



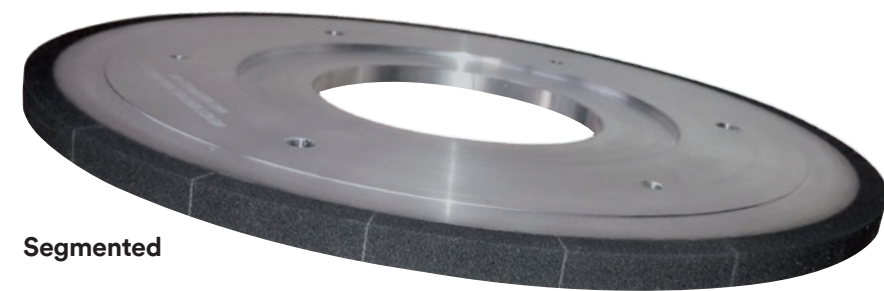
3M grinding solutions in a global network

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 optimized processes.
- We do everything possible to meet your individual demands. Our application engineers are happy to help all around the world.

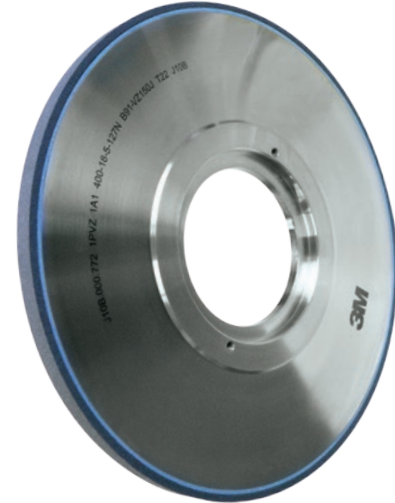
Which grinding wheel layout do you prefer?

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 replaced in either of the 2 layer types.



Segmented

Continuous layer

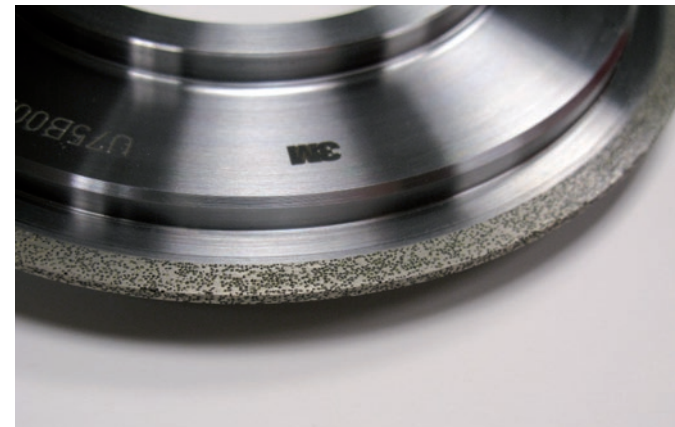


Dressing solutions

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



Electroplated positive



Sintered metal



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PGF-130-EN

3M Science.
Applied to Life.™



3M Vitrified CBN Grinding Wheels 1PVZ
**High-performance grinding
with highly porous, wear-
resistant bonding systems**

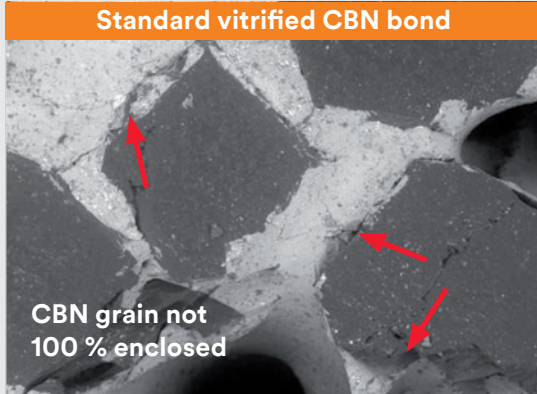
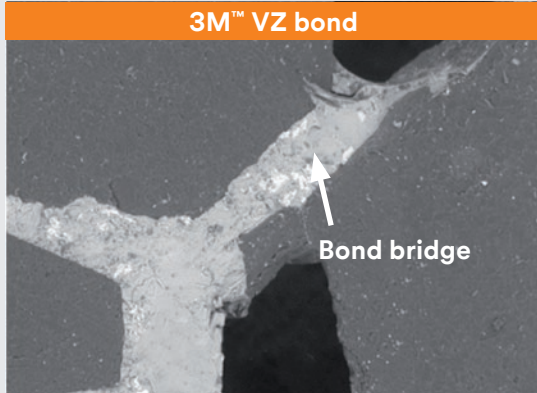




Concept and Design: Werbeagentur friends without partners GmbH & Co. KG, Dortmund

english

The 3M™ Vitrified CBN Grinding Wheels 1PVZ

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

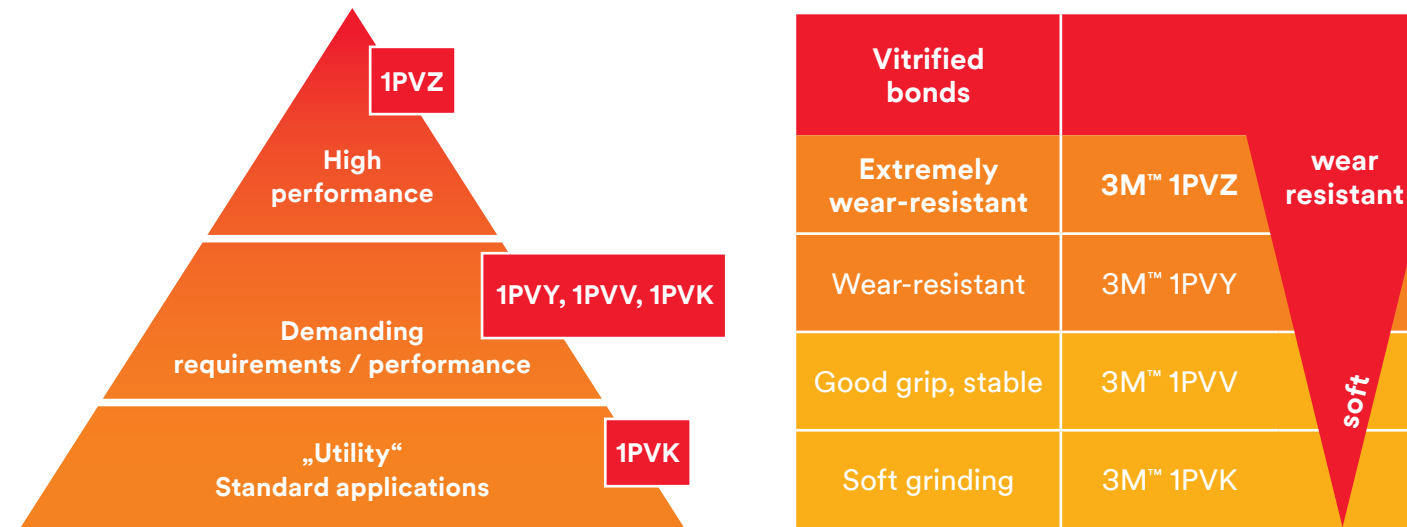
In other words, 3 % less binding compared to the 3M™ 1PVY.

DEVELOPMENT	BENEFITS
<p>Standard vitrified CBN bond</p>  <p>CBN grain not 100 % enclosed</p>	<ul style="list-style-type: none"> • Long lifetime • Perfect profile retention • Significant reduction of grinding time • Longer dressing intervals <p>Product features</p> <ul style="list-style-type: none"> • Highly porous • Optimal grit bond • Usual, good profiling capability with 3M dressing solutions <p>Performance features</p> <ul style="list-style-type: none"> • 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 $\frac{mm^3}{mm \cdot s}$ on cast iron are possible
<p>3M™ VZ bond</p>  <p>Bond bridge</p>	
<ul style="list-style-type: none"> • 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	
<p>Perfect for ...</p> <ul style="list-style-type: none">  Cam shafts ✓  Crank shafts ✓  Medical ✓  Ball screw ✓ 	

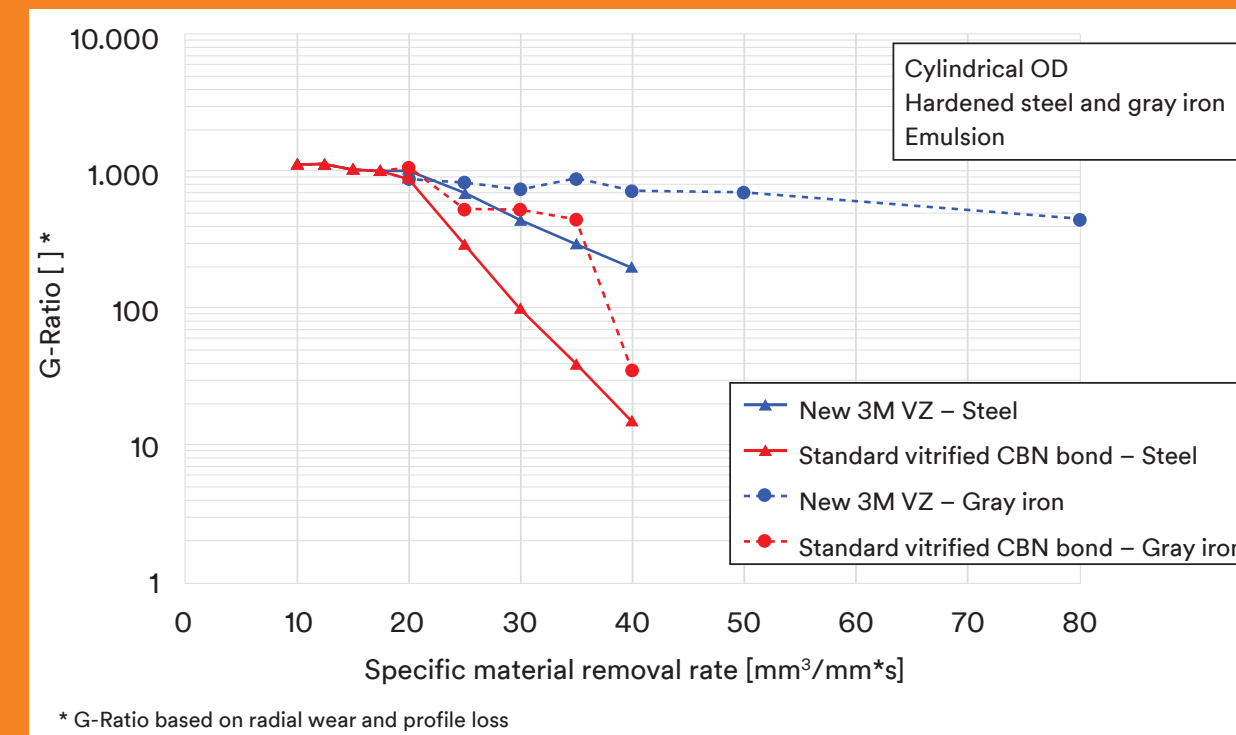
With 3M™ Vitrified CBN Grinding Wheels 1PVZ you grind efficiently, economically and at the highest level!

3M Vitrified CBN Grinding Wheels in performance comparison

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



Increase in wear resistance at high grinding performance



Case studies



Cam shaft grinding in automotive	Cam shaft grinding in automotive
Material: Steel	Material: Cast iron
Machine: EMAG VCL 100G	Machine: Landis
Peripheral speed: up to 72 m/s	Peripheral speed: up to 80 m/s
3M Specification: B126-VZ200R/411	3M Specification: B181-VZ200T/426
Required Q'_w: 22 [mm²/mm*s]	Required Q'_w: 50 [mm²/mm*s]
Coolant: Oil	Coolant: Oil
Result: 100 % more parts per dress*	Result: 85 % more parts per dress*

Ball screw grinding at steering systems / ball screw spindle	Ball screw grinding at steering systems / ball screw nut
Machine: Junker, ...	Machine: Junker, Bahmüller, Studer, ...
Peripheral speed: up to 80 m/s	Peripheral speed: up to 80 m/s
3M Specification: B91-VZ150O/189	3M Specification: B91-VZ150R/189
Required surface finish Ra: 0,4	Required surface finish Ra: 0,4
Coolant: Oil	Coolant: Oil
Required Q'_w: 15	Required Q'_w: 15
Result: 25 % more parts per dress*	Result: 25 % more parts per dress*

* compared to standard vitrified CBN bonds