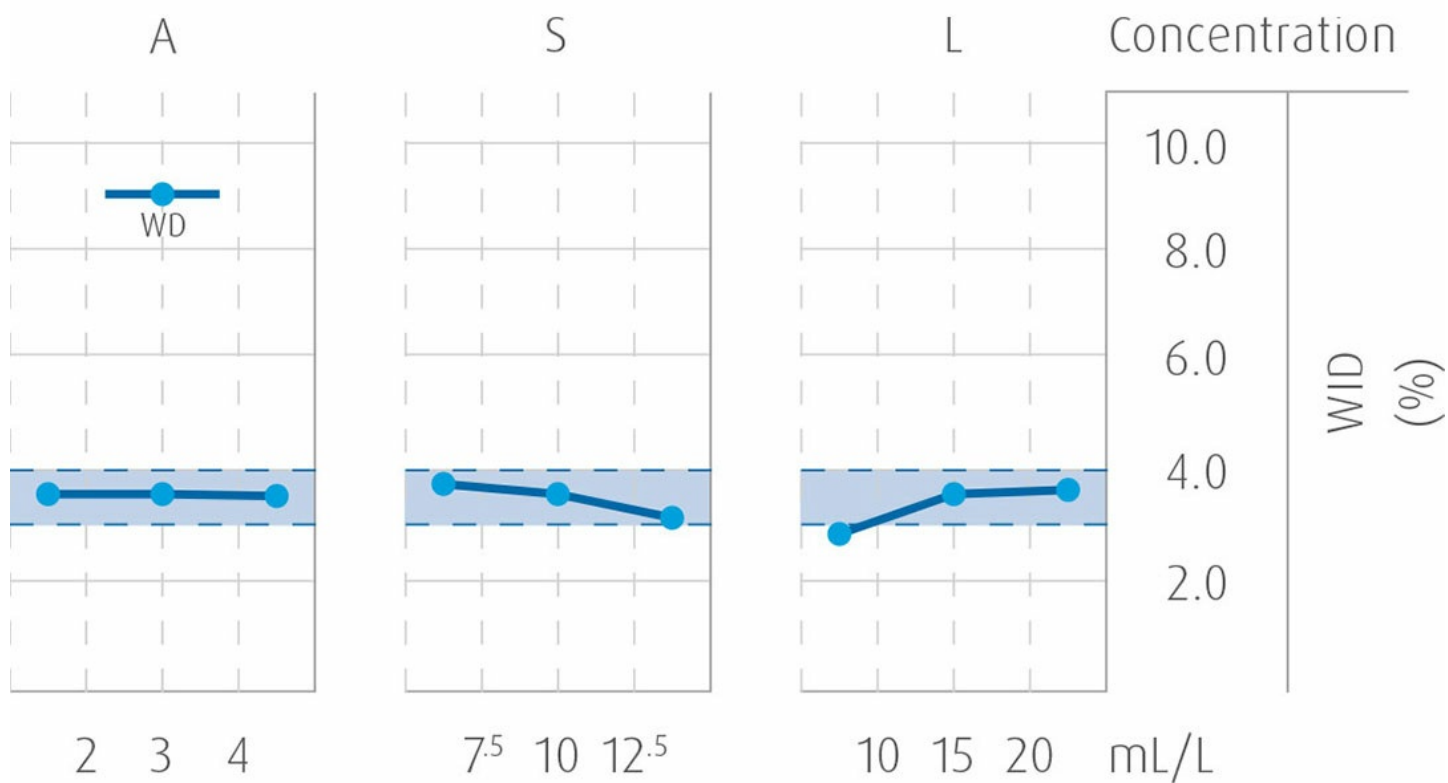
Applications

- Fine line RDL ($< 2\ \mu\text{m}$)
- Cu-to-Cu direct bonding
- 2-in-1 bright Cu (Cu pillar and RDL)
- 2-in-1 with KV-less requirement



Very low stress of IntraCu® SC layers:
8 inch blanket wafer, plated on one side
with $20\ \mu\text{m}$, shows warpage $< 10\ \mu\text{m}$.





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