### Portfolio Overview

**Wheel**

<table>
<thead>
<tr>
<th>Shape</th>
<th>Standard: All FEPA Wheel shapes</th>
<th>Special: For special shapes, please contact us!</th>
</tr>
</thead>
</table>

**CBN Layer Dimension**

- Outer diameter: 2–50 mm
- Layer width: 4–50 mm

**Type**

- Threaded Pin
- Cylindrical Shaft
- Special Shaft
- Shafts according to drawing

**Material**

- Steel
- Tungsten Alloy
- Tungsten Carbide

**Cooling Hole**

- With or without holes

### Key Applications

- Rotary Bearing
- Steering Components
- Linear Guide and Ball Screw
- Valve Train
- Miniature Bearing
- Shaft/Quill
- Nut/Fastener
- Wheel
- Shaft/Quill
- Threaded Pin
- Cylindrical Shaft
- Special Shaft

### Specifications

**Grit size**

- Standard range: MB25 to MB125
- Finer
- Suffer

**Hardness**

- MB25 to MB125

**Grit size**

- For other grit sizes, please contact us!

**Material**

- With or without holes

<table>
<thead>
<tr>
<th>Shape</th>
<th>Standard range: MB25 to MB125</th>
<th>Finer</th>
<th>Suffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape</td>
<td>Standard range: MB25 to MB125</td>
<td>Finer</td>
<td>Suffer</td>
</tr>
</tbody>
</table>

**Specification**

- Outer diameter: 2–50 mm
- Layer width (T/U): 4–50 mm

**CBN Layer Dimension**

- Outer diameter: 2–50 mm
- Layer width: 4–50 mm

**Threaded Pin**

- Cylindrical Shaft
- Special Shaft
- Shafts according to drawing

**Material**

- Steel
- Tungsten Alloy
- Tungsten Carbide

**Cooling Hole**

- With or without holes

**Hardness**

- For other grit sizes, please contact us!

**Material**

- With or without holes

### New Dimensions in High-Performance Internal Grinding Wheels

**Enabled by 3D Technology**

3M is a trademark of 3M. Used under license in Canada.

Please recycle. Printed in U.S.A. © 3M 2019. All rights reserved. 61-5002-8474-2
3M pioneers new capabilities for high performance precision-structured internal grinding tools.

New, tailor-made solutions adapt to the customer’s tool design and specifications and may improve levels of performance and output. Creating more possibilities and empowering individuals to grind in the most complex internal grinding applications.

Technology at a glance
3D printing structures are made by the addition of thousands of minuscule layers. With the help of this innovative technology, tools can be built layer by layer according to the design. Furthermore, new geometric flexibility ensures homogeneous distribution of grit and pores throughout. Unlike traditional manufacturing methods, this technology offers a new and different way to process grinding wheels. 3D technology adjusts and accommodates the wheel performance to meet customer requirements in a new way.

Freedom of shape design
Digital modeling allows flexible wheel design. This includes unique 3D shapes and structures, surface slots, integrated cooling holes, passages and channels.

Customer-centric tailor-made solution
A tailor-made solution can be delivered to satisfy the customer’s need for improvement by adjusting parameters such as “surface slot design” and “wheel specification”.

Higher process efficiency
Tests show improved efficiency and increased output in grinding processes. The ability to specify shape and formulation optimizes wheel design and performance. 3M™ Precision Structured Vitrified CBN Grinding Wheels also help reduce dressing intervals and extend wheel life, minimizing process cycle time and cost per piece.

Higher Performance up to 40%
Application: Plunge ID grinding
- Material: 100Cr6 – 60HRC ± 2
- Wheel sizes: 25 x 10 x 20
- Cutting fluid: OIL
- Wheel speed: 45 m/s (around 35000rpm)
- Workpiece speed: 0.75 m/s
- Dressing: UD: 3 – Speed ratio: 0.8 (synchronous)
- Dressing traverse speed: 650 mm/min

Results
Compared to non-patterned wheels, our new precision structured wheels achieved up to 40% higher removal rates (diagram 1) and lower grinding forces (diagram 2).