



COMPLETE METALWORKING SOLUTIONS
(800) 991-4225 www.ahbinc.com
ISO Certified customerservice@ahbinc.com

HARD TURNING

Coated CBN for Machining Hardened Material



Lower Machining Costs in Hardened Material with Wear and Fracture Resistance

Combining new coating technology with high content CBN provides exceptional wear resistance and fracture resistance

Supports a wide range of applications from continuous to heavily interrupted machining

Newly developed "MEGACOAT TOUGH" coating technology

KBN010 / KBN015 / KBN020



KBN010 / KBN015 / KBN020

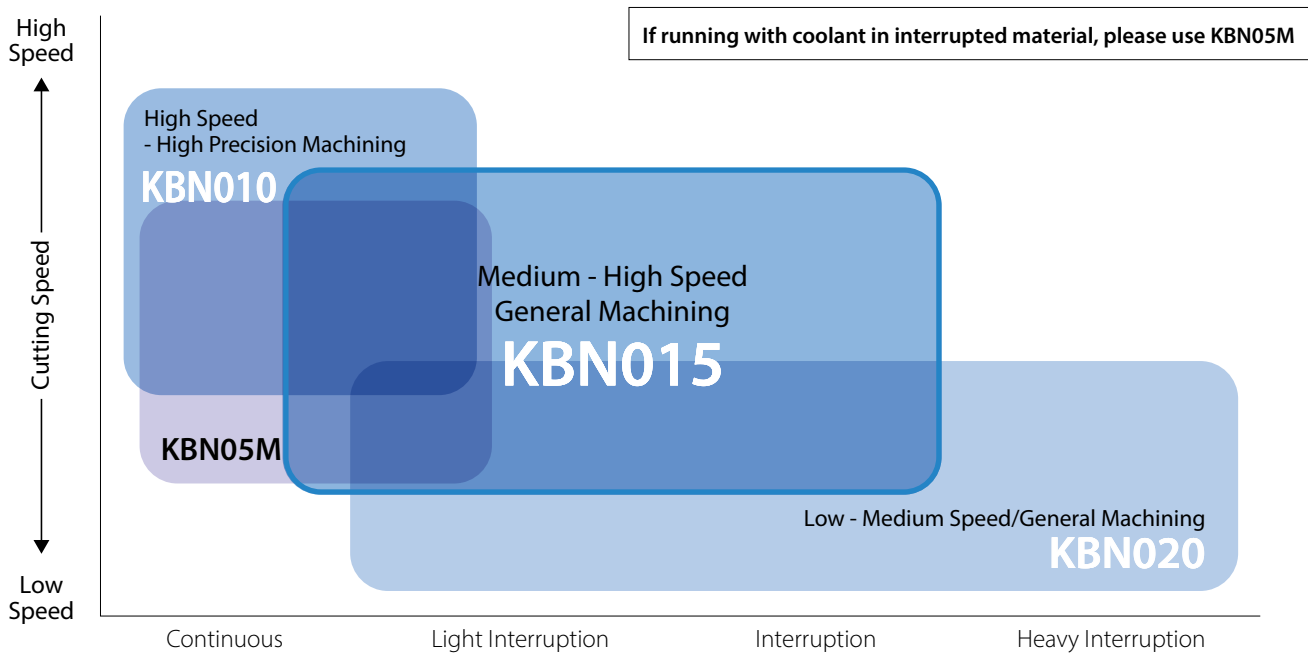
Coated CBN for Machining Hardened Material

Long tool life and stable machining results with wear resistance and fracture resistance

Supports a wide range of applications and reduces the cost of machining hardened materials

1

KBN015: 1st recommended grade for general purpose machining of hardened materials



KBN015

1st recommended grade for hardened material

Available for a wide range of machining applications from continuous to interrupted to high-speed machining



- New CBN maintains heat resistance and fracture resistance
- "MEGACOAT TOUGH" Coating technology
- Special multi-layer improves wear resistance

KBN010

High-speed, high-precision machining

- Mixed structure of micro grain CBN and coarse grain CBN for excellent heat resistance and surface quality
- "MEGACOAT TOUGH" Coating technology



KBN020

For heavily interrupted machining

- High content CBN with high purity TiN binder
- High fracture resistance
- "MEGACOAT TOUGH" Coating technology



Case Studies

Gear 4118H 58-60HRC

Continuous Facing

Vc = 590 sfm
D.O.C. = 0.008"
f = 0.004 ipr
Wet
CNGA432S00525MEW



Tool Life

KBN015

2,000 pcs/edge

1.3×

Competitor A

1,500 pcs/edge

KBN015 showed good cutting edge condition and maintains long tool life.

(User Evaluation)

Outer Race 1055 62HRC

Internal Interrupted Turning

Vc = 520 sfm
D.O.C. = 0.008"
f = 0.007 ipr
Dry
TNGA333S00245



Tool Life

KBN015

500 pcs/edge

1.6×

Competitor B

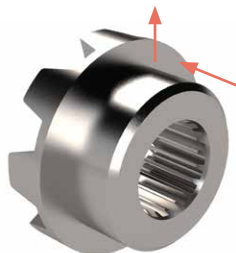
300 pcs/edge

KBN015 is resistant to chipping and maintains extended long tool life.

(User Evaluation)

Gear 8620^H 58HRC

Vc = 410 sfm
D.O.C. = 0.010"
f = 0.004 ipr
Dry
CNGA432S01630MEH



Tool Life

KBN010

600 pcs/edge

3.0×

Competitor C

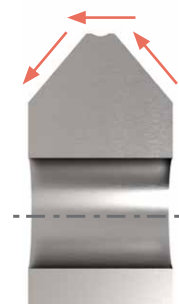
200 pcs/edge

KBN010 provides longer tool life than competitor D.

(User Evaluation)

Roll D2 62HRC

Vc = 480 sfm
D.O.C. = 0.010" - 0.020"
f = 0.004 ipr
Dry
DNGA442S00525



Tool Life

KBN010

18 pcs/edge

1.3×

Competitor D

13 pcs/edge

Achieved longer tool life with excellent wear resistance in continuous machining of hardened material.

(User Evaluation)

Clutch 5120H

Vc = 330 sfm
D.O.C. = 0.006"
f = 0.004 ipr
Wet
WNGA432S00525



Tool Life

KBN020

650 pcs/edge

1.6×

Competitor E

400 pcs/edge

KBN020 provides stable machining with longer tool life.

(User Evaluation)

Gear Chromium Steel

Vc = 330 sfm
D. = 0.002"
f = 0.006 ipr
Wet
CNGA432S00525MEW



Tool Life

KBN020

300 pcs/edge

1.5×

Competitor F

200 pcs/edge

KBN020 improves dimensional variation with longer tool life.

(User Evaluation)

2

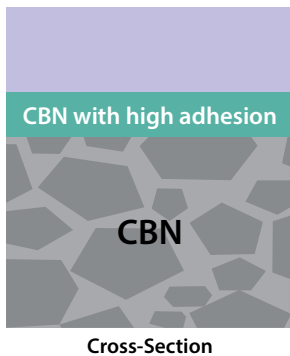
"MEGACOAT TOUGH" and new CBN provide both wear resistance and fracture resistance



MEGACOAT
TOUGH | CBN |



"MEGACOAT TOUGH" coating with newly developed CBN dedicated high adhesion layer
High adhesion suppresses delamination for long tool life and stable machining

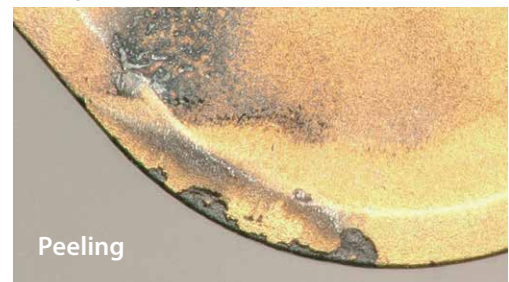


Cutting Edge Condition after Machining (Internal Evaluation)

KBN015



Competitor G



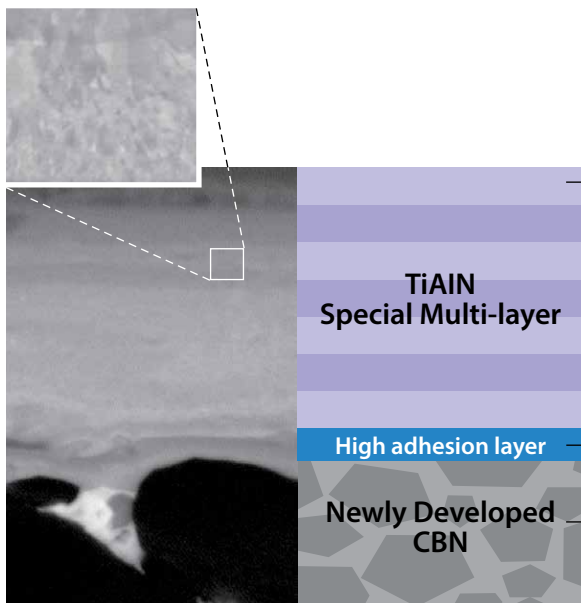
Cutting Conditions : $V_c = 490$ sfm, D.O.C. = 0.008", $f = 0.008$ ipr Dry 4118H 61 HRC

Intermediate layer and high adhesion layer for decreased stress improve adhesion with CBN

Medium - High Speed/General Machining **KBN015**

"MEGACOAT TOUGH" and New CBN substrate for Long Tool Life and Stable Machining

Micronized film structure

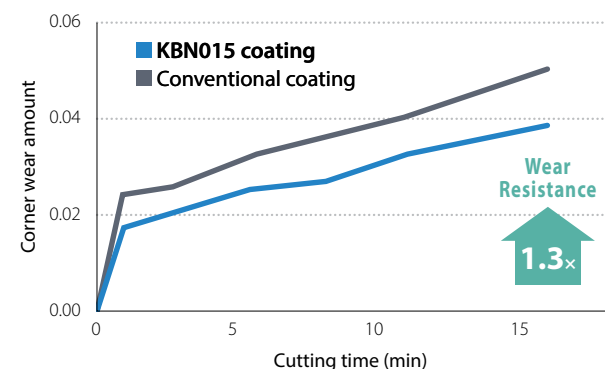


Layer Cross-Section

Wear Resistance Layer

- Improved heat resistance by optimizing film composition
- Improved hardness and toughness with atomization

Wear resistance comparison (Internal evaluation)



Cutting Conditions : $V_c = 490$ sfm, $f = 0.004$ ipr D.O.C. = 0.008" Wet 4118H

"MEGACOAT TOUGH" unique technology
Suppresses delamination with high adhesion

Balanced CBN with heat resistance and fracture resistance

- High purity and tough CBN abrasive grain
- Fine ceramic binder improves heat resistance and fracture resistance

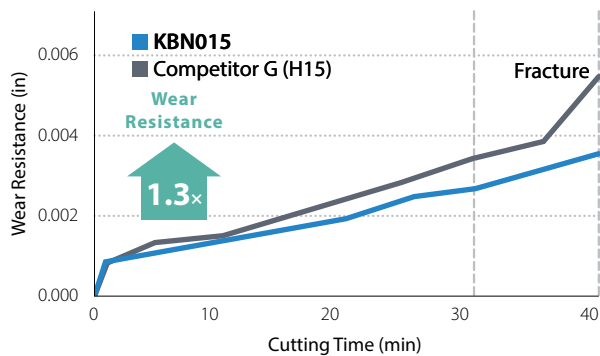
Cutting Performance

Excellent balance of abrasion resistance and fracture resistance, long tool life and stable machining

Medium Speed Machining Evaluation ($V_c = 490$ sfm)

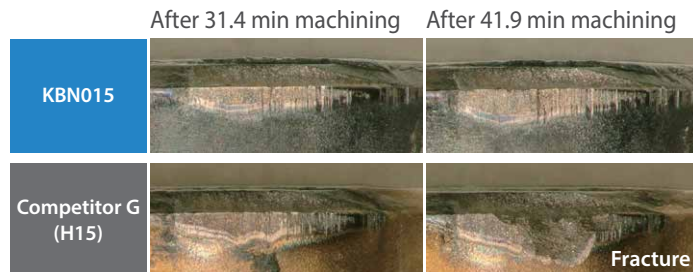
KBN015 has 1.3 times higher wear resistance of competitor G (H15).

Wear Resistance Comparison (Internal Evaluation)



Cutting Conditions : $V_c = 490$ sfm, $f = 0.004$ ipr, D.O.C. = $0.008''$ ipr Wet 4118H

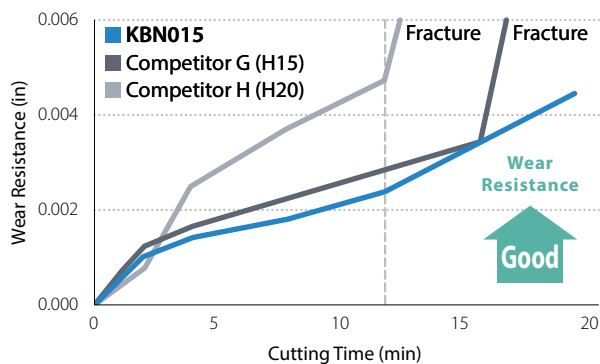
Edge Condition



High Speed Machining Evaluation ($V_c = 660$ sfm)

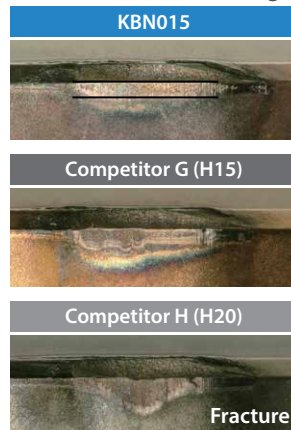
KBN015 has excellent wear resistance and fracture resistance compared to competitor's H15 and H20 grades.

Wear Resistance Comparison (Internal Evaluation)



Cutting Conditions : $V_c = 660$ sfm, $f = 0.004$ ipr, D.O.C. = $0.008''$ Wet 4118H

Edge condition (after 11.5 min machining)



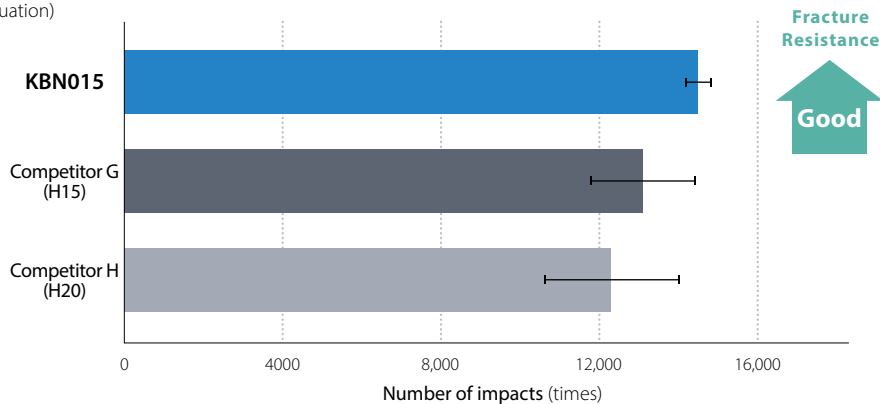
Interrupted Machining Evaluation

KBN015 is resistant to chipping and has high stability compared to competitor's H15 and H20 grades.

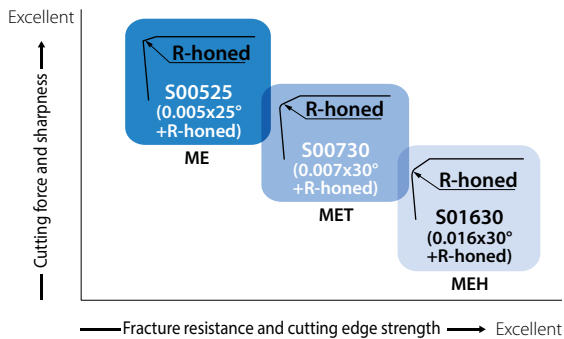
Fracture Resistance Comparison (Internal Evaluation)



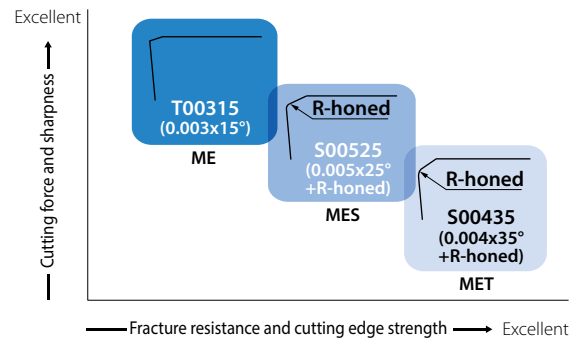
Cutting Conditions : $V_c = 490$ sfm
 $f = 0.008$ ipr, D.O.C. = $0.008''$ Dry
 4118H



Negative Insert



Positive Insert

Negative Insert - Standard Cutting Edge Prep.
(Hardened Material Machining)

Symbol	Cutting Edge Prep.		Applications and Features
ME	S00525	0.005" x 25° + R-honed	General purpose
MET	S00730	0.007" x 30° + R-honed	Superior fracture resistance
MEH	S01630	0.016" x 30° + R-honed	For interrupted · high-feed machining Prevents flaking

Positive Insert - Standard Cutting Edge Prep.
(Hardened Material Machining)

Symbol	Cutting Edge Prep.		Applications and Features
ME	T00315	0.003" x 15°	Chamfered Sharp Edge, Minimize Burrs
MES	S00525	0.005" x 25° + R-honed	General Purpose
MET	S00435	0.004" x 35° + R-honed	For interruption Stable machining

Recommended Cutting Conditions

Workpiece Material		Recommended Insert Grade		Application	Cutting Conditions		
					Vc (sfm)	D.O.C. (in)	f (ipr)
Hardened Materials	55 HRC or more	KBN010	High Precision Machining Finishing	Continuous	260 - 590 - 820	0.002 - 0.008 - 0.014	0.002 - 0.006 - 0.012
		KBN015	High Speed / General Machining	Continuous ~ Interruption	260 - 590 - 750	0.002 - 0.008 - 0.020	0.002 - 0.008 - 0.018
		KBN020	Low Speed / General Machining	Continuous ~ Heavy Interruption	260 - 390 - 660	0.002 - 0.008 - 0.020	0.002 - 0.008 - 0.018

Solutions for Automotive Parts

KBN010 / KBN015 / KBN020

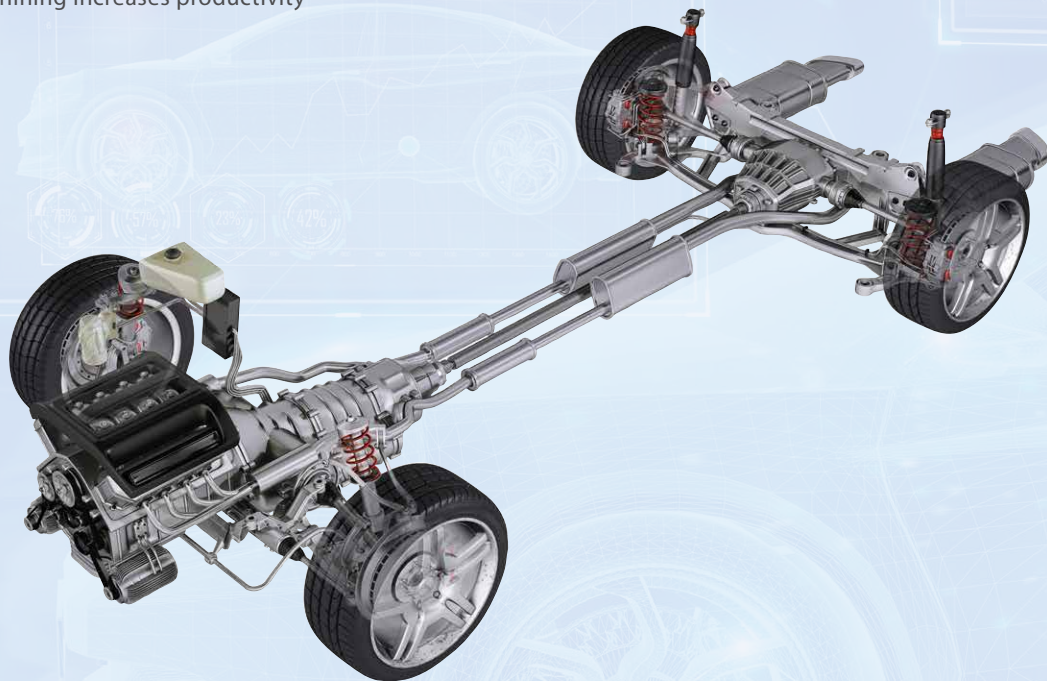
Available for continuous to interrupted/heavy interrupted machining

Can be used on a variety of part shapes such as machining shafts and gears.

Excellent machining performance of auto suspension parts that use hardened materials

Long tool life and stable machining. High toughness suppresses sudden fractures during continuous to interrupted machining applications.

Stable machining increases productivity



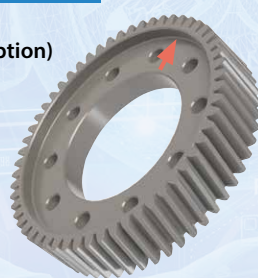
Sun Gear

Boring finishing
for spline part
(Interruption)



Diff Ring

Facing
(Interruption)



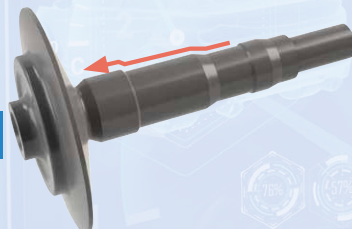
Pinion Gear

External finishing



CVT Shaft

External finishing

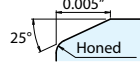


Side Gear

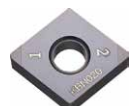
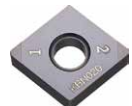
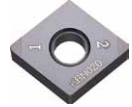
Boring finishing for spline part
(Interruption)



Negative Inserts

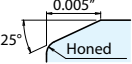
Cutting Edge Preparation			
Symbol	Cutting Edge Specification	Indication	Shape examples
S	Chamfered and Honed	S00525 0.005" x 25° chamfered and honed	

Part Number	IC	S	D1
CNGA 43_	1/2	3/16	0.203
DNGA 43_	1/2	3/16	0.203
DNGA 44_		1/4	

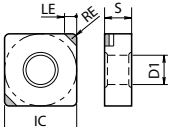
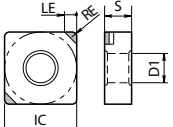
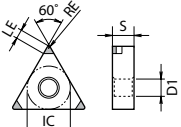
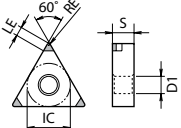
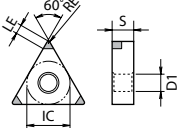
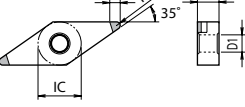
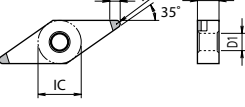
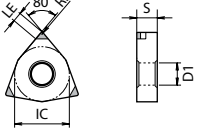
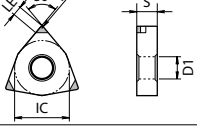
Shape	Part Number	Cutting Edge Preparation	Dimensions (in)		No. of Edges	MEGACOAT TOUGH		
			RE	LE		KBN010	KBN015	KBN020
 Multi-Edge / Wiper Edge	CNGA 431S00515MEW	S00515	1/64	0.102	2	●	●	●
	432S00515MEW		1/32	0.098		●	●	●
	433S00515MEW		3/64	0.098		●	●	●
 Multi-Edge	CNGA 430S00525ME	S00525	0.008	0.102	2	●	●	●
	431S00525ME		1/64	0.102		●	●	●
	432S00525ME		1/32	0.102		●	●	●
	433S00525ME		3/64	0.098		●	●	●
	434S00525ME		1/16	0.134		●	●	●
	435S00525ME		5/64	0.134		●	●	●
 Multi-Edge / Tough	CNGA 431S00730MET	S00730	1/64	0.102	2	●	●	●
	432S00730MET		1/32	0.102		●	●	●
	433S00730MET		3/64	0.098		●	●	●
	434S00730MET		1/16	0.134		●	●	●
 Multi-Edge / Interruption	CNGA 432S01630MEH	S01630	1/32	0.102	2	●	●	●
	433S01630MEH		3/64	0.098		●	●	●
 Multi-Edge	DNGA 4302S00525ME	S00525	0.004	0.110	2	●	●	●
	4305S00525ME		0.008	0.106		●	●	●
	431S00525ME		1/64	0.102		●	●	●
	432S00525ME		1/32	0.087		●	●	●
	433S00525ME		3/64	0.075		●	●	●
	434S00525ME		1/16	0.150		●	●	●
	DNGA 441S00525ME	S00525	1/64	0.102	2	●	●	●
	442S00525ME		1/32	0.087		●	●	●
	DNGA 431S00730MET	S00730	1/64	0.102	2	●	●	●
	432S00730MET		1/32	0.087		●	●	●
	433S00730MET		3/64	0.075		●	●	●
	434S00730MET		1/16	0.150		●	●	●
 Multi-Edge / Tough	DNGA 441S00730MET	S00730	1/64	0.102	2	●	●	●
	442S00730MET		1/32	0.087		●	●	●
 Multi-Edge / Interruption	DNGA 431S01630MEH	S01630	1/64	0.102	2	●	●	●
	432S01630MEH		1/32	0.087		●	●	●
	433S01630MEH		3/64	0.075		●	●	●

● : Standard Item

Negative Inserts

Cutting Edge Preparation			
Symbol	Cutting Edge Specification	Indication	Shape examples
S	Chamfered and Honed	S00525 0.005" x 25° chamfered and honed	

Part Number	IC	S	D1
SNGA 43_	1/2	3/16	0.203
TNGA 33_	3/8	3/16	0.150
VNGA 33_	3/8	3/16	0.150
WNGA 43_	1/2	3/16	0.203

Shape		Part Number	Cutting Edge Preparation	Dimensions (in)		No. of Edges	MEGACOAT TOUGH		
				RE	LE		KBN010	KBN015	KBN020
 Multi-Edge		SNGA 431S00525ME	S00525	1/64	0.102	2	●	●	●
		432S00525ME		1/32	0.102		●	●	●
 Multi-Edge / Tough		SNGA 431S00730MET	S00730	1/64	0.102	2	●	●	●
		432S00730MET		1/32	0.102		●	●	●
		433S00730MET		3/64	0.102		●	●	●
 Multi-Edge		TNGA 3302S00525ME	S00525	0.004	0.114	3	●	●	●
		3305S00525ME		0.008	0.110		●	●	●
		331S00525ME		1/64	0.106		●	●	●
		332S00525ME		1/32	0.094		●	●	●
		333S00525ME		3/64	0.083		●	●	●
 Multi-Edge / Tough		TNGA 331S00730MET	S00730	1/64	0.106	3	●	●	●
		332S00730MET		1/32	0.094		●	●	●
		333S00730MET		3/64	0.083		●	●	●
 Multi-Edge / Interruption		TNGA 331S01630MEH	S01630	1/64	0.106	3	●	●	●
		332S01630MEH		1/32	0.094		●	●	●
 Multi-Edge		VNGA 3302S00525ME	S00525	0.004	0.102	2	●	●	●
		3305S00525ME		0.008	0.091		●	●	●
		331S00525ME		1/64	0.079		●	●	●
		332S00525ME		1/32	0.106		●	●	●
 Multi-Edge / Tough		VNGA 331S00730MET	S00730	1/64	0.079	2	●	●	●
		332S00730MET		1/32	0.106		●	●	●
 Multi-Edge		WNGA 431S00525ME	S00525	1/64	0.102	3	●	●	●
		432S00525ME		1/32	0.102		●	●	●
 Multi-Edge / Tough		WNGA 431S00730MET	S00730	1/64	0.079	3	●	●	●
		432S00730MET		1/32	0.102		●	●	●

● : Standard Item

Positive Inserts

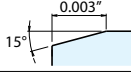
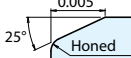
Cutting Edge Preparation				
Symbol	Cutting Edge Specification	Indication		Shape Examples
T	Chamfered	T00315	0.003" x 15° chamfered	
S	Chamfered and Honed	S00525	0.005" x 25° chamfered and honed	

Part Number	IC	S	D1
CCMW 215_	1/4	3/32	0.110
CCMW 325_	3/8	5/32	0.173
CPGB 2515_	5/16	3/32	0.138
CPGB 32_	3/8	1/8	0.177
DCMW 215_	1/4	3/32	0.110
DCMW 325_	3/8	5/32	0.173

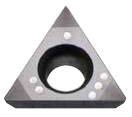
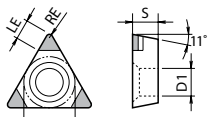
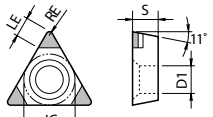
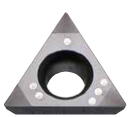
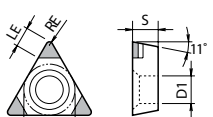
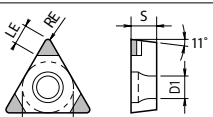
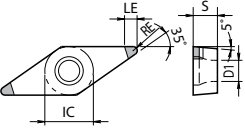
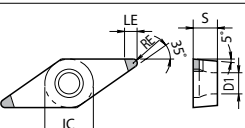
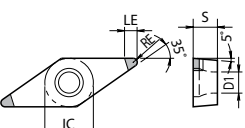
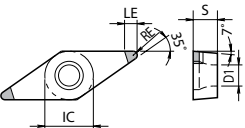
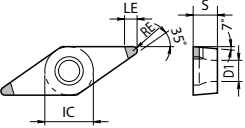
Shape		Part Number	Cutting Edge Preparation	Dimensions (in)		No. of Edges	MEGACOAT TOUGH		
				RE	LE		KBN010	KBN015	KBN020
		CCMW 21505T00315ME	T00315	0.008	0.079	2	●	●	●
		2151T00315ME		1/64	0.075		●	●	●
		2152T00315ME		1/32	0.071		●	●	●
		CCMW 32505T00315ME	T00315	0.008	0.079	2	●	●	●
		3251T00315ME		1/64	0.075		●	●	●
		3252T00315ME		1/32	0.071		●	●	●
		CCMW 2151S00525MES	S00525	1/64	0.075	2	●	●	●
		2152S00525MES		1/32	0.071		●	●	●
		CCMW 3251S00525MES	S00525	1/64	0.075	2	●	●	●
		3252S00525MES		1/32	0.071		●	●	●
		CCMW 3251S00435MET	S00435	1/64	0.075	2	●	●	●
		3252S00435MET		1/32	0.071		●	●	●
		CPGB 25151T00315ME	T00315	1/64	0.075	2	●	●	●
		CPGB 3205T00315ME	T00315	0.008	0.102	2	●	●	●
		321T00315ME		1/64	0.102		●	●	●
		CPGB 321S00525MES	S00525	1/64	0.098	2	●	●	●
		322S00525MES		1/32	0.098		●	●	●
		CPGB 25151S00435MET	S00435	1/64	0.075	2	●	●	●
		25152S00435MET		1/32	0.087		●	●	●
		CPGB 321S00435MET	S00435	1/64	0.098	2	●	●	●
		322S00435MET		1/32	0.098		●	●	●
		DCMW 21505T00315ME	T00315	0.008	0.094	2	●	●	●
		2151T00315ME		1/64	0.087		●	●	●
		2152T00315ME		1/32	0.075		●	●	●
		DCMW 32505T00315ME	T00315	0.008	0.094	2	●	●	●
		3251T00315ME		1/64	0.087		●	●	●
		3252T00315ME		1/32	0.075		●	●	●
		DCMW 3253T00315ME	T00315	3/64	0.075	2	●	●	●
		DCMW 3250S00525MES		0.008	0.094	2	●	●	●
		3251S00525MES		1/64	0.087		●	●	●
		3252S00525MES	S00525	1/32	0.075	2	●	●	●
		DCMW 2150S00435MET	S00435	0.008	0.075	2	●	●	●
		2151S00435MET		1/64	0.067		●	●	●
		2152S00435MET		1/32	0.075	2	●	●	●
		DCMW 3250S00435MET	S00435	0.008	0.094		●	●	●
		3251S00435MET		1/64	0.087		●	●	●
		3252S00435MET		1/32	0.075		●	●	●
		3253S00435MET		3/64	0.075		●	●	●

● Standard Item

Positive Inserts

Cutting Edge Preparation				
Symbol	Cutting Edge Specification	Indication		Shape Examples
T	Chamfered	T00315	0.003" x 15° chamfered	
S	Chamfered and Honed	S00525	0.005" x 25° chamfered and honed	

Part Number	IC	S	D1
TPGB 22__	1/4	1/8	0.138
TPGB 32__	3/8		0.177
TPGW 33__	3/8	3/16	0.173
VBGW 22__	1/4	1/8	0.110
VBGW 33__	3/8	3/16	0.173
VCGW 1515__	3/16	3/32	0.091

Shape		Part Number	Cutting Edge Preparation	Dimensions (in)		No. of Edges	MEGACOAT TOUGH		
				RE	LE		KBN010	KBN015	KBN020
 Multi-Edge		TPGB 2205T00315ME	T00315	0.008	0.091	3	●	●	●
		221T00315ME		1/64	0.083		●	●	●
		222T00315ME		1/32	0.071		●	●	●
 Multi-Edge / General Purpose		TPGB 221S00525MES	S00525	1/64	0.083	3	●	●	●
		222S00525MES		1/32	0.071		●	●	●
 Multi-Edge / Tough		TPGB 2205S00435MET	S00435	0.008	0.091	3	●	●	●
		221S00435MET		1/64	0.083		●	●	●
		222S00435MET		1/32	0.071		●	●	●
		TPGB 321S00435MET	S00435	1/64	0.071	3	●	●	●
		322S00435MET		1/32	0.059		●	●	●
 Multi-Edge / Tough		TPGW 331S00435MET	S00435	1/64	0.071	3	●	●	●
		332S00435MET		1/32	0.059		●	●	●
 Multi-Edge		VBGW 2205T00315ME	T00315	0.008	0.094	2	●	●	●
		221T00315ME		1/64	0.079		●	●	●
		222T00315ME		1/32	0.067		●	●	●
		VBGW 3305T00315ME	T00315	0.008	0.094	2	●	●	●
		331T00315ME		1/64	0.079		●	●	●
		332T00315ME		1/32	0.067		●	●	●
 Multi-Edge / General Purpose		VBGW 221S00525MES	S00525	1/64	0.079	2	●	●	●
		VBGW 331S00525MES	S00525	1/64	0.079	2	●	●	●
 Multi-Edge / Tough		VBGW 2205S00435MET	S00435	0.008	0.094	2	●	●	●
		221S00435MET		1/64	0.079		●	●	●
		222S00435MET		1/32	0.067		●	●	●
		VBGW 3305S00435MET	S00435	0.008	0.094	2	●	●	●
		331S00435MET		1/64	0.079		●	●	●
		332S00435MET		1/32	0.067		●	●	●
 Multi-Edge		VCGW 151505T00315ME	T00315	0.008	0.094	2	●	●	●
		15151T00315ME		1/64	0.079		●	●	●
 Multi-Edge / Tough		VCGW 151505S00435MET	S00435	0.008	0.094	2	●	●	●
		15151S00435MET		1/64	0.079		●	●	●
		15152S00435MET		1/32	0.067		●	●	●

● : Standard Item



KYOCERA Precision Tools

238 Marc Drive
Cuyahoga Falls, OH 44223

©KYOCERA Precision Tools
08/2025