3M[™] Precision Structured Vitrified CBN Grinding Wheel 1PVP

Portfolio Overview





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

For other grit sizes, please contact us!

Key Applications



uel Injection



Linear Guide and Ball Screw



Rotary Bearing



Steering Components



Valve Train



Miniature Bearing

3M Precision Structured Wheels. The key to your future grinding challenges.





3M Abrasive Systems Division 3M Center, Building 21-1W-10 St. Paul, MN 55144-1000

 Phone
 1-855-809-1710

 Fax
 1-855-805-1711

 Web
 3M.com/us/precisiongrinding

3M is a trademark of 3M. Used under license in Canada. Please recycle. Printed in U.S.A. © 3M 2019. All rights reserved. Issued: 4/19 61-5002-8474-2





3M[™] Precision Structured Vitrified CBN Grinding Wheel 1PVP

New Dimensions in High-Performance Internal Grinding Wheels

Enabled by 3D Technology



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)



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



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).