

高能率加工用ブレイカシリーズ  
Chipbreaker series for high efficiency machining

仕上げ用

汎用

粗用

# SE型/GE型/ME型ブレイカ

SE type/GE type/ME type Chipbreaker 第5版



## 高能率、長寿命化

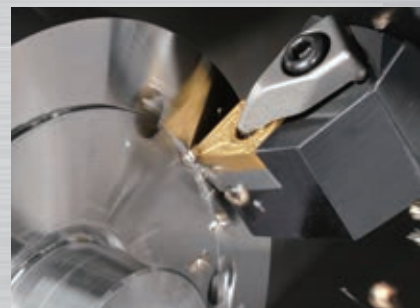
High efficiency and long life

すくい面損傷抑制による長寿命化及び高能率化を実現！  
Long life and high efficiency are achieved by reducing damage to the rake surface.

## 優れた切りくず処理

Excellent chip control

高送り領域まで幅広い加工条件で安定した切りくず処理性を発揮！  
Stable chip control can be performed under wide range of machining conditions including high-feed.



**NEW** コーテッドサーメットT1500Z/サーメットT1000Aシリーズ化 (SE型ブレイカ)  
Series of T1500Z Coated Cermet and T1000A Cermet (SE type Chipbreaker)

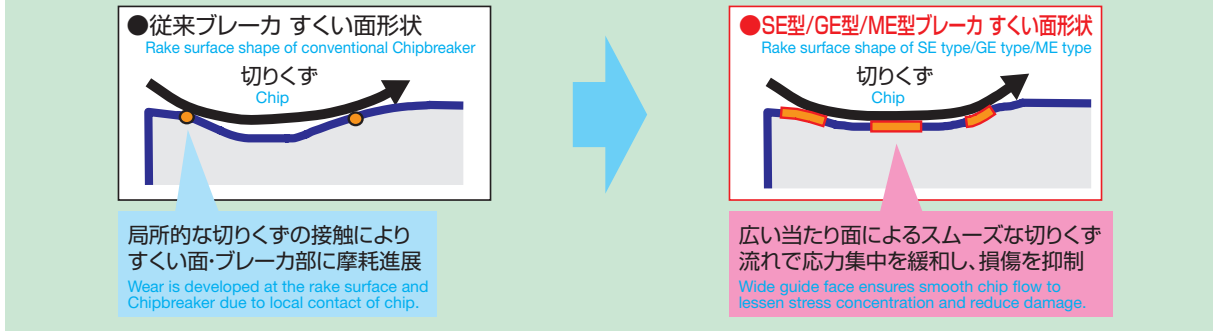
P M K N S H

# すくい面損傷が大きく進展する高能率加工領域で、SE型/GE型/ME型ブレーカは大きな効果を発揮！

The SE type/GE type/ME type shows a great effect in the high efficiency machining zone where damage to the rake surface is significantly developed!

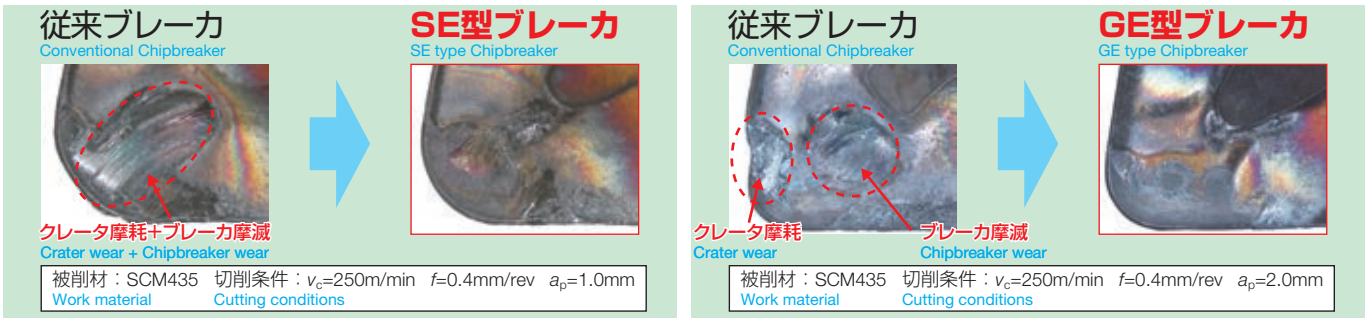
## ■特長 Characteristics

スムーズな切りくずの流れで応力集中を緩和、損傷を抑制する新しくい面形状  
New rake surface shape that lessens stress concentration and reduces damage with smooth flow of chip



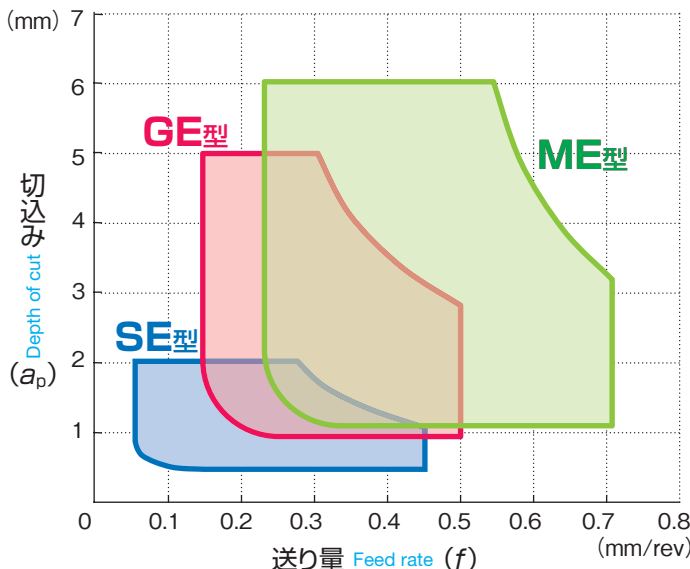
**長寿命・高能率化** (Long life and high efficiency) + **優れた切りくず処理性** (Excellent chip management) **を実現!** (are achieved!)

工具すくい面損傷(クレータ摩耗、ブレーカ摩滅)を抑制、工具寿命延長によって加工コストを低減。  
Damage to the tool rake surface (crater wear or Chipbreaker wear) is reduced. Extended life of the tool can reduce the machining costs.



## ■適用領域 Application Range

### ■SE型/GE型/ME型ブレーカ 適用領域 SE type/GE type/ME type Chipbreaker Application Range



### ■ブレーカ使い分け Chipbreaker applications





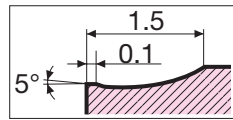
# SE型/GE型ブレードカ特長 Characteristics of SE type/GE type Chipbreaker

## ●仕上げ用SE型ブレードカ

SE type Chipbreaker for finishing

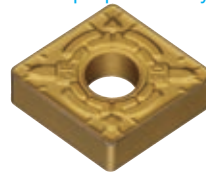


ブレードカ断面形状  
Chipbreaker cross-section shape

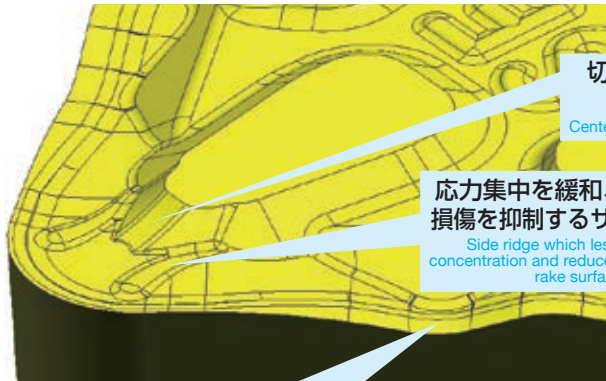
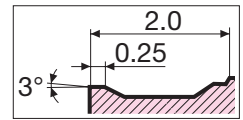


## ●汎用GE型ブレードカ

General purpose GE type Chipbreaker

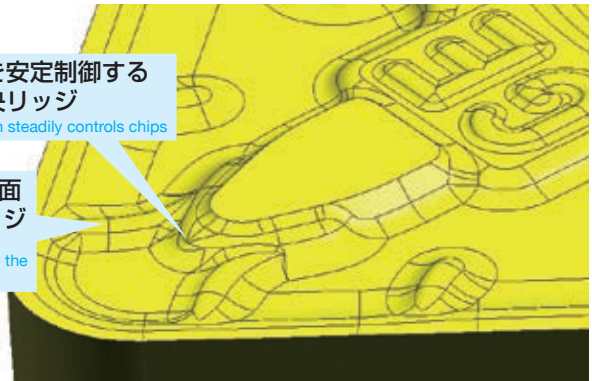


ブレードカ断面形状  
Chipbreaker cross-section shape



切りくずを安定制御する  
中央リッジ  
Center ridge which steadily controls chips

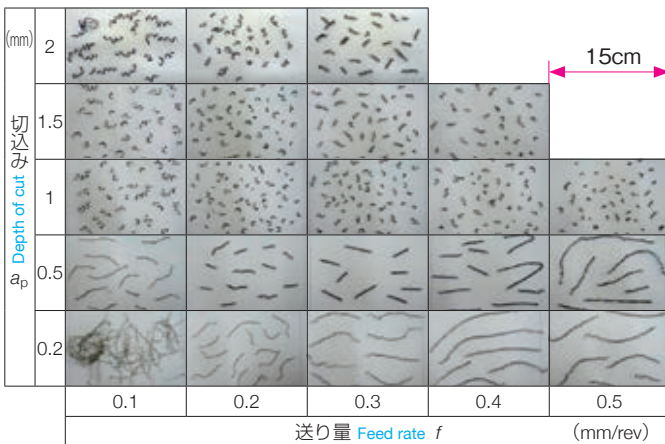
応力集中を緩和、すくい面  
損傷を抑制するサイドリッジ  
Side ridge which lessens stress  
concentration and reduces damage to the  
rake surface



引き上げ加工で優れた切りくず  
処理をもたらす側面ウェーブ切刃  
Side wave cutting edge which provides excellent chip control in out facing

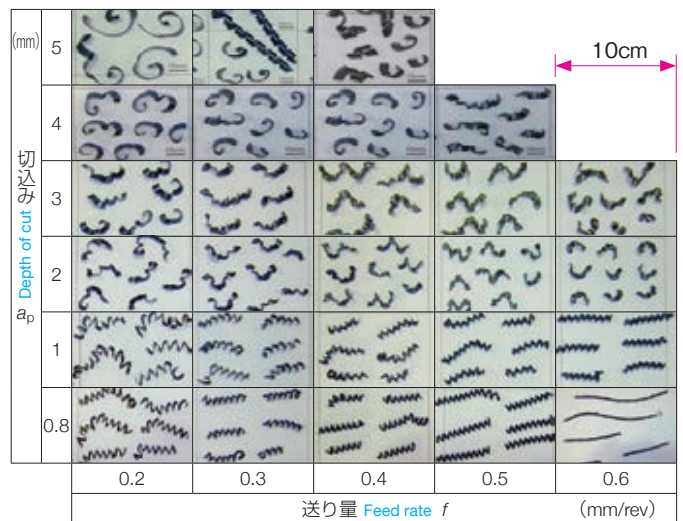
## SE型切りくず処理性 Chip management of SE type

被削材：SCM415 切削条件： $v_c=200\text{m/min}$  Dry  
Work material Cutting conditions



## GE型切りくず処理性 Chip management of GE type

被削材：SCM415 切削条件： $v_c=200\text{m/min}$  Dry  
Work material Cutting conditions

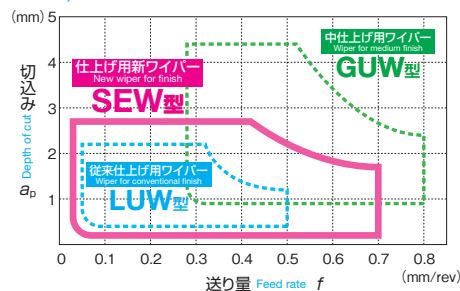


## 低切込みから高送り条件まで安定した切りくず処理が可能！

Stable chip control from small depth to high feed conditions is available!

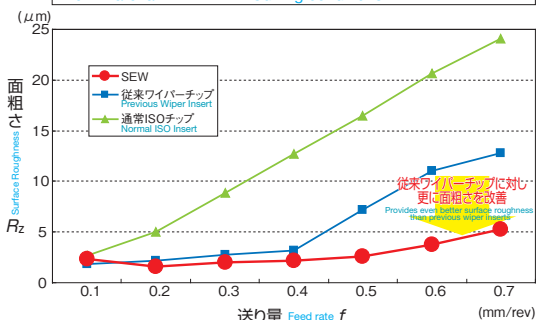
仕上げ加工で更なる高送りをご要望の場合は  
SEW型ワイパーチップをご使用ください。  
(詳しくはイゲタロイニュースNo.483を参照ください。)

If you want further high feed rate for finishing, use the SEW type wiper insert.  
(For details, refer to our brochure No.483.)



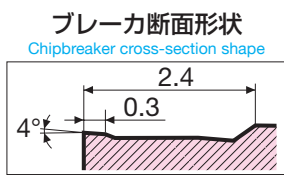
## 加工面粗さ(実測値) Roughness (actual measurements)

工具：CNMG120408  
Tool  
被削材：SCM435 切削条件： $v_c=200\text{m/min}$   
Work material Cutting conditions

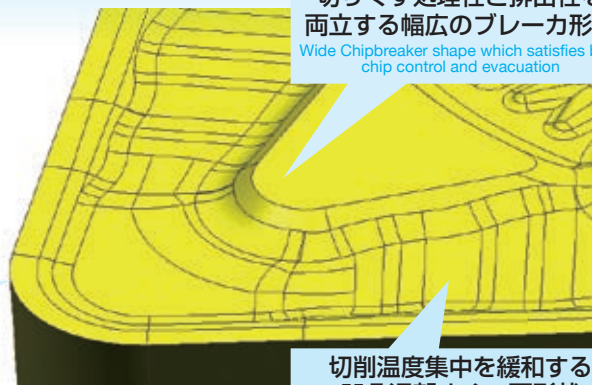


# ME型ブレイカ特長 Characteristics of ME type Chipbreaker

## ●粗用ME型ブレイカ ME type Chipbreaker for roughing



切れ味重視のポジランド切れ刃  
Positive land cutting edge with emphasis on sharp cut

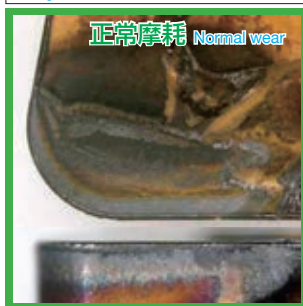


切りくず処理性と排出性を両立する幅広のブレイカ形状  
Wide Chipbreaker shape which satisfies both chip control and evacuation

切削温度集中を緩和する凹凸辺部すくい面形状  
Rake surface shape at uneven area which reduces concentration of machining temperature

## ■耐工具損傷性 Tool resistance to damage

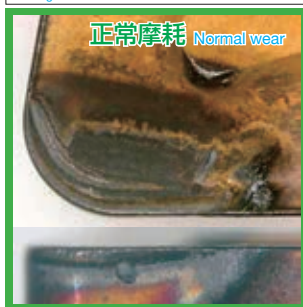
被削材: S45C  
Work material  
切削条件:  $v_c=200\text{m/min}$   $f=0.7\text{mm/rev}$   $a_p=3.0\text{mm}$  Wet 10min加工後  
Cutting conditions after damaging 10min



ME型 ME type

従来型 Conventional type

被削材: S45C  
Work material  
切削条件:  $v_c=350\text{m/min}$   $f=0.5\text{mm/rev}$   $a_p=2.5\text{mm}$  Wet 5.5min加工後  
Cutting conditions after damaging 5.5min



ME型 ME type

従来型 Conventional type

工具すくい面損傷(クレータ摩耗、ブレイカ摩滅)を抑制、工具寿命延長によって加工コストを低減。

The original Chipbreaker geometry minimizes progress of crater wear and flank wear, resulting in extension of tool life and reduction of machining cost.

## ■切りくず処理性 Chip management

被削材: SCM415 切削条件:  $v_c=200\text{m/min}$  Dry  
Work material Cutting conditions

切込み Depth of cut	$a_p$ (mm)	5	4	3	2	1
		0.3	0.4	0.5	0.6	0.7
		送り量 Feed rate $f$ (mm/rev)				

15cm

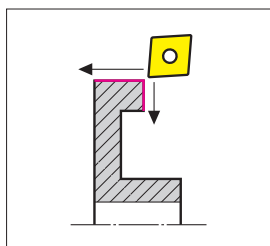
ME型ブレイカは従来粗加工用ブレイカに対し、低切込み領域及び高送り領域の切りくず処理性を向上!!

The ME type has more excellent chip control capability than conventional Chipbreakers in lower depth of cut and higher feed rate machining!!

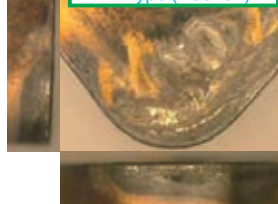
## ME型ブレイカ加工実例 ME type Chipbreaker applications

### ●ベアリング部品 Bearing component

被削材 Work material: SUJ2  
外径端面加工  
External face machining  
工具 Tool: CNMG160612  
切削条件 Cutting conditions:  
 $v_c=240\text{m/min}$   
 $f=0.4\text{mm/rev}$   
 $a_p=2.5\text{mm}$  Wet



### ME型(AC810P) ME type (AC810P)



加工数 30個  
Quantity of machined pieces: 30

### 他社粗用ブレイカ(P10) Competitor's Chipbreaker for roughing



加工数 30個  
Quantity of machined pieces: 30








すくい面摩耗損傷低減、寿命延長可能!

Damage to the rake surface can be reduced and tool life can be extended!











## 在庫表 Stock Listings






### SE型 SE type

形状 Shape	型番 Catalogue No.	材種 Grade				寸法(mm) Dimensions							
		AC810P	AC820P	AC830P	AC830P	内接円 Inscribed circle	厚さ Thickness	穴径 Hole diameter	ノーズ 半径 Nose Radius				
	CNMG 120404N-SE	●	●	●	●	12.7	4.76	5.16	0.4				
	120408N-SE	●	●	●	●				0.8				
	120412N-SE	●	●	●	●				1.2				
	120416N-SE	●	●	●	●				1.6				
	DNMG 110408N-SE	●	●	●	●	9.525	4.76	3.81	0.8				
	DNMG 150404N-SE	●	●	●	●				0.4				
	150408N-SE	●	●	●	●				0.8				
	150412N-SE	●	●	●	●				1.2				
	150416N-SE	●	●	●	●				1.6				
	DNMG 150604N-SE	●	●	●	●				0.4				
	SNMG 120408N-SE	●	●	●	●	12.7	4.76	5.16	0.8				
	120412N-SE	●	●	●	●				1.2				
		TNMG 160404N-SE	●	●	●				●	9.525	4.76	3.81	0.4
		160408N-SE	●	●	●				●				0.8
160412N-SE		●	●	●	●	1.2							
160416N-SE		●	●	●	●	1.6							
	TNMG 220404N-SE	●	●	●	●	12.7	4.76	5.16	0.4				
	220408N-SE	●	●	●	●				0.8				
	220412N-SE	●	●	●	●				1.2				
	220416N-SE	●	●	●	●				1.6				
	VNMG 160404N-SE	●	●	●	●	9.525	4.76	3.81	0.4				
	160408N-SE	●	●	●	●				0.8				
	WNMG 080404N-SE	●	●	●	●	12.7	4.76	5.16	0.4				
	080408N-SE	●	●	●	●				0.8				
	080412N-SE	●	●	●	●				1.2				

### GE型 GE type

形状 Shape	型番 Catalogue No.	材種 Grade			寸法(mm) Dimensions						
		AC810P	AC820P	AC830P	内接円 Inscribed circle	厚さ Thickness	穴径 Hole diameter	ノーズ 半径 Nose Radius			
	CNMG 120404N-GE	●	●	●	12.7	4.76	5.16	0.4			
	120408N-GE	●	●	●				0.8			
	120412N-GE	●	●	●				1.2			
	120416N-GE	●	●	●				1.6			
	CNMG 160612N-GE	●	●	●	15.875	6.35	6.35	1.2			
	160616N-GE	●	●	●				1.6			
	CNMG 190612N-GE	●	●	●				19.05	6.35	7.94	1.2
	190616N-GE	●	●	●							1.6
	DNMG 110408N-GE	●	●	●	9.525	4.76	3.81	0.8			
	DNMG 150404N-GE	●	●	●				0.4			
	150408N-GE	●	●	●				0.8			
	150412N-GE	●	●	●				1.2			
	150416N-GE	●	●	●				1.6			
	DNMG 150604N-GE	●	●	●				0.4			
	SNMG 120408N-GE	●	●	●	12.7	4.76	5.16	0.8			
	120412N-GE	●	●	●				1.2			
	120416N-GE	●	●	●				1.6			
		TNMG 160404N-GE	●	●				●	9.525	4.76	3.81
160408N-GE		●	●	●	0.8						
160412N-GE		●	●	●	1.2						
160416N-GE		●	●	●	1.6						
	TNMG 220408N-GE	●	●	●	12.7	4.76	5.16	0.8			
	220412N-GE	●	●	●				1.2			
	220416N-GE	●	●	●				1.6			
		VNMG 160404N-GE	●	●				●	9.525	4.76	3.81
160408N-GE		●	●	●	0.8						
160412N-GE		●	●	●	1.2						
	WNMG 060408N-GE	●	●	●	9.525	4.76	3.81	0.8			
	060412N-GE	●	●	●				1.2			
	WNMG 080404N-GE	●	●	●				12.7	4.76	5.16	0.4
	080408N-GE	●	●	●							0.8
080412N-GE	●	●	●	1.2							
	080416N-GE	●	●	●	1.6						

### ME型 ME type

形状 Shape	型番 Catalogue No.	材種 Grade			寸法(mm) Dimensions						
		AC810P	AC820P	AC830P	内接円 Inscribed circle	厚さ Thickness	穴径 Hole diameter	ノーズ 半径 Nose Radius			
	CNMG 120408N-ME	●	●	●	12.7	4.76	5.16	0.8			
	120412N-ME	●	●	●				1.2			
	120416N-ME	●	●	●				1.6			
	CNMG 160608N-ME	●	●	●				15.875	6.35	6.35	0.8
160612N-ME	●	●	●	1.2							
160616N-ME	●	●	●	1.6							
	CNMG 190612N-ME	●	●	●	19.05	6.35	7.94	1.2			
	190616N-ME	●	●	●				1.6			
	DNMG 150408N-ME	●	●	●				12.7	4.76	5.16	0.8
	150412N-ME	●	●	●							1.2
150416N-ME	●	●	●	1.6							
DNMG 150608N-ME	●	●	●	0.8							
	SNMG 150612N-ME	●	●	●	12.7	6.35	5.16	1.2			
	150616N-ME	●	●	●				1.6			
	SNMG 120408N-ME	●	●	●				12.7	4.76	5.16	0.8
	120412N-ME	●	●	●							1.2
120416N-ME	●	●	●	1.6							
SNMG 150612N-ME	●	●	●	1.2							
	SNMG 190612N-ME	●	●	●	19.05	6.35	7.94	1.2			
	190616N-ME	●	●	●				1.6			
	TNMG 160408N-ME	●	●	●				9.525	4.76	3.81	0.8
	160412N-ME	●	●	●							1.2
160416N-ME	●	●	●	1.6							
TNMG 220408N-ME	●	●	●	0.8							
	TNMG 220412N-ME	●	●	●	12.7	4.76	5.16	1.2			
	220416N-ME	●	●	●				1.6			
	WNMG 060408N-ME	●	●	●				9.525	4.76	3.81	0.8
	060412N-ME	●	●	●							1.2
WNMG 080408N-ME	●	●	●	12.7	4.76	5.16	0.8				
080412N-ME	●	●	●				1.2				
080416N-ME	●	●	●				1.6				

●印：標準在庫品 ●印：標準在庫品(拡充品)  
 -印：製作いたしません 無印：受注生産品  
 ●mark : Standard Stocked Item ●mark : Standard Stocked item (expanded item)  
 -item with -- : We cannot produce Blank : Made to order item

- AC800Pシリーズとの組み合わせで  
更なる高能率加工を実現！  
With combination of the AC800P series, further high efficiency machining is achieved!
- 仕上用SE型ブレイカにサーメット材種を拡充!  
Cermet grades expansion for the SE type Chipbreaker for finishing!

### 材種グレードマップ Map of material grades

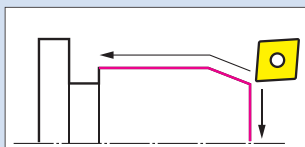
P 一般鋼(炭素鋼・合金鋼)、軟鋼 General Steel (Carbon Steel, Alloy Steel), Soft Steel				
高速切削 High-Speed	仕上~軽切削 Finishing to Light	中切削 Medium	粗~重切削 Rough to Heavy	
—	P01	P10	P20	P30 P40
コーティング Coating				
AC810P		AC820P		
			AC830P	
コーテッドサーメット Coated Cermet				
T1500Z <small>New</small>				
ノンコートサーメット Uncoated Cermet				
T1000A <small>New</small>		T1500A		

材種端のC・Pはコーティング種類を表します。▽: CVD ▲: PVD 無印: ノンコート  
 The letters "C" and "P" at either end of each grade indicate coating type. Blank: Uncoated

## SE型 使用事例 Application example of SE type

### ●S45C 自動車駆動系部品 外径端面加工

S45C Automotive drive train part External face machining



**SE型  
フレカ**  
SE type  
Chipbreaker

200個加工時の工具損傷  
Damage to tool for machining 200 pieces



**他社汎用  
フレカ**  
Competitor's  
general-purpose  
Chipbreaker



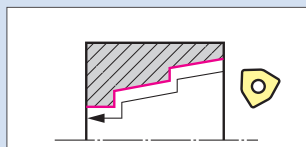
使用工具：CNMG120408N-SE  
Insert AC820P  
切削条件： $v_c=200\text{m/min}$   
 $f=0.25\text{mm/rev}$   
 $a_p=1.0\text{mm Wet}$

クレータ摩耗  
Crater wear

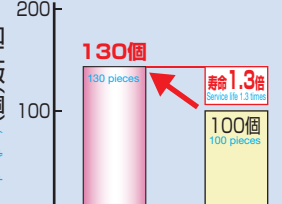
**クレータ摩耗抑制、安定加工で1.5倍寿命延長可能!**  
Reduced crater wear and stable machining can extend the service life 1.5 times!

### ●SUJ2 ベ어링部品 内径加工

SUJ2 Bearing component Boring



加工数(個)  
Output (pcs)



使用工具：WNMG080412N-SE  
Insert AC810P  
切削条件： $v_c=280\text{m/min}$   
 $f=0.1-0.5\text{mm/rev}$   
 $a_p=0.3\text{mm Wet}$

SE型  
フレカ  
SE type  
Chipbreaker

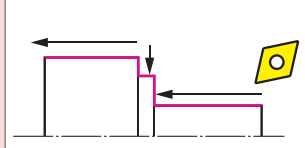
他社汎用  
フレカ  
Competitor's  
general-purpose  
Chipbreaker

**すくい面損傷抑制、安定加工で寿命延長可能!**  
Low rake surface damage and stable machining can extend the service life!

## GE型 使用事例 Application example of GE type

### ●S53C CVJアウターレース部品 外径端面加工

S53C CVJ outer race component External face machining

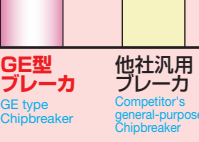


**GE型  
フレカ**  
GE type  
Chipbreaker



使用工具：DNMG150612N-GE  
Insert AC810P  
切削条件： $v_c=270\text{m/min}$   
 $f=0.4\text{mm/rev}$   
 $a_p=1.5\text{mm Dry}$

他社汎用  
フレカ  
Competitor's  
general-purpose  
Chipbreaker

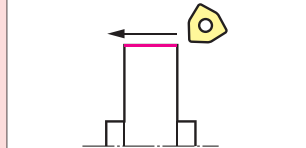


**すくい面損傷抑制、安定加工で寿命延長可能!**  
Low rake surface damage and stable machining can extend the service life!

### ●SCM420 ギヤ部品 外径加工

SCM420 Gear component External diameter machining

200個加工時の工具損傷  
Damage to tool for machining 200 pieces

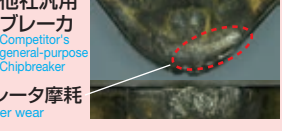


**GE型  
フレカ**  
GE type  
Chipbreaker



使用工具：WNMG080412N-GE  
Insert AC810P  
切削条件： $v_c=400\text{m/min}$   
 $f=0.5\text{mm/rev}$   
 $a_p=0.6\text{mm Dry}$

クレータ摩耗  
Crater wear

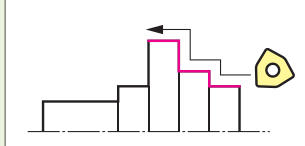


**クレータ摩耗進展による欠け抑制、安定加工可能!**  
Chipping due to development of crater wear can be reduced and stable machining can be performed!

## ME型 使用事例 Application example of ME type

### ●SCM材 シャフト部品 外径端面加工

SCM Shaft component External face machining



**ME型  
フレカ**  
ME type  
Chipbreaker



使用工具：WNMG080412N-ME  
Insert AC810P  
切削条件： $v_c=230\text{m/min}$   
 $f=0.35-0.55\text{mm/rev}$   
 $a_p=1.5\text{mm Wet}$

他社汎用  
フレカ  
Competitor's  
general-purpose  
Chipbreaker



**すくい面摩耗損傷低減、工具寿命2.7倍達成!**  
Wear and damage to the rake surface are reduced. Tool life was extended 2.7 times!

### ●S48C インボード治具 外径加工

S48C Inboard jig External diameter machining



加工数(個)  
Output (pcs)



使用工具：WNMG080412N-ME  
Insert AC820P  
切削条件： $v_c=250-280\text{m/min}$   
 $f=0.3-0.6\text{mm/rev}$   
 $a_p=2.0\text{mm Wet}$

ME型  
フレカ  
ME type  
Chipbreaker

他社汎用  
フレカ  
Competitor's  
general-purpose  
Chipbreaker

**すくい面摩耗損傷低減、工具寿命1.3倍達成!**  
Wear and damage to the rake surface are reduced. Tool life was extended 1.3 times!

### ◆安全にお使いいただくために◆



- 高温の切りくずが飛散したり長く伸びた切りくずが排出されることがありますので、安全カバーや保護メガネ等の保護具を使用し、防災・防火に十分ご注意ください。
- 鋭い切れ刃を持っているため取扱いにご注意ください。
- 使用方法を誤ったり、使用条件が不適切な場合、工具破損、飛散を招きますので推奨条件の範囲内でご使用ください。
- 不水溶性の切削液をご使用になる場合は、自動消火装置を設置するなどの対策を講じて頂き、火災にくれくれもご注意ください。
- Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.
- Please handle with care as this product has sharp edges.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.
- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

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