

THE NEW VALUE FRONTIER



KBN10M / KBN25M KBN10C / KBN25C

PVD COATED CBN

Featuring Kyocera's New
Megacoat PVD Coating Technology

ADVANCING PRODUCTIVITY

Kyocera New Coated CBN

MEGACOAT CBN

Introducing four new PVD coated materials with superior features compared to our popular uncoated KBN series.

KBN10M / KBN25M

Special PVD coated CBN

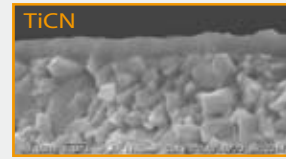
Special PVD coating:
Superior oxidation resistance controls crater wear while providing stable machining.

KBN10C / KBN25C

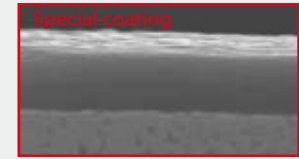
TiCN PVD coated CBN

TiCN PVD coating:
Improved wear resistance and finish quality due to higher rigidity and excellent coating smoothness.

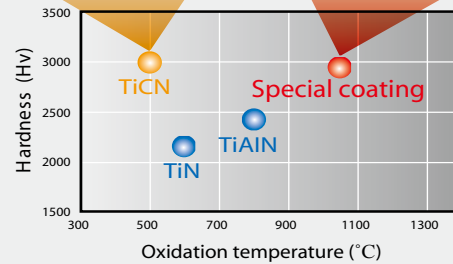
Properties of PVD coating



TiCN
High rigidity ($\geq 3000\text{Hv}$)
⇒ Controlling mechanical wear



Special coating
High oxidation resistance ($\geq 1000\text{ }^\circ\text{C}$)
⇒ Controlling oxidation wear and roll back wear



KBN25M for the light interrupted and interrupted machining of alloy steel and tool steel

KBN25M

KBN25C for the continuous machining of alloy steel

KBN25C

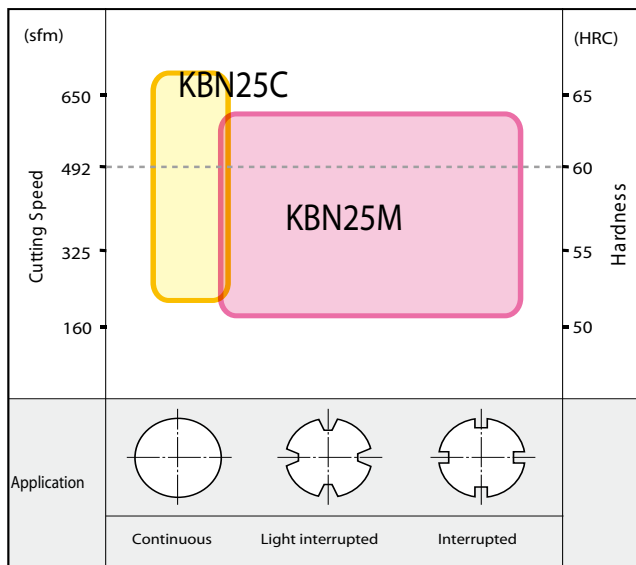
KBN10M for the light interrupted machining of tool steel

KBN10M

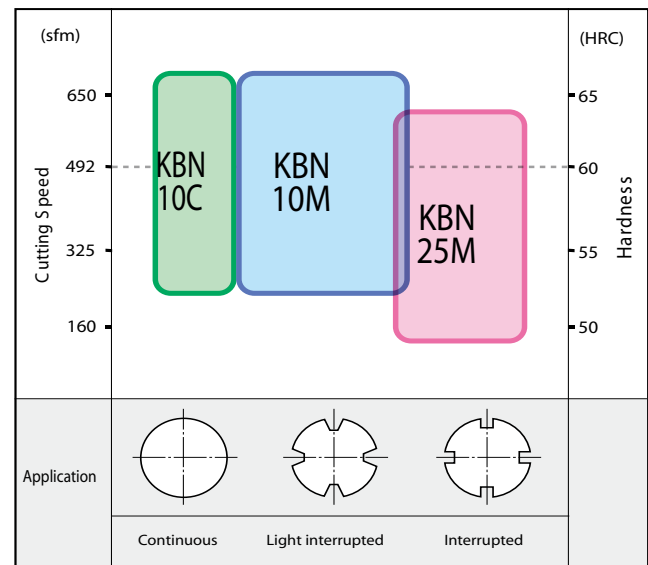
KBN10C for the continuous machining of tool steel

KBN10C

Alloy Steel (Shallow Hard Layer)



Tool steel (Deep Hard Layer)



MEGACOAT CBN handles accelerated speeds, extends tool life and improves stabilization.

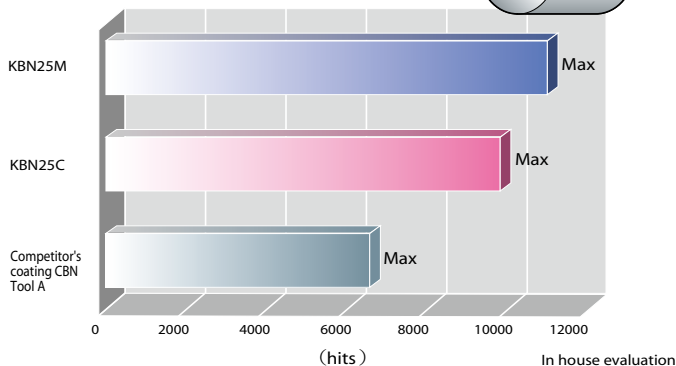
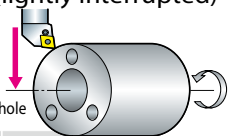
Extended Tool Life

Stabilization

Accelerated Speeds

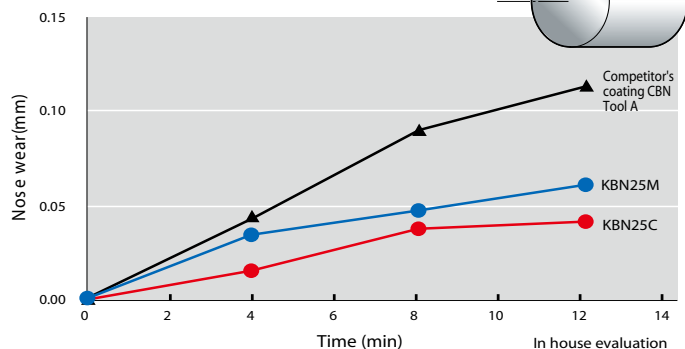
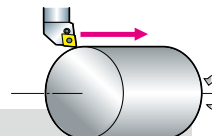
Comparison of fracture resistance (lightly interrupted)

Cutting condition :
 $V=492$ sfm, $doc=0.008"$, $f=0.006$ ipr, Dry
 Work piece :
 Hardened Steel (Carburizing and quenching:58 ~ 62HRC) With hole



Comparison of wear resistance

Cutting condition :
 $V=656$ sfm, $doc=0.008"$, $f=0.004$ ipr, Wet
 Work piece :
 Hardened Steel (Carburizing and quenching:58 ~ 62HRC)



Case Studies

Hardened Steel	
<ul style="list-style-type: none"> • Gear parts • $V=295$ sfm • $doc=0.02"$ • $f=.0047$ ipr • Wet \Rightarrow Dry • CNGA433S00525ME (KBN25M) 	
KBN25M	70 pcs/edge
Competitor B (CBN tool)	30 pcs/edge (Unstable)
<p>KBN25M improved tool life up to 70 pieces/corner which is two times more than Competitor B's CBN tool. Also, KBN25M has increased its tool life up to 250 pieces/corner by changing from wet machining to dry machining.</p> <p>Evaluation from the user</p>	

Hardened Steel	
<ul style="list-style-type: none"> • Gear parts • $V=558$ sfm • $doc=.012"$ • $f=.008$ ipr • Wet \Rightarrow Dry • CNGA433S00515MEW (KBN25M) 	
KBN25M	250 pcs/edge (Stable)
Competitor C (CBN tool)	250 pcs/edge (Unstable) Many corrections
<p>Competitor C's CBN tool required many corrections in order to accomplish 250 pieces/corner, and its tool life was not stable. KBN25M (with wiper edge) exhibited good wear resistance at the border area, and the edge condition is capable of further extension of tool life.</p> <p>Evaluation from the user</p>	

Case Studies

<p>Hardened Steel</p> <ul style="list-style-type: none"> • Ring gear • V=558 sfm • doc=.006" • f=.008 ipr • Wet • SNGA433 <p>(KBN25M)</p>	
KBN25M	More than 400 pcs/edge
Competitor D	200 pcs/edge
<p>KBN25M has good wear resistance and doubles the tool life of competitor D. (Tool life is determined by the surface roughness.)</p>	
Evaluation from the user	

<p>Hardened Steel</p> <ul style="list-style-type: none"> • Gear parts • V=1378 sfm • doc=.008" • f=.005 ipr • Dry • CNGA432S00525 <p>(KBN25M)</p>	
KBN25M	More than 400 pcs/edge
Competitor E (CBN tool)	150 pcs/edge
<p>KBN25M has superior wear resistance for dry machining. The extension of its tool life was over 1.5 times more than competitor E's product.</p>	
Evaluation from the user	

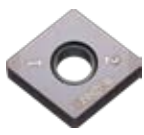
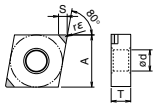
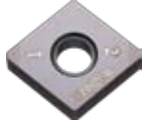
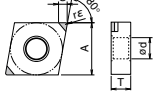
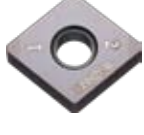
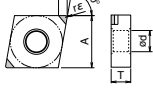
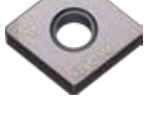
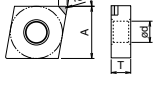

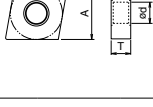

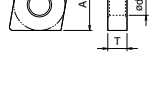
<p>Hardened Steel</p> <ul style="list-style-type: none"> • Sun gear • V=328 sfm • doc=.019" • f=.004 ipr • Dry • DNGA432S00515ME <p>(KBN25M)</p>	
KBN25M	600 pcs/edge (Stable)
Competitor F (CBN tool)	400 pcs/edge
<p>Competitor F's product causes chattering when wear progresses and the finished surface became worse. KBN25M has extended its tool life up to 50% more, and the condition remained good without chattering.</p>	
Evaluation from the user	

<p>Hardened Steel</p> <ul style="list-style-type: none"> • Gear parts • V=394 smf • doc= .02 ~ .04" • f=.031 ipr • Wet • TNGA332S00730MET <p>(KBN25C)</p>	
KBN25C	More than 450 pcs/edge
Competitor G	350 pcs/edge (Unstable)
<p>KBN25C has excelled in its wear resistance and improved its tool life up to 30% more than competitor G.</p>	
Evaluation from the user	

<p>Hardened Steel</p> <ul style="list-style-type: none"> • Gear shaft • V=459 sfm • doc=.011" • f=.006 ipr • Dry • CNGA432S00515MEW <p>(KBN10M)</p>	
KBN10M	More than 300 pcs/edge
Competitor H	100 pcs/edge
<p>KBN10M (with wiper edge) has good relief wear, exhibits stable surface roughness, and triples the tool life of competitor H.</p>	
Evaluation from the user	

<p>Hardened Steel</p> <ul style="list-style-type: none"> • Sleeve • V= 361 ~ 427 sfm • doc=.006" • f=.04 ipr • Wet • VNGA332S00525ME <p>(KBN10M)</p>	
KBN10M	More than 1500 pcs/edge
Competitor I (CBN tool)	1500 pcs/edge
<p>KBN10M has reduced wear, exhibits good surface roughness, and extends tool life.</p>	
Evaluation from the user	

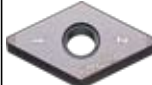
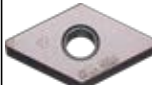
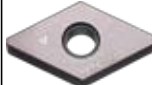
Stock Items

Edge Preparation				Indication of classification	K	Gray cast iron (with scale)									
Symbol	Cutting edge condition	Indication				Gray cast iron (without scale)									
S	Chamfered + Honed Cutting Edge	S00515	0.005inch X 15° Chamfer+Honed	✚ : Interruption / 1st choice ✚ : Interruption / 2nd choice ● : Light Interruption / 1st choice ○ : Light Interruption / 2nd choice ● : Continuous / 1st choice ○ : Continuous / 2nd choice	H	Hardened material (rough)									
						Hardened material (finishing)									
Shape		Description		Previous Description	Edge Prep.	Dimension (inch)					No. of Edge	PVD coated CBN			
						A	T	ød	rε	S		KBN10C	KBN25C	KBN10M	KBN25M
		CNGA	431S00515MEW 432S00515MEW 433S00515MEW	CNGA 431MEW 432MEW 433MEW	S00515	0.5	.187	.203	1/64 1/32 3/64	.102 .098 .098	2	●	●	●	●
		CNGA	430.5S00525ME 431S00525ME 432S00525ME 433S00525ME	CNGA 430.5ME 431ME 432ME 433ME	S00525	0.5	.187	.203	.008 1/64 1/32 3/64	.102 .098 .098	2	●	●	●	●
		CNGA	431S00730MET 432S00730MET 433S00730MET	CNGA 431ME-T 432ME-T 433ME-T	S00730	0.5	.187	.203	1/64 1/32 3/64	.098 .102 .098	2		●		●
		CNGA	430.5S00525SE 431S00525SE 432S00525SE 433S00525SE	CNGA 430.5SE 431SE 432SE 433SE	S00525	0.5	.187	.203	.008 1/64 1/32 3/64	.102 .098 .102 .098	1	●	○	●	●
		CNGA	431S00730SET 432 S00730 SET 433S00730SET	CNGA 431SE-T 432SE-T 433SE-T	S00730	0.5	.187	.203	1/64 1/32 3/64	.098 .102 .098	1		●		●
		CNGA	431S00525 432S00525 433S00525	CNGA 431 432 433	S00525	0.5	.187	.203	1/64 1/32 3/64	.146 .142 .142	1	●	○	○	●

■ Inserts packaged one piece per box

● : Standard Stock
○ : World Express


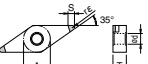

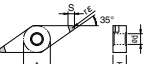

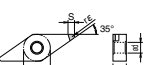

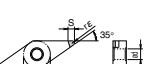

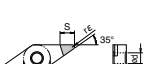

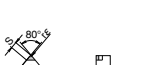

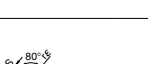

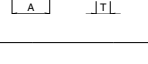
Stock Items

Edge Preparation				Indication of classification ⚙️ : Interruption / 1st choice ⚙️ : Interruption / 2nd choice ● : Light Interruption / 1st choice ○ : Light Interruption / 2nd choice ● : Continuous / 1st choice ○ : Continuous / 2nd choice	K	Gray cast iron (with scale)				H	Hardened material (rough)			
Symbol	Cutting edge condition	Indication				Gray cast iron (without scale)					Hardened material (finishing)			
						Nodular cast iron (without scale)					Hardened material (short-chips finishing)			
S	Chamfered + Honed Cutting Edge	S00525	0.005inch X 25° Chamfer+Honed			Sintered metal								
Shape	Description	Previous Description	Edge Prep.	Dimension (mm)					No. of Edge	PVD coated CBN				
				A	T	ød	rε	S		KBN10C	KBN25C	KBN10M	KBN25M	
 Multi Edge	DNGA 430.5S00525ME 431S00525ME 432S00525ME	DNGA 430.5ME 431ME 432ME	S00525	0.5	.187	.203	1/64	.074	2	●	●	●	●	
	DNGA 441S00525ME 442S00525ME 443S00525ME	DNGA 441ME 442ME 443ME	S00525	0.5	0.25	.203	1/32	.074	2	○	○	○	○	
	DNGA 431S00730MET 432S00730MET 433S00730MET	DNGA 431ME-T 432ME-T 433ME-T	S00730	0.5	.187	.203	1/64	.074	2		●		●	
	DNGA 441S00730MET 442S00730MET 443S00730MET	DNGA 441ME-T 442ME-T 443ME-T	S00730	0.5	0.25	.203	1/32	.074	2	○	○	○	○	
	DNGA 430.2S00525SE 430.5S00525SE 431S00525SE 432S00525SE 433S00525SE	DNGA 430.2SE 430.5SE 431SE 432SE 433SE	S00525	0.5	.187	.203	0.004	.087	1	●	●	●	●	
	DNGA 441S00525SE 442S00525SE 443S00525SE	DNGA 441SE 442SE 443SE	S00525	0.5	0.25	.203	1/64	.091	1	○	○	○	○	
 Small Edge/Tough	DNGA 431S00730SET 432S00730SET 433S00730SET	DNGA 431SE-T 432SE-T 433SE-T	S00730	0.5	.187	.203	1/64	.074	1		●		●	
 Small Edge	DNGA 431S00525 432S00525	DNGA 431 432	S00525	0.5	.187	.203	1/64	.228	1	●	●	●	●	

■ Inserts packaged one piece per box

● : Standard Stock
○ : World Express

Stock Items

Edge Preparation				Indication of classification	K				H				
Symbol	Cutting edge condition	Indication			Gray cast iron (with scale)				Gray cast iron (without scale)				
S	Chamfered + Honed Cutting Edge	S00525	0.005inch X 25° Chamfer+Honed		Nodular cast iron (without scale)				Sintered metal				
					Hardened material (rough)				Hardened material (finishing)				
				Hardened material (short-chips finishing)									
Shape	Description	Previous Description	Edge Prep.	Dimension (mm)					No. of Edge	PVD coated CBN			
				A	T	ød	rε	S		KBN10C	KBN25C	KBN10M	KBN25M
 Multi Edge	 VNGA 330.5S00525ME 331ME S00525	VNGA 330.5ME 331ME	S00525	.375	.187	0.15	.008 1/64	.087 .074	2	●	●	●	●
 Multi Edge/Tough	 VNGA 331S00730MET 332S00730MET	VNGA 331ME-T 332ME-T	S00730	.375	.187	0.15	1/64 1/32	.079 .074	2		●		●
 Small Edge	 VNGA 330.2S00525SE 330.5S00525SE 331S00525SE 332S00525SE	VNGA 330.2SE 330.5SE 331SE 332SE	S00525	.375	.187	0.15	0.1 .008 1/64 1/32	.102 .087 .074 .063	1	●	●	●	●
 Small Edge/Tough	 VNGA 331S00730SET 332S00730SET	VNGA 331SE-T 332SE-T	S00730	.375	.187	0.15	1/64 1/32	.074 .063	1		●		●
 Multi Edge	 VNGA 331S00525 332S00525	VNGA 331 332	S00525	.375	.187	0.15	1/64 1/32	.193 .157	1	●	●	●	●
 Multi Edge	 WNGA 431S00525ME 432S00525ME	WNGA 431ME 432ME	S00525	0.5	.187	.203	1/64 1/32	.079 .074	3	●	●	●	●
 Small Edge	 WNGA 431S00525SE 432S00525SE	WNGA 431SE 432SE	S00525	0.5	.187	.203	1/64 1/32	.079 .074	1	●	●	●	●
 Small Edge/Tough	 WNGA 431S00730SET 432S00730SET	WNGA 431SE-T 432SE-T	S00730	0.5	.187	.203	1/64 1/32	.079 .074	1	●	●	●	●

■ Inserts packaged one piece per box

● : Standard Stock
○ : World Express



KYOCERA Industrial Ceramics Corporation ■ Cutting Tool Division
ph 800-823-7284 ■ www.kyocera.com/ceratip ■ kyoceracuttingtools@kyocera.com