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— GENENTECH

Your Best Solution for
Grinding Wheels



GENENTECH

Diamond & CBN Grinding Wheel
Conventional Grinding Wheel

Your Best Solution for Grinding Wheels

GENENTECH's Diamond & CBN Grinding Wheels offer the optimized solution for improvement of quality and productivity. Based on our diverse & abundant engineering experiences in comprehensive application, Genentech has created an innovative bond systems to enhance the quality level. By this Genentech will be your best solution for grinding wheels.

DIAMOND & CBN GRINDING WHEELS

- Shorter machining time through better traverse feeds.
- Longer wheel dressing interval and balanced grinding ability are able to comprehensive application.
- Providing perfect wheel quality by way of developed bond systems and grit qualities.

DIAMOND & CBN GRINDING WHEELS

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STANDARD SHAPES OF
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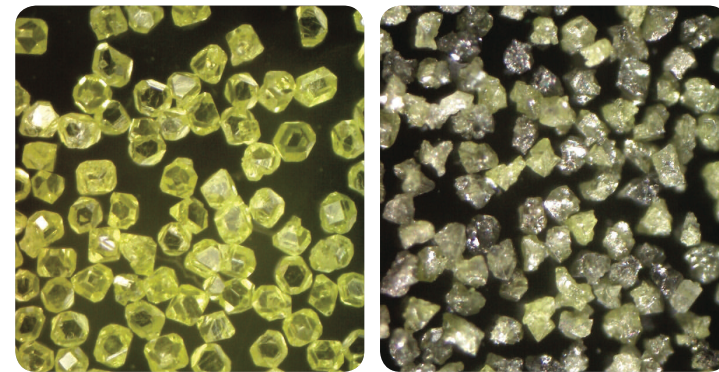


BASIC INFORMATION OF DIAMOND & CBN WHEELS

DIAMOND GRINDING WHEEL

For grinding
non-ferrous material

Diamond grinding wheel is consist of diamond which is most hardest material in the earth. Usually diamond grinding wheel is used for non-ferrous material such as carbide, ceramics and cermet, etc.



DIA WHEEL WORK MATERIAL

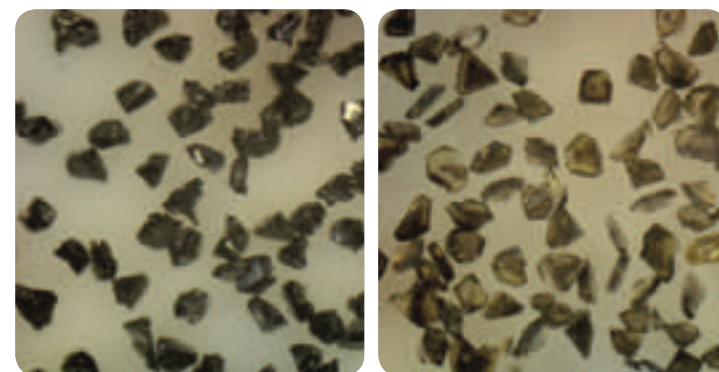
NON FERROUS MATERIAL
TUNGSTEN CARBIDE
CERMET
CERAMIC
GLASS
QUARTS
FERRITE
SEMI CONDUCTOR MATERIAL

CBN GRINDING WHEEL

For grinding ferrous material
(mainly steel)

CBN grinding wheel is consist of CBN (Cubic Boron Nitride) which is the second hardest material in the earth.

Usually CBN grinding wheel is used for steel (ferrous material) grinding.



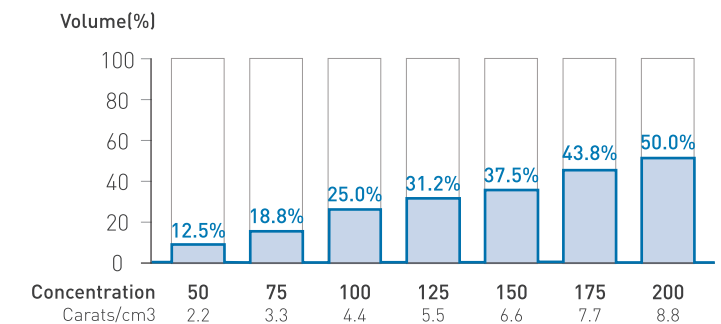
CBN WHEELS WORK MATERIAL

FERROUS MATERIAL
HARDENED STEEL
STEEL
BEARING STEEL
CAST IRON
SINTERED METAL [WITH FE]
SUPER ALLOY

BOND HARDNESS



CONCENTRATION



GRIT SIZE

Abrasive grit that takes role of cutting edge while grinding process is most important factor to grind effectively for the precision tool and a suitable grit size bring excellent grinding result.

Genetech Grit Size		FEPA Designation		AN SI Grit size	US Grit Number	JIS Size
Mesh	Size(μm)	Diamond	CBN			
#60	251	D251	B251	60/80	60	
#80	181	D181	B181	80/100	100	80
#100	151	D151	B151	100/120	120	100
#120	126	D126	B126	120/140	150	120
#140	107	D107	B107	140/170	180	140
#170	91	D91	B91	170/200	220	170
#200	76	D76	B76	200/230	240	200
#230	64	D64	B64	230/270	280	230
#270	54	D54	B54	270/325	320	270
#325	46	D46	B46	325/400	400	325
#400	40					
#500	35					
#600	30					
#800	20					
#1000	15					
#1500	10					

RESIN WHEELS

PHENOL RESIN



Characteristic
HIGH STABILITY IN DRY & WET GRINDING CONDITION.

Application
GENERAL GRINDING OF TUNGSTEN-CARBIDE, HSS, FERROUS & NON-FERROUS METALS.

Phenolic resin bond is one of the most representative bond type of super-abrasive grinding wheel. In general, it shows an excellent result to find roughness and minimal chipping. It's mainly used for carbide, hss, ceramic cutting tool grinding application (Genentech **GB** series)

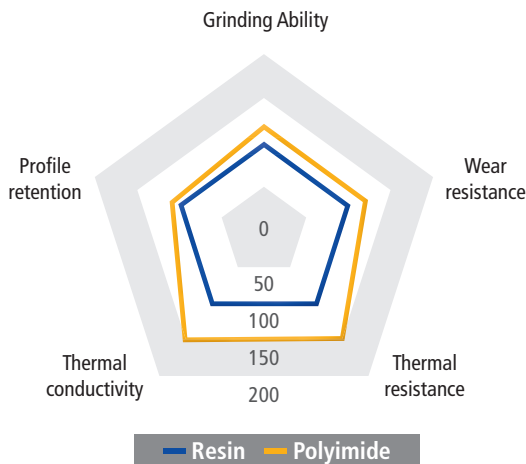
POLYIMIDE



Characteristic
BETTER HEAT RESISTANCE THAN PHEONOL.

Application
CREEP FEED GRINDING OF TUNGSTEN-CARBIDE AND HSS.

Polyimide resin bond has distinguished feature at heat and wear resistance. It's superior mechanical property in high temperature makes excellent result at creep feed grinding. (GENENTECH **GP** series)



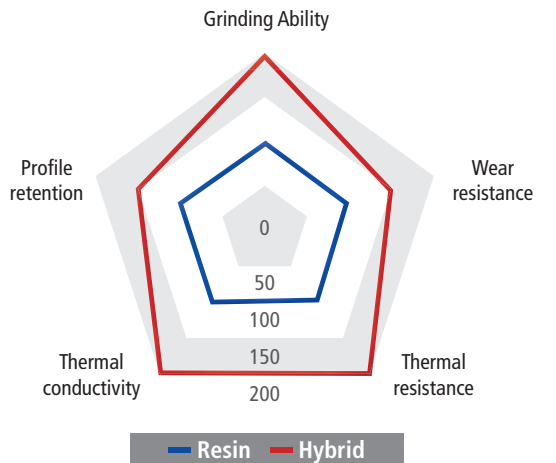
HYBRID



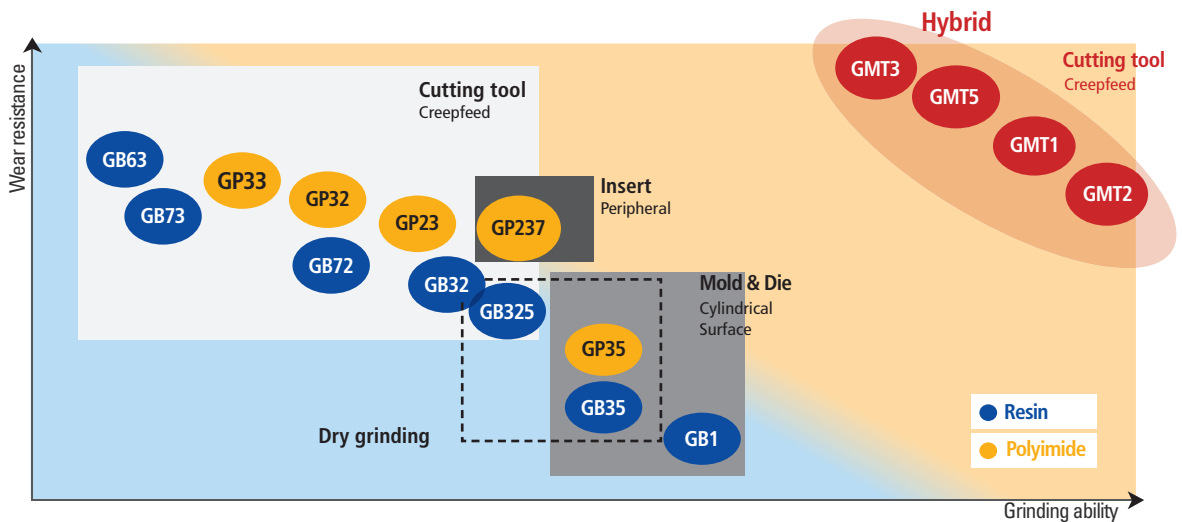
Characteristic
HAS METAL AND RESIN CHARACTERISTIC. EXCELLENT GRINDING ABILITY WITH LONG LIFE AND FORM HOLDING.

Application
ROUGH GRINDING OF TUNGSTEN-CARBIDE AND HSS.

Hybrid is combined with metal and resin bond. This mixture has excellent grinding abilities with heat & wear resistance. In particular, it has excellent machining ability at carbide and HSS tool. (Genentech **GMT** series)



Resin & Hybrid bond Recommendation of application



VITRIFIED WHEELS



Characteristic
 TOOL LIFE IS VERY LONG DUE TO HIGH CONCENTRATION. EXCELLENT GRINDING ABILITY DUE TO MANY PORES.

Application
 GRINDING OF FERROUS METAL & CERAMIC FOR AUTOMOTIVE PARTS, GRINDING OF PCD & PCBN.

Vitrified bond has porosity and it's high retention force. This bonds are good at Free-cutting due to porosity. While the grinding porosity allows coolant and prevent loading. By this you can get excellent grinding performance to various materials. (Genentech GV series)



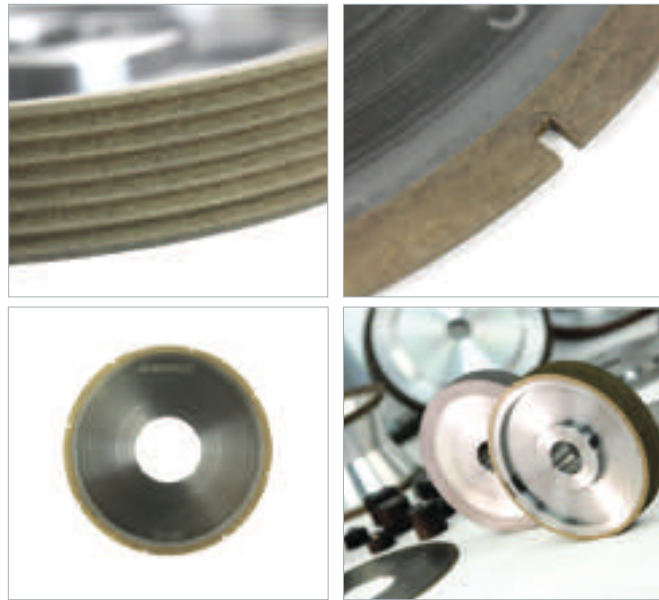
METAL WHEELS



Characteristic
 THE WEAR RESISTANCE IS VERY HIGH, THE FORM HOLDING ABILITY IS EXCELLENT.

Application
 GRINDING OF GLASS, FERROUS METAL, PROCESSING OF SHAPE PROFILE, HONING.

Metallic bonds are most based on bronze and compound of various metal powders such as Copper, Cobalt, Tungsten, etc. This metal bond has good form holding ability especially sharp edge profile grinding. (Genentech GM series)



ELECTRO PLATE WHEELS (GALVANIC BOND)



Characteristic

EXCELLENT GRINDING ABILITY DUE TO PROTRUSION OF GRAIN.

Application

PRECISION SHAPES.

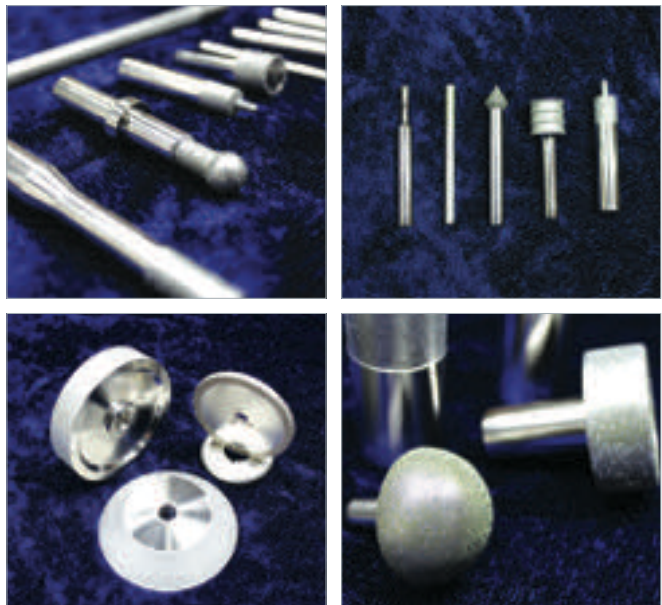


Abrasive is secured with an electroplated nickel matrix.

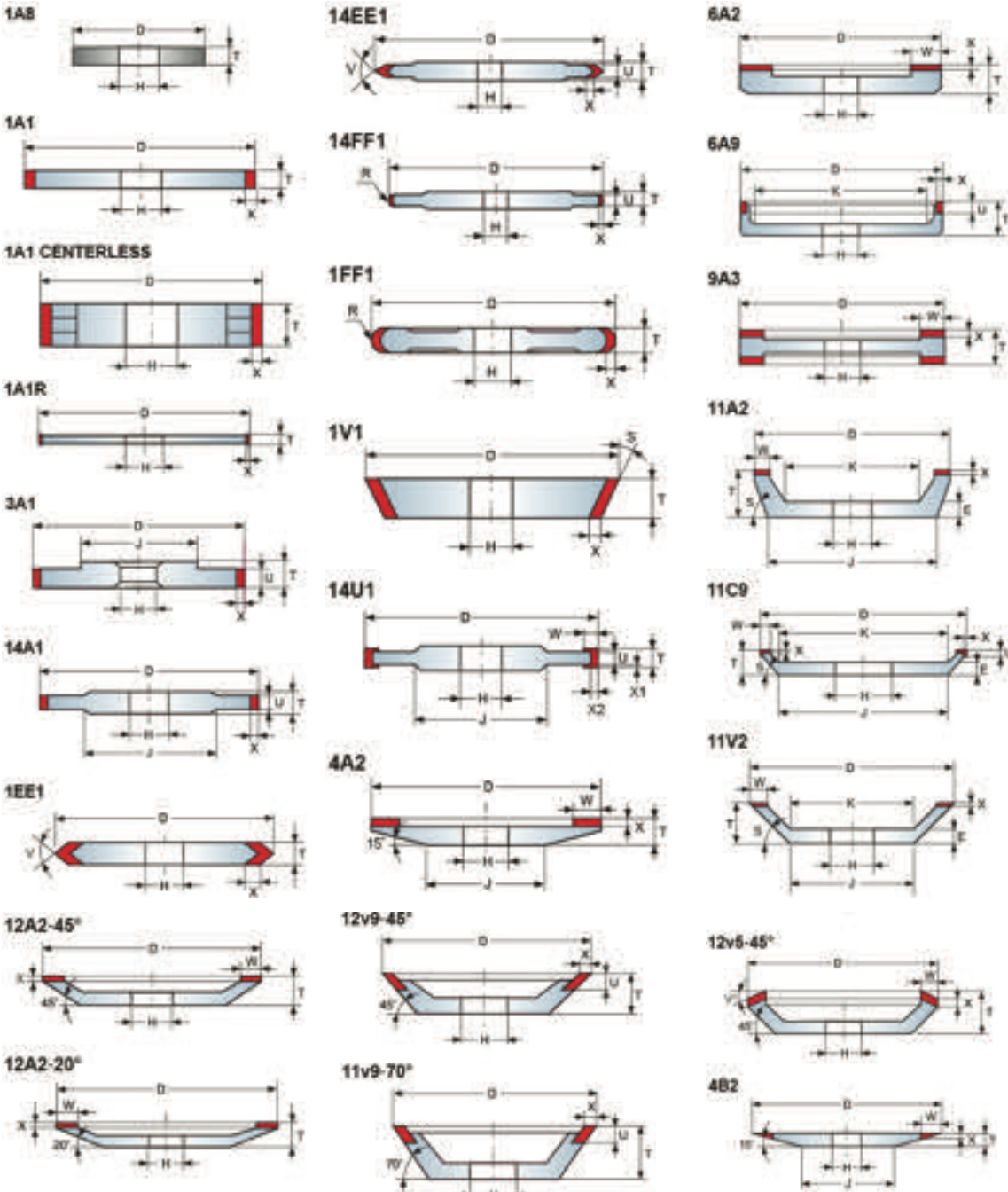
Electroplated layer on the body of the wheel has excellent grinding ability due to protrusion of grain.

This wheel is suitable for which industry needs precision shapes.

(Genentech GE series)



STANDARD SHAPES OF SUPERABRASIVE WHEELS



APPLICATION

TOOL INDUSTRY



Endmill



Drill



Tap



Milling Cutter



Reamer



Broach Grinding



Gear Grinding



Woodworking Cutter



Rotary Bar



Insert

CUTTING TOOL INDUSTRY



Cut off



Centerless Grinding



Fluting



End Teeth



OD Grinding



Thread Grinding



Resharpening

AUTOMOTIVE INDUSTRY



Cam-Shaft



Crank-Shaft



CV Joint



Speed-Gear



Injection Nozzle



Transmission



Cylinder Block

BEARING INDUSTRY



Ball Bearing



Tapper Bearing



LM Guide

WOODWORKING INDUSTRY



Tip Saw
(=Circular Tipped Saw)



Cold Saw



Band Saw



Knife



Router Bit

APPLICATION

SEMI-CONDUCTOR INDUSTRY



Silicon Wafer



Sapphire



LCD, LED Panel

ELECTRONIC INDUSTRY



Compressor Part



Compressor Part

MOLD & DIE INDUSTRY



Mold



DIE / Punch



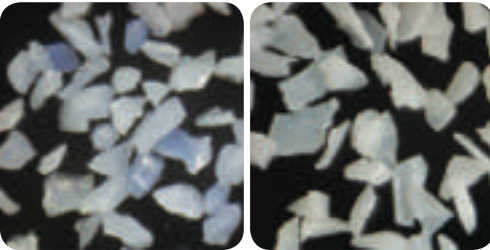
Lead Frame

BASIC INFORMATION OF CONVENTIONAL WHEEL

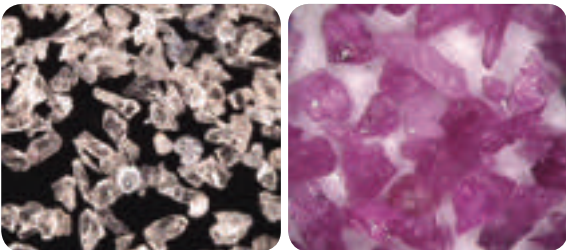
ABRASIVE

The abrasive grain mainly carry out the actual cutting process while grinding operation.

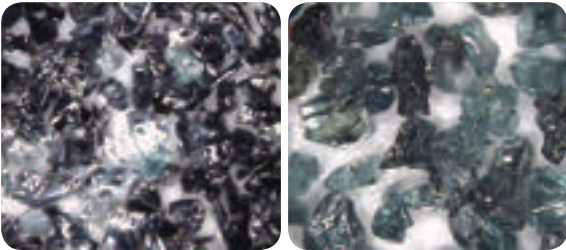
SY SY Abrasive is one of specially treated Alumina abrasives grain. This abrasive grain is well known for its high performance and better grinding ability.



Al₂O₃ For carbon steel, alloy steel and tool steel, etc.



SIC For cast iron, nonferrous metal and ceramics, etc.



GRIT SIZE

Grit that takes a role of cutting edge with grinding process is most important factor to grind effectively for the precision tool and suitable grit size bring excellent grinding result.

Grading Table

Particle size	Mesh						
Rough	8	10	12	14	16	20	24
Normal	30	36	46	54	60	70	
Fine	80	100	120	150	180	220	
Very Fine	240	280	320	400	600	800	1000 ↑

Roughness Conversion Table

	▽▽	▽▽▽	▽▽▽▽	▽▽▽▽▽	▽▽▽▽▽▽
Roughness(μ)	12 ↓	6 ↓	3 ↓	1.5 ↓	0.8 ↓
Grit Size	30,36	30,36	54	60	80
	46	60	60	80	100

GRADE

In general, Grade designates the hardness of grinding wheel.

E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
VERY SOFT			SOFT				NORMAL				HARD							VERY HARD

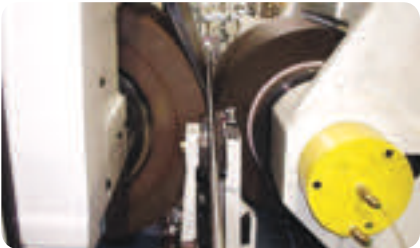
STRUCTURE

Structure is abrasive volume ratio that marking as 0-14. In chart, the closer its gap between each grains, the volume rate gets less.

Structure No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Volume ratio(%)	62	60	58	56	54	52	50	48	46	44	42	40	38	36	34
Acronym	C						M					W			
Abbreviation	C1			C2			M1		M2		W1		W2		
Volume ratio range(%)	C1≥54			50≤C2<54			46≤M1<50		42≤M2<46		39≤W1<42		39>W2		

CONVENTIONAL GRINDING WHEELS

RESINOID WHEELS



Characteristic

High speed grinding available due to excellent wheel elasticity and cohesion.

Application

Grinding flutes of taps and grinding clearances & points of drills etc.



This is composed of the abrasive grain and Phenol Resin which sintered at 180°C.

(relatively, lower temperature than other bond types.)

- More stable than Vitrified Bond and can be operated in high speed.
- Weak at grinding heat and alkaline coolant and low wear-resistance due to carbonization



EPOXY WHEELS



Characteristic

Excellent performance for grinding heat sensitive materials due to wheel elasticity and decreasing heat generating.

Application

Grinding Knives, Bearing cases & Grinding chamfer of Tap.

This is mainly composed of abrasive grain and Epoxy bond.

- Developed to replace MgO and General Resin bonded wheels.
- Used for double disk grinding for Knives, Spring and Bearing industries.



VITRIFIED WHEELS



Characteristic

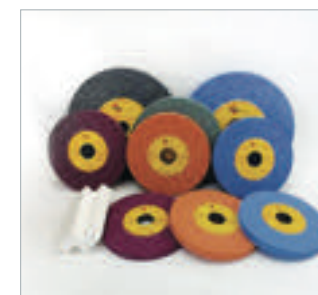
Due to ceramic material which is mixed inorganic bond, vitrified bond is strong and various structures and pores of wheels can be made.

Application

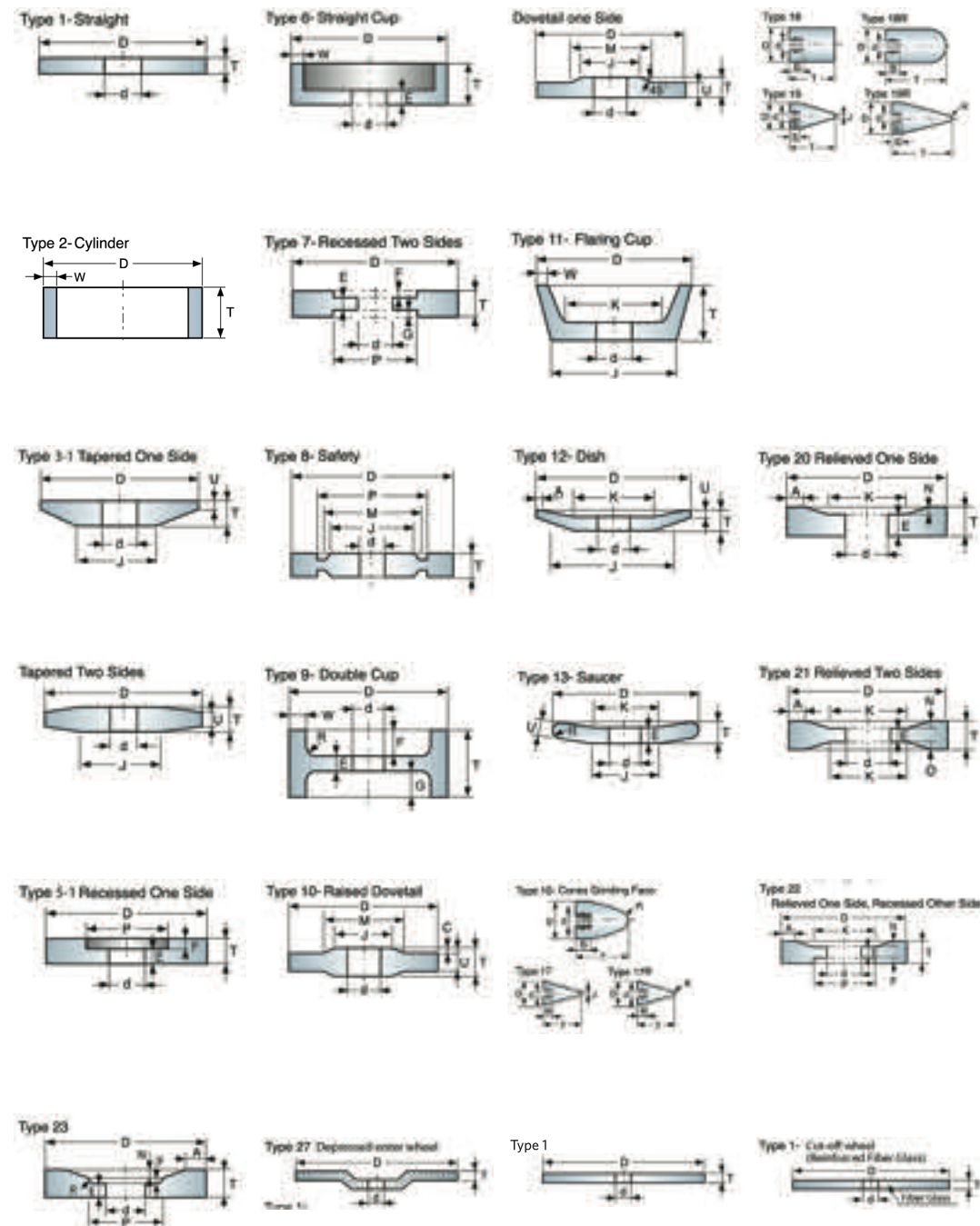
Grinding of Precision products, cutting tools & tungsten-carbides.

This is composed of the abrasive grain and a mixed feldspar, white clay, Frits and mineral binders. Which sintered at 1,250 ~ 1,300°C

- Binding force is very strong and includes many pores inside. It can achieve a cool cutting and show better grinding ability.
- Wide range for the precision grinding in Cutting tool industry.
- Mainly used for external grinding application for Drill and Tap.



STANDARD SHAPES OF CONVENTIONAL WHEELS



YOUR BEST SOLUTION FOR YOUR GRINDING PROCESS

To accomplish goals together with our customers, this is our entitlement. Our company is fairly young, founded in 2009, but through cooperation with our customers challenges are mastered fast and competent. Sustained success means to be fit for the future. We offer superior quality, high precision and short delivery times for our customers.





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