

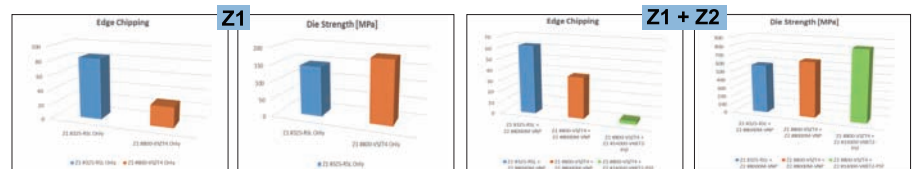
VITRIFIED BACK GRINDING WHEEL (NANO POL)



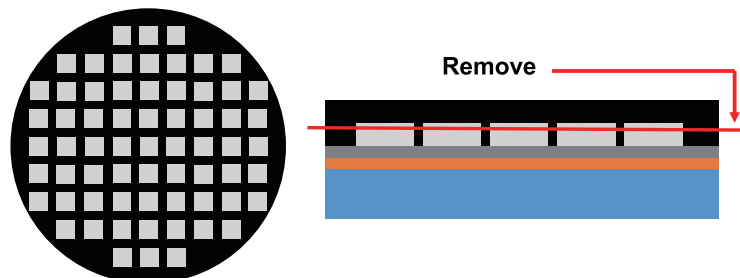
Technology

- Improve wafer surface roughness and die strength
- Reduce grinding stress and wafer edge chipping
- Diamond distribution at tip can be unified.
- Porosity, pore shape, and pore size controlling in various ways.
- Solution capable of grinding ultra thin wafer up to 17 μ m
- Solution for compound wafer grinding for TSV

Si Wafer Grinding Wheel



Compound Material & Compound Molded Wafer (TSV/Fan-Out) Grinding Wheel



EHWA DIAMOND IND. CO. LTD.

HEAD OFF. : 374, Nambu-daero, Osan-si,
Gyeonggi-do, 18145, Korea
Tel : (82-31)370-9000
Fax : (82-31)374-9235

SALES DEPT. , Tel : (82-31)370-0500
Fax : (82-31)370-0605

INTERNET : <http://www.ehwadia.co.kr>
E-MAIL : semi@ehwadia.co.kr

Material	Wheel Spec.
Pure Compound(Ex. EMC)	#800 ~ #2000 VSP3, #800 ~ #2000 VSP5
Compound + Silicon Chip	Z1 #800 VSP3 + Z2 #5000VK8HS, Z1 #800 VSP3 + Z2 #5000VK8B
Compound + Silicon Chip + Copper Via	Z1 #800 VSP3 + Z2 #5000VK8HS, Z1 #800 VSP3 + Z2 #5000VK8B
Compound + Silicon Chip + Copper Via + Polyimide + Solder	Z1 #800 VSP3 + #3000 VSPS10, Z1 #800 VSP3 + #3000 VSPBT7

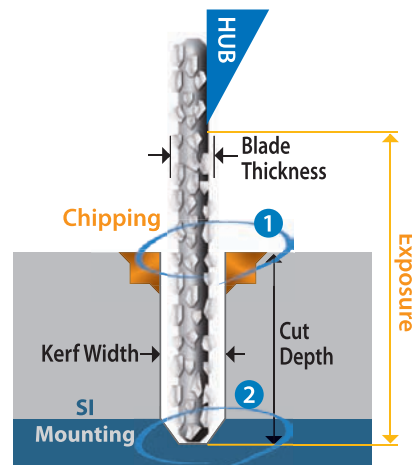
DICING BLADE



Advantages

- High accuracy, super thin blade developed by EHWA's cutting
- Minimized chipping and superior consistence in quality through stringent particle
- Size distribution control
- Improve productivity by high feed speed
- Providing an optimized solution to the customers

Si Wafer Dicing Mechanism

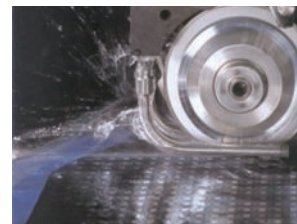


1. Wafer Top Side :

Wet cutting with coolant In general, fine diamond grit leads to small top side chipping.

2. Wafer Back Side :

Dry cutting without coolant In general, coarse diamond grit minimizes back size chipping due to its cutting ability and less load imposed on each grit.



Developing New Bond

Application

Si and Compound semiconductor

Features

Small top and backside chipping
Improve productivity by high feed speed



Top chipping



Side & back chipping

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MICRO BLADE



Advantages

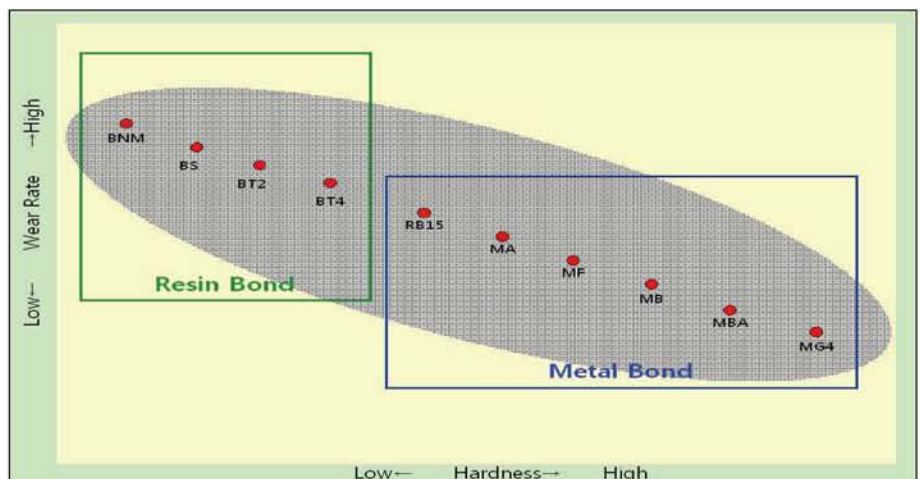
- High precision thin with superior cutting efficiency
- Maintains free cutting action at high RPM and fast feed rates
- Eliminate chipping during the sawing operation

Applications

- Sawing of packages such as QFN, FBGA, CSP, MCP, POP, PBGA
- Sawing and grooving of Ferrite, Ceramics, Glass, Quartz, Sapphire

Available Product Spec and Bond Series

Out Diameter	Minimum Thickness(mm)		
	Metal Bond	Resin Bond	Electroformed Bond
52~60 mm (2.5 inch)	0.10	0.10	0.08
75~78 (3inch)	0.15	0.15	
100~115 (4 inch)	0.15	0.20	
120~130 (5 inch)	0.20	0.25	



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New Product (Metal & Resin Blade)

- No diamond exposure of blade surface type
- Excellent cutting quality at Cu burr, Chipping and shape maintaining
- Superior blade life time and hardness than conventional blade

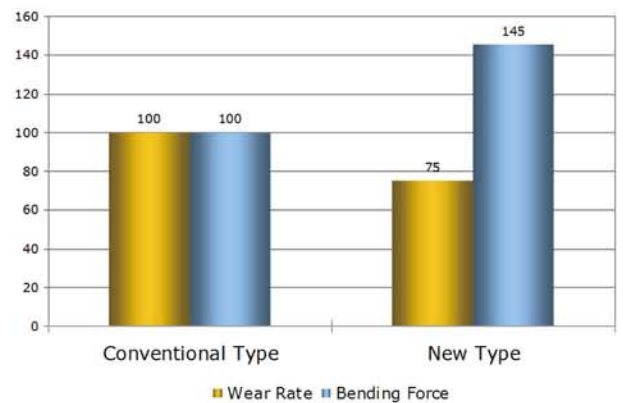
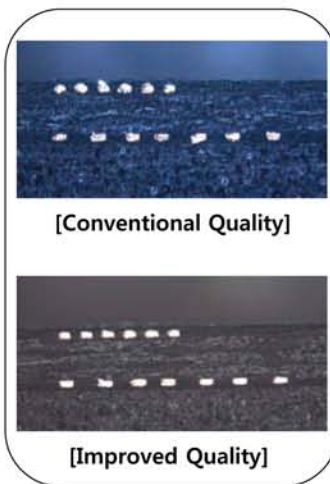


[Conventional Blade Surface and edge shape deformation]



[New Blade Surface and edge shape deformation]

Cutting surface of the PKG



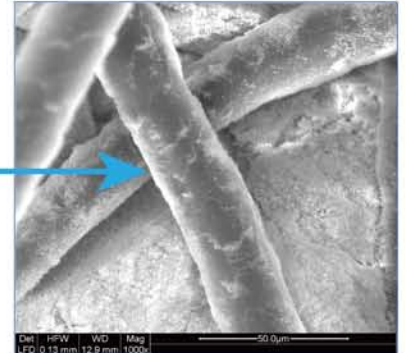
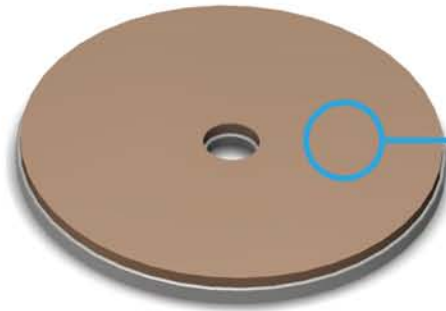
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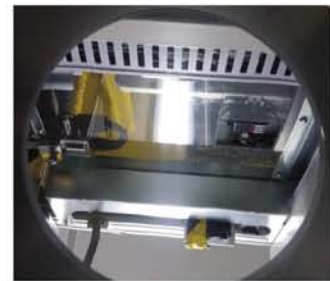
DRY POLISHING WHEEL (DP)



Wool Felt + ZrO₂ (250 nm)

Work Piece & Grinding

Silicon Wafer



- Z1 : EHWA BACK GRINDING WHEEL
- Z2 : EHWA BACK GRINDING WHEEL
- Z3 : EHWA DP-350D

Roughness Result (EHWA)

WAFER ROUGHNESS TEST (Field test)

- Sampling Interval : 1.0µm
- Objective : 20X
- Cutoff Filter : 80.00 (µm)
- Machine : MP2000+

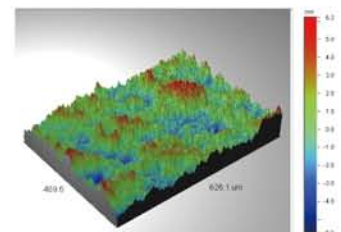
TOTAL ROUGHNESS AVERAGE

Ra Average = 1.64 Å



WAFER ROUGHNESS TEST (In house test)

- Ra : 1.17nm
- Rq : 1.48nm
- Rt : 11.97nm
- Machine : Wyko NT3300
- Method : Optical 3D Surface



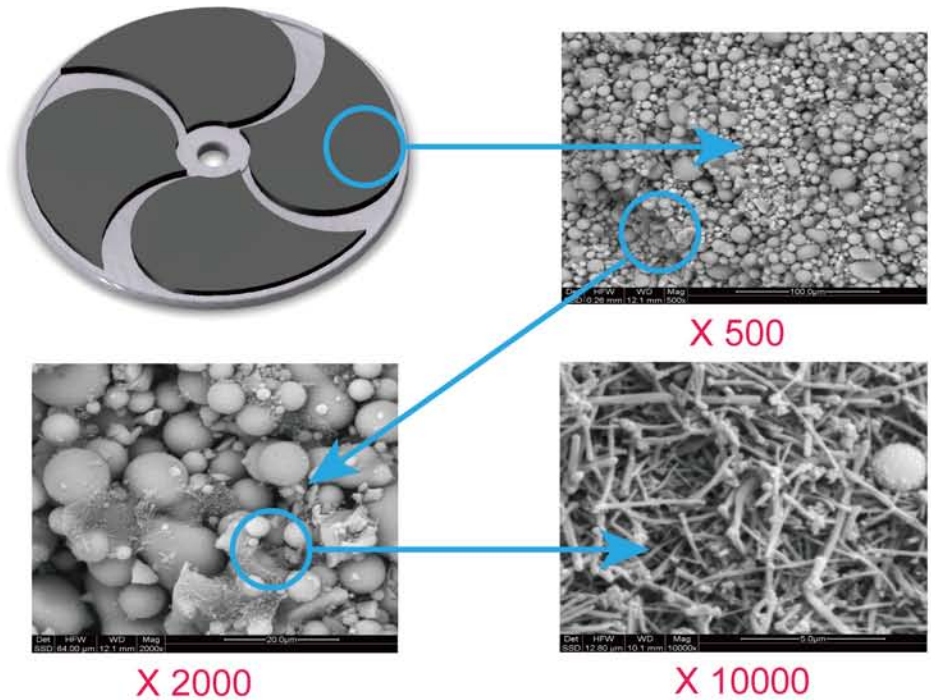
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GDP WHEEL



Test Condition

EHWA GDP(Sample1) Wheel Test

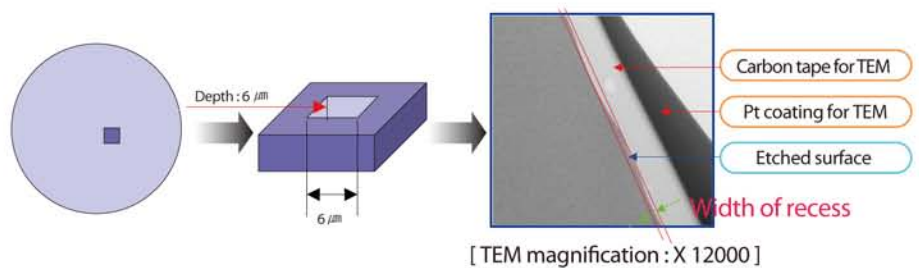
Processed Material

- Silicon Wafer Size : 12inch
- BG Tape Type : Lintec P-7180(180um)
- Machine Type : DGP 8761(NN2412) & DFM2800
- Quantity : Dummy Wafer x10 pcs

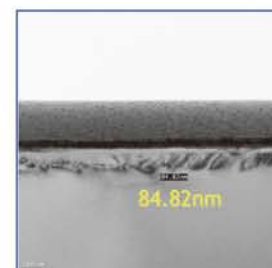
Wheel Type

- Z1 : EHWA BACK GRINDING WHEEL
- Z2 : EHWA BACK GRINDING WHEEL
- Z3 : EHWA-GDP 450D-26T-130H

Roughness Result (EHWA)



Damage depth



Damage depth

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