

Appropriative inserts for cast iron machining

Safety precautions:

- Very hot or lengthy chips may be discharged while the machine is in operation. So, safety goggles or other protective covers must be used.
- In cutting process, sparks and hot chips may cause fire and explosion hazard. Therefore please make sure the fire extinguishers are ready for use.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.
- Please handle with care as this product has sharp edges.



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INTRODUCTION

Zhuzhou Huarui Cemented Carbide Tools Co.,Ltd. is a high and new tech enterprise engaged in the production of cemented carbide cutting tools for CNC machinery, the municipal supporting institution of Zhuzhou Carbide Precision Cutting tool Engineering Technology Research Center. Also the production line has been named key project of “Manufacture makes Hunan stronger”. In the market, its “Hardstone” Brand products with excellent properties have been widely used in industries of automobiles, aviation & aerospace, rail traffic, heavy equipment, mold manufacture, power equipment,etc. and have been accepted by customers. Therefore they are selling to various overseas markets.

With its good development prospects, the company has won great favor from various investors. The well-known domestic equity investment funds invested a large sum of money for company in 2011, 2015 and 2017, which has speeded up the introduction of high-tech manufacturing equipments and quality test instruments. Therefore, the product quality has climbed one storey higher & reached the first- class in Asia.

The company has in its possession a strong technical strength & has forged a top domestic specialized & high-level R & D team of old, middle-aged & young professional personnel. They included experts enjoying special allowance of the state council & introduced outstanding CNC talents. The company has its own R&D Center consisting of material research, products design, mould design & manufacture, cutting experiments & technical application service, etc. ensuring the provision to customers of the best solutions to products & technical service. At present, the company has 22 nationally authorized patents.

The company has its quality control system covering the whole processes with independent intellectual property rights to guarantee the stability and consistency of its products. The company was awarded ISO9001:2000 quality management system certificate.2014, enterprise have passed 2008 quality standard system certificate.

The company has experienced sales engineers and technical application engineers, and has set up its product and technical service branched in China’s major industrial cities to provide the most professional and efficient service.

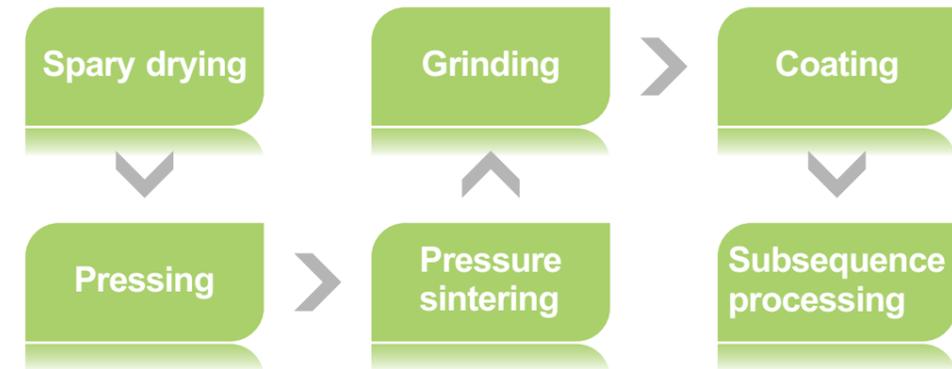


EQUIPMENT

The company has a full set of high-level producing equipments ranging from raw power material preparation, mould manufacture, pressing, pressure sintering, grinding to post processing. We use spray drying tower in mixing process. Its advanced technique ascertains the best performance behavior of material in physical property and formability.

Using powder compacting press with Electro-Servo Motor Direct Drive, the most advanced machine for press shaping in the world, which meet the high requirements on precision, performance and stability. For sintering, we equipped the most advanced devices to meet the quality requirements on chemical and physical performance.

For grinding and machining, we equipped Fully auto CNC periphery insert grinder, CNC two-wheel flat lapping machine etc. to ensure product shape and precision demand. We also use the most advanced PVD/CVD coating machines. The state-of-the-art subsequence process devices equipped for better performance.



The inserts for cast iron machining (negative inserts)

80° CN** inserts with hole

Inserts shape	Type	Dimension (mm)					Cutting parameters	Shape
		L	IC	S	Φd	Re		
	CNMA120404	12.9	12.7	4.76	5.16	0.4	ap : 0.5~ 5.0 ; fn : 0.1~ 0.25	
	CNMA120408	12.9	12.7	4.76	5.16	0.8	ap : 0.5~ 5.0 ; fn : 0.1~ 0.4	
	CNMA120412	12.9	12.7	4.76	5.16	1.2	ap : 0.5~ 5.0 ; fn : 0.1~ 0.5	
	CNMA160612	16.1	15.875	6.35	6.35	1.2	ap:2.0~7.0 ; fn:0.15~0.6	
	CNMA160616	16.1	15.875	6.35	6.35	1.6	ap:2.0~7.0 ; fn:0.15~0.7	
	CNMG120404	12.9	12.7	4.76	5.16	0.4	ap: 1.5~ 5.0 ; fn: 0.20~ 0.50	
	CNMG120408	12.9	12.7	4.76	5.16	0.8	ap: 1.5~ 5.0 ; fn: 0.20~ 0.50	
	CNMG120412	12.9	12.7	4.76	5.16	1.2	ap: 1.5~ 5.0 ; fn: 0.20~ 0.50	
	CNMG120416	12.9	12.7	4.76	5.16	1.6	ap: 1.5~ 5.0 ; fn: 0.20~ 0.50	
	CNMG160612	16.1	15.875	6.35	6.35	1.2	ap: 1.5~ 6.0 ; fn: 0.20~ 0.60	
	CNMG160616	16.1	15.875	6.35	6.35	1.6	ap: 1.5~ 6.0 ; fn: 0.20~ 0.60	

55° DN** inserts with hole

Inserts shape	Type	Dimension (mm)					Cutting parameters	Shape
		L	IC	S	Φd	Re		
	DNMA150404	15.5	12.7	4.76	5.16	0.4	ap: 0.5~ 5.5 ; fn: 0.15~ 0.25	
	DNMA150408	15.5	12.7	4.76	5.16	0.8	ap: 0.5~ 5.5 ; fn: 0.15~ 0.40	
	DNMA150604	15.5	12.7	6.35	5.16	0.4	ap: 0.5~ 5.5 ; fn: 0.15~ 0.25	
	DNMA150608	15.5	12.7	6.35	5.16	0.8	ap: 0.5~ 5.5 ; fn: 0.15~ 0.40	
	DNMA150612	15.5	12.7	6.35	5.16	1.2	ap: 0.5~ 5.5 ; fn: 0.15~ 0.50	
	DNMG150608	15.5	12.7	6.35	5.16	0.8	ap: 0.5~ 5.5 ; fn: 0.15~ 0.40	
	DNMG150612	15.5	12.7	6.35	5.16	1.2	ap: 0.5~ 5.5 ; fn: 0.15~ 0.50	

90° SN** inserts with hole

Inserts shape	Type	Dimension (mm)					Cutting parameters	Shape
		L	IC	S	Φd	Re		
	SNMA120404	12.7	12.7	4.76	5.16	0.4	ap : 0.5~ 5.0 ; fn : 0.1~ 0.25	
	SNMA120408	12.7	12.7	4.76	5.16	0.8	ap : 0.5~ 5.0 ; fn : 0.1~ 0.4	
	SNMA120412	12.7	12.7	4.76	5.16	1.2	ap : 0.5~ 5.0 ; fn : 0.1~ 0.5	
	SNMA150612	15.875	15.875	6.35	6.35	1.2	ap:2.0~7.0 ; fn:0.15~0.6	
	SNMA150616	15.875	15.875	6.35	6.35	1.6	ap:2.0~7.0 ; fn:0.15~0.7	
		SNMG120404	12.7	12.7	4.76	5.16	0.4	
SNMG120408		12.7	12.7	4.76	5.16	0.8	ap : 0.5~ 5.0 ; fn : 0.1~ 0.4	
SNMG120412		12.7	12.7	4.76	5.16	1.2	ap : 0.5~ 5.0 ; fn : 0.1~ 0.5	
SNMG150612		15.875	15.875	6.35	6.35	1.2	ap:2.0~7.0 ; fn:0.15~0.6	
SNMG150616		15.875	15.875	6.35	6.35	1.6	ap:2.0~7.0 ; fn:0.15~0.7	

60° TN** inserts with hole

Inserts shape	Type	Dimension (mm)					Cutting parameters	Shape
		L	IC	S	Φd	Re		
	TNMA160404	16.5	9.525	4.76	3.81	0.4	ap : 0.5~ 5.0 ; fn : 0.1~ 0.25	
	TNMA160408	16.5	9.525	4.76	3.81	0.8	ap : 0.5~ 5.0 ; fn : 0.1~ 0.4	
	TNMA160412	16.5	9.525	4.76	3.81	1.2	ap : 0.5~ 5.0 ; fn : 0.1~ 0.5	
	TNMA220412	22.0	12.7	4.76	5.16	1.2	ap:2.0~7.0 ; fn:0.15~0.6	
	TNMA220416	22.0	12.7	4.76	5.16	1.6	ap:2.0~7.0 ; fn:0.15~0.7	
	TNMG160404	16.5	9.525	4.76	3.81	0.4	ap : 0.5~ 5.0 ; fn : 0.1~ 0.25	
	TNMG160408	16.5	9.525	4.76	3.81	0.8	ap : 0.5~ 5.0 ; fn : 0.1~ 0.4	
	TNMG160412	16.5	9.525	4.76	3.81	1.2	ap : 0.5~ 5.0 ; fn : 0.1~ 0.5	
	TNMG220412	22.0	12.7	4.76	5.16	1.2	ap:2.0~7.0 ; fn:0.15~0.6	
	TNMG220416	22.0	12.7	4.76	5.16	1.6	ap:2.0~7.0 ; fn:0.15~0.7	

80° WN** inserts with hole

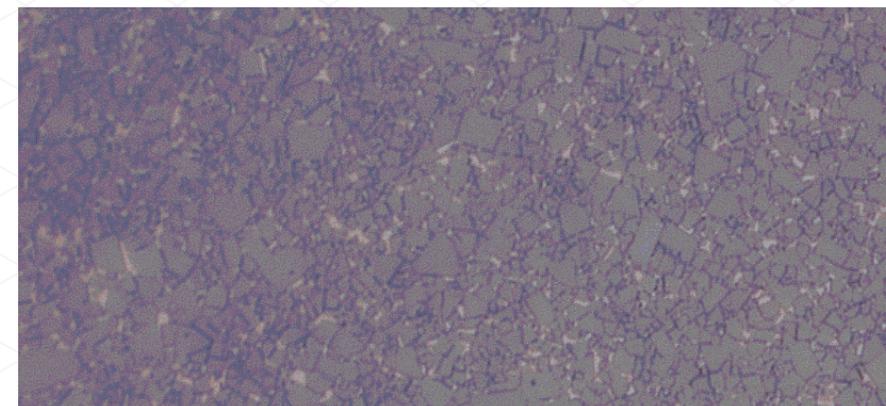
Inserts shape	Type	Dimension (mm)					Cutting parameters	Shape
		L	IC	S	Φd	Re		
	WNMA080404	8.7	12.7	4.76	5.16	0.4	ap : 0.5~ 5.0 ; fn : 0.1~ 0.25	
	WNMA080408	8.7	12.7	4.76	5.16	0.8	ap : 0.5~ 5.0 ; fn : 0.1~ 0.4	
	WNMA080412	8.7	12.7	4.76	5.16	1.2	ap : 0.5~ 5.0 ; fn : 0.1~ 0.5	
	WNMG080408	8.7	12.7	4.76	5.16	0.8	ap : 0.5~ 5.0 ; fn : 0.1~ 0.4	
	WNMG080412	8.7	12.7	4.76	5.16	1.2	ap : 0.5~ 5.0 ; fn : 0.1~ 0.5	

Features of the inserts

- ◆ The special post processing treatment provides smoother inserts surface, which substantially improved the adhesive resistance and reduced the edge breakage caused by cohering, thus can machining longer and more stable.
- ◆ The inserts(*NMA) without chipbreaker with super-high strength cutting edge, it has excellent performance in intermittent machining, improved the stability and reduce the accidental chipping.
- ◆ The inserts(*NMG) with chipbreaker are suitable for general machining of cast iron, it is the first choice for cast iron turning machining.
- ◆ The specially developed substrate and coating which has extensive versatility for cast iron turning, and has good performance in high-speed turning.

WS6115 Grade Features

- ◆ Cemented carbide substrate with ultrafine grain structure, which has high hardness and high strength. Good performance for rough to finishing machining of cast iron.
- ◆ Using cemented carbide substrate with unique process and excellent CVD coating, which achieved the combination of hardness, toughness and higher red hardness. It is especially suitable for the rough turning of cast iron.
- ◆ The combination of high performance and high precision, it satisfies high precision machining.



WS6115 substrate micrograph under 100 times

Application cases

Brake disc

Workpiece material	HT250
Machining way	Continuous end face and cylindrical turning
Inserts type/Grade	TNMG220412-GH WS6115
Cutting parameters	Vc=580m/min, f=0.25~0.4mm/r, ap=1.5~2.5mm
Result of cutting	Hardstone, 30~40 pieces/cutting edge Brand M, 30~40 pieces/cutting edge



Air cylinder

Workpiece material	HT250
Machining way	External and end face rough turning
Inserts type/Grade	WNMG080412-ZR WS6115
Cutting parameters	Vc=415m/min, f=0.15mm/r, ap=0.4mm
Result of cutting	Hardstone, 60~70 pieces/cutting edge Brand M, 60~70 pieces/cutting edge



Flange

Workpiece material	D138 Flange HT250
Machining way	Dry continuous/intermittent rough turning external and end face
Inserts type/Grade	WNMG080408-ZR WS6115
Cutting parameters	Vc=563m/min, f=0.25mm/r, ap=1mm
Result of cutting	Hardstone, 70~80 pieces/cutting edge Brand M, 70~80 pieces/cutting edge



Crankshaft

Workpiece material	Crankshaft QT550
Machining way	Continuous rough turning
Inserts type/Grade	WNMG080412 WS6115
Cutting parameters	Vc=190m/min, f=0.4mm/r, ap=3mm
Result of cutting	Hardstone, 96~102 pieces/cutting edge Brand A, 99~102 pieces/cutting edge



HARDSTONE CUTTING TOOLS MARKETING NETWORK

