3M™ Precision Structured Vitrified CBN Grinding Wheel 1PVP

Portfolio Overview

Wheel

Shape

Standard: All FEPA Wheel shapes
Special: For special shapes please contact us!

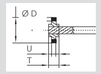
CBN Layer Dimension

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

FEPA Shape: **A8**

Ø D: Outer Diameter
T: Layer Width

FEPA Shape: **14A1W**



Ø D: Outer Diameter
U: Layer Width
T: Total Width

Specification

Grit size	Hardness
Standard range	
MB25 to	Fine / Softer
B126	Coaser / Harder

For other grit sizes, please contact us!

Shaft/Quill

Type

Threaded Pin
Cylindrical Shaft
Special Shaft
Shafts according to drawing

Material

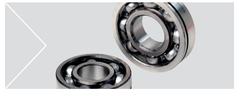
Steel
Tungsten Alloy
Tungsten Carbide

Cooling Hole

With or without holes

Key Applications

Fuel Injection



Rotary Bearing

Valve Train

Linear Guide and Ball Screw

Steering Components

Miniature Bearing

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Armed with 3D Technology

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

Grooved wheel achieved a higher removal rate despite same grinding force F(n)

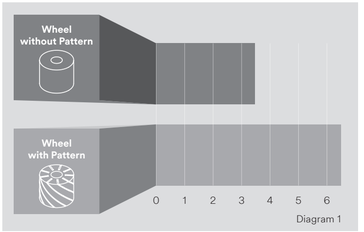

Diagram 1

Grooved wheel achieved a lower grinding force despite same removal rate Q`w (2 mm³/mm·s)

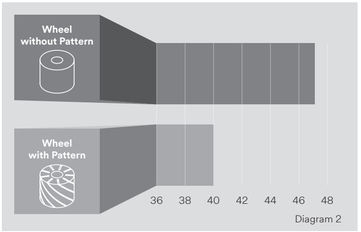

Diagram 2

Result

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).