

# 湖南锐特超硬材料工具有限公司

HUNAN REAL TECH SUPERABRASIVE&TOOL CO.,LTD.

## CBN Inserts For Gear Machining

[www.cbninserts.com](http://www.cbninserts.com)  
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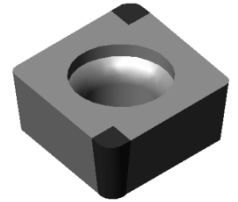
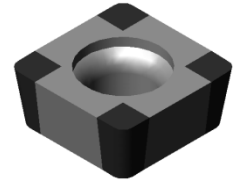
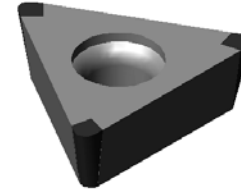
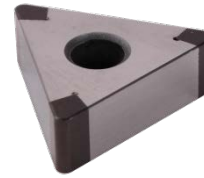
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## **Brief Introduction about Hunan Real Tech CBN inserts**

- **Hunan Real Tech Superabrasive & Tool Co.,Ltd. have controlled the CBN design, manufacturing and application technique, our CBN inserts achieved innovative enhancement for anti-shock resistance, can be used in a variety of applications.**
- **RT solid CBN inserts can be used for rough, semi fine and fine turning, milling, honing workpiece of hardened steel,high nickel steel,high Chromium steel, the machining can be both continuous and interrupted, working efficiency is very high, take for example, our CBN inserts can turning the gear with  $V=100\text{m/min}$ ,turning the gray cast iron with  $V=2000\text{m/min}$ .**
- **We have the patented CBN welding technique which provide the CBN more and extremely high binding strength with the base material, the inner structure and welding technique reach the world leading level. Various sizes and grades of our super-hard welding CBN inserts can meet different working conditions.**
- **Our CBN insert is now the first choice for heavy loading, high efficiency, energy saving cutting request.**
- **Our CBN inserts achieved many successful case for gear machining, enhance the working efficiency while lower down the product cost dramatically at the mean time.**

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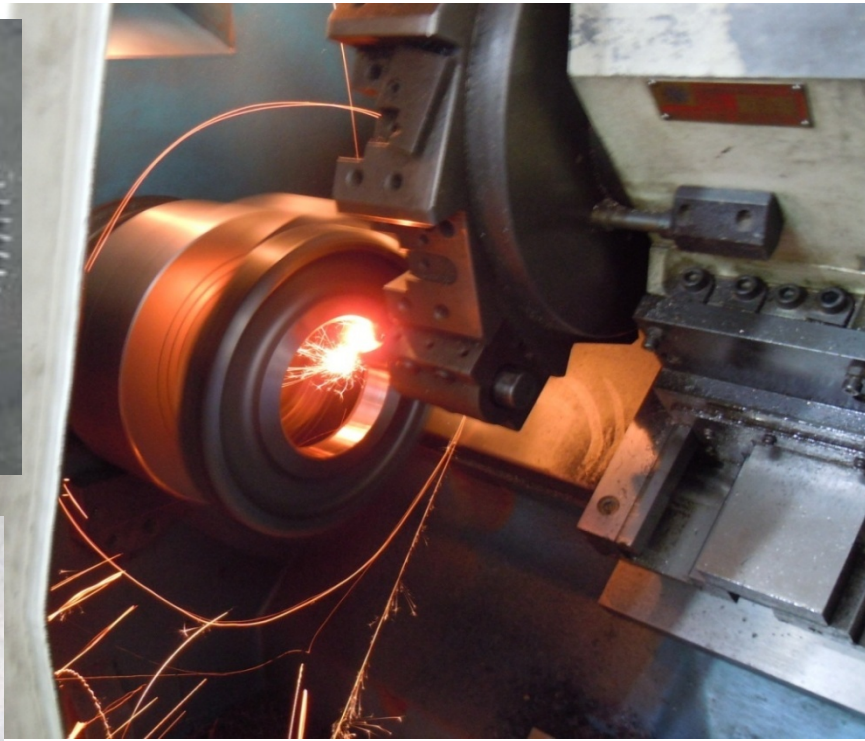
# 1. Fine turning hardened gear Bore/inner hole and end face



## Turning replace the grinding to machining gear

1. The tolerance can be controlled under  $\pm 0.01\text{mm}$ .
2. Surface Roughness can be controlled under  $Ra 0.8-1.6\mu\text{m}$ .
3. Reduce investment for grinding machine.
4. One time clamping can complete all complicated face fine machining process, save energy and reduce pollution.
5. Dry turning, environment friendly.

Note: The virtual machining tolerance is related with the lathe.



**Workpiece: Hardened alloy steel**  
**Hardness: HRC48**  
**CBN Insert: TNGA 110304**  
**S01020 (  $S0.1 \times 20^\circ$  )-6 edge**  
 **$V_c=100-120\text{m/min}; a_p=0.06\text{mm},$**   
 **$f=0.06\text{mm/r}$**   
 **$Ra0.8-1.6\mu\text{m}$**

**Hunan Real Tech Tipped CBN  
turning insert show the same  
turning performance with a  
foreign competitor's product, but  
our tool duration is of 2 times  
compare with their product.**

**Fine Honing the bore/inner hole, turning replace grinding process**

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### I、应用实例一（加工外圆—粗车；材料：17CrNiMo6）

工件名称	应用机床	工件硬度	刀片牌号	刀片型号	切削 参数		
					V (m/min)	ap (mm)	f (mm/r)
JGW3846-1001/01 (一级太阳轮)	普通中型车 床(C630-1)	HRC50 <sup>②</sup>	900901 <sup>③</sup>	SNMN120708	65	2	0.4
JGW3846-1001/01 (一级太阳轮)	普通中型车 床(C630-1)	HRC50 <sup>②</sup>	硅陶瓷 <sup>④</sup>	—	65	2	0.2

备注 1.上标<sup>②</sup>：工件在渗碳淬火过程中，外圆未保护好，局部漏碳，使得工件外圆某些局部硬度偏高；

2.上标<sup>③</sup>：立方氮化硼刀片在该试切参数下，产生积屑瘤，建议适当提高切削线速度至 100m/Min 左右；

3.上标<sup>④</sup>：硅陶瓷刀片在该试切参数下容易发生崩刃；

4.通过对比可知，立方氮化硼刀片（900901）的切削效率至少是硅陶瓷的 2 倍，且不容易崩刃。

### II、应用实例二（加工外圆—精车；材料：17CrNiMo6）

工件名称	应用机床	工件硬度	刀片牌号	刀片型号	切削 参数		
					V (m/min)	ap (mm)	f (mm/r)
JGW3846-1001/01 (一级太阳轮)	普通中型车 床(C630-1)	HRC50 <sup>②</sup>	900901 <sup>③</sup>	SNMN120708	130	0.7	0.3

备注 1.上标<sup>②</sup>：工件在渗碳淬火过程中，外圆未保护好，局部漏碳，使得工件外圆某些局部硬度偏高。

2.上标<sup>③</sup>：立方氮化硼刀片在该试切参数下，a).粗糙度能达到 Ra3.2 左右；b).断屑效果较好；

c).建议刀尖圆弧为 R0.5 更有利于精加工；d).单个刀片（8 刃均破损）可加工 6 件该零件（漏碳严重），刀片耐用度为 150min 左右。

### III、应用实例三（加工外圆及端面；材料：17CrNiMo6）

工件名称	应用机床	工件硬度	刀片牌号	刀片型号	切削 参数		
					V (m/min)	ap (mm)	f (mm/r)
FL1500A-2001A (太阳轮)	普通中型车 床(C630-1)	HRC50 <sup>②</sup>	900901 <sup>③</sup>	SNMN120708	130-145	3 <sup>④</sup>	0.3-0.4
FL1500A-2001A (太阳轮)	普通中型车 床(C630-1)	HRC50 <sup>②</sup>	900901 <sup>③</sup>	SNMN120708	130-145	2.5 <sup>④</sup>	0.3-0.4

备注 1.上标<sup>②</sup>：工件在渗碳淬火过程中，外圆及端面未保护好，局部漏碳，使得工件某些局部硬度偏高。

2.上标<sup>③</sup>：为加工零件外圆情况下的切削深度；

3.上标<sup>④</sup>：为加工零件端面情况下的切削深度；

4.上标<sup>④</sup>：a).粗糙度能达到 Ra3.2 左右；b).断屑效果较好；c).切削效果比硅陶瓷刀片好，不崩刃、效率高；

# Reports from our customer for CBN Inserts gear machining





项目 刀具	转 速 r/min	切削速度 m/min	进给速度 mm/rev	切削深度 mm	切削时间 (秒)	冷却方式	参数对比	
原用刀具	1600	130.6	0.06	0.15/0.07	23"	水溶液	相同	
试验刀具	1600	130.6	0.06	0.15/0.07	23"	水溶液		
项目 刀具	品 牌	刀具规格及材质		刀尖数	加工总数	刀尖平均 加工件数	刀片单价	加工单件 成本对比
原用刀具	Foreign Brand	NP-CCGW09T304G MB825		1	650	650	4	0.094
试验刀具	RealTech CBN	CCGW09T0304 S01020		2	2678	1339		
试验总结	对纹路减少有改善，其它效果相仿，有一定性价比，可以进行推广							



Wok report from our customer for the fine turning Automotive Transmission Gear Box

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# CBN Inserts Turning Hardened Steel Gear



Solid CBN Insert: CNMN 120712  
S02020 (S0.1 × 20°)  
Workpiece: Alloy Steel  
Hardness: HRC48-55  
Gear Diameter: D1200mm  
Vc=100m/min  
ap= 0.5mm  
f=0.3mm/r

**Interrupted Turning Gear Excircle**

**Our Solid CBN insert is 3 times  
duration is 6 times compare with  
imported competitors' carbide  
inserts.**

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# Solid CBN Inserts fine turning giant gear

**Workpiece:** ZG40CrNi2Mo

**Hardness:** HB310-350

**Workpiece :**  $\Phi 12000\text{mm}$ , 296 teeth per circle

**Insert:** SNMN201020

**Holder:** CSSNR4040S20

**V=**97.9m/min;

**ap=**0.5mm,

**f=**2.6mm/r



**Interrupted turning**

**Solid CBN Inserts from Hunan Real Tech Superabrasive & Tool Co.,Ltd show excellent working performance, tool life is 6 times longer than an international famous brand carbide insert with coating, price is only theirs' 77%.**

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# Hardened Gear Shaft Machining



**Workpiece:** 17CrNiMo6  
**Workpiece hardness:** HRC57  
**CBN Insert:** SNMN 120412  
S02020  
**Holder:** CSXNR4040S12T6  
**Lathe brand:** 61160  
**Vc=90m/min;**  
**ap=0.5mm,f=0.6mm/r**

**Our insert life is 3-5  
times higher than insert  
from competitors, while  
cost can be reduce by  
65%**

## Fine turning Gear Shaft

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## **Advantages of our CBN cutting tools**

- **Hunan Real Tech company has the integrated advantages of CBN abrasives and CBN cutting tools , our self research and manufactured CBN tools can offer better working performance, For different work piece materials, we adjust the bond and technique and aimed to gain customers' satisfaction.**
- **Hunan Real Tech company takes the initiative to develop the CBS thoroughly welded CBN inserts, it can offer higher heat resistance and higher binding strength compare with the conventional welding technique.**

**We promise to reduce your  
machining cost by 20%!**