



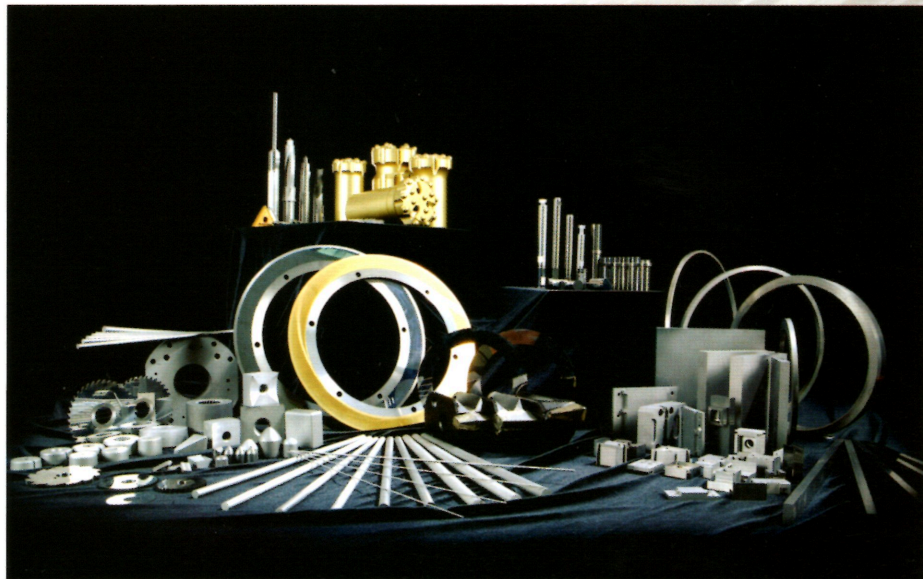
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IAF MLA for
QMS



SHINSENG

INDUSTRIAL CO.,LTD.

Tungsten Carbide | Cemented carbide Tools, Pre-form Carbide



ENGLISH

Shinseng Industrial Co. Ltd

That is beginning to take a new leap!!

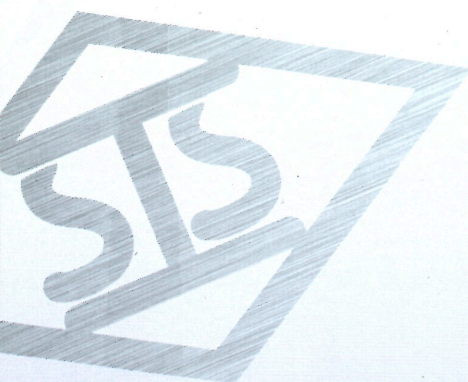
We are going to be a company that creates and shares happiness with the society.

Shinseng industrial Co. Ltd has been consistently developing since the establishment. We are proud of ourselves that the company achieved excellent results in the field of special metals as producing hard metals and other various hard metal tools in Korea where once has been the unexplored field as to the business.



Company History

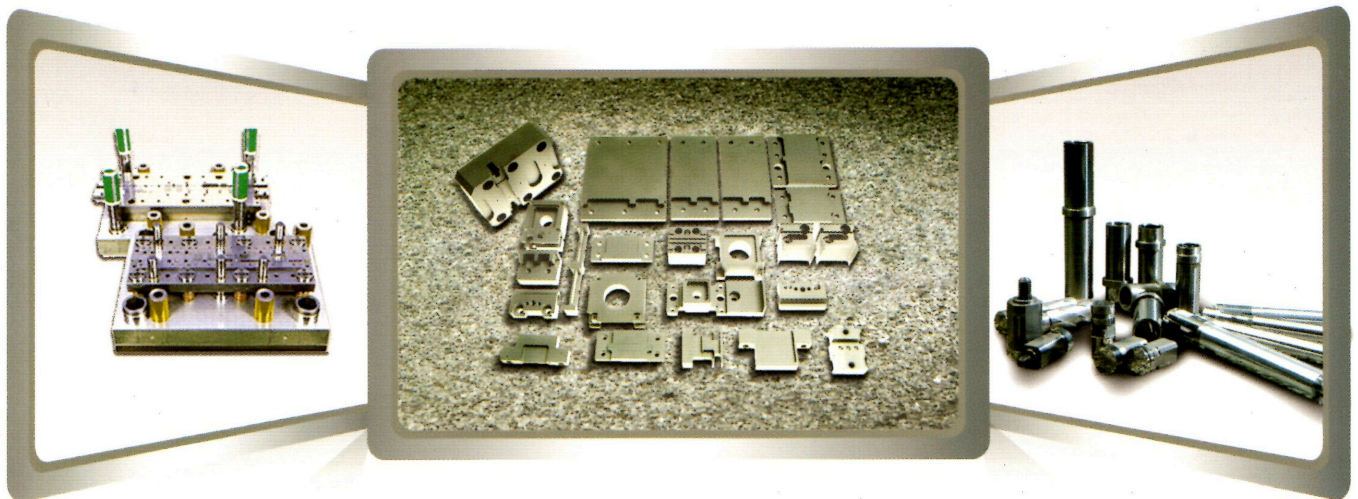
1954. 05	Established Shinseng Industrial
1957. 10	Producing Bolt (substitute import bolt)
1958. 09	Producing hand hacksaw Blade
1968. 10	Contracted technical cooperation with SAKAMURA, Japan
1971. 12	Patent a device for Bolt making machine
1976. 01	Instituted Shinseng Industrial Co. Ltd.
1978. 01	Producing Tungsten Carbide Alloy
1978. 05	Technical Cooperation with MIZUHOLOY, Japan for Tungsten Carbide
1981. 04	Moved factory address Chimsan-Dong, Buk-Gu, DaeGu
1982. 02	Certified K.S(Korean Standard) - No.2575, No.2576
1983. 04	Certified promising small & Medium enterprises by Government
1986. 10	Technical Cooperation with SANALLOY, Japan
1987. 07	Expanded Carbide manufacturing Equipment (Vacuum sintering etc.)
1990. 11	Expanded producing Equipment for 2nd time
2000. 05	Certificated promising of exporting enterprise
2001. 11	Certificated ISO9001
2004. 02	Moved current address Daechun-Dong, Dalseo-Gu, DaeGu
2007. 01	Certificated Enovation medium enterprise by Government
2007. 10	Increase the Capital USD 2,000,000
2010. 06	Certified specialty Corp of manufacturing tungsten carbide alloy by government
2011. 03	Certified INNO-BIZ Enterprise (Technical Innovation Enterprise) by government



SHINSENG INDUSTRIAL CO.,LTD.

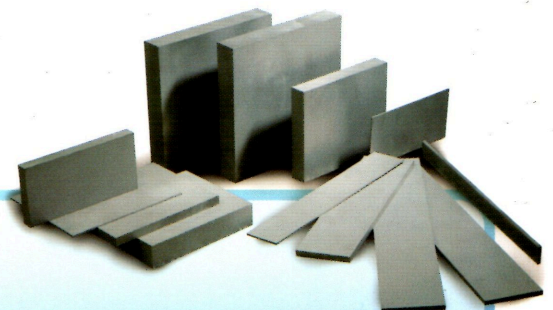
DELICATE MOLD COMPONENTS MATERIALS

We make advanced strength and hardness products using various types of material (ultra fine grade~fine grade). Surface roughness, chippings are also improved after electric discharge machining and wire processing.



GRADE

NF12 SF12 SF13 KF10 KF12 KF15 GF10 GF20
GF30 G3 G4 G5 SX-5 NM40(Nonmagnetic)



APPLICATION

Lead frame mold material
Pot & Plunger
Trim/Form & Mold material

Press & other various types of
terminal mold material,
Motor Core & other various
core mold material

Secondary cell mold material,
Mold material related
to LED & LCD,
Various board materials

FORGING & POWDER MOLD MATERIALS

The forging mold is made up of Dies and Punch, divided into cold forging, warm forging, and hot forging. It is the manufacturing mold component in a car, produced to improve the impact resistance and the wear resistance of forging. With the forging mold, it is easier to manufacture the produce and increases the life of the forging mold.



GRADE

G1 G2 G3 G4 G5 SG6 SM7 SM8 SM9
NM20&NM40 NM40(Nonmagnetic)



APPLICATION

Dies, Nonmagnetic Plug,
Boring Tip, Mold material
Mold Punch, H.D

Forging Die, Powder Die
Nonmagnetic Die, Drawing
Die, Shock Die, Ball Die

Nut Former , Nozzle
Guide Roll, Punch
Plug, Woodworking Cutter

MATERIALS RELATED TO CUTTING

Mainly used for a variety of cutting tools such as burnishing drill, drill, reamer, and end-mill. With carbide mixed with WC particle, it prevents chipping and oxidation caused by high temperature which is occurred at the time of high-speed cutting. The products with the optimum tenacity and toughness by the mixture of WC ultra particle and carbide are usually used for splitter, knife, cutter, and saw cutter. Shinseng Industrial Co. Ltd. also possesses cutting tools such as SHIM (Sheet) and JAW with various specifications. Particularly for JAW, the safety and the life have been improved by hardmetal tap, not brazing tap.



GRADE

SF13 KF10 KF12
K05S K10S G1 G2 G3 GF10



APPLICATION

Casting, Aluminum, Drill,
Burnishing drill, Reamer,
Ductile, End-mill

Knife that requires abrasion
of fiber, Knife by corrugated
board, Rubber roll, Saw

Stencil, Free cutting steel
Synthetic resins, Alloy steel
Knife, Cast steel

MINE TOOL MATERIALS

It is the alloy that is applied with assembly WC. With the excellent tenacity, impact resistance, and impact resistance. it is widely used for Bit for mining and materials for masonry.



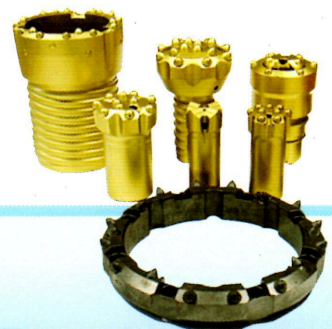
GRADE

DR10 DR20 DR30 DR40 DR65S E35S E40S E50S



APPLICATION

Bit for mining
Materials for masonry



ROLL AND DIES

Productivity improves with hard metal roll at the time of sleeve, bloom, and billet rolling. With hard metal guide roll of excellent abrasion resistance, roll helps with the accurate leading-in while manufacturing timber and iron. It also prolongs the life, too. At present, dies produces timber W103-W120, and H103-H108. It is also possible to make the external diameter 350 with dies for common use. Other than those mentioned, HX and SQ are also produced.



GRADE

SM8 G2 G3 G4 G5 K10S



APPLICATION

Press Roll
Guide Roll
Dies





WC + Co Powder

(Tic,Tac,VC annexing)

MIXING

Ball Milling, Mixer
Drying, Sieving



▲ Spray dryer



▲ Mixer



▲ ATR (Attritor)

FORM PRESSING

(Manual and
Automatic Press,
Extruder)



▲ Extruder



▲ Auto Press



▲ DRY CIP

PRE. SINTERING

Vaccum Type



▲ Vaccum Furnace

WORKING

Mechanic Working,
Forming



▲ CNC



▲ MCT



▲ NC TAP

**With indomitable workmanship of Koreans
And new state-of-the art technologies!!**

We are excited to introduce you and others in overseas the state-of-the art hard materials.
Since we are all aware that what you are needed for your company,
we confidently assure you of satisfying the expectations.

We invite you advanced carbide alloy with high quality and technical researched!!

We Shinseng Industrial Co.Ltd. are specialized in manufacturing quality tungsten carbide alloy by strict Q/C and production process control. We are always improved the quality of special grade to meet customers uses with research and development.



**CEMENTED CARBIDE
MATERIALS**

INSPECTION

**MECHANIC
WORKING**
(Grinding)

**CEMENTED
CARBIDE
WORKING TOOLS**

**MAIN
SINTERING**



▲ Vacuum Type



▲ Pressure Type



▲ S-HIP

Analyzing Machine



▲ AAS (Atomic Absorption Spectrometry)



▲ Particle-size Measuring Machine



▲ TRS (Transverse - Rupture Strength)



▲ CARBON ANALYZER

SHINSENG INDUSTRIAL CO., LTD.

THE CHARACTERISTICS OF GRADE

Grade for special wear resistance and high pressure

G1 G2

It is featured high strength, high-pressure resistance used fine grain grade. It is applied high wear resistance parts, high-pressure parts without impact.

Grade for general wear resistance

G3 G4 G5 SX5

It fine and coarse grain grade is most universal grade for wide applied tools.

Grade for stamping, cold forging tools

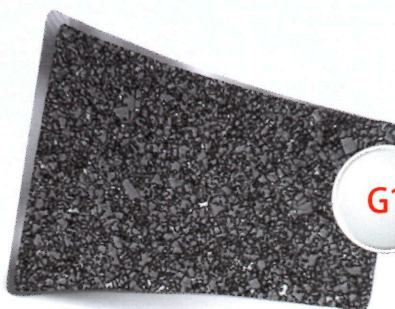
SG6 SG7 SM7 SM8 SM9 M8NC

It extra fine grade with high tenacity is applied stamping, cold forging, high speed forging dies.

Grade for impact tools

DR-Type E35S E40S E50S

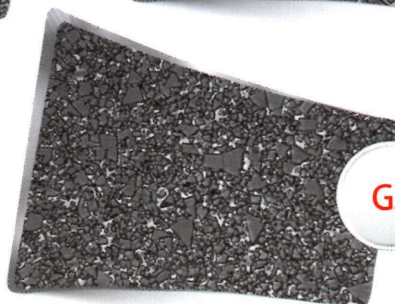
It fine, extra fine grain grade with high tenacity, impact resistance, wear resistance is applied each bit of mining tools and masonry tools.



G1



SM7



G5



E50S

Ultra fine Grade

SF KF GF-Type

It ultra fine grain grade with high strength, high hardness is applied precision stamping die, powder mold, slitter for EDM, mold for semiconductor concerned, motor mold specially needs high wear resistance and chipping resistance.

Grade for high temperature wear resistance, impact resistance

SR30

It is applied hot forging tools needs oxidation resistance under high temperature and high strength.

Grade for high temperature wear resistance

K05S K10S SF13 KF13

It fine grain grade annexed special carbide is applied each cutting tools, metal saw, end mill needs oxidation resistance and high strength.

Grade for non-magnetic, corrosion resistance

NM20 NM40

It non-magnetic grade is applied magnetic press mold, magnetic tape tools, mechanical seal, corrosion resistance tools.



SF12



GF30



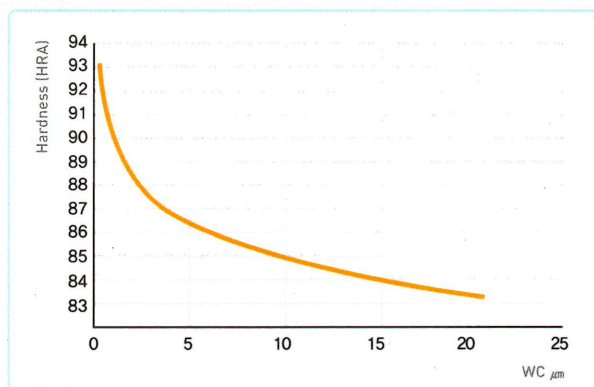
SR30



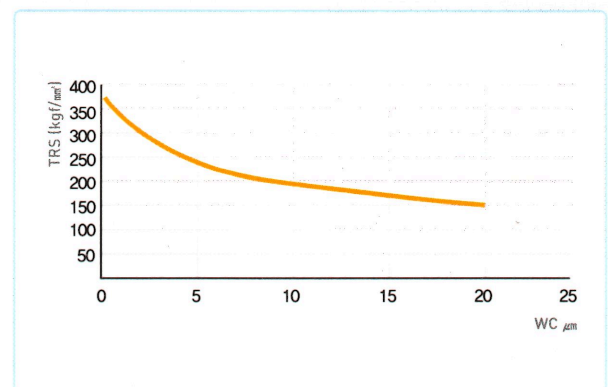
NM40

GRADE AND APPLICATION

Application (Tools Name)		Grade												
		NF12	NF12	SF08	SF12	SF13	KF10	KF12	KF15	K05S	K10S	GF10	GF20	GF30
Dies and Punches	Cold Forging Tools													
	Hot Impact Forming Tools													
	Precise Punching Tools	●	●	●	●	●	●	●	●			●	●	●
	Powder Compacting Tools											●	●	●
Steel Industry	DIES									●	●			
	Hot Extrusion													
	Plug									●	●			
	Rolls for Cold Rolling										●	●		
	Rolls for Hot Rolling													
	Forming & Guide Rolls													
	Knives												●	●
Cutting Tools	Drill & Reamer			●	●		●	●	●	●	●	●		
	End Mill				●	●		●	●			●		
	Cutter & Saw	●	●	●	●	●	●	●		●	●	●		
	Knives	●	●	●	●		●	●		●	●		●	●
High Pressure Tools	Pistons & Cylinders								●	●				
	Anvils													
Machine Parts	Seal Rings													
	Collet													
	Center & Guides									●	●			
Mining Tools	Button Bits													
	Cutter Bits													

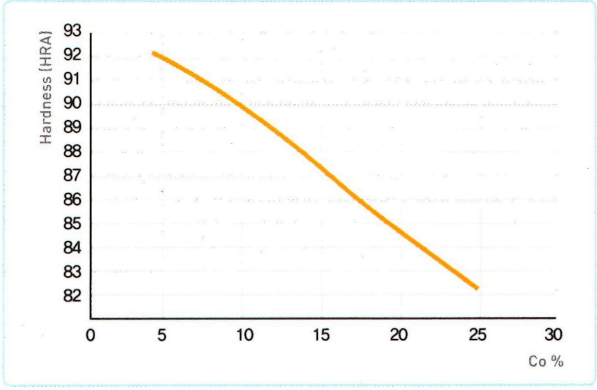


Changes in Hardness according to WC μm

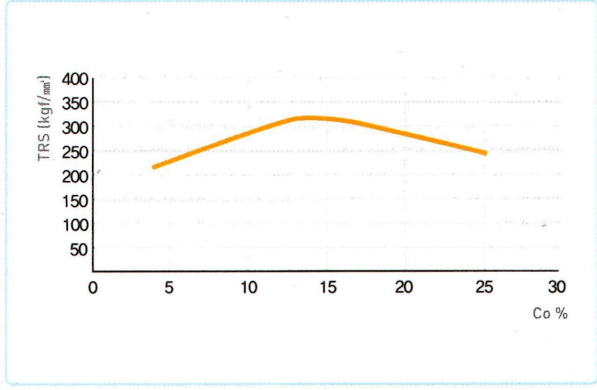


Changes in TRS according to WC μm

Grade																			
G1	G2	G3	G4	G5	SX5	SG6	SG7	SM7	SM8	SM9	DR20	DR30	DR40	E35S	E40S	E50S	SR30	NM20	NM40
			●	●	●	●	●	●	●	●		●	●	●	●	●			
													●	●	●	●	●		
		●	●	●															
		●	●	●	●	●												●	●
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													●	●	●	●			



Changes in Hardness with different Co %



Changes in TRS with different Co %

GRADE LIST

Tools Grades	Grades	Specific gravity	Hardness	Transverse rupture strength
		g/cm ³	HRA	※ kg/mm ²
Grade for special wear resistance and high pressure	G1	15.10	92.5	250
	G2	14.95	92.0	260
	G3	14.75	91.0	300
	G4	14.50	90.0	290
	G5	14.30	89.0	300
Grade for general wear resistance	DA30	14.45	89.5	300
	DA50	14.15	88.5	300
	SX5	13.95	87.5	290
	SG6	14.05	86.8	280
	SG7	13.80	84.5	250
Grade for stamping & Cold forging tools	SM7	13.55	84.5	270
	SM8	13.30	82.0	240
	SM9	13.10	81.2	240
	M8NC	13.10	83.5	250
	DR10	14.95	90.5	260
Grade for impact tools	DR20	14.95	90.0	250
	DR30	14.75	88.3	220
	DR35	14.65	87.8	220
	DR40	14.55	87.3	220
	EA60	14.30	87.0	240
	DR65S	13.95	85.0	190
	E35S	14.45	85.8	180
	E40S	14.25	85.0	180
	E50S	14.05	84.2	190
	SR30	14.00	83.0	150
Grade for high temperature wear resistance & Impact resistance	K05S	14.90	93.0	240
Grade for high temperature wear resistance	K10S	14.80	92.5	260
Ultra fine grade	NF12	14.10	93.0	330
	NF15	13.85	91.5	330
	SF08	14.55	93.5	300
	SF12	14.20	92.0	330
	SF13	14.05	92.2	300
Submicron grade	KF08	14.55	92.8	300
	KF10	14.40	92.2	320
	KF12	14.20	91.3	330
	KF15	13.90	90.3	330
	FD15	14.25	90.8	300
Fine grade	GF10	14.45	91.8	320
	GF20	14.28	90.5	330
	GF30	13.95	88.5	320
Grade for non-magnetic & Corrosion resistance	NM20	14.45	91.0	270
	NM40	13.85	87.5	300

※ × 1/10 ≒ [kg/mm²]

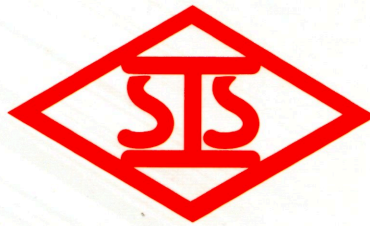
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Compressive strength	Fracture toughness	Young's ratio	Poisson's ratio	Coefficient of thermal expansion	Coefficient of thermal conductivity
N/mm ²	※MN/m ^{3/2}	★KN/mm ²		MK-1	☆W/m-K
5880	11	630	0.21	4.8	79[0.19]
5800	13	620	0.21	5.0	79[0.19]
5200	13	590	0.21	5.1	75[0.18]
5000	15	580	0.21	5.2	75[0.18]
4900	15	570	0.22	5.3	71[0.17]
4900	15	570	0.22	5.2	73[0.18]
4700	16	550	0.23	5.4	71[0.17]
4050	16	540	0.23	5.6	71[0.17]
3920	19	510	0.24	5.7	71[0.17]
3700	20	500	0.24	5.8	67[0.16]
3700	20	500	0.24	5.8	67[0.16]
3050	21	490	0.24	6.2	67[0.16]
3040	22	470	0.25	6.5	63[0.15]
3040	22	490	0.25	5.1	63[0.15]
5050	16	590	0.21	5.1	79[0.19]
5000	16	580	0.21	5.2	79[0.19]
4000	16	560	0.22	5.2	75[0.18]
3920	17	550	0.23	5.3	75[0.18]
3900	18	530	0.23	5.5	71[0.17]
3800	20	500	0.23	5.5	71[0.17]
3600	26	480	0.24	5.6	71[0.17]
3750	23	490	0.23	5.2	71[0.17]
3700	25	480	0.24	5.3	71[0.17]
3500	28	470	0.24	5.7	67[0.17]
2940	22	450	0.24	5.5	67[0.16]
5950	11	630	0.21	4.8	79[0.19]
5880	12	620	0.21	5.0	79[0.19]
6000	11	590	0.20	5.8	75[0.18]
5800	12	580	0.21	6.0	71[0.17]
6000	10	610	0.19	5.2	79[0.19]
5800	11	580	0.21	5.4	75[0.18]
5880	11	560	0.21	5.5	71[0.17]
5900	10	600	0.20	5.2	79[0.19]
5800	11	580	0.21	5.4	79[0.19]
5300	12	570	0.21	5.5	75[0.18]
5200	13	560	0.21	5.9	71[0.17]
5200	11	560	0.21	5.4	75[0.19]
5300	11	610	0.21	5.2	71[0.17]
5100	14	590	0.21	5.4	75[0.18]
4900	19	580	0.22	5.6	71[0.17]
5100	11	580	0.21	5.2	71[0.17]
4400	16	550	0.22	5.7	67[0.16]

※ ×1/10≒[kg/mm²]

★ ×1/10≒[×104 kg/mm²]

() =cal/cm.°C.sec



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