Kiru Kezuru Migaku

DISCO

Vitrified Bond Blades

VT07/12 SERIES

Vitrified bond blade for high-load processing

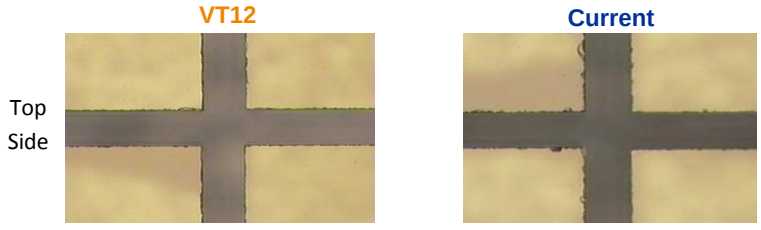
The VT07/12 series can handle various materials from processing of difficult-to-cut workpieces to edge trimming of silicon wafers

This bond series employs a vitrified bond that has been difficult to manufacture into thin blades so far. These blades can process with an acute degree of straightness and dimensional accuracy for high-load processing by using the excellent rigidity and cutting ability of the vitrified bond. As a result, VT07/12 realizes quality processing for difficult-to-cut materials such as silicon nitride. Thanks to the enhanced bond line-up, this bond series also realizes processing in various fields, such as edge trimming of silicon wafers.

- Realizes thin blades with a vitrified bond.
- Able to process with a high degree of straightness and dimensional accuracy for high-load processing.
- Realizes high quality processing for hard ceramics and sapphire.
- Realizes high quality edge trimming.

SiC processing

Compared to the existing blade, the VT12 blade can achieve a higher grade of processing for SiC, which has an extremely high hardness.



Chipping Avg.: 16 µm

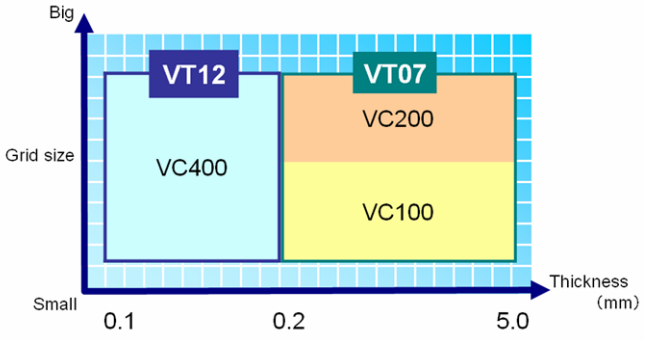
Chipping Avg.: 24 µm

Uses of each bond

VT07	**VC100**	For processing under high load or of hard-to-process materials (e.g., sapphire, silicon or deep groove processing)
	VC200	For edge trimming (silicon)
VT12	**VC400**	SiC and composite materials which the metal and resin layers are placed on the hard-to-cut materials

Applications
Si_3N_4, SiC, Crystal, Sapphire, etc

Supported range of each bond



VT07/12 SERIES

Specifications

VT07 – SD 400 – VC100 – 75 – A** 54 × 0.2 A3 × 40 – L**

Grit type	Grit size				Bond	Concentration	Special specification
SD	VC100		VC400		VC100	50	
B	280	#280	1000	#1000	VC200	75	
	320	#320	1200	#1200		100	
	340	#340	1500	#1500		125	
	360	#360	2000	#2000		150	
	400	#400	2500	#2500			
	600	#600	3000	#3000			
	800	#800					

O.D.	Thickness	Thickness accuracy		I.D.	Surface treatment※1
		A1	±0.002		L lapping specification
		A2	±0.005		
		A3	±0.010		
		A4	±0.015		
		AS	Special specification		

※1 The VT07 Series all have a lapping specification.

VT12 – SD 400 – VC400 – 120 – A** 54 × 0.1 A2 × 40**

Grit type	Grit size				Bond	Concentration	Special specification
SD	240	#240	1000	#1000	VC400	100	
B	280	#280	1200	#1200		120	
	320	#320	1500	#1500		140	
	340	#340	2000	#2000		160	
	360	#360				180	
	400	#400					
	600	#600					
	800	#800					

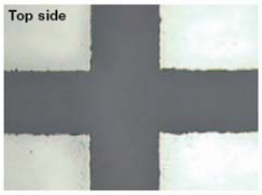
O.D.	Thickness	Thickness accuracy		I.D.
		A1	±0.002	
		A2	±0.005	
		A3	±0.010	
		A4	±0.015	
		AS	Special specification	

(mm)

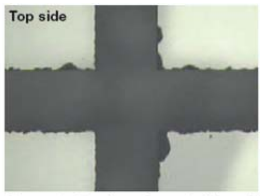
Experimental Data

Deep-groove processing

Compared to the existing blade, the VT07 blade can achieve a higher grade of processing for sapphire, which has an extremely high hardness.



New : VT07 3 mm/s (1 pass)

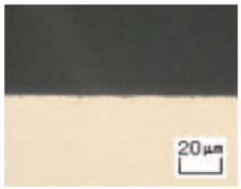


Current : Resin 2 mm/s (1 pass)

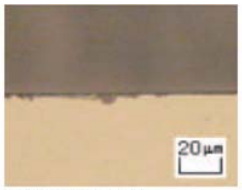
Workpiece : Sapphire 0.7 mmt
Blade : VT07-SD400-VC100-150
G1A851 SDC240R13B01
Spindle revolution : 15,000min^{-1}
Size : 56 x 0.3 x 40 mm

Edge trimming of silicon wafers

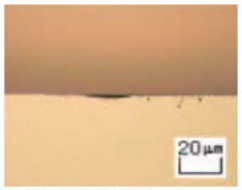
The wafer edge trimmed by the VT07/VT12 blade (VC200 bond) has the same quality realized by the resin blade processing.



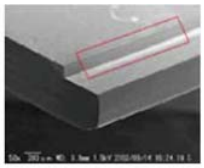
VT07



M42(Metal bond)



BR16(Resin bond)



Section where the photos were taken

Workpiece : Si
Blade : VT07-SD2000-VC200-100
B1A801 SD2000N100M42
P1A862 SD1200N100BR16
Blade size : 58 x 1 x 40 mm
Feed rate : 5 degree/s
Depth : 0.5 mm into Si wafer
Spindle revolution : Vitrified bond 20,000 min^{-1}
Resin/Metal bond 30,000 min^{-1}

Cautions during usage

Note the below points on its characteristics when using the vitrified bond.

1. Since the VT07/12 Series is nonconductive, contact setup (conductive type) cannot be used.
2. Since there is a danger of blade breakage when using the VT07/12 Series at high rpm, use at the specified rpm.
3. When using the VT07/12 Series on a machine with the standard BBD (Blade Breakage Detector Unit) the settings must be changed since there is a possibility of incorrect detection.
4. Since there is a fear of blade breakage, do not conduct the chopper cut setup (CCS) before dressing.
Note: For details, contact your DISCO sales representative.

VT07/12 Spindle rotation

	VT07Spindle rotation	VT12Spindle rotation
O.D.(mm)	Max. spindle rotation(min^{-1})	Max. spindle rotation(min^{-1})
50.0–63.4	20,000	38,000
63.5–88.3	13,000	25,000
88.4–117.0	10,000	19,000

When ordering

Please contact a DISCO representative with your product needs such as type, wheel size, and quantity.

When you place the first order with us, please explain application information such as materials to grind, sizes, 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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