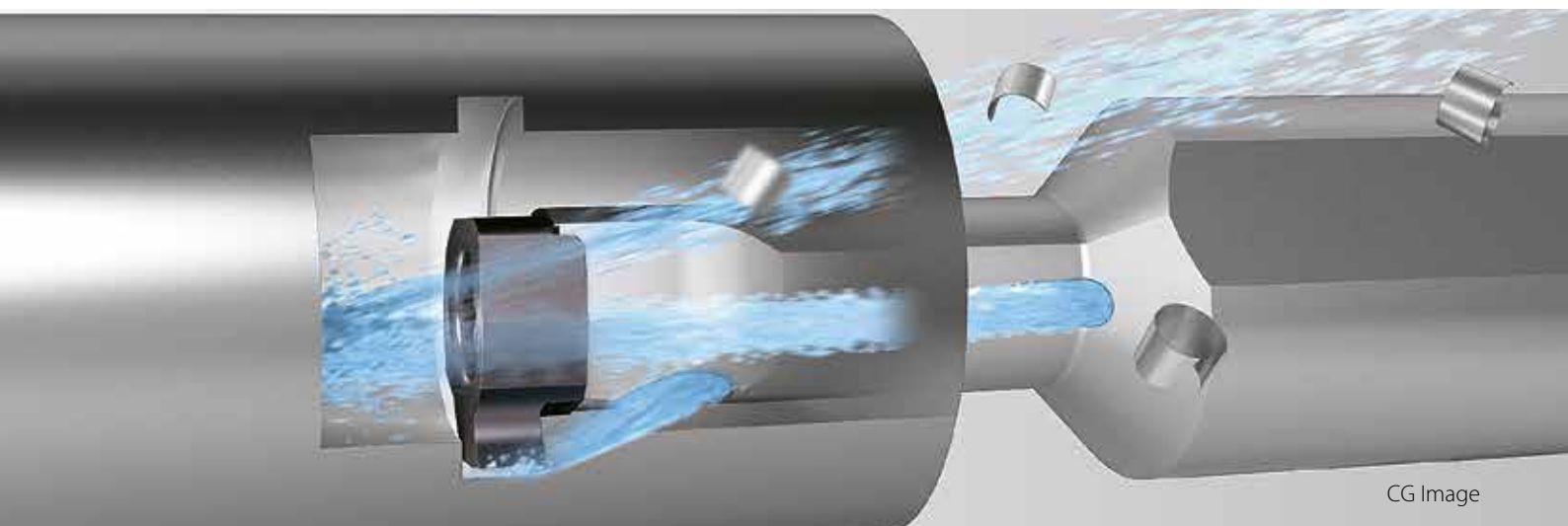


SIGC



CG Image

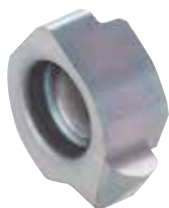
High-precision small internal grooving tool series

Newly developed clamping system ensures a firm insert hold to provide high-precision machining

Excellent chip evacuation with double coolant holes

Minimum cutting diameter $\varnothing 8$ mm

NEW Full-R inserts



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High-precision small internal grooving

SIGC

Newly developed clamping system ensures a firm insert hold

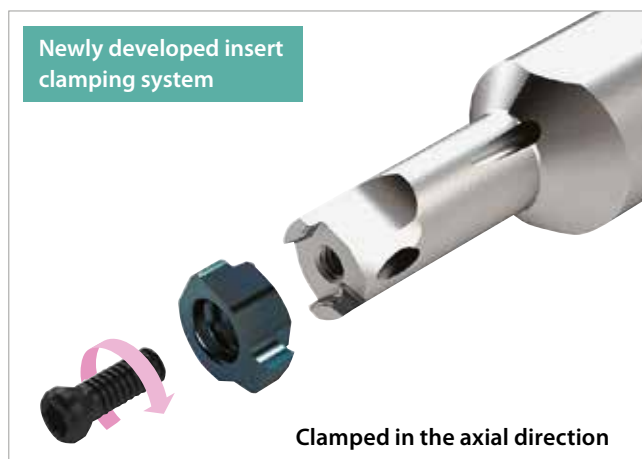
Excellent chip evacuation with double coolant holes

Optimized flute shape with a $\varnothing 8$ mm minimum cutting diameter

1 Firm insert clamping system provides high-precision machining

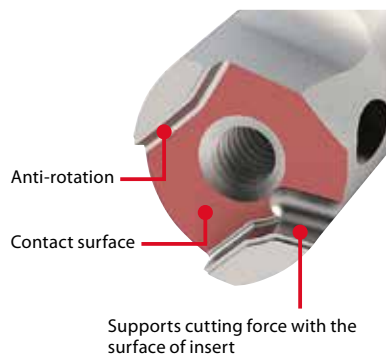
Firm clamping action by pressing the bottom surface of the insert in axial direction

Stable machining is achieved by ensuring a firm clamp on the insert

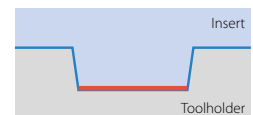


Clamping part (image)

Firm clamping is available due to large contact surface

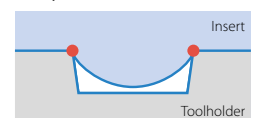


SIGC



Bottom surface contact

Competitor A

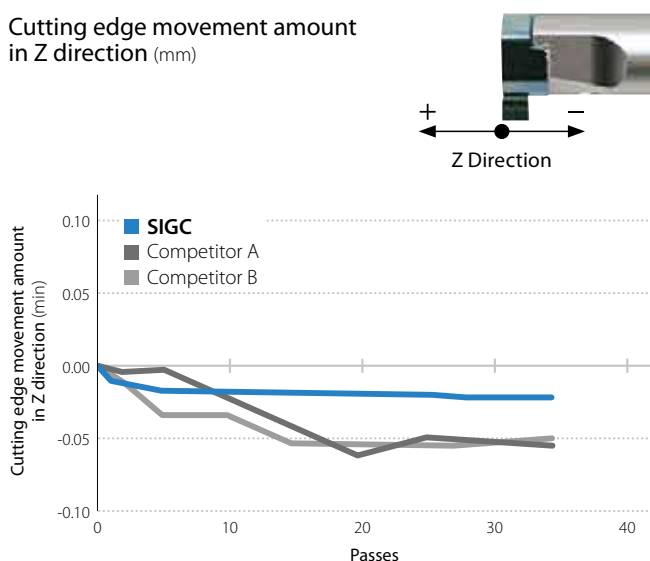


Point contact

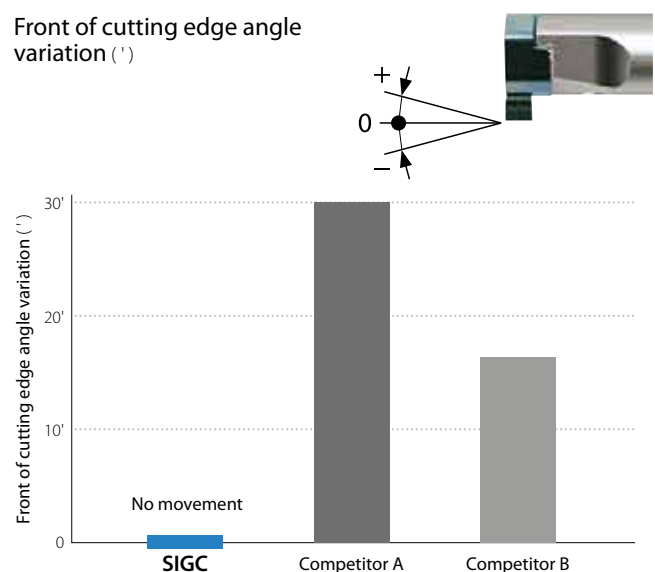
Cutting edge stability position comparison (Internal evaluation)

Measurement of the cutting edge position and angle after turning

Cutting edge movement amount
in Z direction (mm)



Front of cutting edge angle
variation (°)



Cutting conditions : $V_c = 50$ m/min, $a_p = 0.2$ mm, $f = 0.05$ mm/rev, Wet Workpiece : 4CrMo4 External turning

SIGC ensures high precision machining by preventing cutting edge position movement

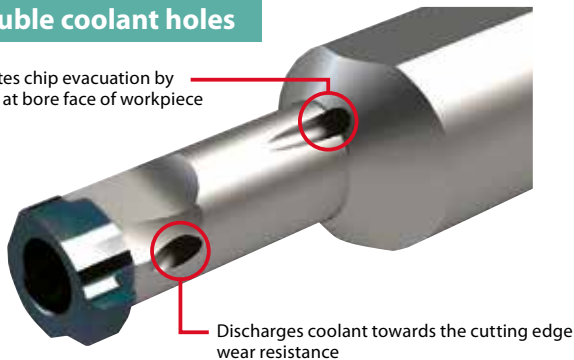
2

Excellent chip evacuation

Excellent chip evacuation with double coolant holes and optimized flute shape

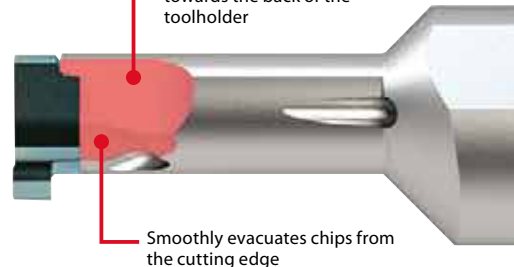
Double coolant holes

Promotes chip evacuation by aiming at bore face of workpiece



Flute shape

Smoothly evacuates chips towards the back of the toolholder

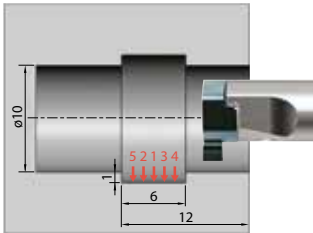


Provides a better solution when facing chip evacuation difficulties in small internal grooving
Prevents chip crunching

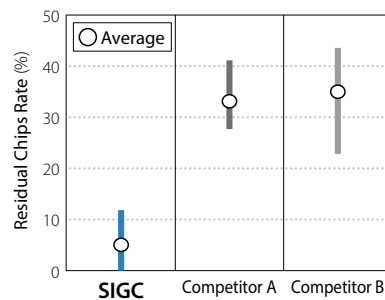
Chip evacuation comparison

(Internal evaluation)

Cutting conditions : $V_c = 50$ m/min,
 $a_p = 1.0$ mm (Shouldering), $f = 0.03$ mm/rev,
Wet (Internal Coolant), Workpiece : 17Cr3, with
edge width 2 mm

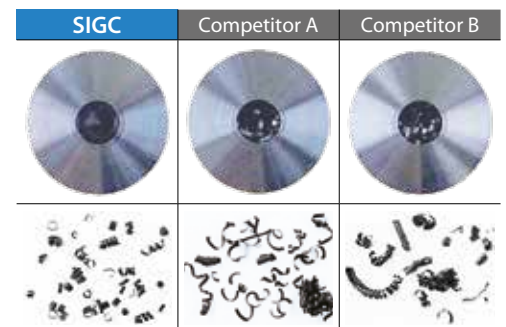


Residual chips rate (%)



$$\text{Residual chips rate (\%)} = \frac{\text{Weight of remaining chip in the hole (g)}}{\text{Weight of chips removed (g)}} \times 100$$

Chip evacuation comparison



Good chip evacuation

3

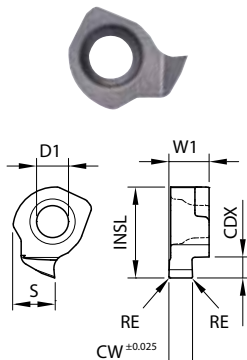
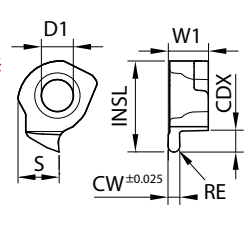
Large lineup for various internal grooving

Minimum cutting diameter $\varnothing 8$ mm

Excellent bars and carbide shank bars added to the lineup



Applicable inserts

Inserts Handed insert shows right-hand	Description	Dimensions (mm)							MEGACOAT NANO PLUS		MEGACOAT NANO		Applicable toolholders				
		CW	CDX	RE	W1	INSL	S	D1	PR1725		PR1535						
									R	L	R	L					
	GC08 R/L	100-005	1.00	0.05	3.4	7.7	3.5	2.7	●	●	●	●	SIGC R/L0812-EH SIGC R/L0806-WH				
		120-005	1.20						●	●	●	●					
		125-005	1.25						●	●	●	●					
		150-010	1.50	0.1					●	●	●	●					
		200-010	2.00						●	●	●	●					
	GC10 R/L	100-005	1.00	0.05	4.7	9.6	4.4	3.5	●	●	●	●	SIGC R/L1016-EH SIGC R/L1008-WH-L85 SIGCR1008-WH-L100				
		120-005	1.20						●	●	●	●					
		125-005	1.25						●	●	●	●					
		145-010	1.45	0.1					●	●	●	●					
		150-010	1.50						●	●	●	●					
		200-010	2.00						●	●	●	●					
		250-020	2.50	0.2					●	●	●	●					
		300-020	3.00						●	●	●	●					
									●	●	●	●					
	GC12 R/L	100-005	1.00	0.05	4.7	11.6	5.4	3.5	●	●	●	●	SIGC R/L1216-EH SIGCR1210-WH-L95 SIGC R/L1210-WH-L110				
		120-005	1.20						●	●	●	●					
		125-005	1.25						●	●	●	●					
		145-010	1.45	0.1					●	●	●	●					
		150-010	1.50						●	●	●	●					
		200-010	2.00						●	●	●	●					
		250-020	2.50	0.2					●	●	●	●					
		300-020	3.00						●	●	●	●					
									●	●	●	●					
 Full-R	GC08R	100-050R	1.00	0.5	3.4	7.7	3.5	2.7	●		●		SIGCR0812-EH SIGCR0806-WH				
		200-100R	2.00						●		●						
	GC10R	100-050R	1.00	0.5	4.7	9.6	4.4	3.5	●		●		SIGCR1016-EH SIGCR1008-WH-L85 SIGCR1008-WH-L100				
		200-100R	2.00						●		●						
	GC12R	100-050R	1.00	0.5	4.7	11.6	5.4	3.5	●		●		SIGCR1216-EH SIGCR1210-WH-L95 SIGCR1210-WH-L110				
		200-100R	2.00						●		●						

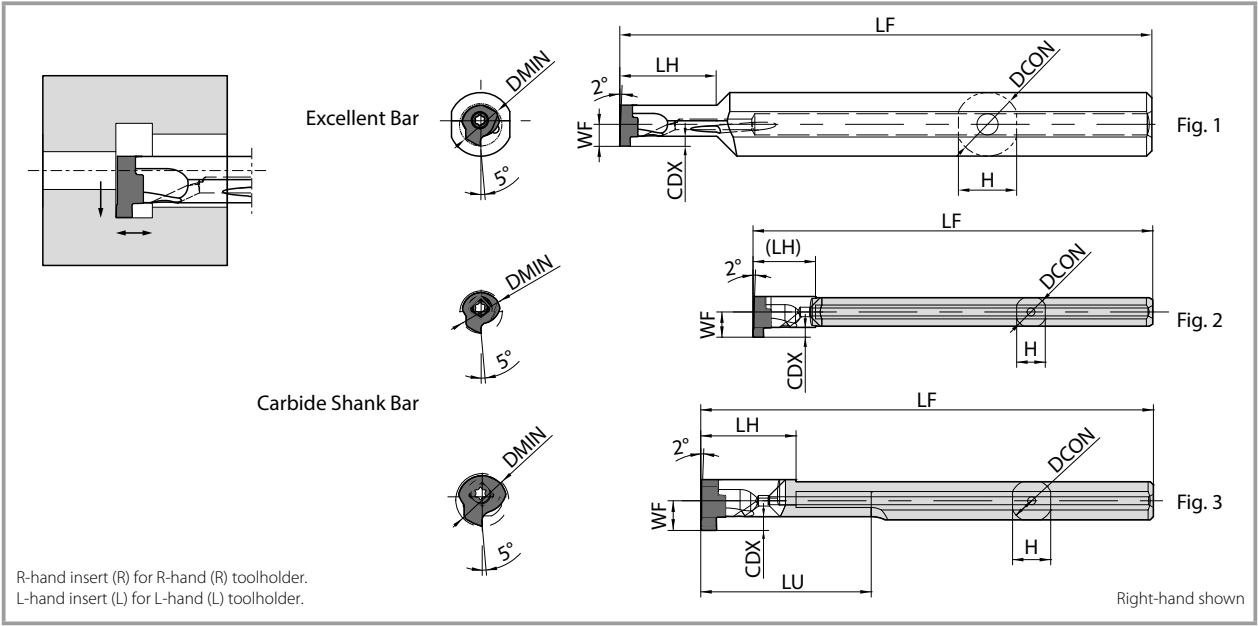
• CDX : shows available grooving depth.
• Inserts are sold in 5 piece boxes.

● : Available

Recommended cutting conditions

Workpiece	Recommended insert grade (Cutting conditions Vc : m/min)		(1) f for Grooving (mm/rev)			Notes
	MEGACOAT NANO PLUS	MEGACOAT NANO	(2) f for Turning (mm/rev)			
			(3) ap for Turning (mm)			
			GC08 ^{R/L} ... GC08R...-...R	GC10 ^{R/L} , GC12 ^{R/L} 100 ~ 200... GC10R...-...R GC12R...-...R	GC10 ^{R/L} , GC12 ^{R/L} 250 ~ 300...	
Carbon steel	★ 50 ~ 80	☆ 50 ~ 80	(1) 0.01 ~ 0.03	(1) 0.02 ~ 0.04	(1) 0.02 ~ 0.04	Wet
			(2) 0.01 ~ 0.03	(2) 0.02 ~ 0.04	(2) 0.02 ~ 0.04	
			(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Alloy steel	★ 50 ~ 80	☆ 50 ~ 80	(1) 0.01 ~ 0.03	(1) 0.02 ~ 0.04	(1) 0.02 ~ 0.04	
			(2) 0.01 ~ 0.03	(2) 0.02 ~ 0.04	(2) 0.02 ~ 0.04	
			(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Stainless steel	☆ 50 ~ 80	★ 50 ~ 80	(1) 0.01 ~ 0.03	(1) 0.01 ~ 0.03	(1) 0.01 ~ 0.03	
			(2) 0.01 ~ 0.03	(2) 0.01 ~ 0.03	(2) 0.01 ~ 0.03	
			(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	

★ : 1st Recommendation ☆ : 2nd Recommendation



Toolholder dimensions

Description	Availability		Min. cutting dia.	Dimensions (mm)							Drawing	Spare Parts		Applicable insert	
	R	L		DMIN	DCON	H	LF	LU	LH	WF		CDX	Clamp screw		Wrench
															
SIGC R/L 0812-EH	●	●	8	12	11	100	—	18	4.1	1.5	Fig. 1	SB-2270T R/L	FT-7	GC08 R/L100-005 ~ GC08 R/L200-010 GC08R100-050R, GC08R200-100R	
1016-EH	●	●	10	16	15	100	—	21	5.0	2.2		SB-3070T R/L	FT-8	GC10 R/L100-005 ~ GC10 R/L300-020 GC10R100-050R, GC10R200-100R	
1216-EH	●	●	12	16	15	110	—	25	6.0	2.2				GC12 R/L100-005 ~ GC12 R/L300-020 GC12R100-050R, GC12R200-100R	
SIGC R/L 0806-WH	●	●	8	6	5.4	75	—	12	4.8	1.5	Fig. 3	SB-2270T R/L	FT-7	GC08 R/L100-005 ~ GC08 R/L200-010 GC08R100-050R, GC08R200-100R	
1008-WH-L85	●	●	10	8	7.2	85	32	18	5.6	2.2		SB-3070T R/L	FT-8	GC10 R/L100-005 ~ GC10 R/L300-020 GC10R100-050R, GC10R200-100R	
1008-WH-L100	●					100	45							GC10R100-005 ~ GC10R300-020 GC10R100-050R, GC10R200-100R	
1210-WH-L95	●		12	10	9.2	95	32							6.6	GC12 R/L100-005 ~ GC12 R/L300-020 GC12R100-050R, GC12R200-100R
1210-WH-L110	●	●				110	45								

Mounting inserts
Use compressed air or other measures to remove chips from the insert pocket.
Mount the insert into the toolholder ensure the bottom makes contact with the end of the toolholder's surface.
Keeping the insert seated, tighten the insert clamp screw at an appropriate torque.
Recommended tightening torque for clamp screw : 0.8 N · m (SB-2270TR) 1.2 N · m (SB-3070TR)
L-hand clamp screw for L-hand toolholder. (Fig.1)

● : Available

Fig.1



GCGCR-*** (R)**

Right-hand screw

Toolholder : SIGCR****

Insert : GC**R-*** (R)

Clamp screw : SB-****TR



GCL-*****

Left-hand screw

Toolholder : SIGCL****

Insert : GC**L-***

Clamp screw : SB-****TL

Applicable sleeve

Applicable sleeves. Please see the KYOCERA general product catalog for more details.

Shank size (Diameter : mm)	06 (6 mm)	08 (8 mm)	10 (10 mm)	12 (12 mm)	16 (16 mm)
Toolholders	SIGC R/L 0806-WH	SIGC R/L 1008-WH-L85 SIGC R/L 1008-WH-L100	SIGC R/L 1210-WH-L95 SIGC R/L 1210-WH-L110	SIGC R/L 0812-EH	SIGC R/L 1016-EH SIGC R/L 1216-EH
SH Sleeve (for boring bars)	SH 06...	SH 08...	SH 10...	SH 12...	SH 16...
SHC Sleeve (for coolant sleeves)	—	SHC 08...	SHC 10...	SHC 12...	SHC 16...
SHA Sleeve	—	SHA 08...	SHA 10...	SHA 12...	—
EZH Sleeve (for EZ Bars)	EZH 06...ST/CT/HP...	EZH 08...ST/CT/HP...	—	—	—

Remove the positioning pin when mounting SIGC to the EZH-CT/HP Sleeve.
(Positioning function is not available.)

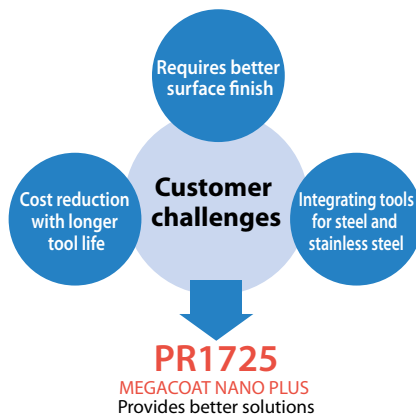
New PVD coating

PR1725

MEGACOAT NANO PLUS maintains long tool life and excellent surface finish.
Great performance in small parts machining applications.

Long tool life leads to improved cycle time

Excellent surface finish with no tearing lowers quality control costs

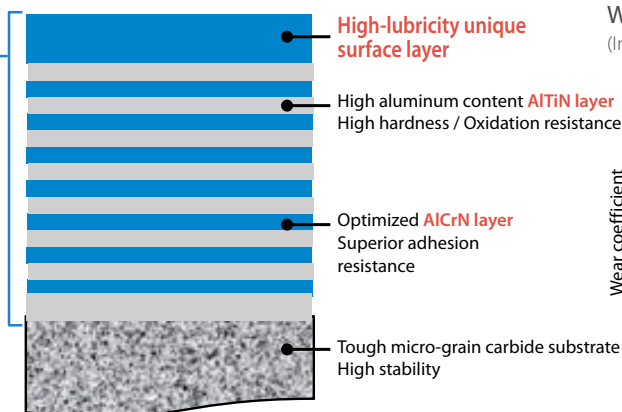


MEGACOAT NANO PLUS

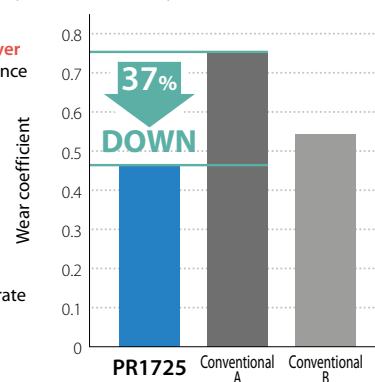
AlTiN/AlCrN Nano laminated film with superior wear resistance and adhesion resistance
Excellent surface finish and long tool life

Reduces cracking

Reduces abnormal damages such as chipping because of increased lamination layer with a thinner gap than conventional coatings



Wear coefficient comparison
(Internal evaluation)



Superior wear and chipping resistance

High hardness with nano laminated film layer properties
Internal stress optimization reduces chipping

Excellent surface finish

Special surface layer with great lubricity reduces adhesion

Applicable to various workpiece materials

Excellent oxidation resistance. Superior high temperature properties maintains good performance in steel, stainless steel and free-cutting steel

High machining stability

Tough micro-grain carbide substrate provides stable machining