

## SAPPHIRE WAFER BACK GRINDING WHEEL



### Technology

- Leading technology in various types of machines and applications
- Rough wheel (metal bond) : Long life time and excellent bulk removal rate
- Fine wheel (vitrified bond) : Superior grinding ability and roughness
- Providing proper wheel designs for various grinding methods and proper recipes

### Application

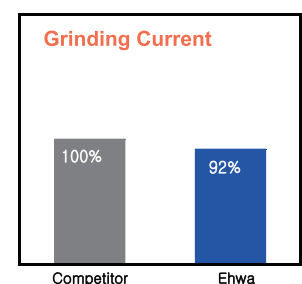
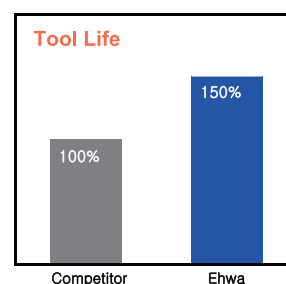
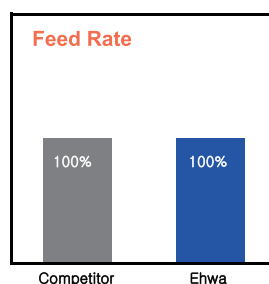
- Sapphire wafer
- SiC wafer
- Glass wafer
- High hardness material (Ex. zirconia)

### Specifications

| Process | Bond                          | D (mm)  | W (mm) | X (mm) | Grit Size  | Tip Shape      |
|---------|-------------------------------|---------|--------|--------|------------|----------------|
| Rough   | MX, MS Series                 | 200~300 | 3~5    | 3~10   | #170~#500  | Slant, Segment |
| Fine    | MS Series<br>VSP, VSBT Series |         |        |        | #600~#5000 |                |

### 2~4" Sapphire Wafer (Wax Bonding System)

#### 1) Grinding Wheel (#270-MX)



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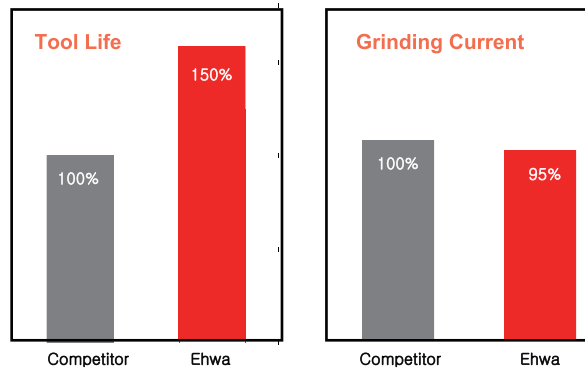
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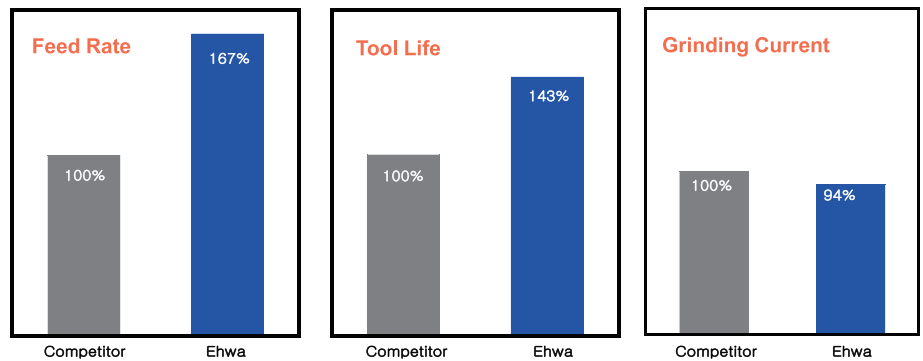
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### 2) Grinding Wheel ( #400 – MX)

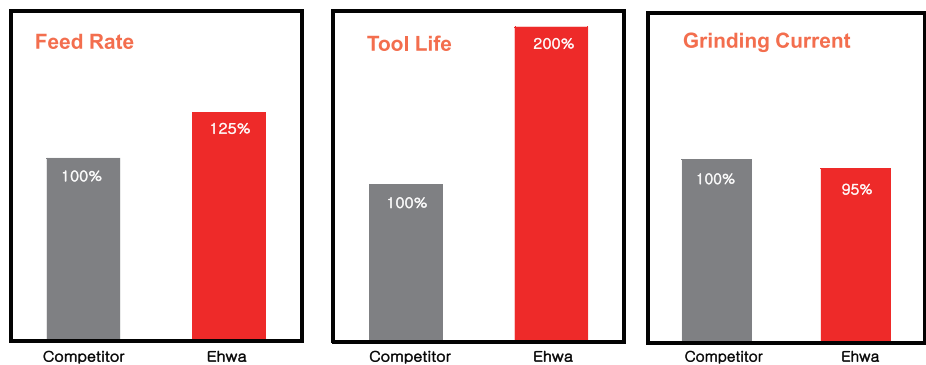


## 4" sapphire Wafer (Wax Bonding System) for Fully Automatic

### 1) Rough Grinding Wheel (#325-MX16)

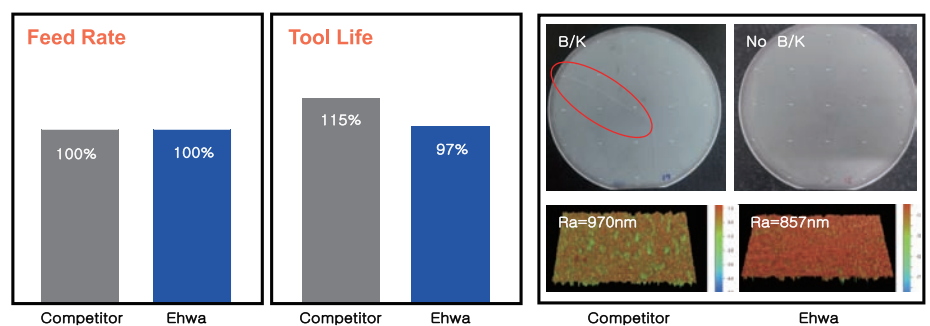


### 2) Fine Grinding Wheel (#1200-VSP)



## 6" sapphire Wafer ( Tape Bonding System ) for Fully automatic M/C

### 1) Rough Grinding Wheel (#270-MX)





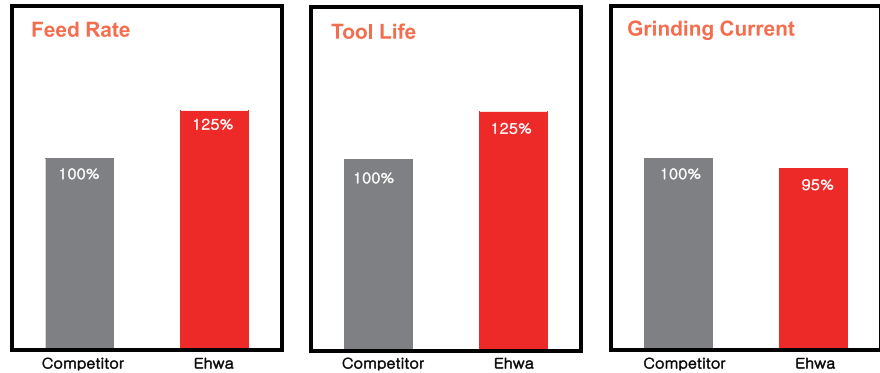
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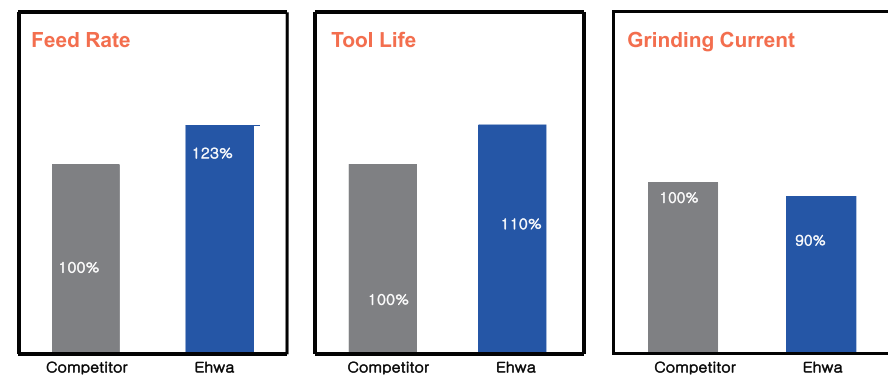
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### 2) Fine Grinding Wheel (#1200-VSP)

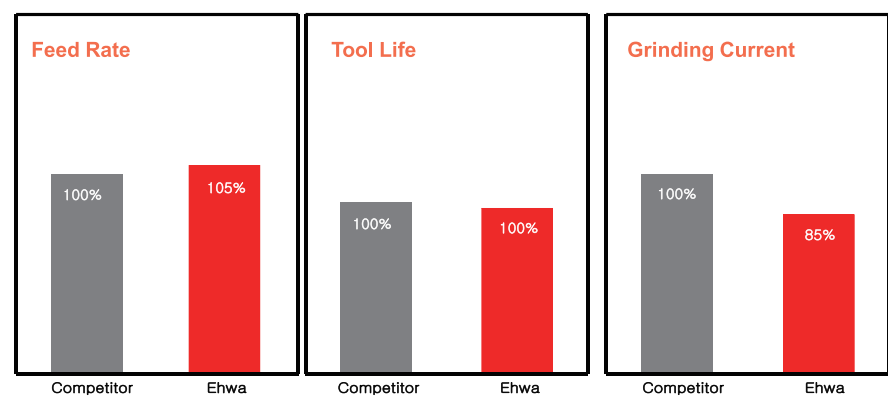


### 8" Ceramic Wafer (tape Bonding System) for Fully Automatic

#### 1) Rough Grinding Wheel (#325-MX)



#### 2) Fine Grinding Wheel (#1000-MF)



## SILICON AND SAPPHIRE WAFER EDGE GRINDING WHEEL



### Advantages

- Various groove shapes can be designed.
- Grinded with uniform chamfer width (excellent rigidity)
- Strong groove shape retention.
- Product 1ea enables multi-stage grinding (rough / fine grinding)

### Application

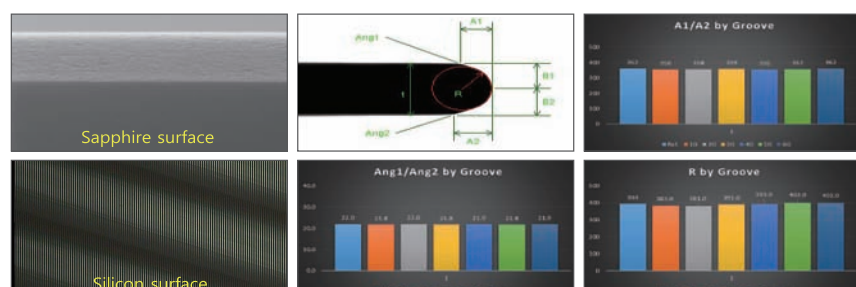
- Silicon and sapphire wafer edge grinding



### Available Product Spec.

|          |       |    |          |              |        |
|----------|-------|----|----------|--------------|--------|
| MD-DW    | Φ 3.9 | 5G | 5 ~ 20mm | #325 ~ #3000 | 5G     |
| MD-1FF6Y | Φ 202 | 8G | 5 ~ 20mm |              | 8G~10G |

### Performance Data



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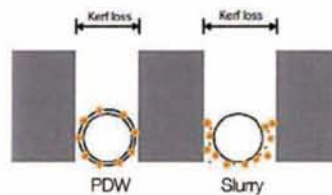
## PRECISION DIAMOND WIRE (PDW)



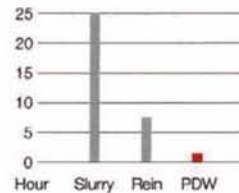
### Advantages

- High throughput & Superior cutting quality
  - Reduced process lead time and kerf loss
  - Enhanced flatness of cut materials and superior Warp, TTV and Bow values
- Applicable for thin wafer slicing - through uniform diamond grit
- Longer wire lifetime - Excellent diamond retention & no wire breakage
- Faster cutting speed - 3~10 times compared with slurry process
- Low cost and eco-friendly - Slurry free process

#### ■ Minimized kerf loss comparing to conventional method



#### ■ Process time



### For Silicon

For silicon slicing application, EHWA provides diamond wire in as 50um along with 120um. In realizing minimized kerf loss and superior cutting quality for high yield and utilization of thin wafer process, EHWA PDW will be the only solution.

EHWA PDW is easily adapted to other cutting systems in wider industries that would replace conventional cutting methods meeting customers' requirements for cutting quality and expectations for high throughput and cost savings

#### ■ Squaring



PDW Order code | 300-D50  
250-D50

#### ■ Slicing



PDW Order code | 90-D35

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## For Sapphire

EHWA PDW is widely accepted in slicing and cropping process for 2", 4" and 6" sapphire wafer preparation and it is expanding its presence in 8" sapphire wafer preparation process. Compared to Resin-coated diamond Wire, EHWA PDW has better thermal stability, longer lifetime and allows fast cutting time resulting in high throughput.

## SPECS for PDW

|                                | core material <sup>1)</sup> |                 |                       | diamond size (um) | kerf loss(um) | concentration <sup>3)</sup> & spool <sup>4)</sup> availability |
|--------------------------------|-----------------------------|-----------------|-----------------------|-------------------|---------------|----------------------------------------------------------------|
|                                | Order Code                  | diameter (Φ,um) | WBS (N) <sup>2)</sup> |                   |               |                                                                |
| Mono-/Poly-Si Wafering         | 70-D10                      | 70              | 18                    | 8~12              | 80~90         | We can provide wire according to the customer's request        |
|                                | 80-D12                      | 80              | 21                    | 8~16              | 90~100        |                                                                |
|                                | 90-D12                      | 90              | 23                    | 8~16              | 100~110       |                                                                |
|                                | 120-D15                     | 120             | 40                    | 10~20             | 140~145       |                                                                |
| Sapphire Ingot Wafering        | 160-D35                     | 160             | 65                    | 30~40             | 220~240       |                                                                |
|                                | 180-D35                     | 180             | 85                    | 30~40             | 235~255       |                                                                |
|                                | 180-D45                     | 180             | 85                    | 40~50             | 245~255       |                                                                |
|                                | 200-D35                     | 200             | 110                   | 30~40             | 260~280       |                                                                |
| Si Squaring/ Sapphire Cropping | 250-D35                     | 250             | 180                   | 30~40             | 310~330       |                                                                |
|                                | 250-D50                     |                 |                       | 40~60             | 340~360       |                                                                |
|                                | 300-D50                     | 300             | 240                   | 40~60             | 390~410       |                                                                |

1) high-quality piano wire, 2) wire breaking strength

3) low, middle, high concentration with continuous quality

4) lengths to 5, 10, 20, 30km, 50km, +100km

