Brewer Science® ProTEK® B3

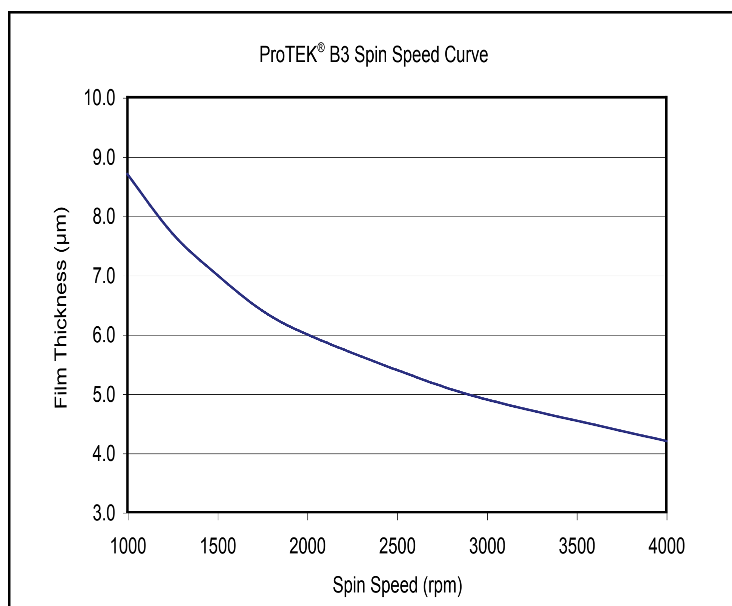
Alkaline-Resistant Coating

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

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)
Rinse: With isopropanol (IPA) (room temperature) for 5 min
Rinse: With deionized (DI) water (room temperature) for 2 min
Dry: Air 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_2O 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 O_2 plasma etch step should be performed as follows:

Power: 300 W
Gas: O_2
Gas flow: 50 sccm
Temperature: 20 °C
Pressure: 50 mTorr
Time: 20 s

Recommended Dry Removal Process

Power: 400 W
Gas: 20% CF_4
Gas Flow: 80 sccm
Pressure: 75 mTorr
Time: Approximate etch rate is 2 µm/min

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