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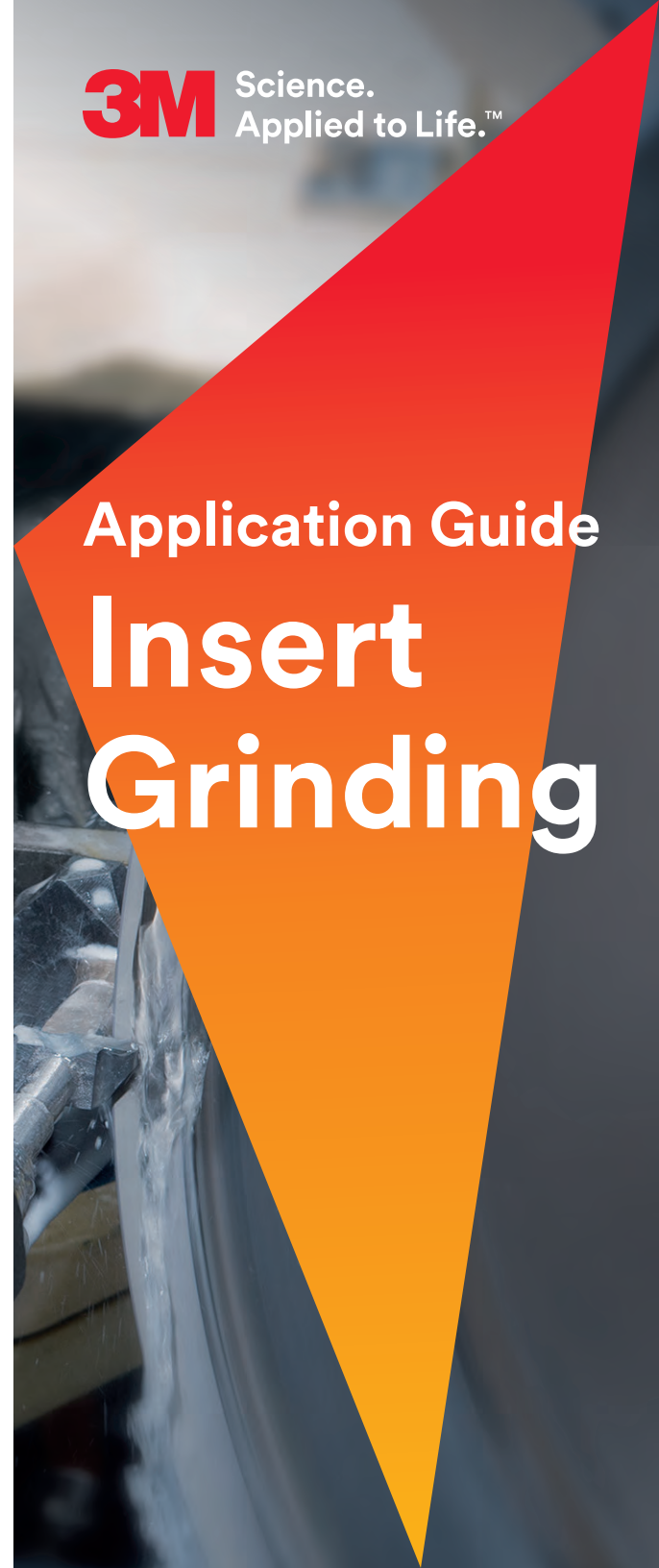
## Superabrasive Grinding Wheel Application Guide

Grinding Process	Workpiece Material	3M Diamond Grinding Wheel	3M Bond	Specification	Performance Characteristics	Typical Machines
Periphery		3M Resin Bond Diamond Wheel	BN	D (Grit size) B100BN	General purpose grinding; Go-to Bond™	WENDT Quattro, WENDT Centro, WENDT Scalar; Other Machines
		3M Hybrid Bond Diamond Wheel	TR844/7	D (Grit Size) X100TR844/7	Improved removal rate and form retention vs. resin bond, used in water or oil coolant	
Top & Bottom	Tungsten Carbide	3M Resin Bond Diamond Wheel	N57	D (Grit Size) B100N57	Most popular bond for grinding Top & Bottom carbide inserts used in water-based emulsions	WENDT WBM; Other Machines
		3M Resin Bond Diamond Wheel	N43	D (Grit Size) B100N43	Porous bond free cutting typically used in larger tools	
Profile		3M Hybrid Bond Diamond Wheel	TR844/7	D (Grit Size) X125TR844/7	Improved removal rate and form retention vs. resin bond, used in water or oil coolant	WENDT Quattro, WENDT Centro; Other Machines
		3M Vitrified Diamond Wheel	F153V	D (Grit Size) K125F153V	General purpose porous bond; best used in mesh sizes D400–D1200	
Periphery	Advanced Materials PCD/CBN	3M Vitrified Diamond Wheel	F181V	D (Grit Size) K125F181V	Durable, long lasting bond	WENDT Quattro, WENDT Centro, WENDT Scalar; Other Machines
		3M Vitrified Diamond Wheel	F615V	D (Grit Size) K125F615V	Free cutting bond with improved part edge quality	
Top & Bottom		3M Vitrified Diamond Wheel	F153V	D (Grit Size) K125D153V	General purpose porous bond; best used in mesh sizes D400–D1200	WENDT WBM; Other Machines
		3M Resin Bond Diamond Wheel	A06	D (Grit Size) R100A06	Periphery grinding of white or black ceramic inserts in oil- or water-based coolant	
Periphery	Ceramics	3M Resin Bond Diamond Wheel	N57	D (Grit Size) B110N57	Most popular bond for grinding Top & Bottom carbide inserts used in water-based emulsions	WENDT WBM; Other Machines
		3M Vitrified Diamond Wheel	F451V	D (Grit Size) K125F451V	Very tough bond recommended for grinding carbide and ceramic inserts; wet only	
Top & Bottom	Cermet	3M Hybrid Bond Diamond Wheel	TR844/7	D (Grit Size) 100TR844/7	Improved removal rate and form retention vs. resin bond, used in water or oil coolant	WENDT Quattro, WENDT Centro, WENDT Scalar; Other Machines
		3M Resin Bond Diamond Wheel	N57	D (Grit Size) B100N57	Most popular bond for grinding Top & Bottom carbide and Cermet inserts used in water-based emulsions	
Profile		3M Resin Bond Diamond Wheel	N43	D (Grit Size) B100N43	Porous bond free cutting typically used in larger tools	WENDT WBM; Other Machines
		3M Hybrid Bond Diamond Wheel	TR844/7	D (Grit Size) X125TR844/7	Improved removal rate and form retention vs. resin bond, used in water or oil coolant	

Note: In any case of uncertainty please contact your local Tech Service team. Please make use of our Tech Center in order to offer customers trials. Contact global Tech Service (B.Kaiser) in advance to check for free machine times.

## Dressing Tool Application Guide

Type	Dressing Wheel Information		Diamond Wheel		Application	
	Grain Size	Information	Grit Size	Bond	Grinding Process	Workpiece Material
Vitrified bonded white aluminum oxide (Al <sub>2</sub> O <sub>3</sub> )	120 mesh	First choice for resharpening grinding wheels for WENDT machines for periphery grinding. Softer than SiC, causing less damage to the diamond particles in the wheels.	≥D46	Resin	Periphery	Tungsten Carbide, Ceramics, Cermets
			>D25	Meta/Hybrid	Periphery	Tungsten Carbide, Ceramics
			>D64	Vitrified	Periphery	Tungsten Carbide, Silicon Nitride Ceramics
Vitrified bonded green silicon carbide (SiC)	320 mesh	Harder than Al <sub>2</sub> O <sub>3</sub> , more aggressive to the diamond particles, more suitable for re-profiling the diamond wheel.	<D46	Resin	Periphery	Tungsten Carbide, Ceramics, Cermets
			≤D25	Meta/Hybrid	Periphery	Tungsten Carbide, Ceramics
			≤D64	Vitrified	Periphery	PCD, PcBN
	500 mesh		≤D16	Vitrified	Periphery	PCD, PcBN (sharp edges)
			>D126	Resin	Top & Bottom	Tungsten Carbide, Ceramics, Cermets
			>D107	Metal	Top & Bottom	Tungsten Carbide, Ceramics
	220 mesh		≥D64	Resin	Periphery	Tungsten Carbide, Ceramics, Cermets
			≥D46	Metal/Hybrid	Periphery	Tungsten Carbide, Ceramics



# Application Guide Insert Grinding

**3M** Science.  
Applied to Life.™

## Intelligent grinding systems.

We develop intelligent grinding systems capable of grinding your most complex insert geometries made of ultra-hard materials such as carbides, ceramics, cBN and PCD.

Grinding inserts with maximum precision in the minimum time requires machines and tools working in harmony to get the best possible results.

3M provides your complete insert grinding solution with our 3M superabrasive grinding wheels and dressing tools and WENDT™ Precision Grinding Machines. This complete abrasive system is optimized for the best results with our technical and application experts.

### Take a look!

3M Insert Grinding Products and Services:

- 3M Superabrasive Grinding Wheels
- 3M Dressing Tools
- WENDT Precision Grinding Machines
- Onsite Application Consulting
- Internal Testing Capabilities

## 3M insert grinding systems.

Maximum precision in the minimum time!

Everything from one company!

3M is your insert grinding system supplier!



## 3M Superabrasive Wheel Solutions: Innovative bonds for ultra-hard materials.

**TR8447 (Tungsten Carbide and Cermet Applications)**

A premium bond for peripheral grinding of tungsten carbide and cermet insert tools. This metal hybrid bond demonstrates improved grinding rates with improved wear resistance compared to other 3M bonds.

Recommended Diamond Concentration: 100

**AO6 (Ceramic Applications)**

Our go-to bond for periphery grinding of black and white ceramic inserts, demonstrating excellent wear resistance.

Recommended Diamond Concentration: 100

**F153V (PCD and cBN Applications)**

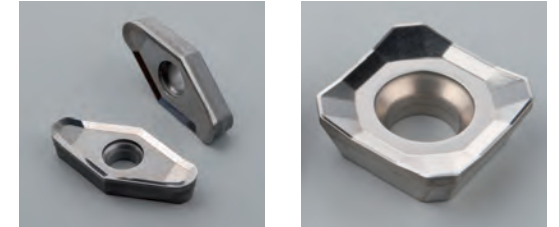
A porous vitrified bond designed for periphery grinding of PCD and cBN inserts demonstrating good wear resistance and excellent edge finishes on these premium materials.

Recommended Diamond Concentration: 125

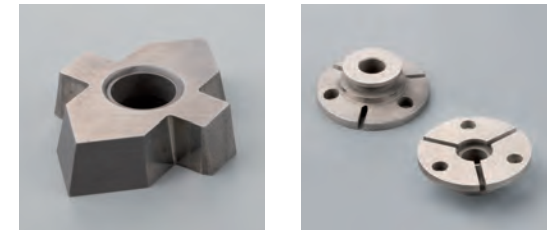
**3M Dressing Tools**

3M dressing tools available in aluminum oxide and silicon carbide constructions are the perfect complement to our superabrasive wheel solutions. Optimize the performance of our grinding wheels with a dressing wheel designed specifically for the application.

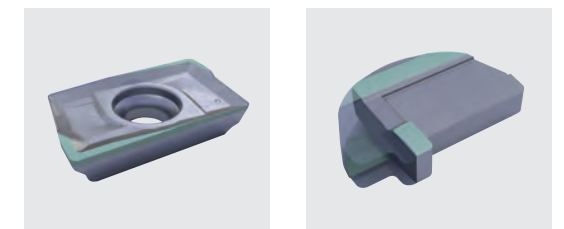
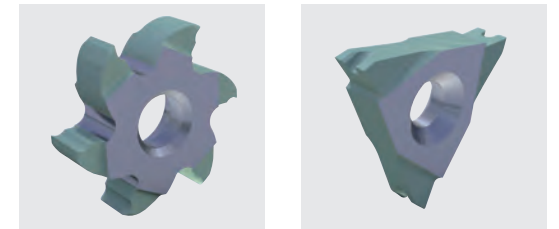
## Systems designed for any insert geometry.



Periphery Grinding Applications



Top & Bottom Grinding Applications



Profile Grinding Applications