

Elevate® Copper 3000

Versatile Process for Advanced Packaging

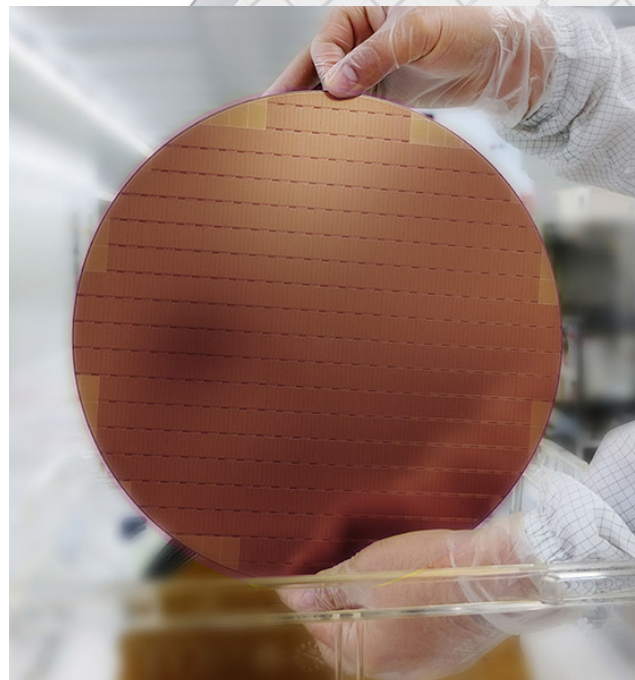


Versatile Copper Process for Advanced Packaging Applications

Elevate® Cu 3000 is a versatile electrolytic copper plating process, designed for a wide range of advanced packaging structures, all using the same organic system. It effectively plates RDL (Redistribution Layer) patterns, copper pillars, and other features commonly required in advanced packaging.

With minor adjustments to operating parameters, Elevate® Cu 3000 can produce flat, convex, or concave feature profiles, providing flexibility for various application needs. It has been successfully used in both pre-production wet benches and mass production tools.

The specially selected organic package in Elevate® Cu 3000 is easy to control using Technic's Elevate Analyzer or any standard CVS unit. This unique organic formulation can be modified to optimize copper pillar deposits, ranging from 20 to 150 microns in diameter, and up to 100 microns thickness.

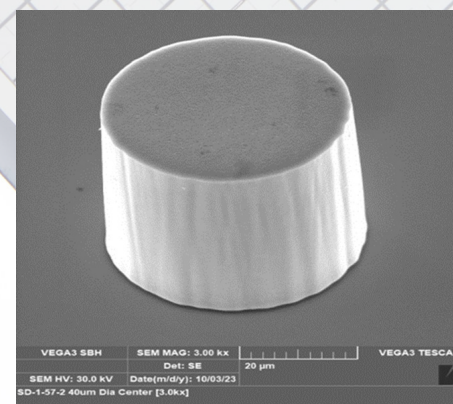


Benefits

- Additive package allows for adjustment of feature profile
- Eliminates the need to have different plating solutions for diverse feature types
- Reduced metal cost thanks to excellent coplanarity at various current densities
- Stable additive package yields predictable consumption rates
- Technic's extensive copper plating expertise available worldwide

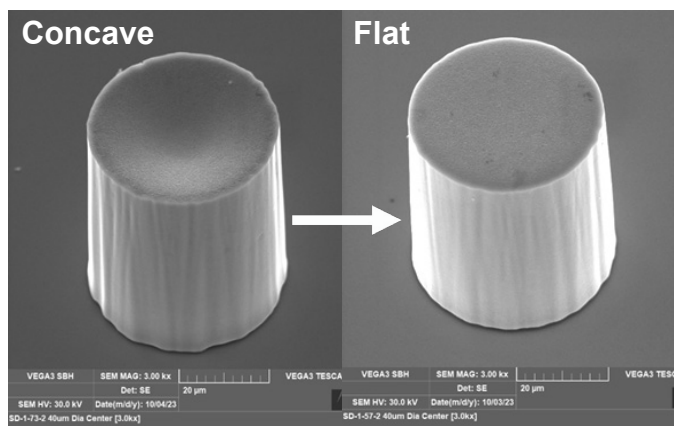
Features

- Plates at wide current densities
- Compatible with standard industrial horizontal and vertical plating tools
- Maintains optimum WIW (Wafer in Wafer) and WID (Wafer in Die) coplanarity at various plating rates
- Capable of plating many different advanced packaging structures, using the same organic system
- Easily controlled using Technic's Elevate Analyzer or standard CVS methods



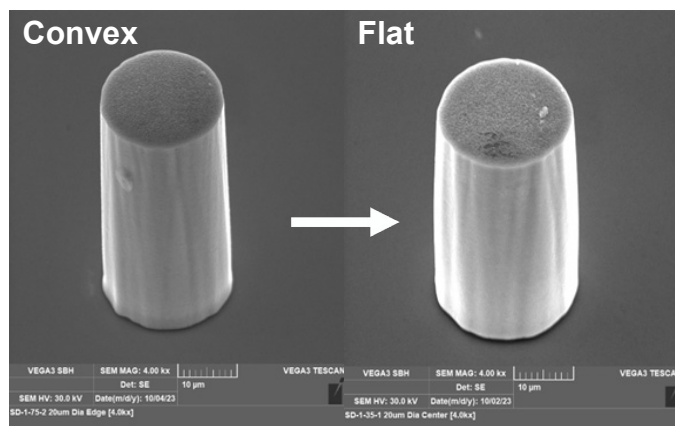
Elevate® Copper 3000

Control of % TIR



The following options, in order of effectiveness, can be utilized to adjust a concave feature profile to a flat profile:

- Reduce Current Density
- Increase Accelerator
- Increase Leveler



The following options, in order of effectiveness, can be utilized to adjust a convex feature profile to a flat profile:

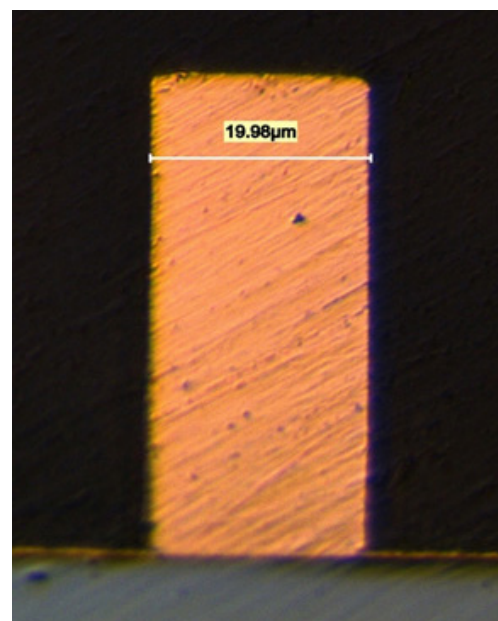
- Increase Current Density
- Decrease Accelerator
- Decrease Temperature

90 ASF

20 μm Dia.			50 μm Dia.		
Step Height (μm)	TIR	% TIR	Step Height (μm)	TIR	% TIR
50.02	0.87	1.739304	52.46	0.52	1.00
49.98	0.65	1.296519	52.18	0.58	1.11
49.83	0.67	1.346578	52.33	0.49	0.94
49.93	0.79	1.588224	52.22	0.40	0.77
49.45	0.84	1.700708	52.33	0.56	1.10
49.67	0.98	1.979062	52.27	0.43	0.83
49.84	0.72	1.448636	52.24	0.51	0.97
49.8	0.72	1.441767	52.2	0.40	0.76
49.82	0.78	1.57	52.28	0.49	0.93
50.02			52.46		
49.45			52.18		
0.57			0.27		

125 ASF

20 μm Dia.			50 μm Dia.		
Step Height (μm)	TIR	% TIR	Step Height (μm)	TIR	% TIR
50.17	0.48	0.96	52.33	0.20	0.37
50.09	0.46	0.92	52.26	0.22	0.41
49.81	0.40	0.80	52.23	0.16	0.31
49.96	0.37	0.75	52.21	0.15	0.30
49.94	0.46	0.93	52.21	0.20	0.38
49.67	0.39	0.79	52.20	0.20	0.39
49.84	0.37	0.73	52.22	0.19	0.37
49.88	0.47	0.93	52.19	0.21	0.40
49.92	0.43	0.85	52.23	0.19	0.37
50.17			52.33		
49.67			52.19		
0.50			0.13		



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