KORLOY TECH-NEWS

WE CREATE YOUR TOMORROW!

KORLOY is ISO9001 Certified
ISO9001

May 1, 2009
No. 220-M

Heat resistant alloy
Stainless steel
PVD turning grade

New

PC8110

Features

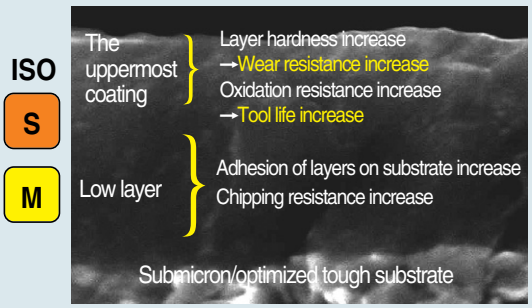
- Improved hardness of cutting edge and chipping resistance by using fine submicron substrate.
- New concept PVD coating with strengthened substrate and high oxidation resistance applied
- Increasing productivity for difficult to cut material by high speed and high feed cutting.

KORLOY Inc.

PC8110

Coating features(KATS coating) | Reconmended chip breaker cutting range by workpiece

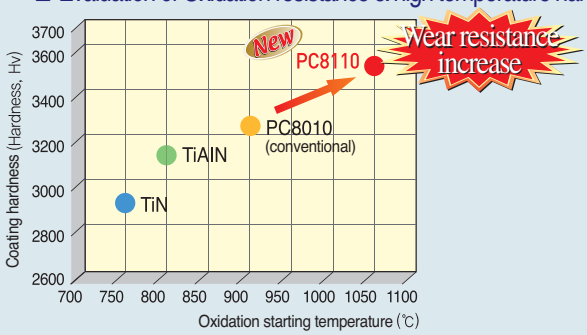
Coating features(KATS coating)



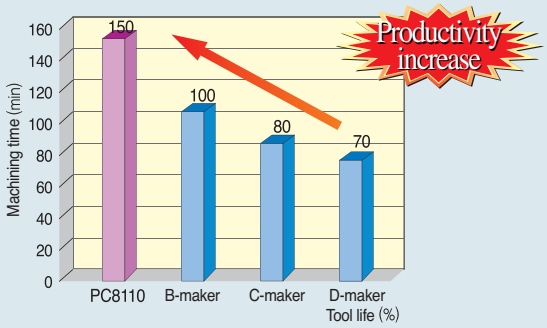
KORLOY new technology PVD coating

New concept of coating having high temperature oxidation resistance with excellent strength

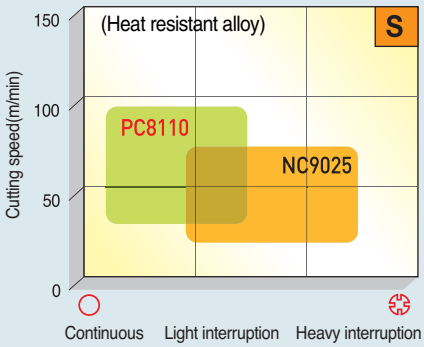
■ Evaluation of Oxidation resistance & high temperature hardness

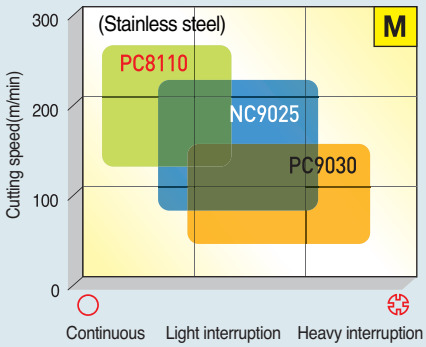


■ Evaluation of tool life



■ Recommended cutting speed

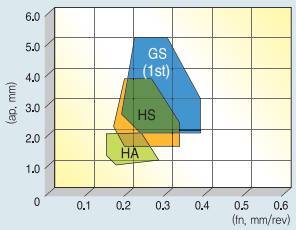




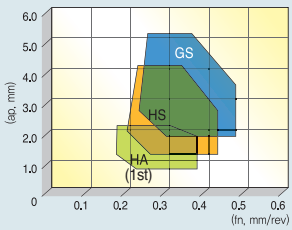
PC8110	ISO Code							
	05	10	15	20	25	30	35	40
S(Inconel/Titanium) /Stellite/Nimonic/etc		40 < vc < 90						
M(Stainless steel)		120 < vc < 280						

Recommended chip breaker cutting range by workpiece.

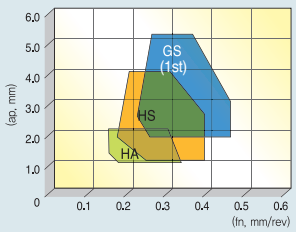
■ Inconel-nega type



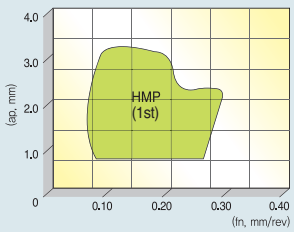
■ Titanium-nega type



■ Stainless steel-nega type



■ Inconel/Titanium/Stainless steel-posi type



PC8110

PC8110 recommended cutting condition by difficult-to-cut-materials

PC8110 recommended cutting condition by difficult-to-cut-materials

S 10~20		Workpiece	Hardness	Optimized speed	Cutting speed (vc)	Feed (fn)	D.O.C (ap)
			HB	(m/min)		(mm/rev)	(mm)
Heat resistant super alloys	Nickel base	Inconel	220~300	60	40 ~ 90	0.1 ~ 0.3	1 ~ 5
		Nimonic	350	50			
		Hastelloy	160	60			
	Cobalt base	Stellite	370	50	30 ~ 80	0.1 ~ 0.3	1 ~ 3
	Iron base	17-4-PH	250	50	30 ~ 70	0.1 ~ 0.3	1 ~ 3
		Incoloy	180	60			
Titanium alloys		Ti-6246	-	60	50 ~ 180	0.1 ~ 0.3	1 ~ 5
		Ti-6Al-4V	250 ~ 310	70			

∗Workpieces : Inconel, Nimonic, Hastelloy, Stellite

M 10~20	Workpiece	Hardness	Optimized speed	Cutting speed (vc)	Feed (fn)	D.O.C (ap)
		HB	(m/min)		(mm/rev)	(mm)
Austenitic Stainless Steel(300 계)	STS304	180	230	150 ~ 280	0.1 ~ 0.3	1 ~ 5
	STS316(L)	200	200	120 ~ 250		
Ferritic Stainless Steel	STS409	165	200	150 ~ 250	0.1 ~ 0.3	1 ~ 4
	STS430	180	200	150 ~ 250		
	STS444	220	180	120 ~ 230		
Martensitic Stainless Steel	STS410	200	180	130~280	0.1 ~ 0.3	1 ~ 4
	STS420J1	220	180	130~280		
	STS420J2	230	180	130~280		
Precipitation hardening Stainless Steel	STS630	>300	150	80 ~ 180	0.1 ~ 0.3	1 ~ 5
	STS631					

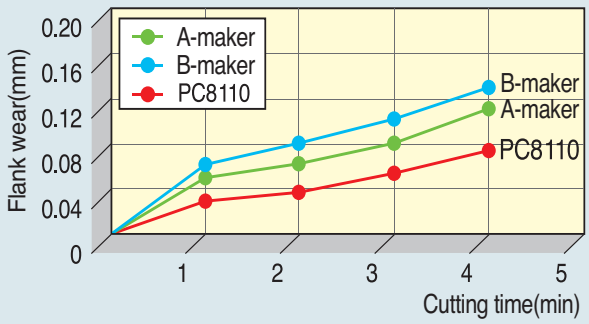
∗Workpieces : Austenitic stainless steel, Ferritic stainless steel, Martensitic stainless steel

S(M)10~20	Workpiece	Hardness	Optimized speed	Cutting speed (vc)	Feed (fn)	D.O.C (ap)
		HB	(m/min)		(mm/rev)	(mm)
Stellite + STS	-	-	60	40 ~ 120	0.1 ~ 0.3	1 ~ 3
Inconel + STS	-	-	80	60 ~ 150	0.1 ~ 0.3	1 ~ 4

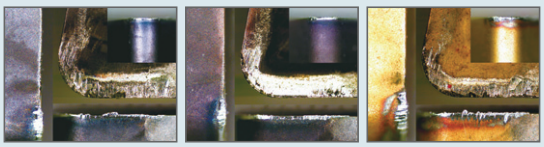
∗Brazed workpieces

PC8110

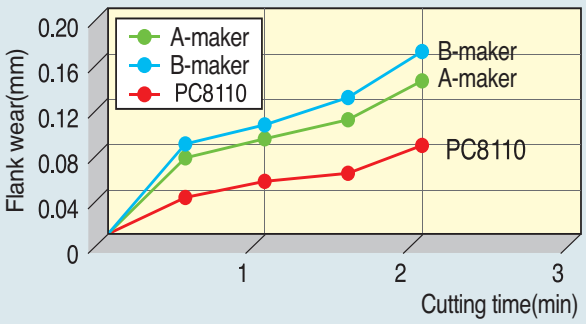
Cutting efficiency test



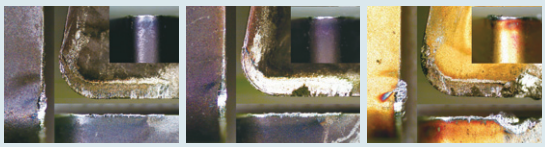
- workpiece : Inconel 718
- Cutting condition : vc=60m/min, fn=0.2mm/rev
  ap=2mm, wet cutting, 4 min cutting



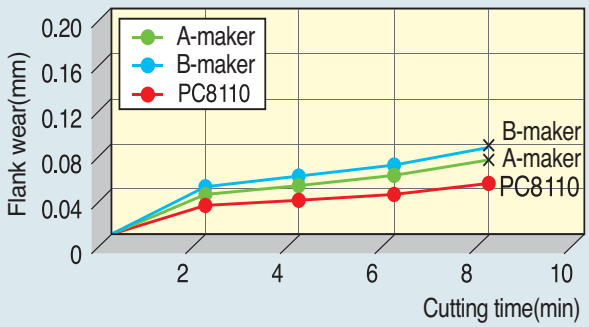
PC8110 A-maker B-maker



- workpiece : Inconel 718
- Cutting condition : vc=100m/min, fn=0.2mm/rev
  ap=2mm, wet cutting, 2 min cutting

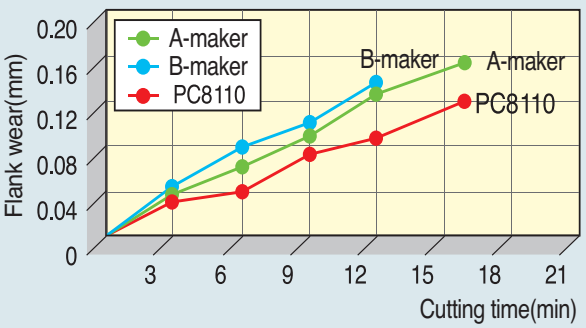


PC8110 A-maker B-maker

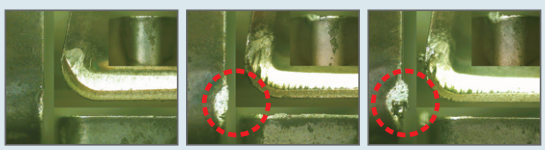


- Workpiece : Titanium alloy
- Cutting condition : vc=70m/min, fn=0.2mm/rev
  ap=1mm, wet cutting, 8 min cutting

PC8110 A-maker B-maker



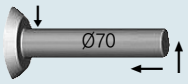
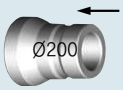
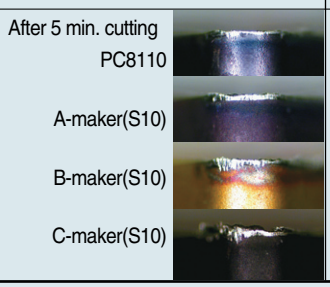
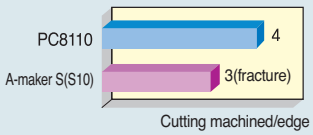
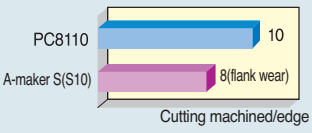
- Workpiece : X2CrNiMo17-13-2 (STS316)
- Cutting condition : vc=250m/min, fn=0.2mm/rev
  ap=3mm, wet cutting, 12 min cutting

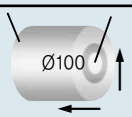
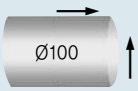
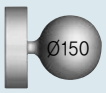
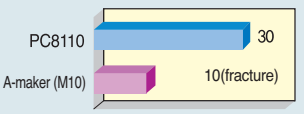
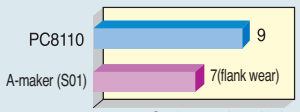
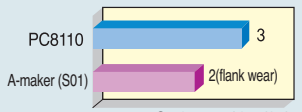


PC8110 A-maker B-maker

PC8110

Application example

Workpiece		CNMG120408-HS Inconel718(Inconel718)	CNMG120408-HA Ti-6Al-4V	DNMG150608-HS Inconel625(Inconel625)
Configuration				
Cutting condition	vc(m/min)	60	60	70
	fn(mm/rev)	0.2	0.2	0.25
	ap(mm)	2	1.5~3	1.5
	Coolant	wet	wet	wet
Test result			 Cutting machined/edge	 Cutting machined/edge

Workpiece		CNMG120408-GS Stainless steel + Stellite	SNMG120408-GS Nimonic 901	RCMX1003M0 Stellite
Configuration				
Cutting condition	vc(m/min)	70	70	70
	fn(mm/rev)	0.2	0.2	0.2
	ap(mm)	2~4	2	1.5
	Coolant	wet	wet	wet
Test result		 Cutting machined/edge	 Cutting machined/edge	 Cutting machined/edge

Application guide-Line

PC 8110 grade comparison with competitors

Type	Korloy	Mitsubishi	Sandvik	Sumitomo	Kyocera	Taegutec	Tungaloy	Kennametal	Iscar	Seco
S10~20 M10~20	PC8110	VP10RT	GC1005 GC1105	AC510U	PR915	TT5030	AH120	KC5010 KC5510	IC907	CP200

Chip breaker comparison(Negative type)

Type		Korloy	Mitsubishi	Sandvik	Sumitomo	Kyocera	Taegutec	Tungaloy	Kennametal	Iscar	Seco
STS(M)	Finishing	VG	SH	MF	SU	GU		SS	FP		F1
	Finish to Medium cutting	HA				MQ	ML			PP, NF	MF1
	Medium cutting	HS GS	MS,MA	MM	GU,EX	MU,MS	MP,MC	SM	MP,MN	TF	MF3
	Roughing	VM	GH,ES	MR	MU	PT	MT	TH	RP,RN	GN	M5
Heat resistant alloy(S)	Finish Medium to cutting	Refer to Stainless steel chip breaker	FJ,MJ	23,SR	EX				MP,FS		MF1
	Medium to Roughing		MS,GJ	SM	UP				GP,MS		MR3,M1,MR4

Chip breaker comparison(Positive type, PC8110 stock item(HMP)

Type	Korloy	Mitsubishi	Sandvik	Sumitomo	Kyocera	Taegutec	Tungaloy	Kennametal	Iscar	Seco
Finishing	HFP	FV SQ	PF,MF,KF UF	LU FP FC	XP GP CF	FA	PF 23 JS	UF 11	SM PP	FF1 F1
Medium cutting	HMP	SV MQ	PM,MM,KM UM UM	SU SK SF,SC	XQ HQ CK,SK	FG	PS 24	LF	PF	F2
Roughing	C25	MV	PR,MR,KR UR	MU SJ	GK G,GQ	MT	PM	MF		

Recommended cutting condition of difficult-to-cut materials

ISO GRADE	Workpiece	Recommended feed, D.O.C: fn=0.1~0.3, ap=1~3 Recommended cutting speed(vc, m/min)		
		PC8110	NC9025	PC9030
S	Titanium alloy	60 ~ 180	40 ~ 150	-
	Inconel	40 ~ 90	20 ~ 60	-
	Stellite (+STS, Inconel)	30 ~ 80	20 ~ 60	-
	Nimonic 901	30 ~ 70	15 ~ 50	-
M	STS304	150 ~ 270	100 ~ 240	80 ~ 190
	STS316	130 ~ 220	80 ~ 200	60 ~ 150
	STS410	130 ~ 280	80 ~ 250	60 ~ 200

PC8110 stock item

Negative

CNMG120404-GS	WNMG060404-GS	WNMG060408-HA	TNMG160404-HS
CNMG120408-GS	WNMG060408-GS	WNMG080404-HA	TNMG160408-HS
CNMG120412-GS	WNMG080404-GS	WNMG080408-HA	TNMG220408-HS
CNMG190612-GS	WNMG080408-GS	CNMG120404-HS	VNMG160404-HS
CNMG190616-GS	CNMG120404-HA	CNMG120408-HS	VNMG160408-HS
DNMG150404-GS	CNMG120408-HA	CNMG120412-HS	WNMG060404-HS
DNMG150408-GS	DNMG150404-HA	CNMG190612-HS	WNMG060408-HS
DNMG150604-GS	DNMG150408-HA	CNMG190616-HS	WNMG080404-HS
DNMG150608-GS	DNMG150604-HA	DNMG150404-HS	WNMG080408-HS
SNMG120408-GS	DNMG150608-HA	DNMG150408-HS	CNMG120408-VM
SNMG120412-GS	SNMG120408-HA	DNMG150604-HS	CNMG120412-VM
SNMG150612-GS	TNMG160404-HA	DNMG150608-HS	CNMG160612-VM
SNMG190612-GS	TNMG160408-HA	SNMG120408-HS	CNMG190612-VM
SNMG190616-GS	VNGG160408-HA	SNMG120412-HS	SNMG120408-VM
TNMG160404-GS	VNMG160404-HA	SNMG150612-HS	TNMG220408-VM
TNMG160408-GS	VNMG160408-HA	SNMG190612-HS	WNMG080408-VM
TNMG220408-GS	WNMG060404-HA	SNMG190616-HS	

Positive

CCMT060202-HMP	CCMT09T304-HMP	DCMT11T304-HMP	VBMT160408-HMP
CCMT060204-HMP	CCMT09T308-HMP	DCMT11T308-HMP	TPMR160304-F
CCMT060208-HMP	DCMT070204-HMP	TCMT16T304-HMP	TPMR160308-M
CCMT09T302-HMP	DCMT11T302-HMP	VBMT160404-HMP	

MGT

FMM300R-03	SP200	SP300L	SP400L
FMM400R-04	SP200R	SP300R	SP400R
FMM500R-04	SP300	SP400	SP500

Warning

※ Safety instruction

- Use glasses safely and face cover with protective equipment. If cutting condition and use method are inaccurate, you may be injured by broken tools or scattered chips.
- Excessive cutting load may influence badly on both tool and machine. Make suitable tool replacement for preventing failure of machining.
- After machine stopped, clean remained chips from machine with special cleaning equipment.
- Keep safety distance from acute and hot chip during machining.
- Make precaution for prevention of fire in advance when you use insoluble cutting oil.
- Assembled parts may be scattered at high speed cutting. Please use protective equipment.

• HEAD OFFICE

Holystar B/D 953-1, Doksanbon-Dong, Geumcheon-Gu, Seoul, Korea
TEL:+82 2 522 3181 FAX:+82 2 522 3184, +82 2 3474 4744

• CHEONGJU FACTORY

53-16, Songjeong-Dong, Hungduk-Gu, Chengju, Chungcheongbuk-Do, Korea
TEL:+82 43 262 0141 FAX:+82 43 262 0146

• JINCHEON FACTORY

767-1, Gwanghyewon-Ri, Gwanghyewon-Myon, Jincheon-Gun, Chungcheongbuk-Do, Korea
TEL:+82 43 535 0141 FAX:+82 43 535 0144

Website : www.korloy.com
E-mail : export@korloy.com

KORLOY Inc.