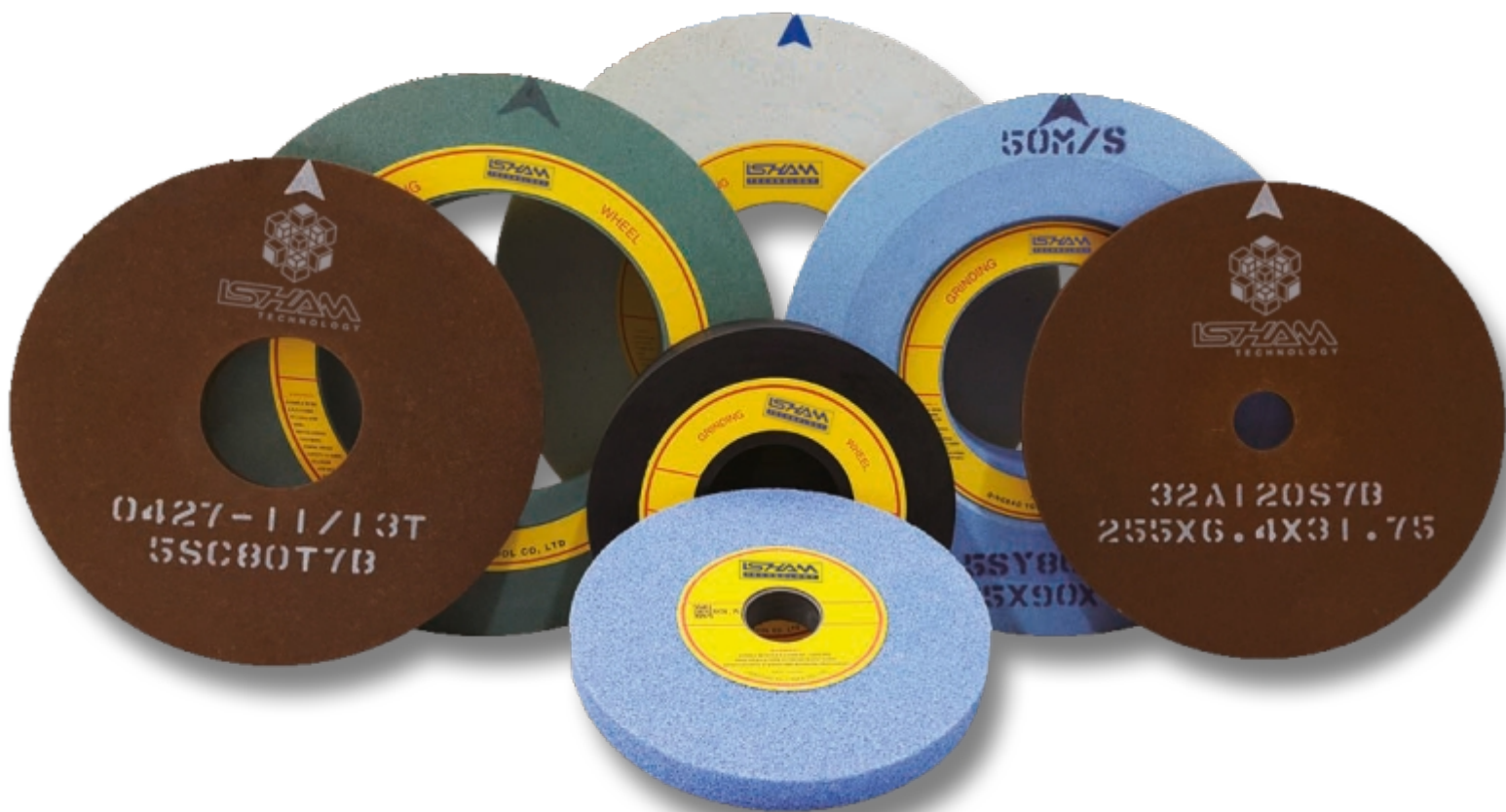




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CONVENTIONAL GRINDING WHEELS FOR **CUTTING TOOLS**



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DIAMOND & CBN WHEELS

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Conventional Wheels for machining cutting tools



The innovative and qualified grinding wheel of the GENENTECH offers a various attractive solutions for your precision grinding needs.

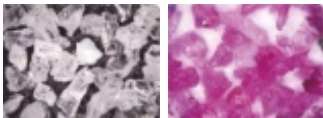
Especially for the Resin bonded wheels, We have built a fully optimized producing process of HOT-PRESSING application.

Benefits

- In our background we have been experiencing and dealing with the cutting tool industry, We have offer the benefits as following.
- The optimized spec and stabilized dressing interval for each grinding sections of Cutting tool application.
 - The shortened lead-time by well organized producing process.
 - The rapid response and well-customized technical support.

Abrasive

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



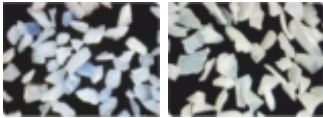
Al₂O₃

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



SiC

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



SC(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.

Grit Size

Grit that takes 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	200	-
Very Fine	240	280	320	400	600	800	1000 ▲

Roughness Conversion Table

	▽▽	▽▽▽				▽▽▽▽
Roughness(μ)	12 ▼	6 ▼	3 ▼	1.5 ▼	0.8 ▼	0.4 ▼
Grit Size	30, 36	30, 36	54	60	80	12 ▲
	46	60	60	80	100	180 ▲

Grade

In general, Grade designates the hardness of grinding wheel.



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		

Bond

This takes a roles of fixing and maintaining abrasive grains to grind.

Resin

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.

Vitrified

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.

Epoxy

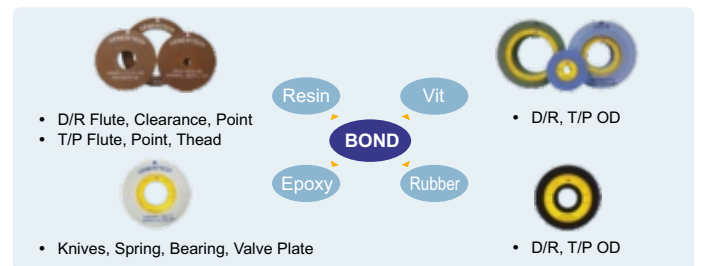
This is mainly composed of abrasive grain and Epoxy bond.

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

Rubber

This is a unique bond which consist with natural or synthetic rubber bond and It's normally sintered at low temperature.

- Excellent at elasticity and binding hardness.
- Used for regulating wheel in Center-less grinding application.



Case Study – Fluting for HSS Drill

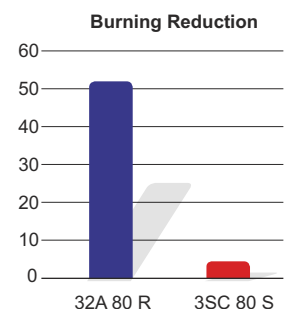
Grinding wheel 3SC 80 S 8 B 1A Ø455 x 16t x Ø203.2
Machine Hertlein Flute Grinder
Coolant Oil

Working condition

Work piece HSS Drill Ø20
Grinding process Flute
Feed rate 348mm/min
Cutting speed 62m/s
Depth of cut 1.1mm
Material removal rate (Qw') 6.38mm³/mms

Advantages

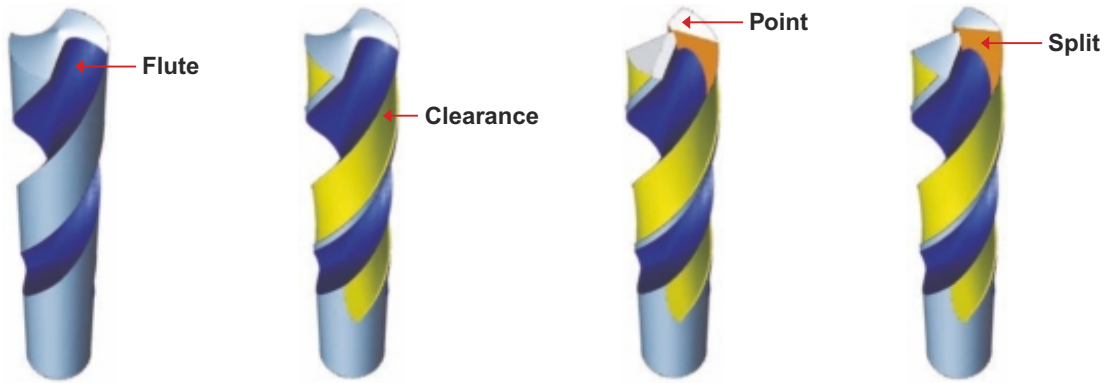
- SC Conventional flute wheel reduced burning for the flute grinding by 50%
- Lower spindle load



Information of cutting tool grinding process

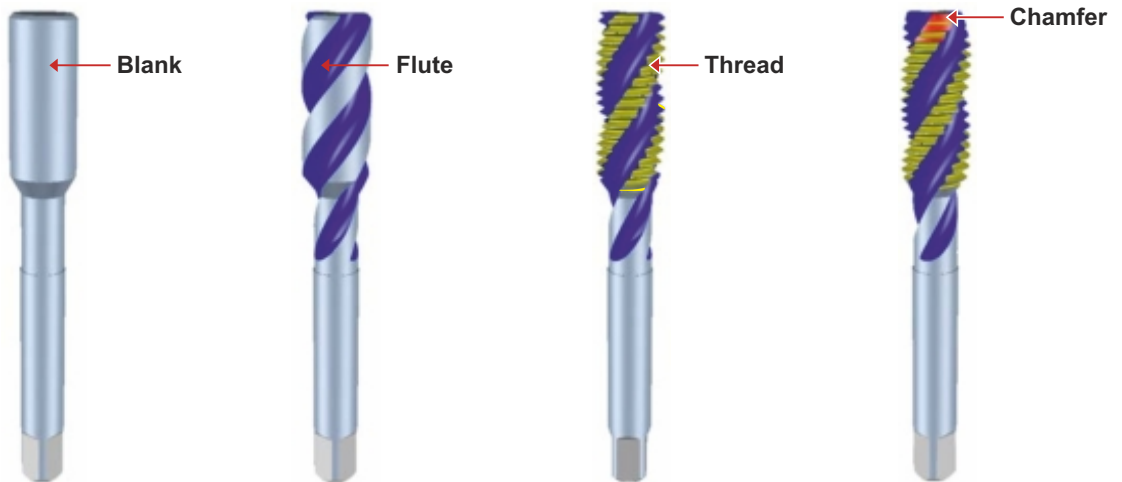


Drill



	Flute	Clearance	Point	Split
Wheel Shape	Type 1	Type 1	Type 1, 1C	Type 1
Wheel Grit Size	HSS : #80 ~ #180	HSS : #54 ~ #120	HSS : #80 ~ #120	HSS : #120

Tap



	Blank	Flute	Thread	Chamfer
Wheel Shape	Type 1	Type 1	Type 1, 1E	Type 1
Wheel Grit Size	HSS : #80	HSS : #80 ~ #180	HSS : #120 ~ #220	HSS : #54 ~ #120

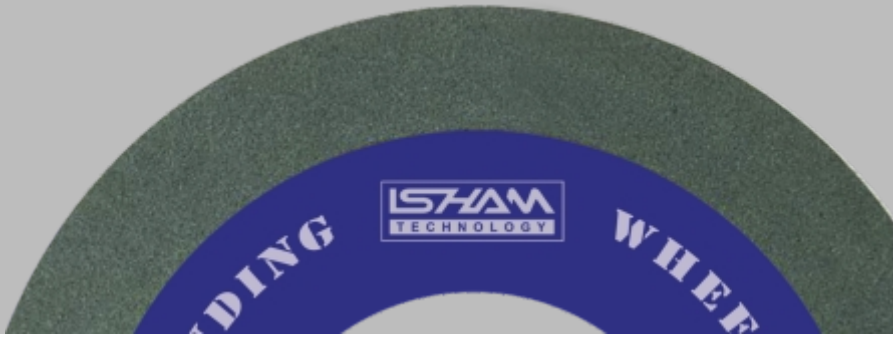
Conventional Wheels for machining cutting tools



Process	Wheel Shape	D	T	H	SPEC
S.S Flute		305	3 ~ 4	50.8	3SC 120 R
		305	1.8 ~ 9.5	203.2	3SC 180 R
		385	2.8 ~ 9.5	203.2	3SC 120 S-
		395	3.0 ~ 10.9	203.2	3SC 120 T
		455	4.1 ~ 9.5	203.2	3SC 80 S-
T. S Flute		455	10.2 ~ 11.4	203.2	3SC 100 R
		455	12.1 ~ 20	203.2	SA 100 S/T
N.C Flute		455	12.1 ~ 18	203.2	3SC 80 R
S.S Clearance		200	1 ~ 4	50.8	32A 120 R
		255	4.8 ~ 16.4	31.75	32A 120 S
		255	4.0 ~ 8.5	76.2	32A 120 P
		255	4.0 ~ 16.4	133.35	3SC 120 T
		355	6.4 ~ 16.4	127	3SC 60 S-
C.D Clearance		510	16 ~ 20	127	SA 120 P
T.S Clearance		455	16 ~ 35	304.8	32A 54 N/O
S.S Point		125	50	32	SA 120 R+
		255	25.0	31.75	SA 120 T-
S.S Split Point		305	9.5	31.75	SA 120 P SA 120 S
T.S Point		305	20.4 ~ 22.4	127	3SC 80 R
		510	12.7 ~ 25	304.8	32A 100 L
T.S Tang		400	13.7	203.2	3SC 80 T

HSS DRILL

Conventional Wheels for machining cutting tools



		Process	Wheel Shape	D	T	H	SPEC
HSS TAP	Straight Flute		150	2.2 ~ 6	44.45	5SC 100 T	
			180	3.7 ~ 8	44.45	5SC 80 S, T	
			205	5.5 ~ 8.5	76.2	5SC 80 S, T	
			255	5 ~ 16	76.2	5SC 80 T	
			305	13 ~ 16	76.2	5SC 80 Q	
			330	8 ~ 27	127	5SC 80 T+	
			400	10 ~ 30	127	5SC 80 T+	
			455	5.0 ~ 12	203.2	SA 100 T	
	Spiral Flute		305	2.8 ~ 4.5	203.2	SA 120 R	
	Gun Point Flute		305	5 ~ 12	76.2	SA 100 T	
OD		305	76.2 ~ 130	120	5SY 80 N 7 V		
		405	150 ~ 205	152.4 ~ 203.2	WA 80 L/M 8 V		
		455	205	228.6	WA 80 L/M 8 V		
		510	205 ~ 250	254 ~ 304.8	WA 80 L/M 8 V		
		610	305	304.8	WA 80 L 8 V		
Square		760	15.9 ~ 25.4	304.8	SA 80 R		
Thread		205	9.5	76.2	A/SA 220 T		
		455	11.1	254	WA 220 L 7 V		
		455	12.7	254	PA 120 L 7 V		
		455	12.7	254	A/SA 180 T		
		480	9.5	254	A/SA 220 S		
Chamfer		355	9 ~ 25	127	4SY 220 I/J 8 V		



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