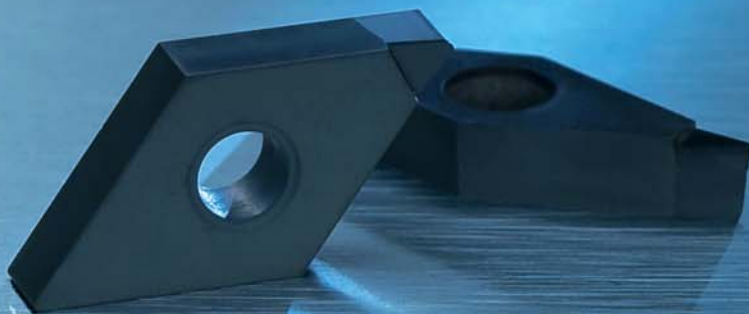


뛰어난 면조도와 탁월한 생산성!  
Outstanding surface finishes and excellent productivity!

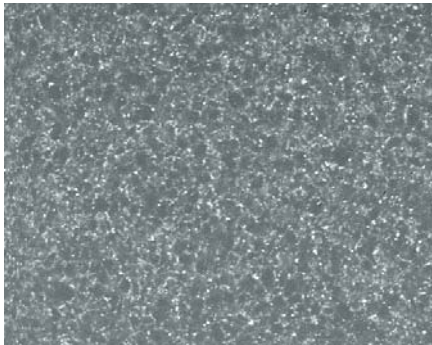
## PCD Inserts

챔프다이아의 PCD 인서트는 최고의 내마모성 및 최적의 Finish 처리가 가능한 PCD 소재를 사용하여 진공Brazing 후 정밀가공으로 생산되며, 알루미늄 합금·동합금 등의 비철금속과 유리섬유·FRP 등 비금속의 가공에 최적의 성능을 발휘합니다. 20여년의 다이아몬드 정밀연삭 Know-how와 엄격한 품질관리 시스템(ISO 9001)은 최고의 표면조도를 위해 인선부의 미세 차핑 및 어떠한 결함도 허용하지 않습니다.

PCD inserts of CHAMP DIA use PCD blanks which has high abrasion resistance and surface finish, are produced via vacuum brazing technology and highly precise grinding system, are providing the best performance in machining of none ferrous materials, such as aluminum and copper alloys and none metallic materials such as fiberglass, FRP etc. Over the 20 years experiences and know-how in diamond tool fabrication and high level quality control system never allow even very small chippings on tool edge.



## 인서트 재종 소개 PCD Grade Introduction



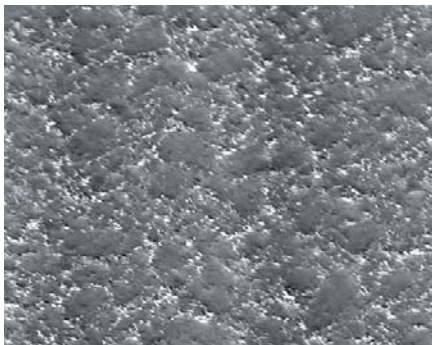
### PCD-SF

- 뛰어난 표면 조도가 요구되는 가공 분야
- 알루미늄 합금 / 동합금 / 귀금속 / 목재 복합체 / 플라스틱류
- DIA 평균입도 1 $\mu$ m 이하
- **Excellent surface finishes for**
- Aluminum / Copper / Precious Metals / Wood Composites / Plastics
- DIA Average particle size <1 $\mu$ m



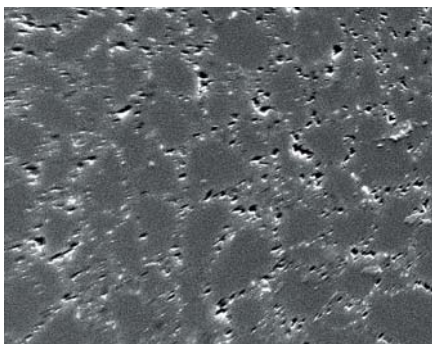
### PCD-F/ PCD-F3

- 우수한 표면조도 및 내마모성이 요구되는 가공 분야
- 알루미늄 합금(14%이하 Si) / 동합금 / 흑연, 흑연 복합체
- 합성 목재 / 반소결 세라믹, 초경합금
- DIA 평균입도 5 $\mu$ m / 알루미늄, 동합금 소재의 가공에 일반적으로 적용
- **High abrasion resistance and fine surface finishes for**
- Aluminum Alloys (<14% Si) / Copper Alloys / Graphite and Graphite Composites
- Wood Composites / Green Ceramics and Carbides
- DIA Average particle size 5 $\mu$ m / General purpose machining for Aluminum and Copper Alloys



### PCD-C

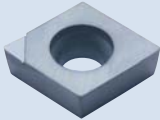
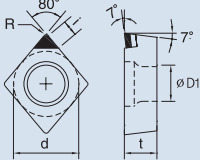
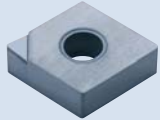
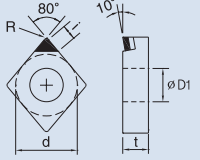
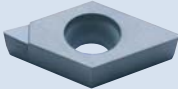
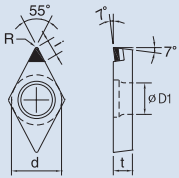
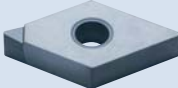
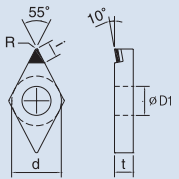
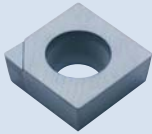
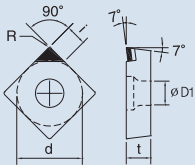
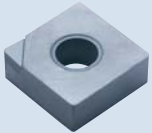
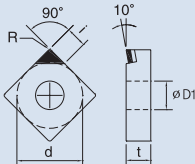
- 범용 재종
- 알루미늄 합금(14%이상 Si) / 금속 복합체 / 기타 내마모 재료
- 소결 세라믹, 초경 합금 / 이종 금속 접합재(알루미늄, 주철)
- DIA 평균입도 30 $\mu$ m
- **General purpose machining for**
- Aluminum Alloys (>14% Si) / Metal Matrix Composites / Wear Parts
- Sintered Ceramics and Carbides / Bi-Metals (Aluminum, Cast Iron)
- DIA Average particle size 30 $\mu$ m



### PCD-M


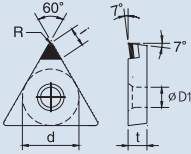

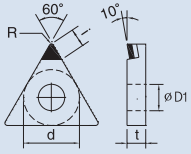

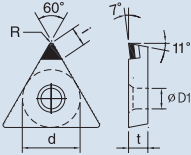
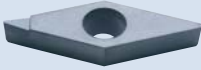
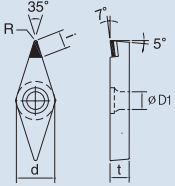
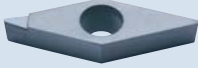
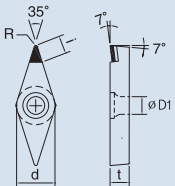
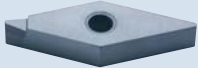
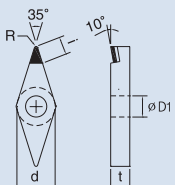
- 우수한 내충격 강도 및 내마모성이 요구되는 황 철삭, 단속 가공
- 금속 복합체(Duralcan\*\*) / 알루미늄 합금(14%이상 Si)
- 유리섬유 / 유리섬유 강화보드 / 강화 목재
- DIA 평균입도 30 $\mu$ m / 4 $\mu$ m 2상 결합
- **High abrasion and impact resistance for**
- MMC (Duralcan\*\*) / Aluminum Alloys (>14% Si)
- Fiberglass / Fiberboard / Wood Laminates
- DIA Average particle size 30 $\mu$ m + 4 $\mu$ m Bi-modal

## 제품 규격 Specification

형상	제품코드	규격 (mm)					PCD-SF	PCD-F	PCD-F3	PCD-M	PCD-C
Shape	ISO	i	d	$\phi D1$	t	R					
 	CCMT060202	3.1	6.35	2.80	2.38	0.2	●	●			
	CCMT060204	3.1	6.35	2.80	2.38	0.4	●	●			
	CCMT09T302	4.1	9.52	4.40	3.97	0.2	●	●			
	CCMT09T304	4.0	9.52	4.40	3.97	0.4	●	●			
	CCMT09T308	3.9	9.52	4.40	3.97	0.8	●	●			
	CCMT120404	4.0	12.7	5.50	4.76	0.4	●	●			
	CCMT120408	3.9	12.7	5.50	4.76	0.8	○	●			
 	CNMA120404	4.0	12.7	5.16	4.76	0.4	●	●			
	CNMA120408	3.9	12.7	5.16	4.76	0.8	●	●			
	CNMA120412	3.8	12.7	5.16	4.76	1.2	○				
 	DCMT070202	3.4	6.35	2.80	2.38	0.2	●	●			
	DCMT070204	3.3	6.35	2.80	2.38	0.4	●	●			
	DCMT11T302	3.9	9.52	4.40	3.97	0.2	○	●			
	DCMT11T304	3.7	9.52	4.40	3.97	0.4	●	●			
	DCMT11T308	3.5	9.52	4.40	3.97	0.8	○	●			
 	DNMA150404	3.9	12.7	5.16	4.76	0.4	○				
	DNMA150408	3.6	12.7	5.16	4.76	0.8	○				
	DNMA150604	3.9	12.7	5.16	6.35	0.4	○	●			
	DNMA150608	3.6	12.7	5.16	6.35	0.8	○	●			
 	SCMT09T304	3.5	9.52	4.40	3.97	0.4	○				
	SCMT09T308	3.5	9.52	4.40	3.97	0.8	○				
	SCMT120404	4.0	12.7	5.50	4.76	0.4	○				
	SCMT120408	4.0	12.7	5.50	4.76	0.8	○				
 	SNMA 090304	3.5	9.52	4.40	3.18	0.4	○				
	SNMA 090308	3.5	9.52	4.40	3.18	0.8	○				
	SNMA 120404	4.0	12.7	5.50	4.76	0.4	○				
	SNMA 120408	4.0	12.7	5.50	4.76	0.8	○				

● : Stock / ○ : 표준관리 (납기확인)

## 제품 규격 Specification

형 상	제품 코드	규 격(mm)					PCD-SF	PCD-F	PCD-F3	PCD-M	PCD-C
Shape	ISO	i	d	$\phi D1$	t	R					
 	TCMT 110204	3.8	6.35	2.80	2.38	0.4	○	●			
	TCMT 110208	3.5	6.35	2.80	2.38	0.8		●			
	TCMT 16T304	3.8	9.52	4.40	3.97	0.4	○	●			
	TCMT 16T308	3.5	9.52	4.40	3.97	0.8		●			
 	TNMA 160404	4.3	9.52	3.81	4.76	0.4	○	●			
	TNMA 160408	4.0	9.52	3.81	4.76	0.8	○	●			
 	TPMT 110304	3.8	6.35	2.80	3.18	0.4	○	●			
	TPMT 110308	3.5	6.35	2.80	3.18	0.8		●			
	TPMT 16T304	3.8	9.52	4.40	3.97	0.4	○				
	TPMT 16T308	3.5	9.52	4.40	3.97	0.8					
 	VBMT 110302	4.8	6.35	2.80	3.18	0.2		●	●		
	VBMT 110304	3.9	6.35	2.80	3.18	0.4	○	●			
	VBMT 160402	5.2	9.52	4.40	4.76	0.2	○	●			
	VBMT 160404	4.8	9.52	4.40	4.76	0.4	○	●			
	VBMT 160408	3.9	9.52	4.40	4.76	0.8	○	●			
 	VCMT 160404	4.8	9.52	4.40	4.76	0.4		●	●		
	VCMT 160408	3.9	9.52	4.40	4.76	0.8	○	●			
 	VNMA 160404	4.8	9.52	3.81	4.76	0.4	○	●			
	VNMA 160408	3.9	9.52	3.81	4.76	0.8	○	●			

●: Stock / ○: 표준관리 (납기확인)

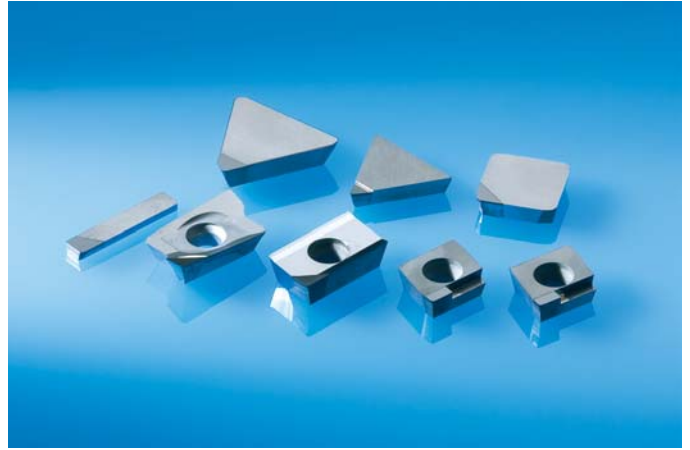


■ 특수규격 Order Made Tools



**Grooving inserts**

Radius inserts for copy turning (ex. Alluminum wheel)  
Available groove width 1mm to 5mm

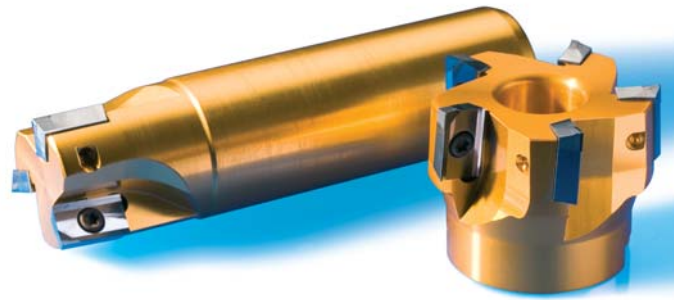


**Milling inserts**

SPCN, SECN, SFCN, TPCN, TFCN, APKT, APXT / Special blade type



Small diameter boring bite  
Optical lens mold core machining bite  
OPC drum bite



*higher performance !  
longer tool life !*

## 추천 절삭조건 Machining Parameter Guidelines

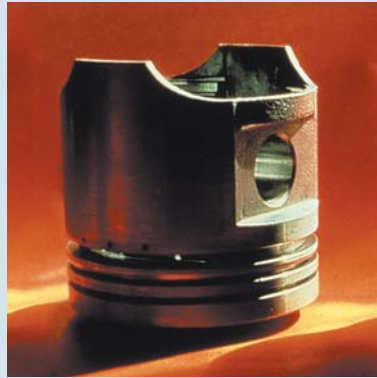
피삭재 Work Material	절삭 속도 V(m/min)	이송 f 터닝(mm/rev), 밀링(mm/tooth)	절삭깊이 d (mm)	추천재종 Recommendation
알루미늄 합금 (14% 이하) Aluminum Alloys (<14% Si)	600 ~ 3000	0.1 ~ 0.6	~ 3.0	PCD-F
알루미늄 합금 (15% 이상) Aluminum Alloys (>15% Si)	300 ~ 700	0.1 ~ 0.4	~ 3.0	PCD-M
동(구리)합금 / 황동 / 청동 Copper Alloys / Brass / Bronze	~ 1000	0.05 ~ 0.2	~ 3.0	PCD-SF
티탄합금 Titanium Alloys	50 ~ 100	0.05 ~ 0.1	~ 2.0	PCD-M
유리섬유 / 강화플라스틱류 Fiberglass / Reinforced Plastic	100 ~ 1000	0.05 ~ 0.3	~ 2.0	PCD-C
목재 Wood	~ 4000	0.1 ~ 0.4	-	PCD-C
초경합금 Tungsten Carbide	10 ~ 30	~ 0.2	~ 0.5	PCD-F / PCD-M

## 가공 사례 Application Cases



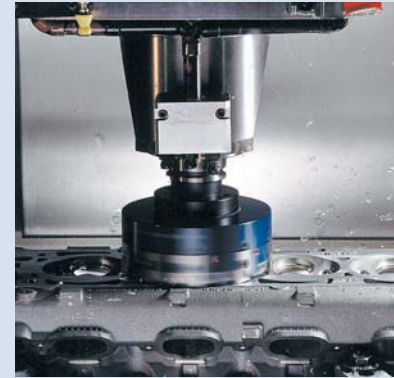
### 알루미늄 피스톤의 외경선삭

- O.D. turning of aluminum pistons
- Work material : 390Al (GD-Al Si 17)
- Tool : PCD-M / CCGW 120316
- Machining speed : 730m/min
- Result : 8,000 pistons per cutting edge



### 알루미늄 피스톤의 홈선삭

- Grooving of aluminum pistons
- Work material : 390Al (GD-Al Si 17)
- Tool : PCD-F / Three grooving Inserts/set
- Machining speed : 370m/min
- Result : 10,000 pistons per tool setup



### 알루미늄 실린더 헤드면의 밀링

- Surface milling of aluminum cylinder-head face
- Work material : GK-Al Si9Cu3
- Tool : PCD-M / Milling head 250mm  $\phi$ , 18 inserts tip
- Machining speed : 3,500m/min
- Spindle speed : 4,460 rev/min
- Result : 40,000 heads per tool setup



### 유리섬유 강화 플라스틱 복합체의 홈/ 자리파기

초경 엔드밀 대비 10배의 공구 수명

#### Slot milling / edge contouring glass fiber reinforced plastic composite

- Work material : Glass fiber reinforced plastic composite (40 vol% fiber filled)
- Tool : PCD-F / 6  $\phi$  and 8  $\phi$  Endmill, 2 cutting edges
- Machining speed : 850m/min
- Spindle speed : 45,000rpm
- Result : 800 parts per cutting edge  
10 times longer tool life than tungsten carbide endmill