

THE NEW VALUE FRONTIER



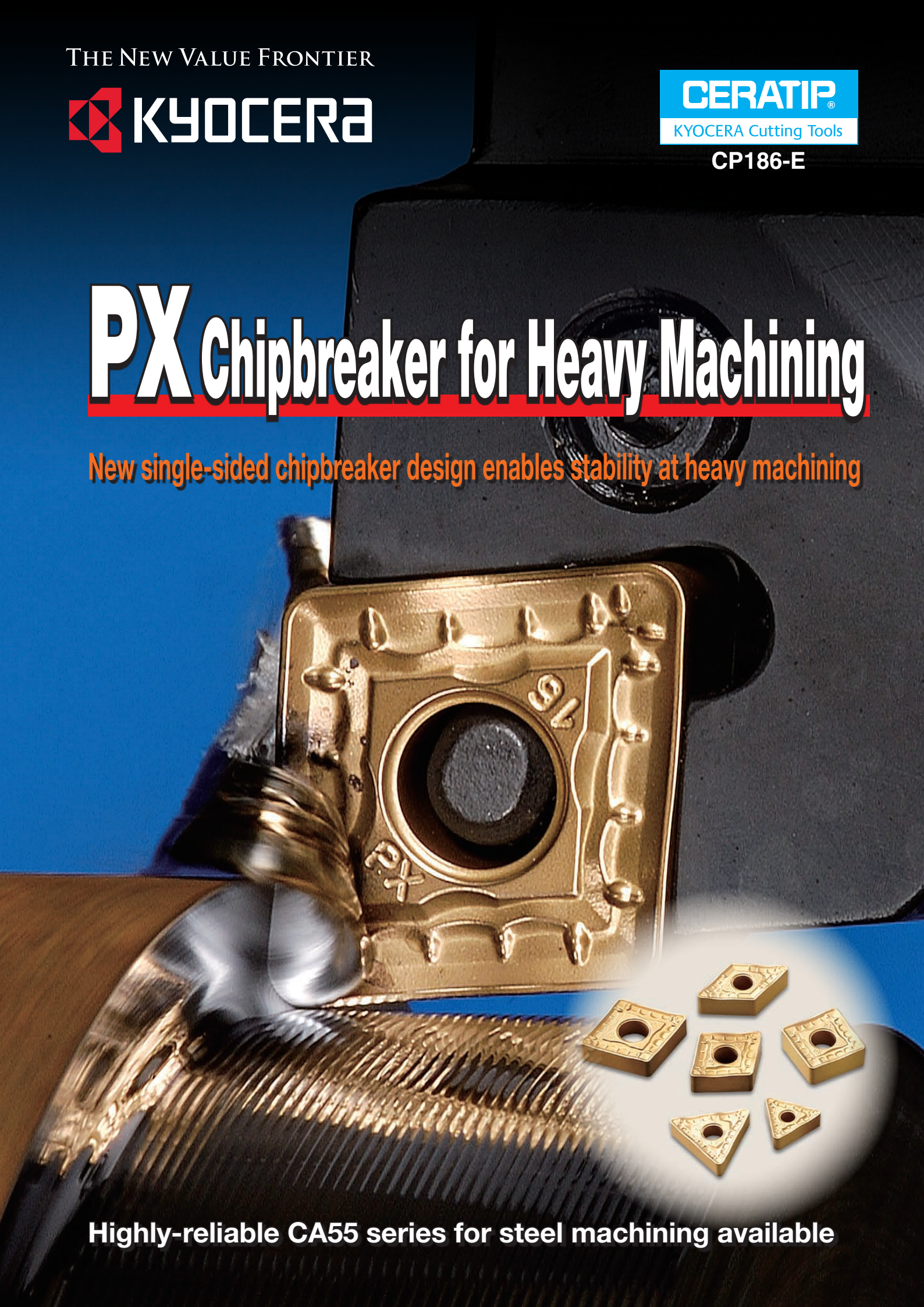
**CERATIP®**

KYOCERA Cutting Tools

CP186-E

# PX Chipbreaker for Heavy Machining

*New single-sided chipbreaker design enables stability at heavy machining*



**Highly-reliable CA55 series for steel machining available**

# PX Chipbreaker



## Advantages

- Low cutting force by curved cutting edge design
- Prevents crater wear by positive land on insert corner
- Prevents adhesion by 2-steps dots and reduces load on dots

**2-step dots**

Chip breaking while preventing adhesion

**Curved edge**

Cutting force reduction at large ap

**CNMM190616PX**

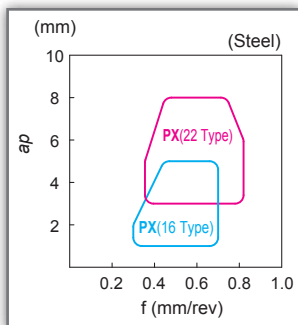
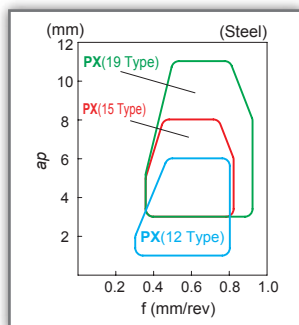
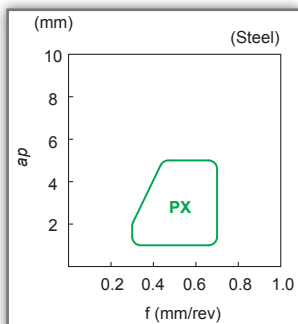
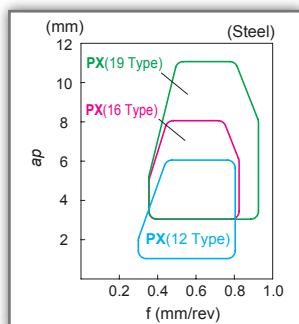
**Positive corner land**

Cutting force reduction at the point of first contact and controls crater wear

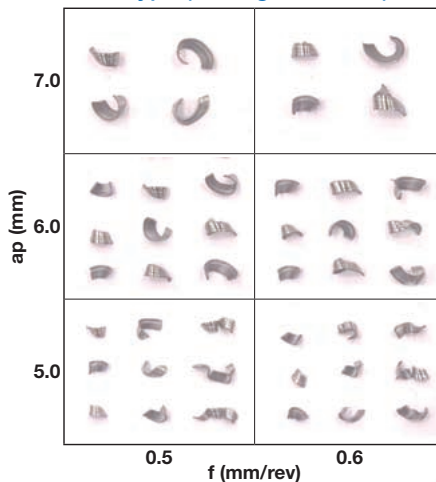
**Wide land and large rake angle**

Good balance of sharpness and cutting edge strength

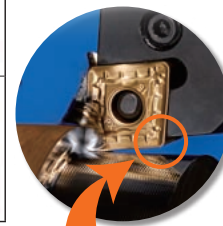
## Applicable Chipbreaker Range



### ● CNMM type (80-degree corner)

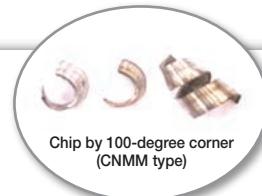


Cutting conditions  
 CNMM190616PX  
 SCM415  
 $V_c=120\text{m/min}$   
 WET



### ■ Chip control of CNMM type (100-degree corner)

Chip control has been improved by large dots on chipbreaker when using 100-degree corner of CNMM type.



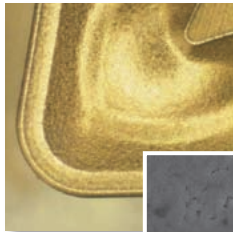
SCM415  
 CNMM190616PX,  $V_c=120\text{m/min}$   
 $a_p=5\text{mm}$ ,  $f=0.5\text{mm/rev}$ , WET

# Innovative CVD Coated Carbides for Steel Machining

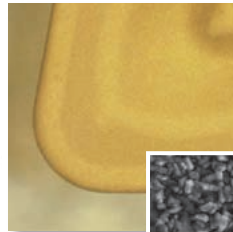
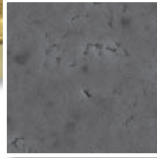
# CA55 Series

## Advantages

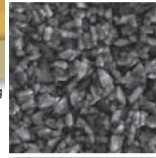
### Bright Gold Coating



Bright Gold Coating



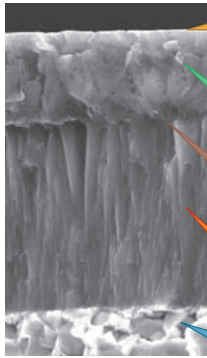
Conventional PVD Coating



### Super Smooth Surface Finishing Technology

- Prevents Adhesion and Sudden Fracture at Steel Machining
- High Quality Surface Finish and High Reliability
- Easy to Identify Used Cutting Edges Even in Dim Light

### Ultra Fine TiCN

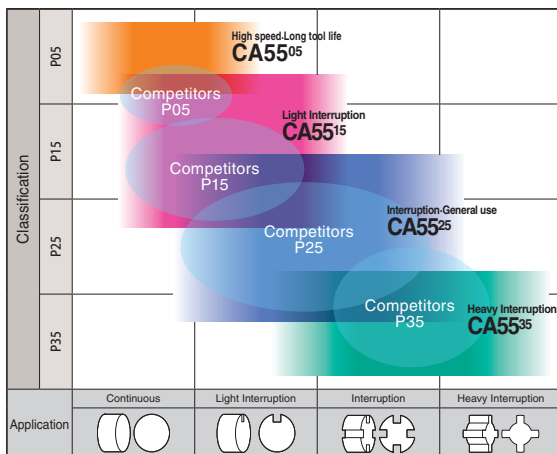


- TiN**  
Surface Smoothness / Welding Resistance
- α-Al<sub>2</sub>O<sub>3</sub>**  
High Temperature Stability / Crater Wear Resistance
- Special Interlayer**  
High Binding Force / Prevents Peeling
- TiCN**  
Improved Fracture Resistance and Wear Resistance due to the High Aspect Ratio and Fine Columnar Structure
- Special Carbide Substrate**

High-speed & High-efficiency Steel Machining is possible due to the High Aspect Ratio Ultra Fine TiCN + Tough Al<sub>2</sub>O<sub>3</sub> Coating



## Applicable Cutting Range



### ●CA55<sup>05</sup>

- Continuous, high speed cutting of steels, continuous to light interrupted cutting of cast iron
- Improved wear resistance and much longer machining tool life by micro columnar

### ●CA55<sup>15</sup>

- Broad application range from finishing to roughing
- Improved chipping resistance, wear resistance and emphasizing wear resistance, much longer tool life by micro columnar

### ●CA55<sup>25</sup>





- Roughing to interruption of steels
- Improved chipping resistance and wear resistance by micro columnar structure

### ●CA55<sup>35</sup>

- Heavy roughing to strong interrupted cutting for steels
- Improved chipping resistance by micro columnar and high destructive flexural strength material

Work material	Application	Recommended grade	Recommended cutting speed(Vc:m/min)
Low carbon steel ≤300HB	Continuous	<b>CA5515</b>	150 - <b>200</b> - 240
	Interruption	<b>CA5525</b>	120 - <b>180</b> - 220
Medium carbon steel ≥300HB	Continuous	<b>CA5525</b>	120 - <b>180</b> - 220
	Interruption	<b>CA5535</b>	100 - <b>150</b> - 200

## Stock Items

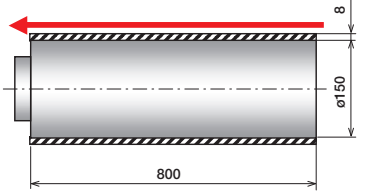
Shape	Description	Dimension(mm)				Stock Grades			
		I.C.	Thickness	Hole	Corner-R (rε)	CVD Coated Carbide			
						CA5505	CA5515	CA5525	CA5535
	CNMM 120408PX 120412PX 120416PX	12.70	4.76	5.16	0.8 1.2 1.6		●●●	●●●	●●●
	CNMM 160608PX 160612PX 160616PX	15.875	6.35	6.35	0.8 1.2 1.6		●●●	●●●	●●●
	CNMM 190608PX 190612PX 190616PX 190624PX	19.05	6.35	7.94	0.8 1.2 1.6 2.4		●●●	●●●	●●●
	DNMM 150408PX 150412PX 150416PX	12.70	4.76	5.16	0.8 1.2 1.6		●●●	●●●	●●●
	DNMM 150608PX 150612PX 150616PX	12.70	6.35	5.16	0.8 1.2 1.6		●●●	●●●	●●●
	SNMM 120408PX 120412PX 120416PX	12.70	4.76	5.16	0.8 1.2 1.6		●●●	●●●	●●●
	SNMM 150612PX 150616PX	15.875	6.35	6.35	1.2 1.6		●●	●●	●●
	SNMM 190612PX 190616PX 190624PX	19.05	6.35	7.94	1.2 1.6 2.4		●●●	●●●	●●●
	TNMM 160408PX 160412PX	9.525	4.76	3.81	0.8 1.2		●●	●●	●●
	TNMM 220408PX 220412PX 220416PX	12.70	4.76	5.16	0.8 1.2 1.6		●●●	●●●	●●●

●: Standard Stock

## Case Studies


### SNCM616

- Shaft
- Vc=120m/min
- ap=8mm
- f=0.35mm/rev
- WET
- CNMM190612PX (CA5515)




With scale

### PX



more than 18pcs/edge

### Competitor A



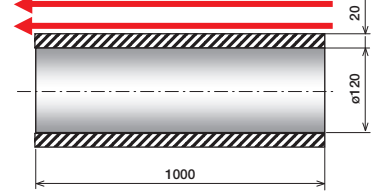
10pcs/edge

• For Comp. A, dots on chipbreaker were worn away after processing 10 workpieces with one corner.  
 • PX chipbreaker showed little wear even after processing 18 workpieces and still available for further processing.

Evaluation from the user


### S45C

- Shaft
- Vc=230m/min
- ap=4mm
- f=0.5mm/rev
- WET
- CNMM190612PX (CA5515)




With scale

### PX



4pcs/edge

### Competitor B



2pcs/edge

• PX chipbreaker showed two times longer tool life compared with Comp. B.

Evaluation from the user