



3M Science.
Applied to Life.™



Application Guide
**Insert
Grinding**

Intelligent grinding systems.

The target is the most efficient grinding of highly complex geometries from ultra-hard materials, such as carbides, PCD, CBN, ceramics or cermets in as few clampings as possible.

To do it with maximum precision and in minimum machining time, it requires machines and equipment that are far superior to the products commonly available on the market.

As one of the leading companies in the world we escort the complete grinding process with our wide product range of machines and equipment. We offer high-performance products for best results in shortest time.

For your applications, too.
Please have a look!

Our products and services

- Complete product portfolio of high quality insert grinding wheels
- Competent application consultants at your production site
- Technical cooperation in order to increase productivity
- Calculation of the total cost
- Grinding seminars
- Internal grinding test capabilities

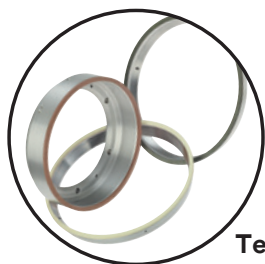
Grinding performance under total control

After intensive analysis of the process, we develop custom-made tool solutions for you for grinding highly complex geometries in ultra-hard materials like carbides, PCD, CBN, ceramics, or cermets.

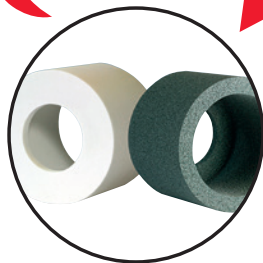
We make maximum precision in the minimum manufacturing time possible. Everything from one company. We are your system supplier.

3M Diamond and CBN grinding wheels

WENDT high precision grinding machines



Technical service application expertise



3M Dressing tools

Innovative 3M bonds

L75 (tungsten carbide application)

The standard bond for the peripheral grinding of tungsten carbide tool inserts. Very good grinding performance and resistance to wear. The all-round bond for grinding customer-specific tungsten carbide solutions.

Grain size: D46-D91

Concentration: 100

N43 (cermet application)

This open pore bond offers good grinding performance for efficiently grinding high performance cutting materials like cermet.

Grain size: D46-D64

Concentration: 100

T22 (ceramic application)

Excellent resistance to wear and good grinding performance. Not suitable for very fine grain sizes.

Grain size: MD25-D46

Concentration: 75

D53 (PKD/CBN application)

Universal grinding wheel for PCD/CBN workpieces. High resistance to wear and little breakage. Tailor-made solutions for customer-specific grinding task offer brilliant results.

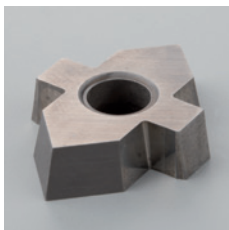
Grain size: MD6,3-D46

Concentration: 125

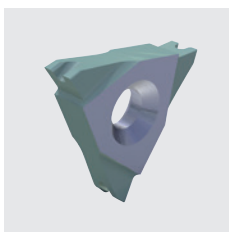
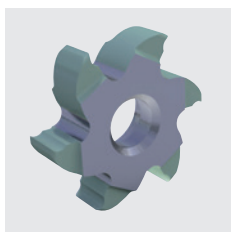
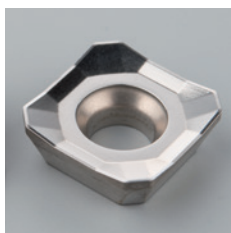
Dressing tools

A careful selection of an aluminum oxide and silicon carbide dressing tools are the perfect supplement to our grinding wheels that are optimized for the application. With the right bond and grain size, you can obtain the best possible sharpening and grinding results using our dressing wheels.

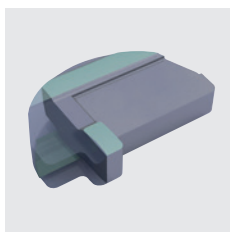
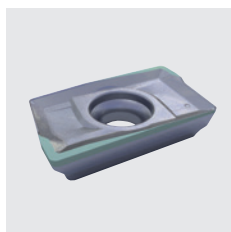
No geometry is too difficult for us.



Examples
surface
grinding



Examples
OD grinding



Grinding of Indexable Inserts

Grinding Process	Workpiece Material	3M Generic Product Description	3M Product Code	3M Bond	Specification	Performance Description	Typical Machines
Periphery Grinding	Tungsten Carbide	3M Resin Bond Diamond Wheel 6PBC	6PBC	L75	D46...D76-X100L7	a) multifunctional on TC and Cermet b) good cutting abilities and reduced wear c) all-round bond for tungsten carbide	WENDT Quattro, WENDT Centro, WENDT Scalar, other machines
		3M Hybrid Bond Diamond Wheel 6CHW	6CHW	TR844/7 (NEW)	D46...D76-X100TR844/7	a) up to 12 % wheel life versus competitor b) 20 % higher grinding speed	WENDT Quattro, WENDT Centro, WENDT Scalar, other machines
		3M Hybrid Bond Diamond Wheel 6PHW	6PHW	MH4 (Naxoinsert)	D20...D76 90..125 MH4	a) multifunctional on TC b) good form stability and reduced wear	WENDT Quattro, WENDT Centro, WENDT Scalar, other machines
Top & Bottom Grinding	Tungsten Carbide	3M Resin Bond Diamond Wheel	6TBB	N57	D91...D151-B75N57	a) good cutting abilities b) low tool wear	WENDT WBM; other machines
Profile Grinding		3M Vitrified Diamond Wheel	6PVK	KR125J/170	D91...D126-KR125J/170	a) easy to profile with 3M rollers b) good profile keeping abilities	WENDT Quattro, WENDT Centro
Periphery Grinding		3M Hybrid Bond Diamond Wheel	6PHW	TR844/7 (NEW)	MD25...D46-X100TR844/7	a) for solid CBN inserts	WENDT Quattro, WENDT Centro, WENDT Scalar, other machines
	3M Vitrified Diamond Wheel	6PVK	K125D53	MD10...MD25-K125D30	a) multifunctional on PCD and CBN b) middle ranged wear, the wheel to start	WENDT Quattro, WENDT Centro, WENDT Scalar, other machines	
	3M Hybrid Bond Diamond Wheel	6PHW	MV2	D 10...40 100 MV2	a) for solid CBN inserts b) low grinding pressure and low wheel wear		
Top & Bottom Grinding	Advanced Materials PCD/CBN	3M Vitrified Diamond Wheel	6TVD	D91	MD25...MD40-K125D91	a) good surface quality b) low grinding pressure	WENDT WBM; other machines
		3M Resin Bond Diamond Wheel	6TBB	Z300B	D54...D64-B75Z300B	a) excellent removal rate b) good price performance ratio	
Periphery Grinding		3M Resin Bond Diamond Wheel	6PBB	T22	D46-B75T22	a) very good cutting abilities b) excellent wheel wear c) not suitable for very fine grain sizes	WENDT Quattro, WENDT Centro, WENDT Scalar, other machines

Top & Bottom Grinding	Ceramics	3M Resin Bond Diamond Wheel	6TBD	BR...W	D91...D151-BR75W	a) established, well proven solution b) especially for ceramic seals	WENDT WBM; other machines
Profile Grinding		3M Vitrified Diamond Wheel	6PVK	KR125J/360	D91...D126-KR125J/360	new tested, works but not too many results	
Periphery Grinding		3M Resin Bond Diamond Wheel	6PBP	N43	D46...D64-B100N43	a) open structure b) good cutting abilities for hard to grind materials like cermet	WENDT Quattro, WENDT Centro, WENDT Scalar, other machines
Top & Bottom Grinding	Cermet	3M Resin Bond Diamond Wheel	6TBP	N43	D91...D126-B75N43	a) open structure b) good cutting abilities for hard to grind materials like cermet	WENDT WBM; other machines
Profile Grinding		3M Vitrified Diamond Wheel	6PVK	KR125J/360	D91...D126-KR125J/360	new tested, works but not too many results	WENDT Quattro, WENDT Centro

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

Dressing of Diamond Wheels for Indexable Inserts

Dressing Wheel		Diamond Wheel		Application		
Type	Information	Grit Size	Bond	Grinding Method	Workpiece Material	
Vitrified bonded white aluminum oxide (Al ₂ O ₃)	First choice for resharpener grinding wheels for Wendt machines for periphery grinding. Softer than SiC, causing less damage to the diamond particles in the wheels.	120 mesh	>=D46	Resin	Periphery	Tungsten Carbide, Ceramics, Cermets
			>MD25	Metal/Hybrid	Periphery	Tungsten Carbide, Ceramics
			>D64	Vitrified	Periphery	Tungsten Carbide, Silicon Nitride Ceramics
		320 mesh	<D46	Resin	Periphery	Tungsten Carbide, Ceramics, Cermets
			<=MD25	Metal/Hybrid	Periphery	Tungsten Carbide, Ceramics
Vitrified bonded green silicon carbide (SiC)	Harder than Al ₂ O ₃ , more aggressive to the diamond particles; more suitable for reprofiling the diamond wheel.	500 mesh	<=D64	Vitrified	Periphery	PCD, PcBN
			<=M16	Vitrified	Periphery	PCD, PcBN (sharp edges)
		80 mesh	>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	



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