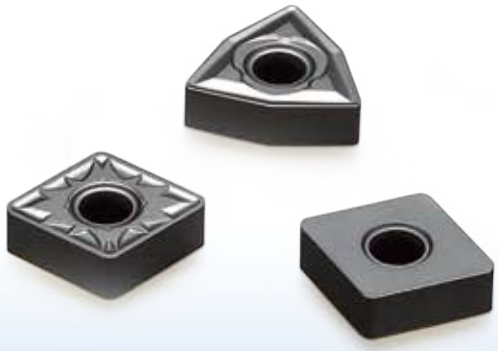
THE NEW VALUE FRONTIER

KYOCERA



New Bright Black (BB) Coating Technology

for Gray and Nodular Cast Iron

CA4515 / CA4505

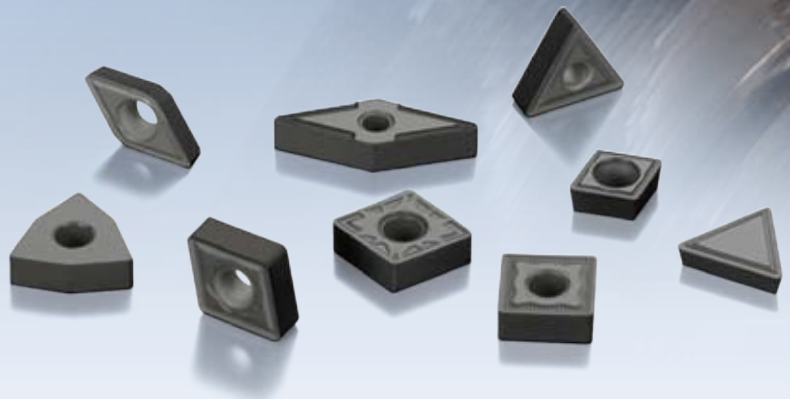
New CVD Coated Carbide

Advantages

- **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.



Reduced manufacturing cost per part.

ADVANCING PRODUCTIVITY

CA45 series

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

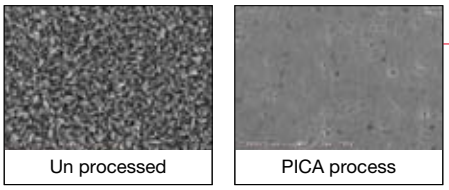
The innovative surface treatment applied to the top layer of the BB Coating prevents adhesion.

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.

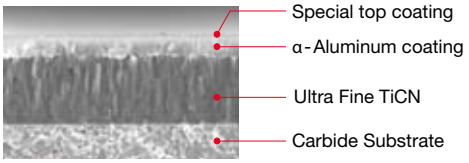
Special top coating and surface finish

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

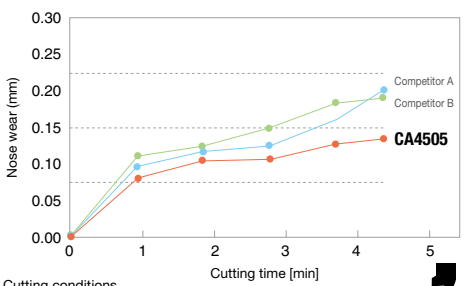


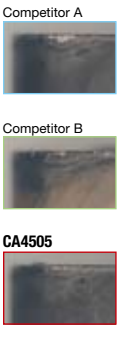
The New BB Coating (Bright Black) Technology

Improved resistance to delamination (coating peeling)
Improved chipping resistance

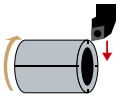


Wear Resistance Comparison (Nodular Cast Iron)

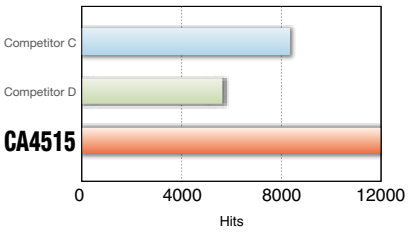




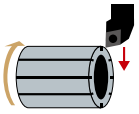
Cutting conditions
FCD450 Vc=450m/min ap=1.5mm
f=0.35mm/rev Wet
Four slot facing



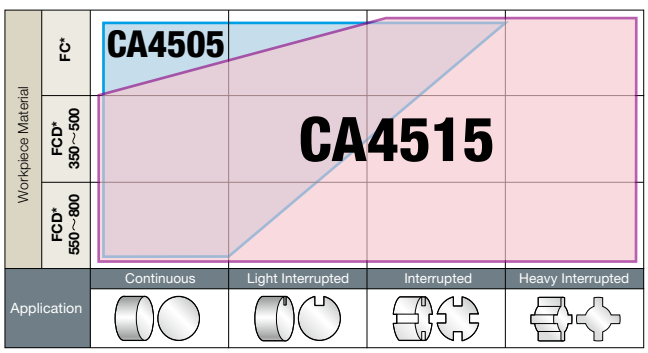
Fracture Resistance Comparison (Nodular Cast Iron)



Cutting conditions
FCD700 Vc=300m/min ap=1.5mm
f=0.3mm/rev Wet
Eight slot facing

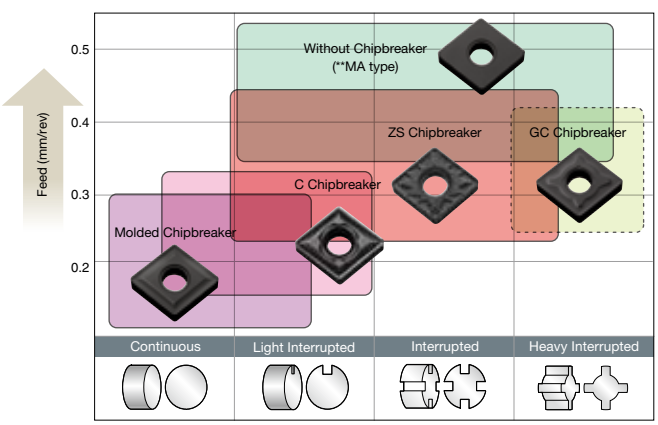


Application Maps for Cast Iron Cutting



*FC: Gray Cast Iron; FCD: Nodular Cast Iron

Chipbreaker Selection (Negative Insert)



Stock Items (negative)

Insert	Description	Dimension (mm)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R(rε)	CA4505	CA4515
 Finishing-Medium With Wiper Edge	CNMG 120408WQ 120412WQ	12.70	4.76	5.16	0.8 1.2	● ●	● ●
 Roughing	CNMG 120404 120408 120412 120416	12.70	4.76	5.16	0.4 0.8 1.2 1.6	● ● ● ●	● ● ● ●
	CNMG 160612 160616	15.875	6.35	6.35	1.2 1.6		● ●
	CNMG 190608 190612 190616	19.05	6.35	7.94	0.8 1.2 1.6	● ● ●	● ● ●
 Roughing	CNMG 120404C 120408C 120412C 120416C	12.70	4.76	5.16	0.4 0.8 1.2 1.6	● ● ● ●	● ● ● ●
	CNMG 160612C	15.875	6.35	6.35	1.2	●	●
 Roughing	CNMG 120408ZS 120412ZS	12.70	4.76	5.16	0.8 1.2	● ●	● ●
 Roughing	CNMG 120408GC 120412GC	12.70	4.76	5.16	0.8 1.2	● ●	● ●
 Without Chipbreaker	CNMA 120404 120408 120412 120416	12.70	4.76	5.16	0.4 0.8 1.2 1.6	● ● ● ●	● ● ● ●
 Roughing	DNMG 150404 150408 150412	12.70	4.76	5.16	0.4 0.8 1.2	● ● ●	● ● ●
	DNMG 150604 150608 150612	12.70	6.35	5.16	0.4 0.8 1.2	● ● ●	● ● ●
 Roughing	DNMG 150404C 150408C 150412C	12.70	4.76	5.16	0.4 0.8 1.2	● ●	● ● ●
	DNMG 150604C 150608C 150612C	12.70	6.35	5.16	0.4 0.8 1.2	● ●	● ● ●
 Roughing	DNMG 150408ZS 150412ZS	12.70	4.76	5.16	0.8 1.2	● ●	● ●
	DNMG 150608ZS 150612ZS	12.70	6.35	5.16	0.8 1.2	● ●	● ●
 Roughing	DNMG 150408GC 150412GC	12.70	4.76	5.16	0.8 1.2	●	● ●
	DNMG 150608GC 150612GC	12.70	6.35	5.16	0.8 1.2	●	● ●
 Without Chipbreaker	DNMA 150404 150408	12.70	4.76	5.16	0.4 0.8	● ●	● ●
	DNMA 150604 150608	12.70	6.35	5.16	0.4 0.8	● ●	● ●
 Medium-Roughing	RNMG 120400	12.70	4.76	5.16	-		●
	RNMG 150600	15.875	6.35	6.35	-		●
 Roughing	SNMG 090308	9.525	3.18	3.81	0.8		●
	SNMG 120404 120408 120412 120416 120420	12.70	4.76	5.16	0.4 0.8 1.2 1.6 2.0	● ● ●	● ● ● ● ●
 Roughing	SNMG 120408C 120412C	12.70	4.76	5.16	0.8 1.2		● ●
 Roughing	SNMG 120408ZS 120412ZS	12.70	4.76	5.16	0.8 1.2	● ●	● ●

Insert	Description	Dimension (mm)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R(rε)	CA4505	CA4515
 Roughing	SNMG 120408GC 120412GC	12.70	4.76	5.16	0.8 1.2	●	● ●
 Without Chipbreaker	SNMA 120404 120408 120412 120416 120420	12.70	4.76	5.16	0.4 0.8 1.2 1.6 2.0	 ● ● ●	● ● ● ● ●
 Without Chipbreaker	SNMN 120408 120412	12.70	4.76	5.16	0.8 1.2		● ●
 Roughing	TNMG 160404 160408 160412 160416 160420	9.525	4.76	3.81	0.4 0.8 1.2 1.6 2.0	● ●	● ● ● ● ●
	TNMG 220404 220408 220412	12.70	4.76	5.16	0.4 0.8 1.2	● ● ●	● ● ●
 Roughing	TNMG 160404C 160408C 160412C	9.525	4.76	3,81	0.4 0.8 1.2	● ●	● ● ●
 Roughing	TNMG 160408ZS 160412ZS	9.525	4.76	3.81	0.8 1.2	●	● ●
 Roughing	TNMG 160408GC 160412GC	9.525	4.76	3.81	0.8 1.2	●	● ●
 Without Chipbreaker	TNMA 160404 160408 160412 160416 160420	9.525	4.76	3.81	0.4 0.8 1.2 1.6 2.0	● ● ●	● ● ● ● ●
 Roughing	VNMG 160404 160408	9.525	4.76	3.81	0.4 0.8	● ●	● ●
 Roughing	WNMG 080404 080408 080412	12.70	4.76	3.81	0.4 0.8 1.2	● ● ●	● ● ●
 Cast Iron Roughing	WNMG 080404C 080408C 080412C	12.70	4.76	3.81	0.4 0.8 1.2	● ●	● ● ●
 Roughing	WNMG 080408ZS 080412ZS	12.70	4.76	3.81	0.8 1.2	● ●	● ●
 Roughing	WNMG 080408GC 080412GC	12.70	4.76	3.81	0.8 1.2	●	● ●
 Without Chipbreaker	WNMA 080408 080412	12.70	4.76	3.81	0.8 1.2	● ●	● ●

● : Standard Stock

Stock Items (positive)

Insert	Description	Dimension (mm) I.C.	Thickness	Hole	Corner-R(rε)	Relief Angle	CVD Coated Carbide CA4505	CA4515
 Finishing-Medium	CCMT 060204GK	6.35	2.38	2.8	0.4	7°		●
	CCMT 09T304GK	9.525	3.97	4.4	0.4	7°		●
	CCMT 120404GK	12.70	4.76	5.5	0.4	7°		●
	120408GK				0.8			●
 Medium cutting	CCMT 09T308	9.525	3.97	4.4	0.8	7°	●	●
 Medium cutting	CPMH 080204	7.94	2.38	3.5	0.4	11°		●
	080208				0.8			●
	CPMH 090304	9.525	3.18	4.5	0.4	11°	●	●
	090308				0.8		●	●
 Finishing-Medium	DCMT 070204GK	6.35	2.38	2.8	0.4	7°	●	●
	070208GK				0.8			●
	DCMT 11T304GK	9.525	3.97	4.4	0.4	7°		●
	11T308GK				0.8			●
 Medium cutting	DCMT 11T308	9.525	3.97	4.4	0.8	7°	●	●
 Medium cutting	RCMX 1204M0	12.0	4.76	4.2	-	7°	●	●

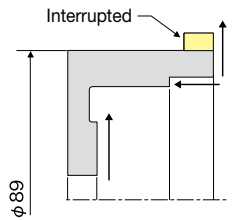
Insert	Description	Dimension (mm) I.C.	Thickness	Hole	Corner-R(rε)	Relief Angle	CVD Coated Carbide CA4505	CA4515
 Without Chipbreaker	SPMN 120304	12.70	3.18	-	0.4	11°		●
	120308				0.8		●	●
	SPMN 120408	12.70	4.76	-	0.8	11°		●
	120412				1.2			●
 Finishing-Medium	TCMT 110204HQ	6.35	2.38	2.8	0.4	7°		●
	110208HQ				0.8			●
	TCMT 16T308HQ	9.525	3.97	4.4	0.8	7°		●
	16T312HQ				1.2			●
	TPMT 110304HQ	6.35	3.18	3.3	0.4	11°	●	●
	110308HQ				0.8			●
	TPMT 160304HQ	9.525	3.18	4.4	0.4	11°		●
	160408HQ				0.8			●
 Medium cutting	TPMR 110304	6.35	3.18	-	0.4	11°		●
	110308				0.8		●	●
	TPMR 160304	9.525	3.18	-	0.4	11°	●	●
	160308				0.8		●	●
 Without Chipbreaker	TPMN 110304	6.35	3.18	-	0.4	11°		●
	110308				0.8		●	●
	TPMN 160304	9.525	3.18	-	0.4	11°	●	●
	160308				0.8		●	●
	160312				1.2			●

● : Standard Stock

Case Studies

FC250

- Generator part
- Vc= 53～168m/min
- ap= 1.5～2mm
- f = 0.25mm/rev
- Wet
- CNMG120408C (CA4505)



CA4505	85pcs / edge (8hrs)
Competitor E (CVD coating)	65pcs / edge (6hrs)

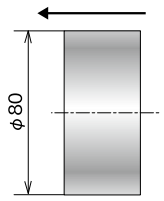
- CA4505 provided an additional 2 hours of tool life and resulted in 20 more parts per edge than competitor E's CVD coated insert.

Evaluation by the user

CA4505	Competitor E
	
85pcs / edge	65pcs / edge

FCD450

- Pulley
- Vc= 200m/min
- ap= 2mm
- f = 0.3mm/rev
- Dry
- WNMG080412ZS (CA4515)



CA4515	620 pcs / edge
Competitor F (CVD coating)	350 pcs / edge

- CA4515 achieved 70% longer tool life than Competitor F's CVD grade!

Evaluation by the user

CA4515	Competitor F
	
620 pcs / edge	350 pcs / edge