3M grinding solutions in a global network

Due to the optimal networking of our 3M production and development sites we ensure high product availability and expertise.

- Our expertise for you: the best possible service, perfect grinding wheel specification, and optimised processes.
- We do everything possible to meet your individual demands. Our application engineers are happy to help all around the world.

Which grinding wheel layout do you prefer?

Only 3M offers grinding layers up to a diameter of 750 mm either segmented or with continuous rim – available new or your used tool can be replated in either of the 2 layer types.

Dressing solutions

We also advise you on your individual dressing solution with dressing tools from our own production.

3M Vitrified CBN Grinding Wheels 1PVZ

High-performance grinding with highly porous, wear-resistant bonding systems

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With the new grinding wheel 3M™ 1PVZ we offer the perfect grinding solution for your high-performance applications.

**Development benefits**
- Complete, homogeneous grit bond through adapted melting properties of the vitrified bond and optimized sintering process management.
- Bond bridges have increased bending strength and E-modulus. The thermal expansion coefficient of the bond is matching with the CBN grain and avoids micro-cracks.
- Reducing the bond by 3% leads to a more open porous structure of the abrasive surface.

**Main applications**
- Perfect for...
  - Cam shafts
  - Crank shafts
  - Medical
  - Ball screw

**Case studies**

**Cam shaft grinding in automotive**
- **Material:** Steel
- **Machine:** EMAG VCL 100G
- **Peripheral speed:** up to 72 m/s
- **3M Specification:** B126-VZ200R/411
- **Required Q’w:** 22 [mm²/mm*s]
- **Coolant:** Oil
- **Result:** 100% more parts per dress*

**Ball screw grinding at steering systems / ball screw spindle**
- **Machine:** Junker, Bahmüller, Studer, …
- **Peripheral speed:** up to 80 m/s
- **3M Specification:** B91-VZ150O/189
- **Required surface finish Ra:** 0.4
- **Coolant:** Oil
- **Required Q’w:** 15
- **Result:** 25% more parts per dress*

**Ball screw grinding at steering systems / ball screw nut**
- **Machine:** Junker, Bahmüller, Studer, …
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- **3M Specification:** B91-VZ150R/189
- **Required surface finish Ra:** 0.4
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**New 3M™ VZ bond**
- High performance grinding wheel with 3M™ VZ bond for absolute high-performance applications.

**Performance features**
- G-Ratio depending on the application between 750 and 7500
- Developed to meet the highest demands on the specific material removal rate Q’w
- Removal rates up to 100 [mm³/mm*s] on cast iron are possible

**Case studies**

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With 3M™ Vitrified CBN Grinding Wheels 1PVZ you grind efficiently, economically and at the highest level!

**In other words, 3 % less binding compared to the 3M™ 1PVY.**

**3M Vitrified CBN Grinding Wheels in performance comparison**

**High performance**
- Extremely wear-resistant
- Good grip, stable
- Soft grinding

**Utility**
- Standard applications

**Performance**
- G-Ratio depending on the application between 750 and 7500
- Developed to meet the highest demands on the specific material removal rate Q’w
- Removal rates up to 100 [mm³/mm*s] on cast iron are possible

**Specific material removal rate [mm³/mm*s]**

<table>
<thead>
<tr>
<th>G-Ratio</th>
<th>Specific material removal rate [mm³/mm*s]</th>
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<tbody>
<tr>
<td>1</td>
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<td>90</td>
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<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

*G-Ratio based on radial wear and profile loss

**Increase in wear resistance at high grinding performance**

**With the development of our vitrified CBN grinding wheels 1PVZ we have succeeded to enable absolute high-performance applications with minimum bond.**

In other words, 3 % less binding compared to the 3M™ 1PVY.

**The 3M™ Vitrified CBN Grinding Wheels 1PVZ**

**With 3M™ Vitrified CBN Grinding Wheels 1PVZ you grind efficiently, economically and at the highest level!**