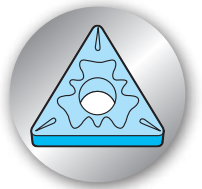
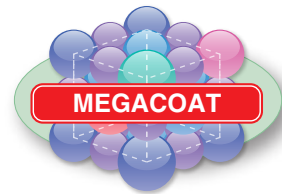


THE NEW VALUE FRONTIER



# PT600M

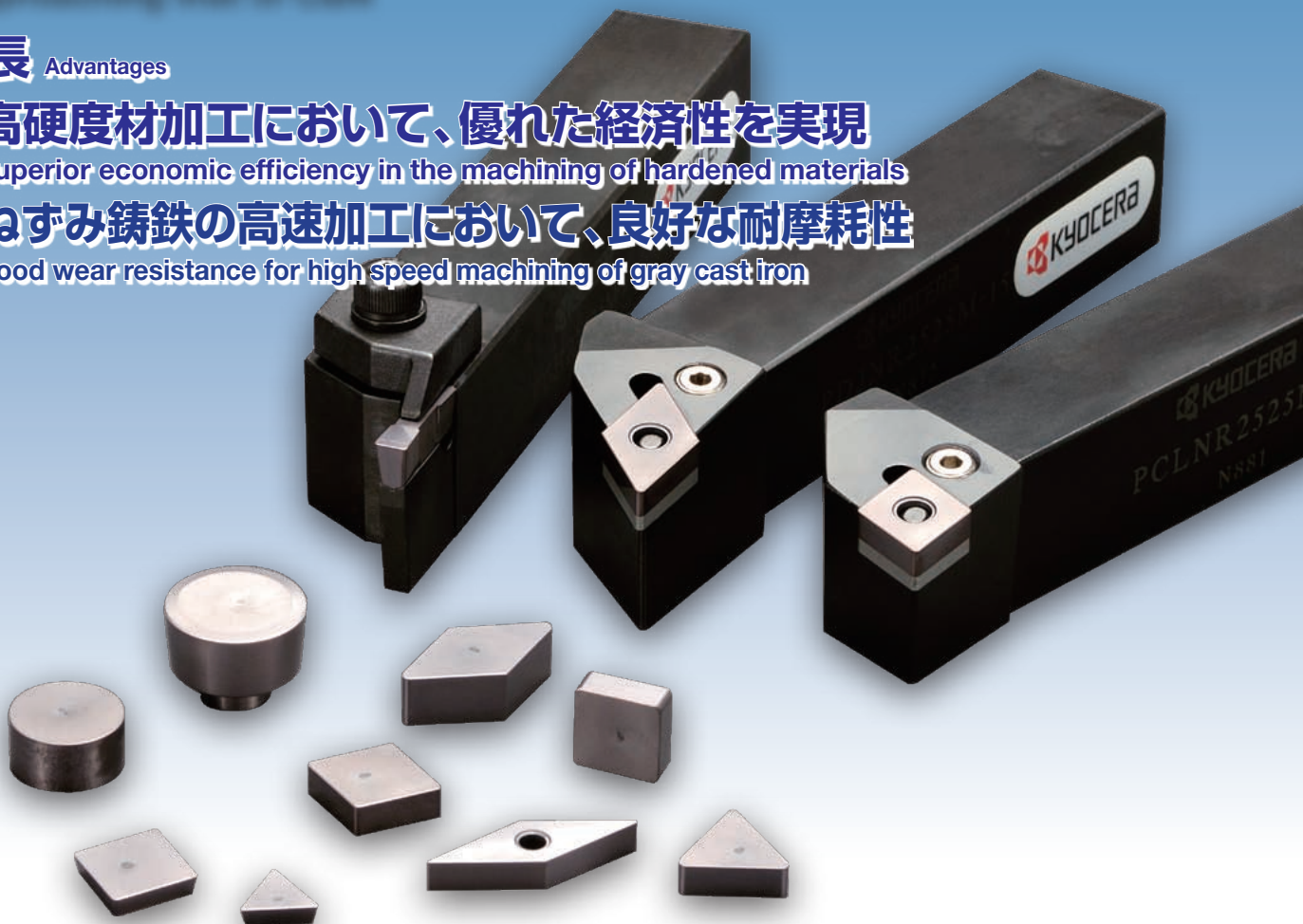
MEGACOATセラミック Ceramic

## MEGACOAT (メガコート) 採用により、 CBNに迫る大幅な長寿命化を実現

New MEGACOAT ceramic achieves significantly longer tool life,  
approaching that of CBN

### 特長 Advantages

- **高硬度材加工において、優れた経済性を実現**  
Superior economic efficiency in the machining of hardened materials
- **ねずみ鉄の高速加工において、良好な耐摩耗性**  
Good wear resistance for high speed machining of gray cast iron



ADVANCING PRODUCTIVITY

## ■特長 Advantages

### 1.MEGACOAT(メガコート)採用により、CBNに迫る大幅な長寿命化を実現

With the use of MEGACOAT, it achieves a significantly longer tool life approaching that of CBN

### 2.高硬度材加工において、優れた経済性を実現

Achieves superior economic efficiency in the machining of hardened materials

### 3.ねずみ鉄鉄の高速加工において、良好な耐摩耗性

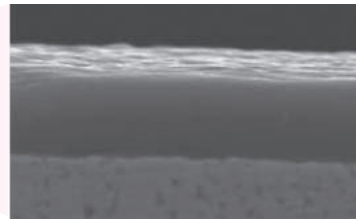
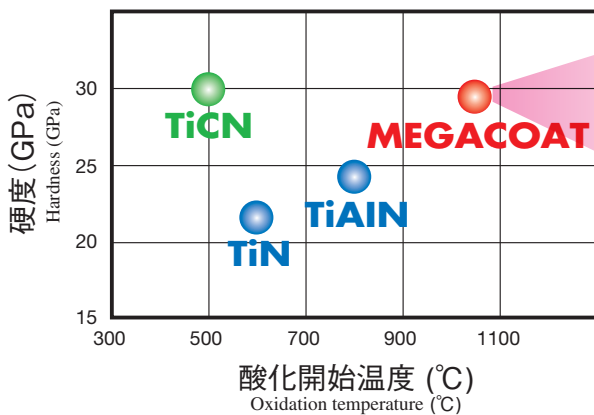
Good wear resistance for high speed machining of gray cast iron

## ■MEGACOAT(メガコート)

特殊PVDコーティング Special PVD coating

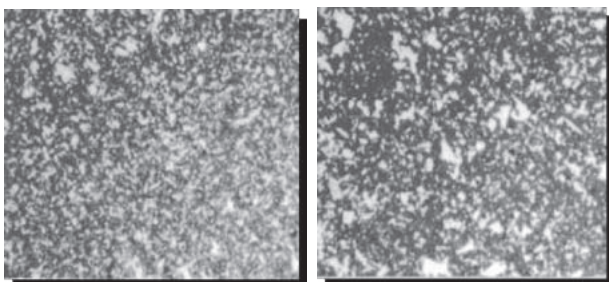
優れた耐酸化性によるクレータ摩耗の抑制と安定加工を実現

Controls crater wear and achieves stable machining with superior oxidation resistance



高い耐酸化性(≥1000°C) High oxidation resistance  
⇒酸化摩耗を抑制 Controlling oxidation wear

## ■セラミック母材特性 Ceramic substrate characteristics



PT600M

従来品A Conve. A

PT600Mは、組織の微細化を実現  
PT600M achieves miniaturization of the structure

- セラミック従来品Aと比較し、硬度・破壊靱性・強度・耐酸化性が向上し、長寿命化を実現

Compared to conventional black ceramic, the hardness, fracture toughness strength and oxidation resistance have been improved to achieve longer tool life

- セラミック組織の微細化により突発欠損を抑制

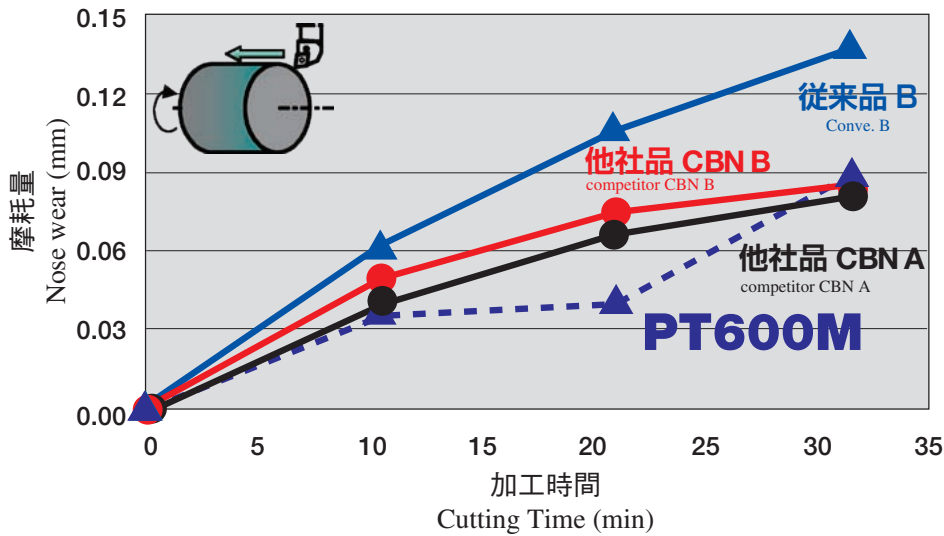
Sudden fracturing is controlled through miniaturization of the ceramic structure

### PT600M・従来品の静的特性比較 Static property comparison of PT600M and Conve. A

材種 grade	硬度(GPa) Hardness(GPa)	K <sub>IC</sub> (MPam <sup>1/2</sup> )	強度 Strength (MPa)	耐酸化性 <sup>1)</sup> (mg/cm <sup>2</sup> ) Oxidation resistance
PT600M	20.0	4.1	1000	2.1
従来品A <small>Conve.A</small>	19.0	4.3	850	2.8

※耐酸化性: 1200°C-1hr大気中で酸化させた場合の単位面積当たりの重量増加量  
Oxidation resistance: The increase in weight per unit area when atmospherically oxidized for one hour at 1200°C

■ 摩耗量比較 (高硬度材加工) Wear comparison (for machining of hardened materials)



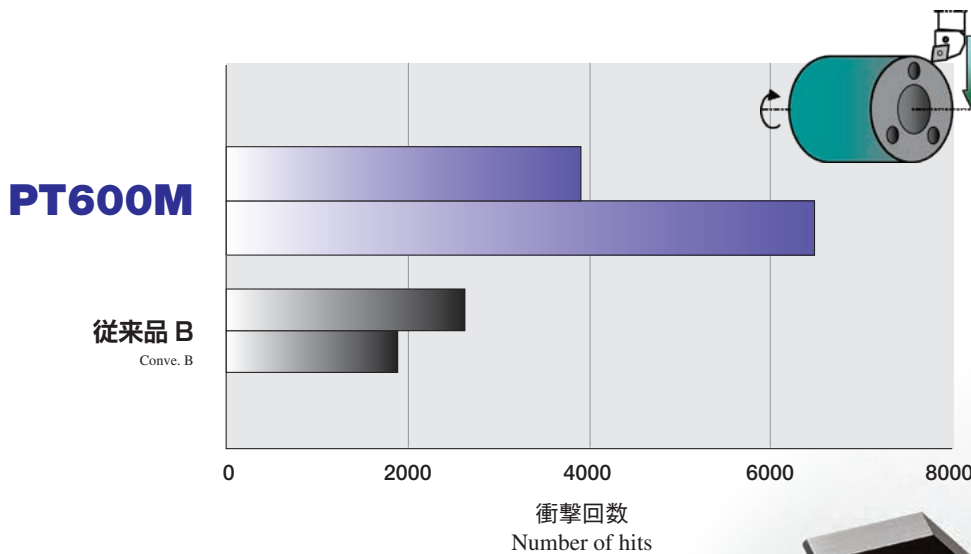
切削条件 Cutting condition:  
 $V_c=100\text{m/min}$ ,  $a_p=0.2\text{mm}$ ,  
 $f=0.1\text{mm/rev}$ , 湿式 Wet  
 被削材 Work material:  
 SCM415H(焼入れ Hardened)  
 58~62HRC

(当社比較 Internal evaluation)

高硬度材の低速加工時 ( $V_c=100\text{m/min}$ ) において、他社品 CBN A、B に迫る耐摩耗性

Wear resistance approaching that of competitor's CBN A and B for low speed machining of hardened materials

■ 耐欠損性比較 (高硬度材加工) Chipping resistance comparison (for machining of hardened materials)



切削条件 Cutting condition:  
 $V_c=150\text{m/min}$ ,  $a_p=0.2\text{mm}$ ,  
 $f=0.15\text{mm/rev}$ , 乾式 Dry  
 被削材 Work material:  
 SCM415H(焼入れ Hardened)  
 58~62HRC

(当社比較 Internal evaluation)

従来品 B に比べ、耐欠損性が大幅に向上

Chipping resistance significantly improved as compared with conve.B.



組織微細化セラミック+MEGACOATにより、  
 高硬度材、ねずみ鋳鉄加工において大幅な長寿命化を実現

Achieves significantly longer tool life for machining of hardened materials and gray cast iron, through ceramic structure miniaturization plus MEGACOAT

## 加工事例 Case study

<b>SUJ2 (焼入れ Hardened)</b>		
<ul style="list-style-type: none"> <li>・ベアリング Bearing</li> <li>・Vc=200m/min</li> <li>・ap=0.3mm</li> <li>・f=0.15mm/rev.</li> <li>・湿式 Wet</li> <li>・DNGA150412S02025 (特注品 special order)</li> </ul>		
<b>PT600M</b>	<b>84分/チップ</b> 84min/insert	
他社品C (CBN) Competitor C	<b>40分/チップ</b> 40min/insert	
<p>他社品C (CBN)と同等の切削条件で、PT600Mの工具寿命は約2倍となり、約70%のコストダウンとなった。</p> <p>Under cutting conditions equivalent to those of Competitor C (CBN), the tool life of PT600M was approximately twice as long and cost was reduced by about 70%</p> <p>(ユーザー様の評価による)Evaluation by the user</p>		



## 刃先仕様 Edge preparation

記号/切刃状態 Symbol/Cutting edge Condition	使用分類 Classification		記入例 Example	形状例 Shape
	ねずみ鋳鉄 gray cast iron	高硬度材 high hard materials		
T チャンファ Chamfered Cutting Edge	★	☆	T00520 0.05mm×20°チャンファ 0.05mm×20°Chamfered Cutting Edge	<p>e.g.) T02025</p>
			T00820 0.08mm×20°チャンファ 0.08mm×20°Chamfered Cutting Edge	
			T01020 0.10mm×20°チャンファ 0.10mm×20°Chamfered Cutting Edge	
			T02025 0.20mm×25°チャンファ 0.20mm×25°Chamfered Cutting Edge	
S チャンファ+ホーニング Chamfered and hone	☆	★	S00820 0.08mm×20°チャンファ+ホーニング 0.08mm×20°Chamfer and hone	<p>e.g.) S02025</p>
			S02025 0.20mm×25°チャンファ+ホーニング 0.20mm×25°Chamfer and hone	
K ダブルチャンファ Double Chamfered Cutting Edges		★	K15015 1.50mm×15°チャンファ 1.50mm×15°Chamfered Cutting Edge	<p>e.g.) K20003</p>
			K20003 2.00mm×3°チャンファ 2.00mm×3°Chamfered Cutting Edge	
P ダブルチャンファ+ホーニング Double Chamfered and hone			P20015 2.00mm×15°チャンファ+ホーニング 2.00mm×15°Chamfered and hone	<p>e.g.) P20015</p>

★:第1推奨 ★:1st. Choice ☆:第2推奨 ☆:2nd. Choice





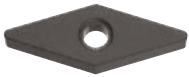
# 標準在庫型番(ネガ)

Stock Items(Negative Inserts)

形状 Shape		型番 Description	在庫 Stock	刃先仕様 Edge Preparation	寸法(mm) Dimension(mm)			
					A	T	ød	rε
		CNGA 120404S02025	●	S02025	12.70	4.76	5.16	0.4
		120408S02025	●					0.8
		120412S02025	●					1.2
		CNGA 120404T02025	●	T02025	12.70	4.76	5.16	0.4
		120408T02025	●					0.8
		120412T02025	●					1.2
		CNGN 120404T00520	●	T00520	12.70	4.76	-	0.4
		120408T00520	●					0.8
		CNGN 120404T02025	●	T02025	12.70	4.76	-	0.4
		120408T02025	●					0.8
120412T02025	●	1.2						
		DNGA 150404S02025	●	S02025	12.70	4.76	5.16	0.4
		150408S02025	●					0.8
		DNGA 150404T02025	●	T02025	12.70	4.76	5.16	0.4
		150408T02025	●					0.8
		150412T02025	●					1.2
		DNGA 150604T02025	●	T02025	12.70	6.35	5.16	0.4
150608T02025	●	0.8						
150612T02025	●	1.2						
		DNGN 150408T02025	●	T02025	12.70	4.76	-	0.8
		DNGN 150704S02025	●	S02025	12.70	7.94	-	0.4
		150708S02025	●					0.8
		150712S02025	●					1.2
		ENGN 130708S02025	●	S02025	12.70	7.94	-	0.8
		130712S02025	●					1.2
		ENGN 130704T02025	●	T02025	12.70	7.94	-	0.4
		130708T02025	●					0.8
		130712T02025	●					1.2
		130716T02025	●					1.6
		130720T02025	●					2.0
		130730T02025	●					3.0
		RNGN 090400S02025	●	S02025	9.525	4.76	-	-
		120400S02025	●					-
		120700S02025	●		12.70	7.94	-	-
		150700S02025	●					-
		150700S02025	●					15.875
		RNGN 090400T02025	●	T02025	9.525	4.76	-	-
		120400T02025	●					-
		120700T02025	●		12.70	7.94	-	-
		150700T02025	●					-
		150700T02025	●					15.875
RNGN 120700K15015	●	K15015	12.70	7.94	-	-		

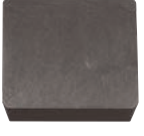
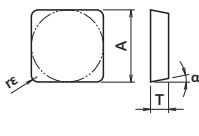

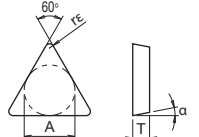

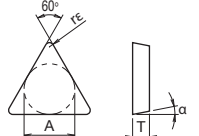
# 標準在庫型番(ネガ)

Stock Items(Negative Inserts)

形状 Shape	型番 Description	在庫 Stock	刃先仕様 Edge Preparation	寸法(mm) Dimension(mm)			
				A	T	ød	rε
	SNGA 120408S02025	●	S02025	12.70	4.76	5.16	0.8
		●					1.2
	SNGA 120408T02025	●	T02025	12.70	4.76	5.16	0.8
		●					1.2
	120412T02025	●					1.2
	120416T02025	●					1.6
	SNGN 120408S02025	●	S02025	12.70	4.76	-	0.8
		●					1.2
		●					1.6
	SNGN 120404T02025	●	T02025	12.70	4.76	-	0.4
		●					0.8
		●					1.2
		●					1.6
		●					2.0
	SNGN 120704S02025	●	S02025	12.70	7.94	-	0.4
		●					0.8
		●					1.2
		●					1.6
		●					2.0
	SNGN 120704T02025	●	T02025	12.70	7.94	-	0.4
		●					0.8
		●					1.2
		●					1.6
		●					2.0
SNGN 150712T02025	●	T02025	15.875	7.94	-	1.2	
	●					1.6	
	TNGA 160404S02025	●	S02025	9.525	4.76	3.81	0.4
		●					0.8
		●					1.2
	TNGA 160404T02025	●	T02025	9.525	4.76	3.81	0.4
		●					0.8
		●					1.2
	TNGN 110304T00520	●	T00520	6.35	3.18	-	0.4
		●					0.8
		●					1.2
	TNGN 160404S02025	●	S02025	9.525	4.76	-	0.4
		●					0.8
		●					1.2
	TNGN 160404T02025	●	T02025	9.525	4.76	-	0.4
		●					0.8
		●					1.2
	TNGN 160708S02025	●	S02025	9.525	7.94	-	0.8
		●					0.4
		●					1.2
TNGN 160704T02025	●	T02025	9.525	7.94	-	0.8	
	●					0.4	
	●					1.2	
	VNGA 160404S02025	●	S02025	9.525	4.76	3.81	0.4
		●					0.8
	VNGA 160404T02025	●	T02025	9.525	4.76	3.81	0.4
		●					0.8
		●					1.2

## 標準在庫型番(ポジ)

Stock Items(Positive Inserts)

形状 Shape	型番 Description	在庫 Stock	刃先仕様 Edge Preparation	寸法(mm) Dimension(mm)			
				A	T	rε	α
 	SPGN 090308T00820	●	T00820	9.525	3.18	0.8	11°
	SPGN 120308S00820	●	S00820	12.70	3.18	0.8	
	SPGN 120308T00820	●	T00820	12.70	3.18	0.8	
	120312T00820	●				1.2	
	120316T00820	●				1.6	
 	TBGN 060104S00820	●	S00820	3.97	1.59	0.4	5°
	060108S00820	●				0.8	
	TBGN 060104T00820	●	T00820	3.97	1.59	0.4	
	060108T00820	●				0.8	
 	TPGN 090204T00820	●	T00820	5.56	2.38	0.4	11°
	090208T00820	●				0.8	
	TPGN 110304S00820	●	S00820	6.35	3.18	0.4	
	110308S00820	●				0.8	
	TPGN 110304T00820	●	T00820	6.35	3.18	0.4	
	110308T00820	●				0.8	
	TPGN 160304S00820	●	S00820	9.525	3.18	0.4	
	160308S00820	●				0.8	
	160312S00820	●				1.2	
	TPGN 160304T00820	●	T00820	9.525	3.18	0.4	
	160308T00820	●				0.8	
	160312T00820	●				1.2	

## 標準在庫型番(高硬度ロール加工用)

Stock Items(Inserts for High Hardened Roll)

形状 Shape	型番 Description	在庫 Stock	刃先仕様 Edge Preparation	寸法(mm) Dimension(mm)				
				φD	φd	A	B	F
 	RBG 12K20003	●	K20003	12	6	6	3	0.2
	16K20003	●		16	8	8	5	0.2
	20K20003	●		20	10	10	5	0.3
 	RCGX 090700P20015	●	P20015	9.525	-	8	-	-
	120700P20015	●		12.70	-	8	-	-

## 標準在庫型番(溝入れ用)

Stock Items(Grooving Inserts)

形状 Shape	型番 Description	在庫 Stock	刃先仕様 Edge Preparation	寸法(mm) Dimension(mm)			
				W	rε	L	H
 	GH 4020-05	●	T01020	4.0	0.5	20	7.5
	5020-05	●		5.0			
	6020-05	●		6.0			
	7020-05	●		7.0			

## ■推奨切削条件 Recommended cutting conditions

・焼入れ鋼 hardened ( $r\epsilon=0.8\text{mm}$ )

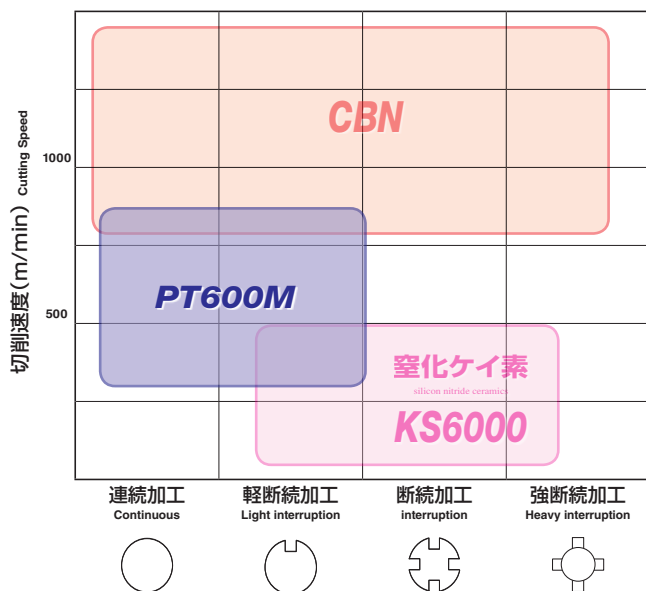
被削材硬度 hardness of workpiece material	切削速度 (m/min) $V_c$	切込み (mm) $a_p$	送り (mm/rev.) $f$
40-50HRC	60-80-100	0.2-0.5-0.7	0.05-0.1-0.15
50-65HRC	30-40-60	0.2-0.5-0.7	0.05-0.1-0.15

・ねずみ鋳鉄 gray cast iron ( $r\epsilon=0.8\text{mm}$ )

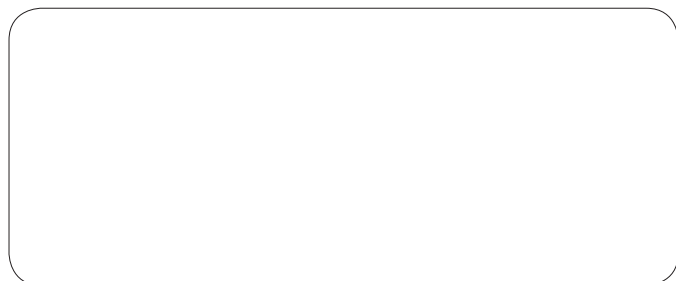
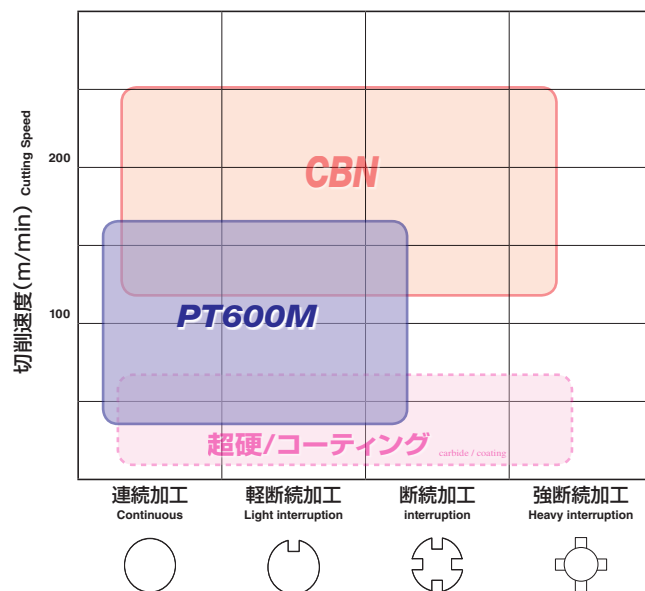
被削材 workpiece material	切削速度 (m/min) $V_c$	切込み (mm) $a_p$	送り (mm/rev.) $f$
FC250~FC300	300-450-600	0.3-0.5-1.0	0.1-0.2-0.3

## ■PT600M 使用領域 Application range of PT600M

●ねずみ鋳鉄 gray cast iron



●高硬度材(焼入れ鋼) high hard materials(hardened)



切削工具に関する技術的なご相談は

**0120-396-369** ●受付時間 9:00~12:00・13:00~17:00  
●土曜・日曜・祝日・会社休日は受付していません  
(携帯・PHSからもご利用できます) FAX:075-602-0335 京セラ カスタマーサポートセンター

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<http://www.kyocera.co.jp/prdct/tool/index.html>