THE NEW VALUE FRONTIER

KYOCERA

Insert Grades PR1535

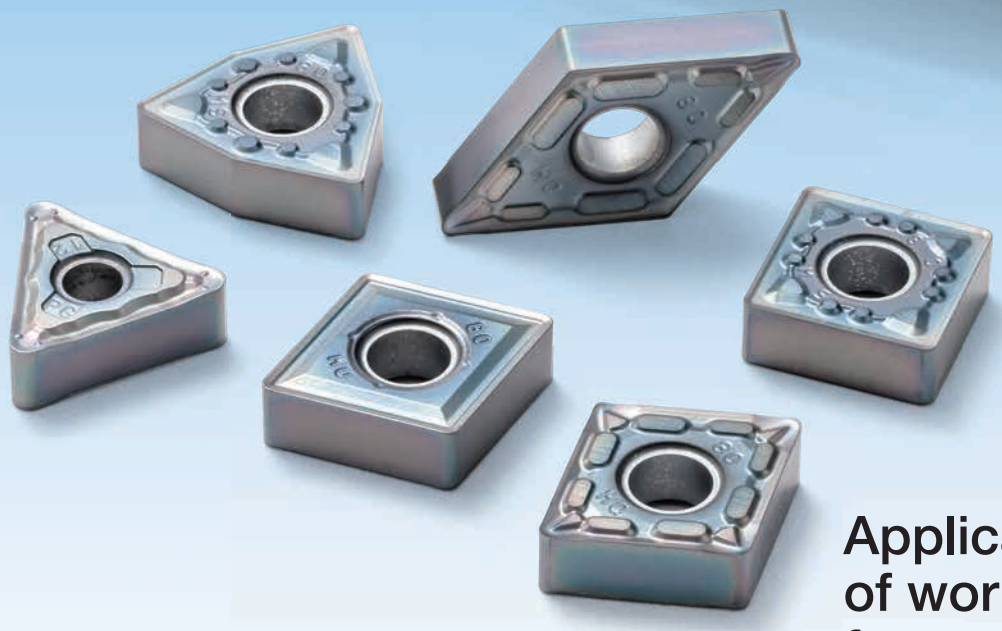
MEGACOAT NANO

PR1535

MEGACOAT NANO PR1535 for Turning

Stable machining for difficult-to-cut materials

- Most suitable for heat resistant alloy, titanium alloy and stainless steel
- Reduces sudden fracture from scaling and interrupted machining
- New, reliable and tough grade for difficult-to-cut materials (for S35/M35/P35)



Applicable to a variety of workpiece materials from steel to difficult-to-cut materials

ADVANCING PRODUCTIVITY

- KYOCERA, Contributing To Advancing Productivity -

Stable Machining for Difficult-to-Cut Materials

For heat resistant alloy, titanium alloy and stainless steel

MEGACOAT NANO PR1535

Point 1 Toughening through a new cobalt-mixing ratio.

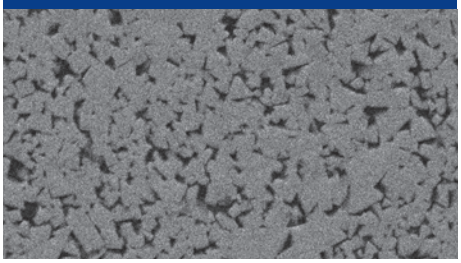
(Fracture toughness has improved by approximately 23%.※)

Point 2 The improvement of stability is achieved through optimization and homogenization of matrix particles

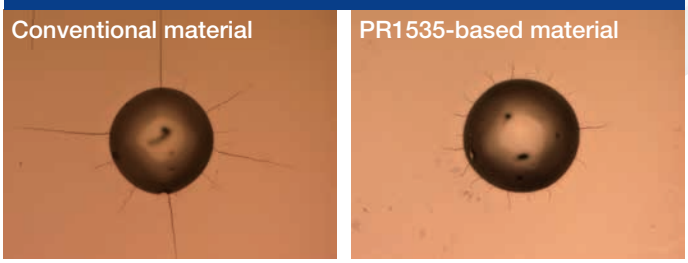
- The optimization of the particles corresponds to impact's strength and instability of process. Conductivity has improved by approximately 11%.※
- Reduces fundamental causes of interstitial fracture in uniformalized tissue.

※: Our conventional material ratio

Tougher carbide substrate



Cracks comparison by diamond indenter

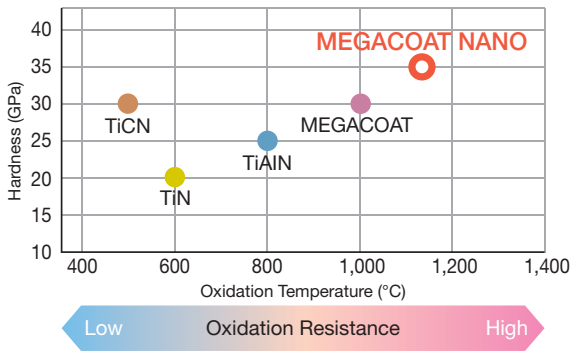


Long cracks

Short cracks ⇒ Improvement of impact resistance

Point 3 Stable turning operation and longer tool life by MEGACOAT NANO

- Extreme hardness (35GPa) and superior oxidation resistance (oxidation temperature at 1,150°C) prevent wear and fracture.

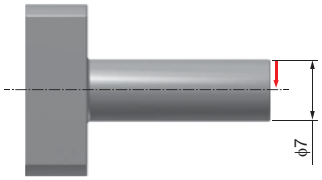


Layer structure of MEGACOAT

Case Studies

Ni-based Heat Resistant Alloy

- Bolt
- Vc = 50 m/min
- ap = 1.0 mm
- f = 0.2 mm/rev
- Wet
- CNMG120408MS (PR1535)



Machining is interrupted while approaching.

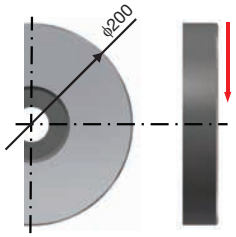
PR1535	80 pcs/edge
Competitor A (PVD coated Carbide)	30 pcs/edge

- PR1535 (MS Chipbreaker) achieves 2.6 times longer tool life than Competitor A (PVD coated Carbide).

(User Evaluation)

Ni-based Heat Resistant Alloy

- Aircraft parts
- Vc = 50 m/min
- ap = 0.5 mm
- f = 0.1 mm/rev
- Wet
- CNMG120408MU (PR1535)



PR1535	1 pc/edge
Competitor B (PVD coated Carbide)	1 pc/edge

- PR1535-MU Chipbreaker enhances the stability of machining. It prevents fracture caused by scaling and interrupted machining, better than Competitor B (PVD coated).

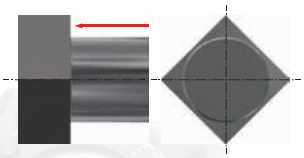
PR1535

Competitor B

(User Evaluation)

SUS304

- Square bar
- Vc = 100 m/min
- ap = 2.0 mm
- f = 0.2 mm/rev
- Wet
- CNMG120408MS (PR1535)



70mm square bar

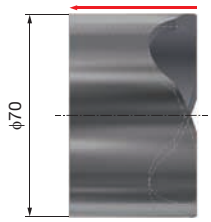
PR1535	50 pcs/edge
Competitor C (CVD coated Carbide)	10 pcs/edge

- Competitor B's fracture caused by heavy interruption machining.
- PR1535 (MS Chipbreaker) achieves 5 times longer tool life than Competitor C (CVD coated Carbide).

(User Evaluation)

SUS304

- Lens tube
- Vc = 120 m/min
- ap = 1.0 mm
- f = 0.15 mm/rev
- Wet
- CNMG120408MS (PR1535)



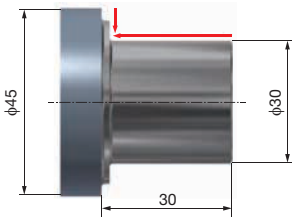
PR1535	80 pcs/edge
Competitor D (PVD coated Carbide)	30 pcs/edge

- Heavy interruption machining.
- PR1535 (MS Chipbreaker) achieves 2.6 times longer tool life than Competitor D (PVD coated Carbide).

(User Evaluation)

SUS304

- Seat
- Vc = 100 m/min
- ap = 1.5 mm
- f = 0.15 mm/rev
- Wet
- CNMG120408MS (PR1535)

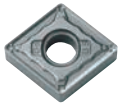
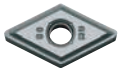


PR1535	30 pcs/edge
Competitor E (CVD coated Carbide)	5 pcs/edge

- PR1535 (MS Chipbreaker) achieves 6 times longer tool life than Competitor E (CVD coated Carbide).

(User Evaluation)

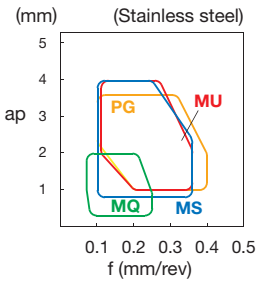
Stock Items

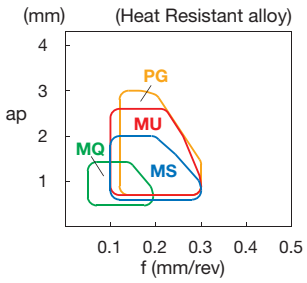
Shape	Description	Dimension (mm) I.C.	Thickness	Hole	Corner-R (rε)	PR1535
 Finishing-Medium	CNMG 120404MQ	12.70	4.76	5.16	0.4	●
	CNMG 120408MQ				0.8	●
 Medium-Roughing	CNMG 120404MS	12.70	4.76	5.16	0.4	●
	CNMG 120408MS				0.8	●
	CNMG 120412MS				1.2	●
 Medium-Roughing	CNMG 120404MU	12.70	4.76	5.16	0.4	●
	CNMG 120408MU				0.8	●
	CNMG 120412MU				1.2	●
 Medium-Roughing	CNMG 120404PG	12.70	4.76	5.16	0.4	●
	CNMG 120408PG				0.8	●
	CNMG 120412PG				1.2	●
 Finishing-Medium	DNMG 150404MQ	12.70	4.76	5.16	0.4	●
	DNMG 150408MQ				0.8	●
 Medium-Roughing	DNMG 150404MS	12.70	4.76	5.16	0.4	●
	DNMG 150408MS				0.8	●
	DNMG 150412MS				1.2	●
 Medium-Roughing	DNMG 150404MU	12.70	4.76	5.16	0.4	●
	DNMG 150408MU				0.8	●
 Medium-Roughing	DNMG 150404PG	12.70	4.76	5.16	0.4	●
	DNMG 150408PG				0.8	●
	DNMG 150412PG				1.2	●
 Medium-Roughing	SNMG 120408MS	12.70	4.76	5.16	0.8	●
	SNMG 120412MS				1.2	●

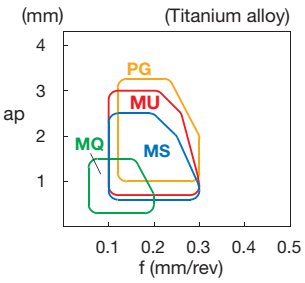
Shape	Description	Dimension (mm) I.C.	Thickness	Hole	Corner-R (rε)	PR1535
 Medium-Roughing	SNMG 120408PG	12.70	4.76	5.16	0.8	●
	SNMG 120412PG				1.2	●
 Finishing-Medium	TNMG 160404MQ	9.525	4.76	3.81	0.4	●
	TNMG 160408MQ				0.8	●
 Medium-Roughing	TNMG 160404MS	9.525	4.76	3.81	0.4	●
	TNMG 160408MS				0.8	●
	TNMG 160412MS				1.2	●
 Medium-Roughing	TNMG 160404MU	9.525	4.76	3.81	0.4	●
	TNMG 160408MU				0.8	●
 Medium-Roughing	TNMG 160404PG	9.525	4.76	3.81	0.4	●
	TNMG 160408PG				0.8	●
	TNMG 160412PG				1.2	●
 Finishing-Medium	WNMG 080404MQ	12.70	4.76	5.16	0.4	●
	WNMG 080408MQ				0.8	●
 Medium-Roughing	WNMG 080404MS	12.70	4.76	5.16	0.4	●
	WNMG 080408MS				0.8	●
	WNMG 080412MS				1.2	●
 Medium-Roughing	WNMG 080404MU	12.70	4.76	5.16	0.4	●
	WNMG 080408MU				0.8	●
 Medium-Roughing	WNMG 080404PG	12.70	4.76	5.16	0.4	●
	WNMG 080408PG				0.8	●
	WNMG 080412PG				1.2	●

●: Std. Item

Cutting Conditions







Workpiece Material	Cutting Speed (Vc) (m/min) Min.–Recommendation–Max.
Stainless Steel	70–120–160
Heat Resistant Alloy	40–50–60
Titanium Alloy	40–50–60

[Website] http://www.kyocera.com.sg/products/cuttingtools/

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