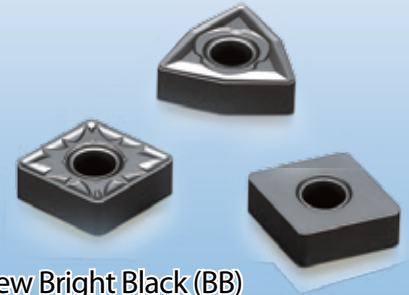


THE NEW VALUE FRONTIER



New Bright Black (BB)  
Coating Technology

for Gray and Nodular Cast Iron

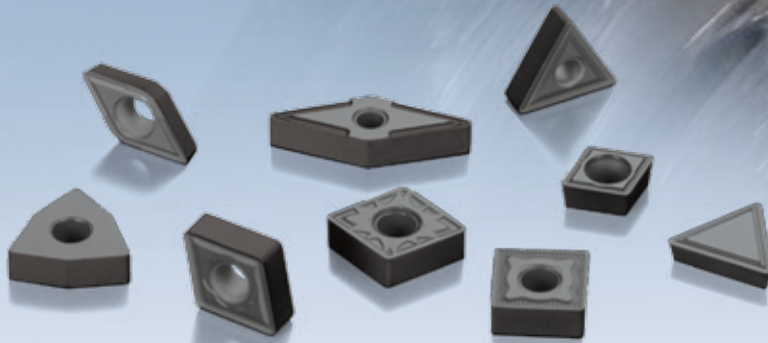
# CA4515 / CA4505

New CVD Coated Carbide

- New CVD Coated Carbide for Gray and Nodular Cast Iron

New Bright Black (BB)  
Coating Technology

Improved coating adhesion due to the new BB coating technology. Results in longer and more consistent tool life.



ADVANCING PRODUCTIVITY

# CA45series

New CVD Coated Carbide for Gray / Nodular Cast Iron

## CA4515

- ▶ First choice for stability
- ▶ Wide application range for continuous to heavy interrupted cutting

## CA4505

- ▶ Suitable for high-speed and efficient cutting
- ▶ Improved tool life through superior wear resistance

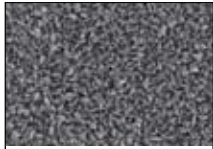
### New Bright Black (BB) Coating Technology

#### Special top coating

The innovative surface treatment applied to the top layer of the BB Coating prevents chip adhesion.

#### Special top coating and surface finish

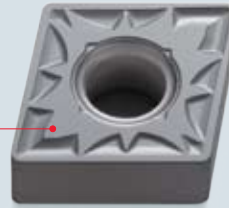
PICA Technology: Promotes a smooth insert surface and reduces built-up-edge.



Un-processed



PICA process

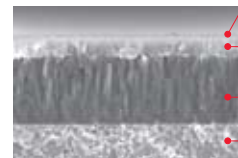


#### New special coating structure for gray / nodular cast iron

Long and stable tool life is attained through the use of a multi-layer coating structure with a dedicated substrate for cast iron turning.

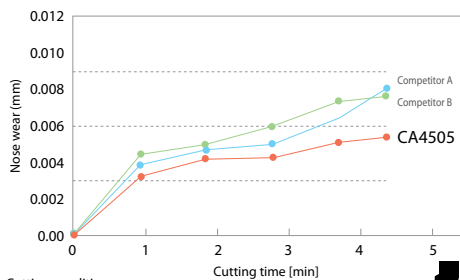
#### The New BB Coating (Bright Black) Technology

Improved resistance to delamination (coating peeling)  
Improved chipping resistance

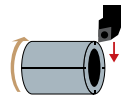


- Special top coating
- $\alpha$ -Aluminum coating
- Ultra Fine TiCN
- Carbide Substrate

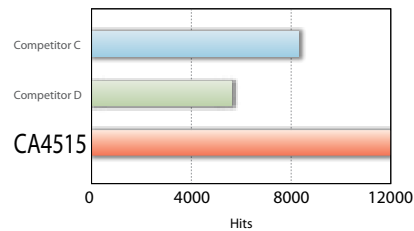
#### Wear Resistance Comparison (Nodular Cast Iron)



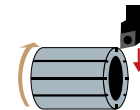
Cutting conditions  
60-40-8 Vc=1475 sfm ap=0.059"  
f=0.014 ipr Wet  
Four slot facing



#### Fracture Resistance Comparison (Nodular Cast Iron)



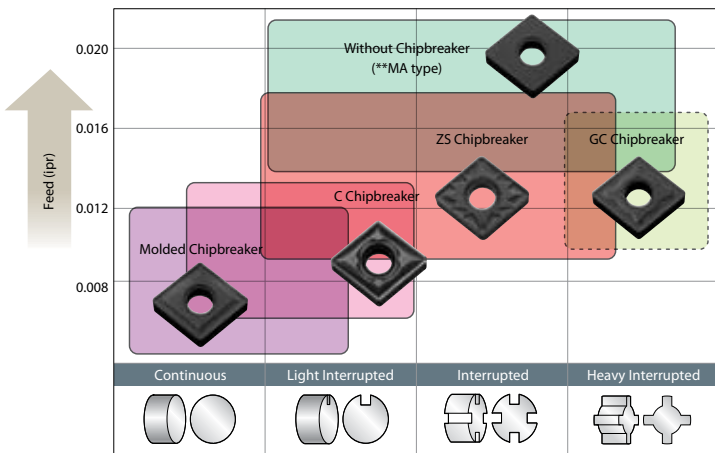
Cutting conditions  
100-70-03 Vc=984 sfm ap=0.059"  
f=0.012 ipr Wet  
Eight slot facing



# Chipbreaker Selection

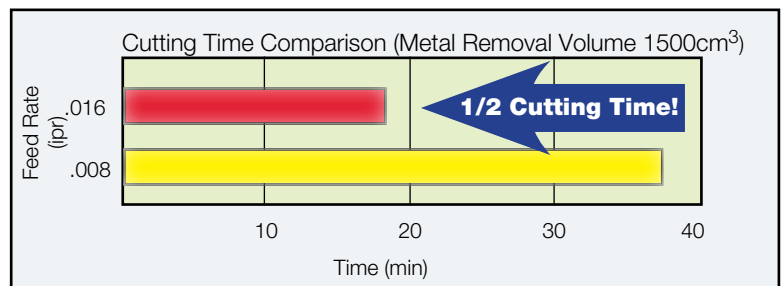
Cutting Range	Name	Design	Advantages	Cutting Range	Name	Design	Advantages
Sharp Cutting Oriented ↑	Standard		Standard chipbreaker for continuous to light interrupted machining of cast iron. (Low cutting force)	Stability Oriented ↓	No Chipbreaker		High feed rate chipbreaker for light interrupted machining of cast iron.
	C		High feed rate chipbreaker for continuous to light interrupted machining of cast iron.		GC		Chipbreaker for heavy interrupted machining of cast iron.
	ZS		Standard chipbreaker for light interrupted to interrupted machining of cast iron. (High stability)		WQ		Wiper insert. Double feed rate possible while maintaining a smooth finish. High efficiency and good chip control. See below.

## Chipbreaker Application Range

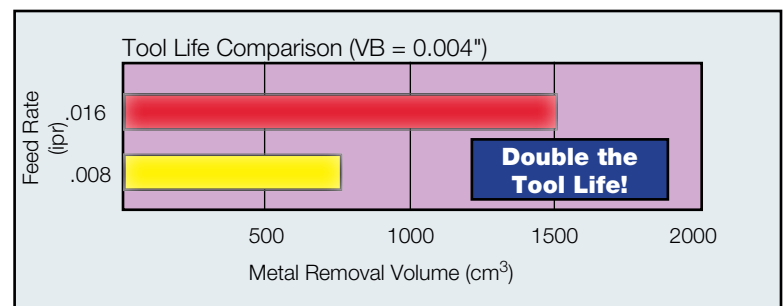


## Advantages of the WQ Wiper Insert

- ▶ Improved Surface Finish
- ▶ Decreased Cycle Time due to High Feed Rates



- ▶ Increased Tool Life due to Reduced Time in Cut



■ Case Studies

### 35B

<ul style="list-style-type: none"> <li>• Generator part</li> <li>• <math>V_c = 175 \sim 550</math> sfm</li> <li>• <math>a_p = 0.059 \sim 0.079''</math></li> <li>• <math>f = 0.010</math> ipr</li> <li>• Wet</li> <li>• CNMG432C (CA4505)</li> </ul>	
<b>CA4505</b>	85pcs / edge (8hrs)
Competitor E (CVD coating)	65pcs / edge (6hrs)
<ul style="list-style-type: none"> <li>• CA4505 provided an additional 2 hours of tool life and resulted in 20 more parts per edge than competitor E's CVD coated insert.</li> </ul>	
Evaluation by the user	
<b>CA4505</b>	Competitor E
85pcs / edge	65pcs / edge

### 60-40-8

<ul style="list-style-type: none"> <li>• Pulley</li> <li>• <math>V_c = 650</math> sfm</li> <li>• <math>a_p = 0.079''</math></li> <li>• <math>f = 0.012</math> ipr</li> <li>• Dry</li> <li>• WNMG432ZS (CA4515)</li> </ul>	
<b>CA4515</b>	620 pcs / edge
Competitor F (CVD coating)	350 pcs / edge
<ul style="list-style-type: none"> <li>• CA4515 achieved 70% longer tool life than Competitor F's CVD grade!</li> </ul>	
Evaluation by the user	
<b>CA4515</b>	Competitor F
620 pcs / edge	350 pcs / edge










### Gray Iron continuous and light interrupted











<ul style="list-style-type: none"> <li>• Motor Parts</li> <li>• <math>V_c = 770 \sim 1030</math> sfm</li> <li>• <math>a_p = 0.039''</math></li> <li>• <math>f = 0.006</math> ipr</li> <li>• Wet</li> <li>• CNMG432C</li> </ul>	
<b>CA4505</b>	50-55pcs / edge
Competitor B	40pcs / edge
<ul style="list-style-type: none"> <li>• CA4505 provides a 25-37% increase in tool life compared to Comp. B</li> <li>• CA4505 shows good wear resistance in cutting gray cast iron.</li> </ul>	
Evaluation by the user	

### Ductile Iron Interrupted Cutting













<ul style="list-style-type: none"> <li>• Crank Shaft</li> <li>• <math>V_c = 370</math> sfm</li> <li>• <math>a_p = 0.059 \sim 0.079''</math></li> <li>• <math>f = 0.005</math> ipr</li> <li>• Wet</li> <li>• CNMG432C</li> </ul>	
<b>CA4515</b>	150 pcs / edge
Competitor C (CVD coating)	150 pcs / edge
<ul style="list-style-type: none"> <li>• CA4515 shows good performance without chipping and peeling, despite the heavy interruptions.</li> <li>• CA4515 will provide superior tool life</li> </ul>	
Evaluation by the user	
<b>CA4515</b>	Competitor C
150 pcs / edge	150 pcs / edge

■ Stock Items (negative)











Insert	Description	Dimension (inch)				CVD Coated Carbide	
		I.C.	T	Hole	Corner-R(r <sub>e</sub> )	CA4505	CA4515
	CNMG 432WQ	1/2	3/16	0.203	1/32	●	●
	433WQ				3/64	●	●
	CNMG 431	1/2	3/16	0.203	1/64	○	●
	432				1/32	●	●
	433				3/64	○	●
	434				1/16	○	○
	CNMG 543	5/8	1/4	1/4	3/64		○
	544				1/16		○
	CNMG 642	3/4	1/4	0.312	1/32	○	○
	643				3/64	○	○
	644				1/16	○	○
	CNMG 431C	1/2	3/16	0.203	1/64	○	●
	432C				1/32	○	○
	433C				3/64	○	●
	434C				1/16	○	●
CNMG 543C	5/8	1/4	1/4	3/64	○	●	
	CNMG 432ZS	1/2	3/16	0.203	1/32	●	●
	433ZS				3/64	●	●
	CNMG 432GC	1/2	3/16	0.203	1/32	○	●
	433GC				3/64	○	●
	CNMA 431	1/2	3/16	0.203	1/64	○	●
	432				1/32	●	●
	433				3/64	○	●
	434				1/16	○	●
	DNMG 431	1/2	3/16	0.203	1/64	●	●
	432				1/32	○	●
	433				3/64	○	●
	DNMG 441	1/2	1/4	0.203	1/64		○
	442				1/32	○	○
	443				3/64		○
	DNMG 431C	1/2	3/16	0.203	1/64	○	○
	432C				1/32	○	●
	433C				3/64	○	●
	DNMG 441C	1/2	1/4	0.203	1/64		○
	442C				1/32		○
	443C				3/64		○
	DNMG 432ZS	1/2	3/16	0.203	1/32	●	●
	433ZS				3/64	●	●
	DNMG 442ZS	1/2	1/4	0.203	1/32	○	○
443ZS	3/64					○	

Insert	Description	Dimension (inch)				CVD Coated Carbide	
		I.C.	T	Hole	Corner-R(r <sub>e</sub> )	CA4505	CA4515
	DNMG 432GC	1/2	3/16	0.203	1/32	○	○
	433GC				3/64		●
	DNMG 442GC	1/2	1/4	0.203	1/32		○
	443GC				3/64		○
	DNMA 431	1/2	3/16	0.203	1/64	○	●
	432				1/32	○	●
	DNMA 441	1/2	1/4	0.203	1/64	○	○
	442				1/32	○	○
	RNMG 43	1/2	3/16	0.203	-		●
	RNMG 54	5/8	1/4	1/4	-		●
	SNMG 322	3/8	1/8	1/8	1/32		○
	SNMG 431	1/2	3/16	0.203	1/64	○	○
	432				1/32	●	●
	433				3/64	○	○
	434				1/16		●
435	5/64					○	
	SNMG 432C	1/2	3/16	0.203	1/32		○
	433C				3/64		○
	SNMG 432ZS	1/2	3/16	0.203	1/32	●	●
	433ZS				3/64	●	●
	SNMG 432GC	1/2	3/16	0.203	1/32	○	●
	433GC				3/64		●
	SNMA 431	1/2	3/16	0.203	1/64		○
	432				1/32	●	●
	433				3/64	○	●
	434				1/16	○	●
	435				5/64		○
	SNM 432	1/2	3/16	-	1/32		○
	433				3/64		○

■ Stock Items (negative)

Insert	Description	Dimension (inch)				CVD Coated Carbide	
		I.C.	T	Hole	Corner-R(r <sub>e</sub> )	CA4505	CA4515
	TNMG 331	3/8	3/16	0.150	1/64	○	○
	332				1/32	○	○
	333				3/64	○	○
	334				1/16	○	○
	335				5/64	○	○
	TNMG 431	1/2	3/16	0.203	1/64	○	○
	432				1/32	●	●
	433				3/64	○	●
	TNMG 331C	3/8	3/16	0.150	1/64	○	○
	332C				1/32	○	○
	333C				3/64	○	○
	TNMG 332ZS	3/8	3/16	0.150	1/32	○	●
	333ZS				3/64	○	○
	TNMG 332GC	3/8	3/16	0.150	1/32	○	●
	333GC				3/64	○	○
	TNMA 331	3/8	3/16	0.150	1/64	○	○
	332				1/32	○	○
	333				3/64	○	○
	334				1/16	○	○
	335				5/64	○	○
	VNMG 331	3/8	3/16	0.150	1/64	●	○
	332				1/32	●	○
	WNMG 431	1/2	3/16	0.203	1/64	○	○
	432				1/32	○	●
	433				3/64	●	●
	WNMG 431C	1/2	3/16	0.203	1/64	○	○
	432C				1/32	○	●
	433C				3/64	○	●
	WNMG 432ZS	1/2	3/16	0.203	1/32	○	●
	433ZS				3/64	●	●
	WNMG 432GC	1/2	3/16	0.203	1/32	○	●
	433GC				3/64	○	●
	WNMA 432	1/2	3/16	0.203	1/32	●	○
	433				3/64	●	●

■ Stock Items (positive)

Insert	Description	Dimension (inch)					CVD Coated Carbide	
		I.C.	T	Hole	Corner-R(r)	Relief Angle	CA4505	CA4515
	CCMT 2151GK	1/4	3/32	0.110	1/64	7°	○	○
	CCMT 3251GK	3/8	5/32	0.173	1/64	7°	○	○
	CCMT 431GK 432GK	1/2	3/16	0.217	1/64 1/32	7°	○	○
	CCMT 3252	3/8	5/32	0.173	1/32	7°	○	●
	CPMH 25151 25152	5/16	3/32	0.130	1/64 1/32	11°	○	○
	CPMH 321 322	3/8	1/8	0.177	1/64 1/32	11°	○	○
	DCMT 2151GK 2152GK	1/4	3/32	0.110	1/64 1/32	7°	○	○
	DCMT 3251GK 3252GK	3/8	5/32	0.173	1/64 1/32	7°	○	○
	DCMT 3252	3/8	5/32	0.173	1/32	7°	○	○
	RCMX 43M0	0.472	3/16	0.165	-	7°	○	○
	SPM 421 422	1/2	1/8	-	1/64 1/32	11°	○	○
	SPM 432 433	1/2	3/16	-	1/32 3/64	11°	○	○
	Without Chipbreaker							
	TCMT 2151HQ 2152HQ	1/4	3/32	0.110	1/64 1/32	7°	○	○
	TCMT 3252HQ 3253HQ	3/8	5/32	0.173	1/32 3/64	7°	○	○
	TPMT 221HQ 222HQ	1/4	1/8	0.138	1/64 1/32	11°	○	○
	TPMT 321HQ 322HQ	3/8	1/8	0.173	1/64 1/32	11°	○	○
	TPMR 221 222	1/4	1/8	-	1/64 1/32	11°	○	○
	TPMR 321 322	3/8	1/8	-	1/64 1/32	11°	○	○
	TPM 221 222	1/4	1/8	-	1/64 1/32	11°	○	○
	TPM 321 322	3/8	1/8	-	1/64 1/32	11°	○	○
	323				3/64		○	○
	Without Chipbreaker							

# Other Cutting Tool Products from



## Drilling

THE NEW VALUE FRONTIER  
**KYOCERA**

### Drilling

- Magic Drills
- Holeshot Drills
- Coremaster Drills
- Stinger Drills
- Counterbores
- Countersinks

- Drilling Diameters from 0.394" to 4"
- Drilling Depths up to 5xD
- Wide variety of grade offerings for:
  - Steel
  - Stainless Steel
  - Cast Iron
  - Non-Ferrous Materials

ADVANCING PRODUCTIVITY

## Milling

THE NEW VALUE FRONTIER  
**KYOCERA**

### M-Series Milling

- MEC Ultra Hurricane Endmills & Facemills
- MECX Ultra Hurricane Fine-Pitch Endmills & Facemills
- MECH Helical Endmills
- MEY Ultra Drill Mills
- MSR Heavy Roughing Cutters
- MSRS Heavy Roughing Facemills

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER  
**KYOCERA**

### Milling

OTM Milling Product Lineup

- End Mills
- Face Mills
- Chamber Mills
- External Milling Cutters

ADVANCING PRODUCTIVITY

## Custom Tools

THE NEW VALUE FRONTIER  
**KYOCERA**

### Custom-Made Toolholder Capabilities

Reduce Cycle Time and Increase your Productivity

Toolholder Customization Options for Your Specific Machining Application

- Full Machine Capabilities & Customization
- Reduce Cycle Time and Increase your Productivity
- Longer Machine Life
- Increased Accuracy
- Increased Tool Life
- Increased Production

ADVANCING PRODUCTIVITY

## Turning

THE NEW VALUE FRONTIER  
**KYOCERA**

### Ceramics

Featuring:

- MEGACOAT PT600M
- A65
- A66N
- CF1
- KS6000

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER  
**KYOCERA**

### CA55 Series

CVD Coated Carbide Grades for Steel

- CA5505
- CA5515
- CA5525
- CA5535

Featuring the PH & PX Chipbreakers for Heavy Machining

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER  
**KYOCERA**

### CA65<sup>15/25</sup> and PR11<sup>25</sup>

for Stainless Steel Machining

New MQ Chipbreaker

Innovative Solutions for Stainless Steel Machining

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER  
**KYOCERA**

### KBN10M / KBN25M KBN10C / KBN25C

PVD COATED CBN

Featuring Kyocera's New MEGACOAT PVD Coating Technology

ADVANCING PRODUCTIVITY

## Swiss

THE NEW VALUE FRONTIER  
**KYOCERA**

### Double-Sided Swiss Tools

- Double-sided negative insert increases productivity and stability
- Sharp cutting edge equivalent to positive insert edge
- Two new PVD Coated grades:
  - PR1005 for Titanium and free cutting steel
  - PR1025 for Stainless Steel and general use

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER  
**KYOCERA**

### SIGE Internal Grooving

- Standard 0.015mm groove width
- Chipbreaker design for improved chip control
- High speed cutting for improved productivity
- High precision grinding for improved accuracy

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER  
**KYOCERA**

### KTKF For Swiss Machining

Back Turning, Threading, and Cut-off Tools

- Grade PR1025 - Fracture and wear resistant PVD Coated Carbide for general purpose
- Grade KW10 - Uncoated Carbide for aluminum, brass, and other non-ferrous materials
- KTKF is available for metric diameters with one sub-millimeter repeat finish

Back turning TKFB type    Threading TKFT type    Cut-off TKF type

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER



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