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 PGF-702-EN

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 Hybrid Bond Diamond Wheel	6CHW	Z92 (NEW)	D46...D76-X100Z92	a) 20 % higher grinding speed	WENDT Quattro, WENDT Centro, WENDT Scalar; other machines*
		3M Resin Bond Diamond Wheel	6PBC	L75	D46...D76-X100L75	a) multifunctional on TC and Cermet b) good cutting abilities and reduced wear	WENDT Quattro, WENDT Centro, WENDT Scalar; other machines*
		3M Hybrid Bond Diamond Wheel	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*
		3M Resin Bond Diamond Wheel	6TBB	N57	D91...D151-B75N57	a) good cutting abilities b) low tool wear	WENDT WBM; other machines*
Top & Bottom Grinding		3M Vitriified Diamond Wheel	6PVK	KR25J/170	D91...D126-KR25J/170	a) easy to profile with 3M rollers b) good profile keeping abilities	WENDT Quattro, WENDT Centro
Periphery Grinding	Advanced Materials PCD/CBN	3M Hybrid Bond Diamond Wheel	6PHW	Z92 (NEW)	MD25...D46-X100Z92	a) for solid CBN inserts	WENDT Quattro, WENDT Centro, WENDT Scalar; other machines*
		3M Vitriified Diamond Wheel	6PVK	K125D53	MD10...MD25-K125D30	a) multifunctional on PCD and CBN b) low tool wear	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	WENDT WBM; other machines*
		3M Vitriified Diamond Wheel	6TVD	D91	MD25...MD40-K125D91	a) good surface quality b) low grinding pressure	WENDT Quattro, WENDT Centro, WENDT Scalar; other machines*
Top & Bottom Grinding		3M Resin Bond Diamond Wheel	6TBB	Z3008	D54...D64-B75Z3008	a) excellent removal rate	WENDT WBM; other machines*
Periphery Grinding	Ceramics	3M Resin Bond Diamond Wheel	6PBB	T22	D46-B75T22	a) very good cutting abilities b) excellent wheel wear c) not suitable for very fine grit sizes	WENDT Quattro, WENDT Centro, WENDT Scalar; other machines*
		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*
Top & Bottom Grinding	Cermet	3M Vitriified Diamond Wheel	6PVK	KR25J/360	D91...D126-KR25J/360	Innovative bond for individual application for profile grinding, crushable	WENDT Quattro, WENDT Centro
		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*
		3M Vitriified Diamond Wheel	6PVK	KR25J/360	D91...D126-KR25J/360	Innovative bond for individual application for profile grinding, crushable	WENDT Quattro, WENDT Centro

Note: In any case of uncertainty please contact your local Application Engineering Team.

* 3M precision grinding wheels can generally be used on grinding machines of all OEMs.

Dressing of Diamond Wheels for Indexable Inserts

Type	Dressing Wheel Information	Dressing Roller		Diamond Wheel		Application	
		Grit Size	Grit Size	Grit Size	Bond	Grinding Method	Workpiece Material
Vitriified bonded white aluminum oxide (Al ₂ O ₃)	First choice for resharpener grinding wheels on periphery grinders. Softer than SiC, causing less damage to the diamond particles in the wheels.	120 mesh	120 mesh	>=D46	Resin	Periphery	Tungsten Carbide, Ceramics, Cermet
				>MD25	Metal/Hybrid	Periphery	Tungsten Carbide, Ceramics
				>D64	Vitriified	Periphery	Tungsten Carbide, Silicon Nitride Ceramics
Vitriified bonded green silicon carbide (SiC)	Harder than Al ₂ O ₃ , more aggressive to the diamond particles, more suitable for reprofiling the diamond wheel.	240 mesh (NEW)	240 mesh (NEW)	>MD25	Metal/Hybrid	Periphery	Tungsten Carbide, Ceramics (recommended for Z92)
				<D46	Resin	Periphery	Tungsten Carbide, Ceramics, Cermet
				<=MD25	Metal/Hybrid	Periphery	Tungsten Carbide, Ceramics
				<=D64	Vitriified	Periphery	PCD, PcBN
				<=M16	Vitriified	Periphery	PCD, PcBN (sharp edges)
Vitriified bonded green silicon carbide (SiC)		80 mesh	80 mesh	>D126	Resin	Top & Bottom	Tungsten Carbide, Ceramics, Cermet
				>D107	Metal	Top & Bottom	Tungsten Carbide, Ceramics
				>D64	Resin	Periphery	Tungsten Carbide, Ceramics, Cermet
		220 mesh	220 mesh	>=D46	Metal/Hybrid	Periphery	Tungsten Carbide, Ceramics

Application Guide Insert Grinding

3M Science.
Applied to Life.™

Intelligent Grinding Systems.

Our target is to reach maximum grinding efficiency even with highly demanding geometries on ultra-hard materials, like tungsten carbide, PCD, CBN, ceramics and/or cermet in one clamping.

To gain highest precision in the shortest cycletime possible, our machines and tools fulfill highest quality standards.

As one of the leading suppliers in the cutting tools industry we support your complete grinding process with our broad range of machines, tools, and technical experience.

For your application, too! Discover our solutions.

Our products and services :

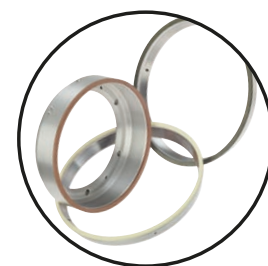
- Complete portfolio of high precision grinding wheels
- Competent application consultants at your production site
- Technical cooperation for maximum productivity.
- Total cost-benefit calculation
- Grinding seminars
- Internal grinding test capabilities

Grinding performance under total control.

After intensive investigation, we develop individual tool solutions to realize optimized overall process conditions – for geometries of high complexity and ultra-hard materials like tungsten carbides, PCD, CBN, ceramics and cermets.

We achieve maximum precision in shortest cycle-times. All from one hand! We are your system supplier.

3M Diamond and CBN grinding wheels



3M Dressing tools



Technical service
Application expertise

Innovative 3M bonds.

Z92 (tungsten carbide application)

New and improved hybrid bond with “universal usage” on tungsten carbide. Advantages: more efficient grinding, improved shelf-life, and excellent workpiece surface quality.

Grit size: D46-D91

Concentration: 100

N43 (cermet application)

This open-pored bond offers good grinding performance for efficient grinding of high performance cutting materials like cermet.

Grit size: D46-D64

Concentration: 100

T22 (ceramic application)

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

Grit size: MD25-D46

Concentration: 75

D53 (PCD, CBN applications)

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

Grit size: MD6,3-D46

Concentration: 125

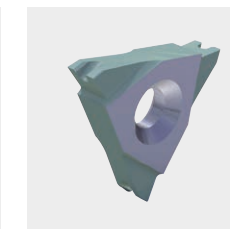
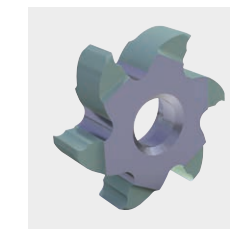
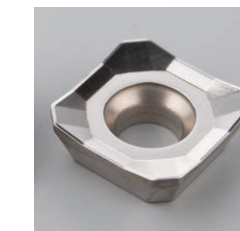
Dressing tools

A careful selection of aluminum oxide and silicon carbide dressing tools is the perfect supplement to our grinding wheels that are optimized for the application. With the right bond and grit size adjusted to the grinding wheel needs, you will realize best-in-class conditioning and grinding results.

No geometry is too difficult for us.



Examples
Surface
Grinding



Examples
Periphery
Grinding and
Profile Grinding

