



DISCO

Kiru · Kezuru · Migaku Technologies



Electroformed Bond Hub Blades **ZHZZ SERIES**

Ultrathin hub blades for stable dicing of narrow street wafers



The thinnest hub blades in the industry - only 10 μm wide. A new high-strength bond, the H1 bond, reduces blade breakage and wavy cutting when dicing with thin kerfs.

ZHZZ Series hub blades were developed with a focus on narrow street dicing and other processing methods that uses thin blades. The newly developed high-strength H1 bond is employed to improve quality when cutting thin kerfs, while also achieving stable processing. The lineup includes a 10 μm wide blade that is the thinnest in the industry, contributing to the drive for narrower streets.

- Reduces blade breakage and wavy cutting for thin kerfs
- Enables stable processing of narrow streets
- Ultrathin 10 μm hub blades

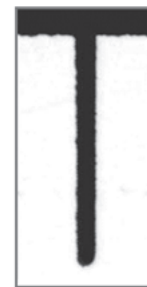


■ Photographs of cut grooves

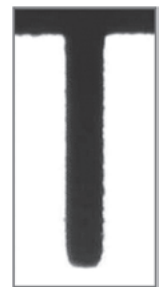
The ZHZZ Series can produce a 10 μm kerf. This is an extremely thin blade compared to 20 and 40 μm blades, and has the proven ability to cut straight grooves.



ZHZZ
Kerf 10 μm



Current
Kerf 20 μm



Current
Kerf 40 μm

Applications

Silicon wafers and compound semiconductor (GaAs, GaP, etc.) wafers, etc.

Specifications

ZHZZ - SD 4800 - H1 - 70 - A** AA**

Grit type	Bond type	Special specification
SD	H1	

Grit size	Concentration	Exposure	Kerf width
3000	50	Z 0.25 - 0.38	Z 0.010 - 0.015
3500	70	A 0.38 - 0.51	A 0.015 - 0.020
4000	90	B 0.51 - 0.64	B 0.020 - 0.025
4500	110	C 0.64 - 0.76	
4800			(mm)

Electroformed Bond Hub Blades ZHZZ SERIES



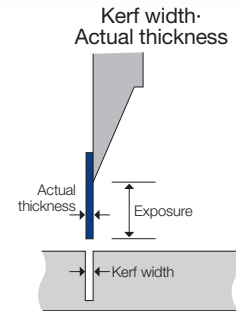
Standard sizes*

Kerf width	Exposure	Z	A	B	C
		mm	0.25 - 0.38	0.38 - 0.51	0.51 - 0.64
Z	0.010 - 0.015	ZZ			
A	0.015 - 0.020		AA	BA	
B	0.020 - 0.025		AB	BB	CB

*Please contact a DISCO representative for details.

Standard concentrations

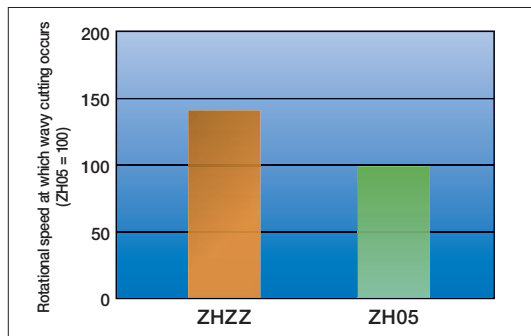
Grit size	Concentration				Kerf width	
	50	70	90	110	Z	A-B
#3000	✓	✓	✓	✓		✓
#3500	✓	✓	✓	✓		✓
#4000	✓	✓	✓			✓
#4500	✓	✓				✓
#4800	✓	✓			✓	✓



Experimental data

Wavy cutting rotational speed comparison

The ZHZZ Series does not exhibit wavy cutting until very high rotational speeds are reached. Compared to previous products, wavy cutting occurs less frequently.

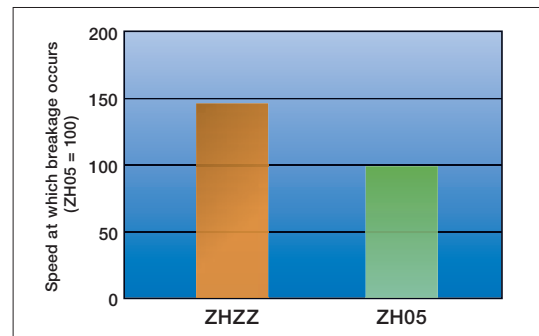


Evaluation was done by using the tendency for wavy cutting to occur more easily at higher rotational speeds. The rotational speed was gradually increased to determine at what rotational speed wavy cutting began.

Workpiece: Si $\phi 6''$
 Depth: 400 μm (half cut)
 Feed speed: 90 mm/s
 Blade: ZHZZ-SD3500-H1-70
 ZH05-SD3500-N1-70

Breakage speed comparison

ZHZZ Series blade can be pushed to a higher feed speed. Only then does the traditional breakage occur. Meaning that compared to standard blades breakage will occur less frequently.



Evaluation by using the tendency for blade breakage to occur more easily at higher feed speeds. The feed speed was increased rapidly to determine at which feed speed breakage would occur.

Workpiece: Si $\phi 8''$
 Depth: 680 μm
 Spindle revolution: 35,000 min^{-1}
 Blade: ZHZZ-SD3000-H1-50
 ZH05-SD3000-N1-50

When ordering

Please contact a DISCO representative with your product needs such as type, thickness, outer and inner diameter, and quantity.

When you place the first order with us, please explain application information such as materials to cut or grind, sizes, shape, machine, type, and other specification.

We are ready to help you to determine which is our most appropriate product type for your application.

Due to improvements in our products, it is possible that product specifications may be changed without advanced notice. Please confirm the product specifications with a DISCO representative.

To use these DISCO blades and wheels (hereafter precision tooling) safely...

- Please read carefully and follow the instructions below to prevent any accidents or injuries.
- USE a safety cover (nozzle case, cover), equipped as a standard accessory, to avoid injury.
- DO NOT EXCEED the specified rpm limit indicated on the precision tooling.
- FOLLOW the instruction manual of the equipment to mount the precision tooling properly.
- DO NOT DROP OR HIT the precision tooling. This may cause breakage or injury.
- Always CHECK the precision tooling for chipping or any other damage before starting to use it. DO NOT USE the tooling if there is any damage.
- READ the operation manual of the cutting/grinding equipment before use.
- DO NOT USE the precision tooling with modified or customized equipment.
- DO NOT USE precision tooling that has a different size from the one recommended for your equipment.
- DO NOT USE the precision tooling for any other purpose than grinding, cutting, or polishing.
- Always USE water or coolant to prevent precision tooling damage.



DISCO CORPORATION

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