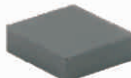




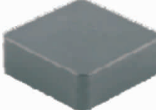
### Characteristics of Cubic Boron Nitride (CBN)


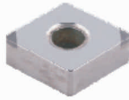
Cubic boron nitride (CBN) is an excellent tool material with high hardness, high heat resistance and high chemical inertness. It can be applied to difficult-to-machine materials such as hardened steel, cast iron, superalloy and powder metal. Due to its high temperature resistance, high hardness, strong cutting force and low friction coefficient, CBN inserts enable to produce workpieces with outstanding surface roughness and maintain long life, high efficiency and stable performance.

Grade	Application	Work Material
TBN3500	Heavy cutting	Excellent impact resistance and wear resistance: High nickel chrome High hardness alloy cast iron Grey cast iron High manganese steel
TBN7000	Semi-Finishing Finishing	Excellent overall performance with universal application: Grey cast iron Hardened cast iron Hardened steel over HRC45
TBS7000	Finishing	
TBN7200	Heavy cutting	Excellent wear resistance: Grey cast iron
TBS7200	Finishing	
TBN9500	Finishing	Hardened steel over HRC45
TBK7520	Finishing for continuous to light interrupted cutting	Grey cast iron Powder metallurgy
TBK9550	Finishing for continuous to light interrupted cutting	Bearing steel Carburized steel




<b>CN</b>		Rhombic 80°	P	Steel	•			•				
		Negative	M	Stainless								
			K	Cast Iron	•	•	•	•	•	•	•	•
		with Hole	N	Non-ferrous								
			S	Superalloys								
			H	Hard Materials		•		•	•		•	•
Application	Chipbreaker	Designation	Corner Radius	CBN								
				TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550	
Medium Cutting		CNMN120404	0.4	•	•	•	•					
		CNMN120408	0.8	•	•	•	•					
		CNMN120412	1.2	•	•	•	•					
		CNGA120404	0.4						•	•		
		CNGA120408	0.8						•	•		
		CNGA120412	1.2						•	•		
		CNGA160404	0.4						•	•		
		CNGA160408	0.8						•	•		
		CNGA160412	1.2						•	•		
		CNGA120404-2S	0.4								•	•
		CNGA120408-2S	0.8								•	•
		CNGA120412-2S	1.2								•	•

External Toolholders:P22  
Internal Toolholders:P34


<b>SN</b>		Square 90°	P	Steel	•			•				
		Negative	M	Stainless								
			K	Cast Iron	•	•	•	•	•	•	•	
		with Hole	N	Non-ferrous								
			S	Superalloys								
			H	Hard Materials		•		•	•		•	•
Application	Chipbreaker	Designation	Corner Radius	CBN								
				TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550	
Medium Cutting		SNMN090304	0.4	•	•	•	•					
		SNMN090308	0.8	•	•	•	•					
		SNMN090312	1.2	•	•	•	•					
		SNMN120404	0.4	•	•	•	•					
		SNMN120408	0.8	•	•	•	•					



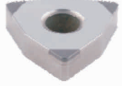
SN		Square 90°	P	Steel	•			•						
		Negative	M	Stainless										
			K	Cast Iron	•	•	•	•	•	•	•	•	•	
		with Hole	N	Non-ferrous										
			S	Superalloys										
			H	Hard Materials			•		•	•		•	•	
Application	Chipbreaker	Designation	Corner Radius	CBN										
				TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550			
Medium Cutting		SNGA120404	0.4					•	•					
		SNGA120408	0.8					•	•					
		SNGA120412	1.2					•	•					
		SNGA120404-2S	0.4								•	•		
		SNGA120408-2S	0.8								•	•		
		SNGA120412-2S	1.2								•	•		

External Toolholders:P23  
Internal Toolholders:P34


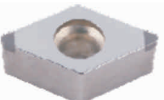
TN		Triangular 60°	P	Steel	•			•						
		Negative	M	Stainless										
			K	Cast Iron	•	•	•	•	•	•	•	•	•	
		with Hole	N	Non-ferrous										
			S	Superalloys										
			H	Hard Materials			•		•	•		•	•	
Application	Chipbreaker	Designation	Corner Radius	CBN										
				TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550			
Medium Cutting		TNGN110304	0.4	•	•	•	•							
		TNGN110308	0.8	•	•	•	•							
		TNGN110312	1.2	•	•	•	•							
		TNGN160404	0.4	•		•	•							
		TNGN160408	0.8	•		•	•							
		TNGN160412	1.2	•		•	•							
		TNGA160404	0.4					•	•					
		TNGA160408	0.8					•	•					
		TNGA160412	1.2					•	•					
		TNGA160404-3S	0.4								•	•		
		TNGA160408-3S	0.8								•	•		
		TNGA160412-3S	1.2								•	•		
TNGA160416-3S		1.6								•	•			

External Toolholders:P25  
Internal Toolholders:P35



RN		Round 90°	P	Steel	•			•					
		Negative	M	Stainless									
with Hole	K		Cast Iron	•	•	•	•	•	•	•	•	•	•
		N	Non-ferrous										
	S	Superalloys											
		H	Hard Materials		•		•	•		•		•	
Application	Chipbreaker	Designation	Corner Radius	CBN									
				TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550		
Medium Cutting		RNMN090300	-	•	•	•	•						
		RNMN120400	-	•	•	•	•						
		RNGN090300	-	•	•	•	•						
		RNGN120400	-	•	•	•	•						

WN		Trigon 80°	P	Steel	•			•					
		Negative	M	Stainless									
with Hole	K		Cast Iron	•	•	•	•	•	•	•	•	•	•
		N	Non-ferrous										
	S	Superalloys											
		H	Hard Materials		•		•	•		•		•	
Application	Chipbreaker	Designation	Corner Radius	CBN									
				TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550		
Medium Cutting		WNMN080404	0.4	•	•	•	•						
		WNMN080408	0.8	•	•	•	•						
		WNMN080412	1.2	•	•	•	•						
		WNGA080404	0.4						•	•			
		WNGA080408	0.8						•	•			
		WNGA080412	1.2						•	•			
		WNGA060404-3S	0.4									•	•
		WNGA060408-3S	0.8									•	•
		WNGA080404-3S	0.4									•	•
		WNGA080408-3S	0.8									•	•
		WNGA080412-3S	1.2									•	•


External Toolholders:P27  
Internal Toolholders:P35

Application		Chipbreaker	Designation	Corner Radius	CBN								
					TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550	
Medium Cutting			CCGW09T304	0.4					●	●			
			CCGW09T308	0.8					●	●			
			CCGW09T312	1.2					●	●			
			CCGW120404	0.4					●	●			
			CCGW120408	0.8					●	●			
			CCGW120412	1.2					●	●			
			CCGW09T304-2S	0.4								●	●
			CCGW09T308-2S	0.8								●	●
			CCGW09T312-2S	1.2								●	●
			CCGW120404-2S	0.4								●	●
			CCGW120408-2S	0.8								●	●
			CCGW120412-2S	1.2								●	●



External Toolholders:P28  
Internal Toolholders:P36

Application		Chipbreaker	Designation	Corner Radius	CBN								
					TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550	
Medium Cutting			DCGW11T304	0.4					●	●			
			DCGW11T308	0.8					●	●			
			DCGW11T312	1.2					●	●			
			DCGW11T304-2S	0.4								●	●
			DCGW11T308-2S	0.8								●	●



External Toolholders:P28  
Internal Toolholders:P36

<b>TC</b>		Square 90°		P	Steel	•			•					
		Positive 7°		M	Stainless									
				K	Cast Iron	•	•	•	•	•	•	•	•	
		with Hole		N	Non-ferrous									
				S	Superalloys									
				H	Hard Materials		•		•	•		•	•	
Application	Chipbreaker	Designation	Corner Radius	CBN										
				TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550			
Medium Cutting		TCGW110304	0.4					•	•					
		TCGW110308	0.8					•	•					
		TCGW110312	1.2					•	•					

External Toolholders:P31  
Internal Toolholders:P38

<b>VB</b>		Rhombic 80°		P	Steel	•			•					
		Positive 5°		M	Stainless									
				K	Cast Iron	•	•	•	•	•	•	•		
		with Hole		N	Non-ferrous									
				S	Superalloys									
				H	Hard Materials		•		•	•		•	•	
Application	Chipbreaker	Designation	Corner Radius	CBN										
				TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550			
Medium Cutting		VBGW160404	0.4					•	•					
		VBGW160408	0.8					•	•					
		VBGW160412	1.2					•	•					
		VBGW160404-2S	0.4								•	•		
		VBGW160408-2S	0.8								•	•		
		VBGW160412-2S	1.2								•	•		

External Toolholders:P33  
Internal Toolholders:P40

VC		Rhombic 80°		P	Steel	•			•					
		Positive 7°		M	Stainless									
		with Hole		K	Cast Iron	•	•	•	•	•	•	•	•	•
				N	Non-ferrous									
				S	Superalloys									
				H	Hard Materials		•		•	•		•	•	
Application	Chipbreaker	Designation	Corner Radius	CBN										
				TBN3500	TBN7000	TBN7200	TBN9500	TBS7000	TBS7200	TBK7520	TBK9550			
Medium Cutting		VCGW160404	0.4					•	•					
		VCGW160408	0.8					•	•					
		VCGW160412	1.2					•	•					
		VCGW160404-2S	0.4								•	•		
		VCGW160408-2S	0.8								•	•		
		VCGW160412-2S	1.2								•	•		

External Toolholders:P32  
Internal Toolholders:P40