WaferBOND® HT-10.10

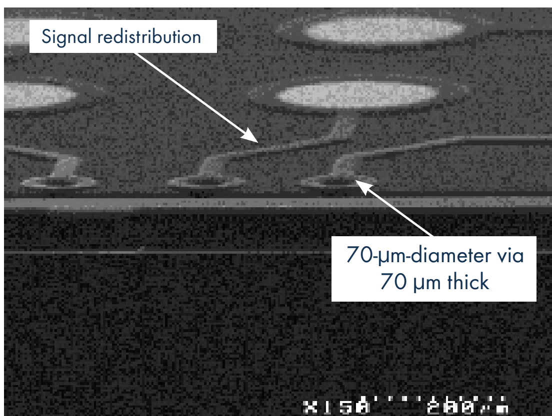
Temporary Bonding Material

WaferBOND® HT-10.10 temporary bonding material enables back-end-of-line (BEOL) processing of ultrathin wafers with standard semiconductor equipment.

WaferBOND® HT-10.10 material is an organic coating for temporary wafer bonding for MEMS and 3-D wafer-level packaging applications. WaferBOND® HT-10.10 material enables thinning and backside standard lithographic processing through effective bonding and subsequent thermal debonding. The material has been developed and tested especially for use in through-silicon via creation, finishing, and redistribution layer completion in processes up to 220°C.

BENEFITS

- Process ultrathin wafers using standard BEOL techniques and tooling
- Create interconnects before or after thinning
- Protect devices from chemical degradation
- Remove adhesive from device wafer completely

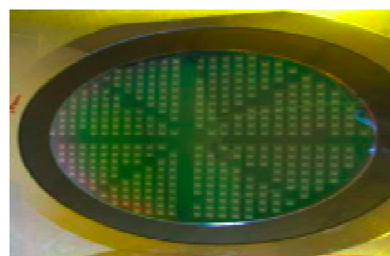


70-µm-thick wafer, 1:1-aspect-ratio vias, copper redistribution layer

Resistance to Process Chemicals

Chemistry	Bath Temp.	Time
Acetone	25°C	25 min
NMP	85°C	60 min
6N HCl	60°C	30 min
15% H_2O_2	60°C	40 min
30% NH_4OH	25°C	30 min
10% KI in H_2O	25°C	20 min
Ethanol	25°C	5 min
Methanol	25°C	5 min
Isopropanol	25°C	5 min
Cyclohexanone	25°C	5 min
Ethyl Lactate	25°C	5 min
PGMEA	25°C	5 min
PGME	25°C	5 min
30% HCl	25°C	90 min
70% HNO_3	25°C	60 min
Note: An HMDS pretreatment is recommended for the following exposure recipes:		
0.26N TMAH	60°C	30 min
30% KOH	85°C	60 min

Contact Brewer Science for process recommendations for different coating thicknesses.



Thinned device wafer may be mounted on film frame for dicing and pick-and-place handling.

PROCESSING

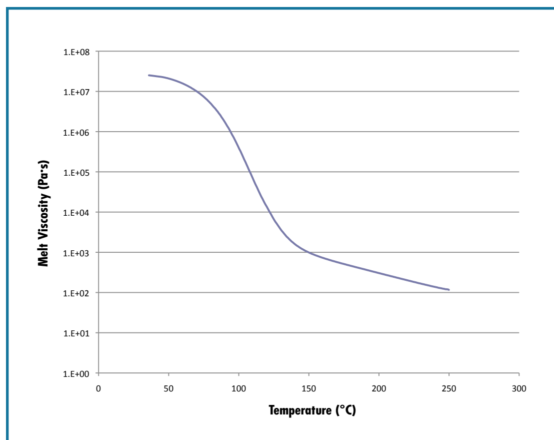
Best known methods (200-mm wafers)

	20-μm process	50-μm process
Coat		
Spin speed	1200 rpm	450 rpm
Acceleration	3000 rpm/s	500 rpm/s
Time	30 s	35 s
Bake		
Bake 1	120°C, 3 min	120°C, 5 min
Bake 2	180°C, 4 min	180°C, 6 min
Bond		
Temperature	180°C	170°C
Force	3500 N	2100 N
Time	2 min	1 min
Vacuum	≤ 5 mbar	≤ 5 mbar

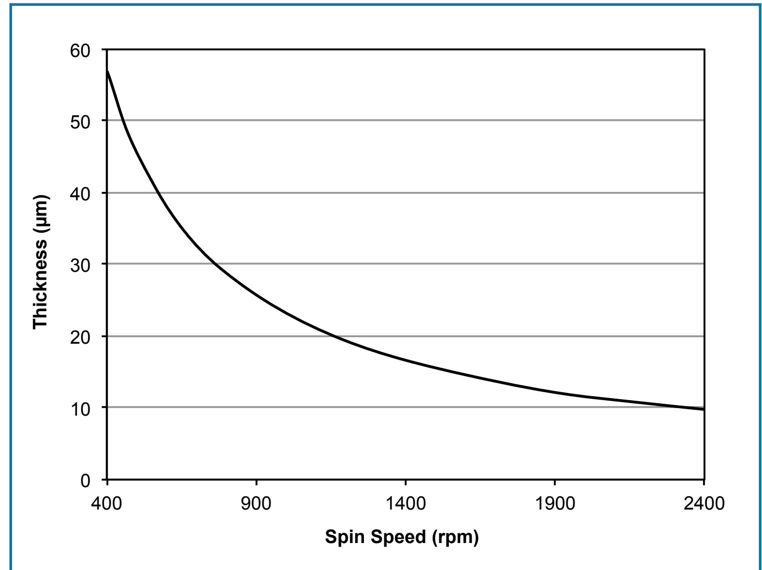
Storage Conditions

Store at room temperature (16 to 26°C)

WaferBOND® HT-10.10 Material Melt Rheology



Spin Speed Curve



Thermal Slide Debonding

Temperature: 190°C
Max Rate: 3 mm/s
Max Force: 3 lb

Thin Wafer Cleaning Process

Clean – Central or Spray Dispense				
Step	Speed (rpm)	Acceleration (rmp/s)	Time (s)	Dispense
1	1000	3000	10	WBR
2	1000	3000	10	–
3	Repeat steps 1 & 2 five to thirteen times*			
4	1000	3000	20	IPA
5	1000	3000	30	–

**Dependent on thickness and equipment*

WBR – WaferBOND® Remover material
IPA – Isopropyl alcohol

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Effective Date: 1/9/2017