



DISCO

Kiru · Kezuru · Migaku Technologies



Vitrified Bond Blades VT07 SERIES

Vitrified bond blades for high-load processing

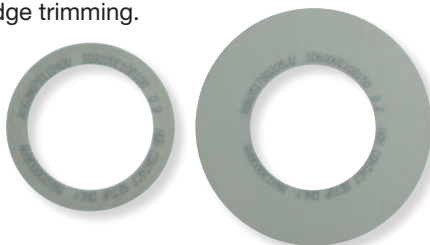


The VT07 Series can handle various materials from processing of hard-to-cut workpieces to edge trimming of silicon wafers

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 realizes quality processing for difficult-to-cut materials such as silicon nitride.

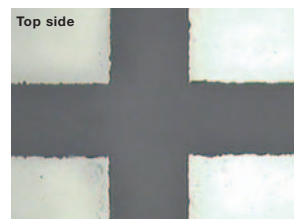
Thanks to the enhanced bond line-up, this bond series also realizes processing in various fields, such as edge trimming of silicon wafers.

- 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.



■ Sapphire 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 mm
 Blade: VT07-SD400-VC100-150
 G1A851 SDC240R13B01
 Spindle revolution: 15,000 min⁻¹
 Size: 56 x 0.3 x 40 mm

■ Uses of each bond

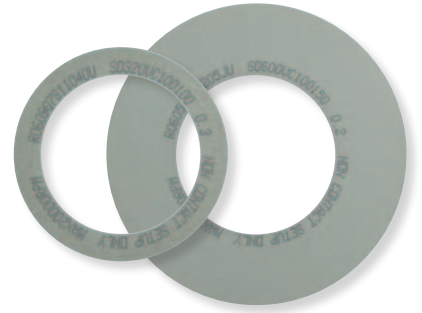
Bond Name	Main use
VC100	For processing under high load or of hard-to-process materials (e.g., sapphire, silicon or deep groove processing)
VC200	For edge trimming (silicon)

Applications

Si₃N₄, SiC, Crystal, Sapphire, etc.

Specifications

Vitrified Bond Blades VT07 SERIES



Bond^{*1}		Special specification		O.D.^{*1}	Thickness^{*1}	I.D.	
VC100							
VC200							
VT07- SD 400 - VC100 - 75 - A**** 54 x 0.2 A3 x 40 - L							
Grit type^{*1}	Grit type^{*1}				Concentration^{*1}	Thickness accuracy	Surface treatment^{*2}
SD	280 #280	1000 #1000			50	A1 ±0.002	L lapping specification
B	320 #320	1200 #1200			75	A2 ±0.005	
	360 #360	1400 #1400			100	A3 ±0.010	
	400 #400	1500 #1500			125	A4 ±0.015	
	600 #600	1700 #1700			150	AS Special specification	
	800 #800	1800 #1800					
		2000 #2000					
		2500 #2500					
	3000 #3000						

(mm)

^{*2} The VT07 Series all have a lapping specification

*1 Standard specification range by grit size (mm)

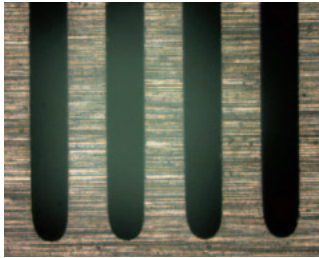
Bond	O.D.	Grit size	Thickness					Grit type		Concentration					
			0.200 - 0.249	0.250 - 0.299	0.300 - 0.399	0.400 - 1.0	1.01 - 5.0	SD	B	50	75	100	125	150	
VC100	50.0 - 117.0	#280				√	√	√	√	√	√	√	√	√	√
		#320			√	√	√	√	√	√	√	√	√	√	√
		#340			√	√	√	√	√	√	√	√	√	√	√
		#360		√	√	√	√	√	√	√	√	√	√	√	√
		#400 - #800	√	√	√	√	√	√	√	√	√	√	√	√	√
VC200	50.0 - 60.9	#1000 - #3000	√	√	√	√	√	√	√	√	√	√	√	√	

(mm)

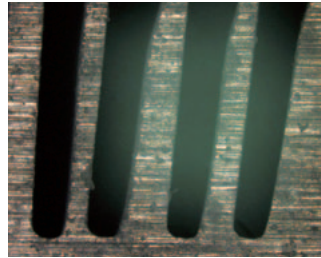
Experimental data

Deep-groove processing

The current blade bends during deep-groove processing. The VT07 Series (VC100 bond) can achieve highly straight processing results for deep-groove



VT07 (Speed:2 mm/s, Depth:2.6 mm)



NBC-Z (Speed:1 mm/s, Depth:1 mm)

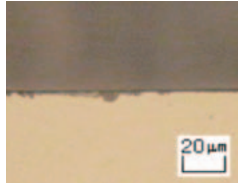
Workpiece: Si₃N₄
Blade: VT07-SD400-VC100-75
NBC-ZB1120
Size: 78 x 0.25 x 40 mm

Edge trimming of silicon wafers

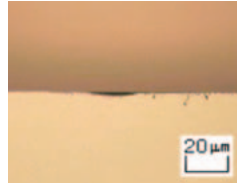
The wafer edge trimmed by the VT07 blade (VC200 bond) has the same quality realized by the resin blade processing.



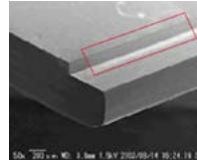
VT07



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: 0.5mm into Si wafer
Spindle revolution: Vitrified bon 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.

- Since the VT07 Series is nonconductive, contact setup (conductive type) cannot be used.
- Since there is a danger of blade breakage when using the VT07 Series at high rpm, use at the specified rpm.

- When using the VT07 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.
- 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 Spindle rotation

O.D. (mm)	Max. spindle rotation (min ⁻¹)
50.0 - 63.4	20,000
63.5 - 88.3	13,000
88.4 - 117.0	10,000

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.



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