Brewer Science® ProTEK® B3

Alkaline-Resistant Coating

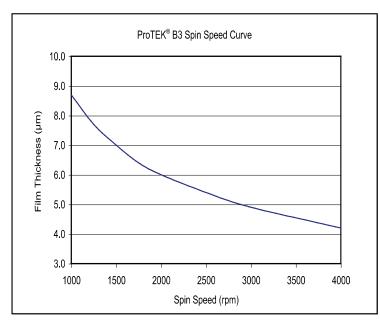


ProTEK® B3 coating protects front-side circuitry during deep backside alkaline bulk micromachining while increasing throughput and yield.

Benefits

- Protect delicate front-side circuitry during backside bulk micromachining
- ▶ Increase yield by minimizing front-side damage caused by alkaline etch solution punch-through during wet etching
- Improve throughput by
 - Reducing labor and process time associated with mechanical clamps
 - Increasing the number of wafers per etch bath

ProTEK® B3-25 Coating Spin Speed Curve



Processing Recommendations

ProTEK® B3 Primer

Spin coat: 1500 rpm for 60 s, acceleration: 1000 to 10,000 rpm/s Bake (hot plate): 205 °C for 60 s

ProTEK® B3 Protective Coating

Various film thicknesses of ProTEK® B3 coating can be achieved by varying the spin speed. We suggest using a spin speed of 1000 to 4000 rpm.

Spin coat: > 1000 rpm (customer set) for 60 s, acceleration:

> 5000 rpm/s

Bake (hot plate), (all bakes required):

Bake 1:100° to 140°C for 120 s

Bake 2: 205°C for 60 s

Alternative Oven Bake Method Hot plate bake: 130°C for 120 s Oven bake: 200°C for 30 min

Remove wafer from oven and cool to room temperature.

Storage Conditions

ProTEK® B3 Coating: Room temperature (16°C to 26°C)
ProTEK® B3 Primer: Room temperature (16°C to 26°C)

Shelf Life

ProTEK® B3 Coating: 365 days
ProTEK® B3 Primer: 180 days
ProTEK® Remover 100: 365 days

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Removal Guidelines

Recommended Wet Removal Process

ProTEK® Remover 100

Puddle (Spin) Dispense Process:

Step 1	Process	Spin (rpm)	Time (s)	Spray (s)
1	Puddle	0	60	0
2	Spin	500	15	15
3	Spin	2000	10	0
4	Puddle	0	30	0
5	Spin	500	15	15
6	Spin	2000	10	5
7	Spin	500	15	15
8	Spin	2500	15	0

Bath Process (two baths):

Bath 1: 23 °C, 20 min (room temperature) Bath 2: 23 °C, 20 min (room temperature)

With isopropanol (IPA) (room temperature) for 5 min With deionized (DI) water (room temperature) for 2 min Rinse:

Air dry Dry:

Spray Solvent Tool (SST) Process:

Step	Time	rpm	Drain/Recycle Tank
1	20 s	0	Drain
2	3 min	50 +	Tank
3	3 min	1000	Tank
4	3 min	50 -	Tank
5	3 min	1000	Tank
6	3 min	50 +	Tank
7	3 min	1000	Tank
8	3 min	50 -	Tank
9	3 min	1000	Tank
10	3 min	50 +	Tank
11	3 min	1000	Tank
12	15 s	50 -	Drain
13	IPA rinse		
14	DI H ₂ O rinse		
15	N ₂ dry		

The wet removal processes may leave a monolayer thin film of ProTEK® coating depending on the device type, structure, and complexity. This film is a transparent and non-reactive film. The remaining film can generate particles when exposed to acid. To prevent particles from forming, a short O₂ plasma etch step should be performed as follows:

Power: 300 W Gas: 50 sccm Gas flow: 20°C Temperature: 50 mTorr Pressure: Time: 20 s

Recommended Dry Removal Process

Power: 400 W 20% CF, Gas: Gas Flow: 80 sccm 75 mTorr Pressure:

Time: Approximate etch rate is 2 µm/min

All statements, technical information and recommendations contained herein are based on tests we believe to be accurate, but the accuracy or completeness thereof is not guaranteed and the following is made in lieu of warranty expressed or implied. Neither the seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising from the use or inability to use the product. Before using, user shall determine the suitability of the product for his intended use, and user assumes all risk and liability whatsoever in connection therewith. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of the seller and manufacturer.