

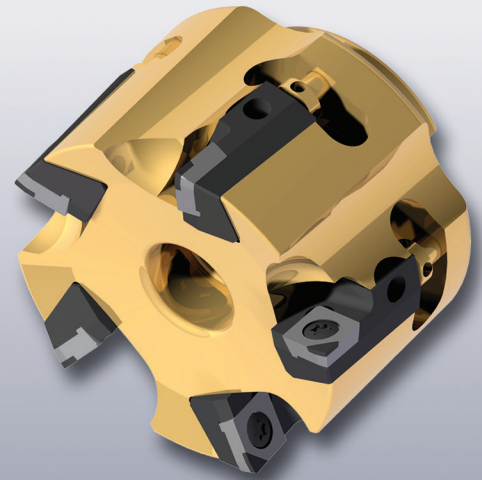




**Advanced Cutting Materials**  
🇩🇪 **Made in Germany**

# Extreme Performance with “TFC”

- ✓ First choice for composites
- ✓ Extreme hardness
- ✓ Dramatically improved tool life
- ✓ Superior surface finish
- ✓ Reduced cutting pressure

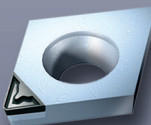
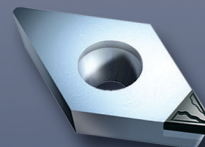
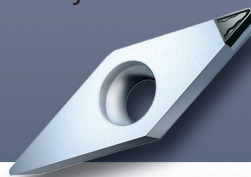


## **TFC Features & Benefits**

- **Harder, more wear resistant**  
*2 to 10x life of PCD*
- **Pure diamond (no binder)**  
*no edge erosion or chemical interaction*
- **Highest thermal conductivity**  
*lowest cutting temperatures*
- **Sharpest cutting edge**  
*reduced cutting forces*  
*smoother more consistent finish*

## **Application Materials**

- Silicon aluminum alloys
- Metal matrix composites
- Carbon fiber reinforced plastic
- Platinum and gold
- High temperature plastics
- Glass reinforced epoxy



## **Application: TCP90 Milling Cutter**

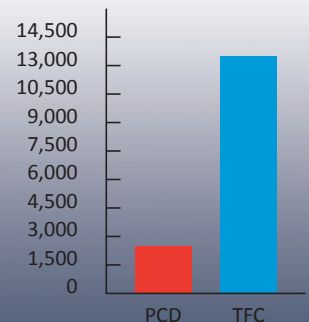
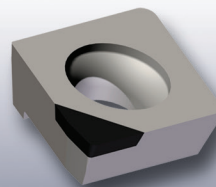
Milling the face of a cast aluminum oil pan.  
Material is A380 Aluminum consisting of 9% silicon.

### **Cutting Data:**

4.00" diameter cutter (Z=10)  
8000 RPM (through tool coolant)  
213 IPM feedrate  
0.040 - 0.080" D.O.C.  
32 RMS

### **Part life:**

PCD= 2,500 pieces  
TFC= 13,500 pieces

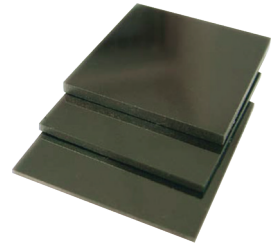


**540% Increase in tool life using TFC!**

# Ultrahard Cutting Materials

“TFC” Thick Film CVD diamond. This outstanding new program of cutting tools from TyCarb has such extreme consistent hardness that its wear properties are anywhere from 2 to 10x that of PCD. This new diamond is grown in a chemical vapour deposition reactor in thicknesses of 0.5 mm-1.8mm which allows for a wide variety of milling tools and insert geometries. This pure diamond has no binders which allows extreme cutting edge sharpness giving you excellent surface finishes with virtually no cutting pressure. The absence of binders at the cutting edge allows for excellent thermal conductivity which reduces heat produced at the cutting zone. The extreme sharpness and the pure diamond cutting edge of the TyCarb “TFC” tools avoids chemical interactions with materials or cutting fluids which eliminates failures due to cutting edge erosion. This pure diamond maintains a sharper cutting edge far longer than that of the

standard polycrystalline diamond tools. With this advancement in technology in cutting material, the technology to prepare the cutting tools has also evolved drastically. All of the “TFC” tips produced at TyCarb are adhered using a high vacuum brazing process that ensures excellent quality. Due to the extreme hardness, the cutting edge cannot be ground or eroded thus the manufacturer has invested in High Tech lasers which not only prepare the cutting edges to the highest quality but also allows the 3D cutting edge geometries in various formations prepared in the same quality.

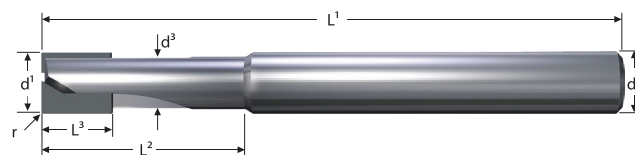


TyCarb Designation	ISO Designation	Description	Application
<b>Diamond Grades</b>			
<b>TFC</b>	<b>PD</b>	Solid polycrystalline CVD-diamond without binder and without carbide reinforcement, perfect cutting edge sharpness and cutting edges without any microdamage. No cutting pressure and smallest tolerances. Highest wear resistance and very high thermal conductivity (HSC and HPC), higher toughness.	From super-finishing to semi-finishing of all non-ferrous metals and non-ferrous composites with high content of abrasive reinforcement or silicon.
<b>PDC</b>	<b>DP Compound</b>	Polycrystalline diamond (compound cutting material), carbide reinforced diamond of fine grit size, good cutting edge sharpness and low cutting pressure allowing for minor tolerances. Lower wear resistance at higher toughness.	Finishing of all non-ferrous metals and non-metallics with low content of abrasive reinforcement or silicon.
<b>PDC-S</b>	<b>DP Compound</b>	Polycrystalline diamond (compound cutting material), carbide reinforced diamond of coarse grit size, good edge sharpness and low cutting pressure allowing for minor tolerances. Ideal for milling. Lower wear resistance at higher toughness.	Finishing and milling of all non-ferrous and non-metallics with medium content of abrasive reinforcement or silicon.
<b>PDC-CU-S</b>	<b>DP Compound</b>	Solid polycrystalline diamond (compound cutting material) without carbide reinforcement, coarse grit size, good cutting edge sharpness and low cutting pressure allowing for minor tolerances. Well suited for milling tools with high depth of cut. High wear resistance at higher toughness due to large diamond volume.	Finishing and milling of all non-ferrous metals and non-metallics with high content of abrasive reinforcement or silicon.
<b>PCBN Grades</b>			
<b>PBC-10</b>	<b>BH</b>	Uncoated PcBN grade with very high CBN content (95%) in standard design. Fine grit size (1 - 1.5μ).	Grey cast iron Super alloys Sintered powdered steel ap = .004" - .016"
<b>PBC-15</b>	<b>BH</b>	Uncoated PcBN grade with high CBN content (90%) in standard design. Super fine grit size (0.75μ).	Nodular cast iron Sintered powdered steel Super alloys Grey cast iron ap = .002" - .016"
<b>PBC-25</b>	<b>BL</b>	Uncoated PcBN grade with low CBN content (65%) in standard design. Fine grit size (3μ), for continuous to heavily-interrupted cut.	Hard milling, dry HRc = 52 - 65 ap = .002" - .016" Ra = 0.2 - 3.2μ
<b>PBC-40</b>	<b>BL</b>	Uncoated PcBN grade with low CBN content and ultrafine grit size. Perfect wear resistance for dry hard-cutting at higher feed rates with low depth of cut. Continuous and slightly interrupted cutting.	Hardened steels (HRc 56 - 62) dry cutting For Ra 32μin - 63μin ap = .002" - .012"



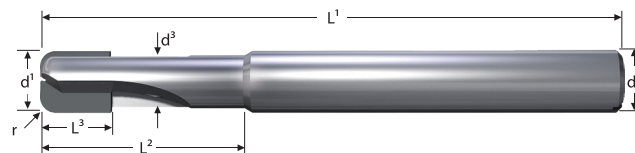


# "TFC MillCut" End Mills



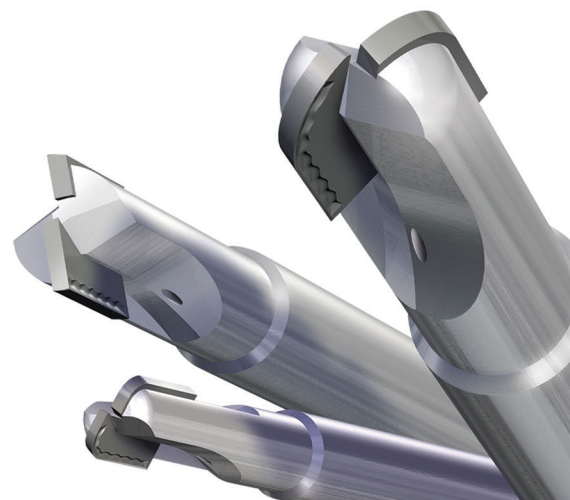
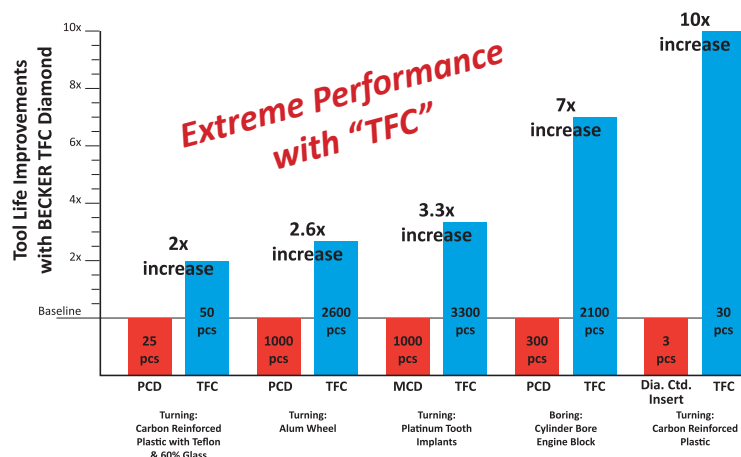
## 2 Flutes Square End Mill (metric dimensions)

Designation	d <sup>1</sup>	r	d <sup>2</sup>	d <sup>3</sup>	flutes	Axial Angle	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	TFC Thickness
BMC-S04.85 TFC	4	0.1	6	3.5	2	+2°	50	10	5.0	.50
BMC-S05.85 TFC	5	0.1	6	4.3	2	+2°	50	12	6.0	.50
BMC-S06.85 TFC	6	0.2	6	5.1	2	+2°	57	15	8.0	.50
BMC-S08.85 TFC	8	0.2	8	6.9	2	+2°	63	20	10.0	.75
BMC-S10.85 TFC	10	0.2	10	8.5	2	+2°	72	26	12.0	1.00
BMC-S12.85 TFC	12	0.2	12	10.1	3	+2°	83	32	15.0	1.00
BMC-S04.35 TFC	4	0.1	6	3.5	2	-2°	50	10	5.0	.50
BMC-S05.35 TFC	5	0.1	6	4.3	2	-2°	50	12	6.0	.50
BMC-S06.35 TFC	6	0.2	6	5.1	2	-2°	57	15	8.0	.50
BMC-S08.35 TFC	8	0.2	8	6.9	2	-2°	63	20	10.0	.75
BMC-S10.35 TFC	10	0.2	10	8.5	2	-2°	72	26	12.0	1.00
BMC-S12.35 TFC	12	0.2	12	10.1	3	-2°	83	32	15.0	1.00



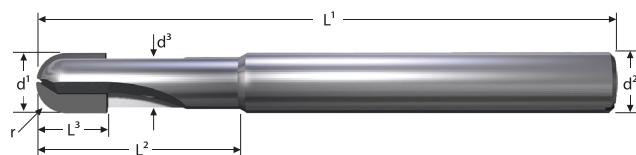
## 2 Flutes Toroid End Mill (metric dimensions)

Designation	d <sup>1</sup>	r	d <sup>2</sup>	d <sup>3</sup>	flutes	Axial Angle	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	TFC Thickness
BMC-T04.R05 TFC	4	0.5	6	3.5	2	0°	50	10	4.0	.50
BMC-T05.R05 TFC	5	0.5	6	4.3	2	0°	50	12	4.7	.50
BMC-T05.R10 TFC	5	1.0	6	4.3	2	0°	50	12	4.7	.50
BMC-T06.R10 TFC	6	1.0	6	5.1	2	0°	57	15	5.2	.50
BMC-T06.R15 TFC	6	1.5	6	5.1	2	0°	57	15	5.2	.50
BMC-T08.R10 TFC	8	1.0	8	6.9	2	0°	63	20	6.1	.75
BMC-T08.R15 TFC	8	1.5	8	6.9	2	0°	63	20	6.1	.75
BMC-T08.R20 TFC	8	2.0	8	6.9	2	0°	63	20	6.1	.75
BMC-T10.R10 TFC	10	1.0	10	8.5	2	0°	72	26	7.5	1.00
BMC-T10.R20 TFC	10	2.0	10	8.5	2	0°	72	26	7.5	1.00
BMC-T10.R25 TFC	10	2.5	10	8.5	2	0°	72	26	7.5	1.00
BMC-T12.R10 TFC	12	1.0	12	10.1	2	0°	83	32	8.5	1.00
BMC-T12.R30 TFC	12	3.0	12	10.1	2	0°	83	32	8.5	1.00
BMC-T12.R40 TFC	12	4.0	12	10.1	2	0°	83	32	8.5	1.00



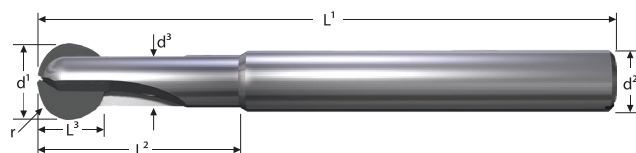


# "TFC MillCut" End Mills



## 2 Flutes Radius End Mill (metric dimensions)

Designation	d <sup>1</sup>	r	d <sup>2</sup>	d <sup>3</sup>	flutes	Axial Angle	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	TFC Thickness
BMC-R04 TFC	4	2	6	3.5	2	0°	60	20	6.0	.50
BMC-R05 TFC	5	2.5	6	4.3	2	0°	63	25	6.0	.50
BMC-R06 TFC	6	3	6	5.1	2	0°	63	25	6.0	.75
BMC-R08 TFC	8	4	8	6.9	2	0°	67	30	8.0	.75
BMC-R10 TFC	10	5	10	8.5	2	0°	77	35	10.0	1.00
BMC-R12 TFC	12	6	12	10.1	2	0°	87	40	12.0	1.00



## 2 Flutes Ball End Mill (metric dimensions)

Designation	d <sup>1</sup>	r	d <sup>2</sup>	d <sup>3</sup>	flutes	Axial Angle	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	TFC Thickness
BMC-K04 TFC	4	2 - 200°	6	3.2	2	0°	60	20	2.5	.50
BMC-K05 TFC	5	2.5 - 200°	6	4.2	2	0°	63	25	3.2	.50
BMC-K06 TFC	6	3 - 210°	6	4.8	2	0°	63	25	3.7	.75
BMC-K08 TFC	8	4 - 220°	8	6.8	2	0°	67	30	5.0	.75
BMC-K10 TFC	10	5 - 220°	10	7.9	2	0°	77	35	6.5	1.00
BMC-K12 TFC	12	6 - 220°	12	9.5	2	0°	87	40	7.5	1.00

## 700% Increase in tool life & 20% faster using TFC!

### Application: 10mm Square End Mill

Trimming CFK Plates 16.5 inches long

#### Cutting Data:

0.394" (10mm) diameter cutter (Z=2)

DOC: 0.394" (10mm)

WOC: 0.039" (1mm)

FPT: 0.004" (0.1mm)

#### TyCarb TFC:

Vc: 1220 SFM (11,830 RPM)

IPM: 94.6

29 passes @ 16.5"

478.5 Linear Inches

#### Competitor PCD:

Vc: 975 SFM (9453 RPM)

IPM: 75.6

4 passes @ 16.5"

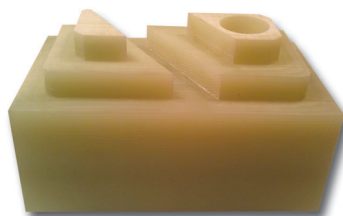
66 Linear Inches

### Cutting Data for Non-Ferrous Applications

Cutting Parameters		
Material	Cutting Speed	Cutting Feed (FPT)
AL <4% Si	1000 - 10000	.001 - .008
AL 4 - 8% Si	1000 - 10000	.001 - .008
AL 9 - 13% Si	700 - 10000	.001 - .008
AL >13% Si	500 - 7000	.001 - .006
Magnesium Alloys	1000 - 10000	.001 - .012
Copper Alloys	1000 - 10000	.001 - .016
Brass Alloys	1000 - 10000	.001 - .010
Graphite	1000 - 7000	.001 - .008
CFK / GFK	500 - 7000	.001 - .030



CFK  
Carbon Fiber



GFK  
EGS 619:  
80% Glass & 20% Epoxy Resin

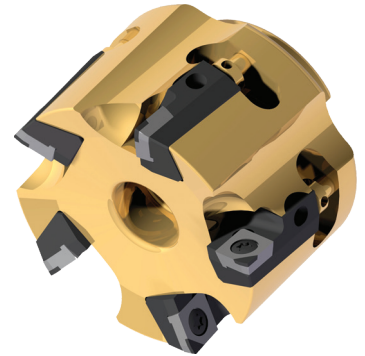
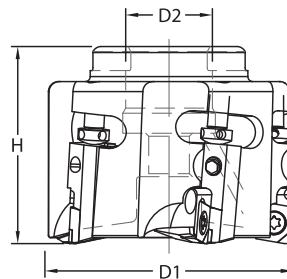
"TFC MillCut" Tools  
with Chipbreaker  
available upon request

# TCP90-AL Milling Cutters





## Aluminium face milling cutter program engineered for high speed machining of all non-ferrous materials

- New advanced milling cutter program engineered for high speed machining of non-ferrous materials
- Ultra precise finishing with unique wiper radius PCD / TFC inserts and micro-adjustable cartridges
- Milling cutter bodies made from lightweight 7075-T6 aviation grade aluminum
- Maxicool through coolant enabled for maximum chip evacuation and temperature control
- New TFC diamond grade for extreme tool life!

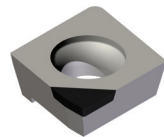
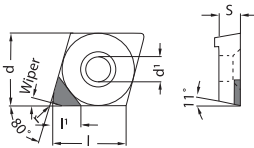
## Engineered for High Speed Machining!



TCP90 Face Mills for PCD / TFC Milling Applications

Designation	D1	D2	H	Flutes	Insert	Cartridge	Cartridge Clamp Screw	Insert Torx Screw	Height Adj. Screw
TCP90-2000-AL	2.00	.75	2.00	3	CPGX-32.51...	BC10X50	M5 SHBS	TCP951	HAS6823
TCP90-2500-AL	2.50	1.00	2.00	5					
TCP90-3000-AL	3.00	1.00	2.00	7					
TCP90-4000-AL	4.00	1.25	2.00	10					
TCP90-5000-AL	5.00	1.50	2.50	11					
TCP90-6000-AL	6.00	1.50	2.50	13					
TCP90-8000-AL	8.00	2.00	2.50	16					

CPGX Milling Insert with Wiper

		Designation	d	d <sup>1</sup>	s	l	l <sup>1</sup>	r	TFC	PDC-CU-S
		CPGX-32.51PDR	.375	.173	.156	.382	.169	.016	PD	DP
		CPGX-32.51NWR								
		CPGX-32.51FLW								
		CPGX-32.51SFR								

### Application: TCP90 Milling Cutter

Milling the face of a cast aluminum oil pan.  
Material is A380 Aluminum consisting of 9% silicon.

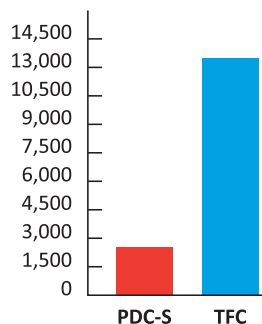
#### Cutting Data:

4.00" diameter cutter (Z=10)  
8000 RPM (through tool coolant)  
213 IPM feedrate  
0.040 - 0.080" D.O.C.  
32 RMS

#### Part life:

PDC-S= 2,500 pieces  
TFC= 13,500 pieces

**540% Increase  
in tool life using TFC!**



Chipbreaker Information	
PDR	Crown radius wiper. Suitable for general purpose applications with stable set-ups.
NWR	Full radius insert with no wiper facet. Suitable for unstable set-ups or thin wall parts. Excellent for sealing surfaces.
FLW	Flat wiper facet for general machining and unstable set-ups.
SFR	Very large crown radius wiper facet. Suitable for super finishing on very stable thick wall parts.

# TCP90-AL Milling Cutters

## TFC ... For Extreme Performance

Performance: Solid diamond with no binder. Cutting edge is extremely sharp and without microfractures generating no cutting pressure, allowing burr-free results with tolerances close to zero. Extremely flank wear resistant with maximum thermal conductivity, and good toughness.

Application: Super finishing to roughing of all nonferrous metals and non-metallics with abrasive reinforcement or silicon. (HSC - High Tech)

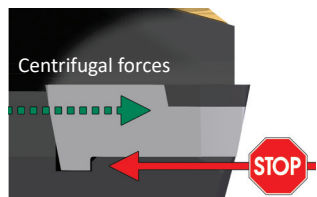
## PDC-CU-S

Performance: Solid polycrystalline diamond (compound cutting material) without carbide reinforcement, coarse grit size, good cutting edge sharpness and low cutting pressure allowing for minor tolerances. Well suited for milling tools with high depth of cut.

Application: Finishing and milling of all non-ferrous metals and non-metallics with high content of abrasive reinforcement or silicon.

### Security Features

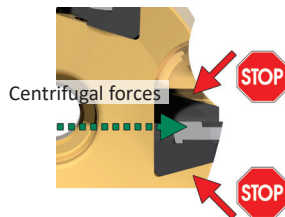
#### Insert Double Lock



Secondary insert step locks against matching step on insert cartridge

Designed to act as a double lock in conjunction with the tapered insert screw

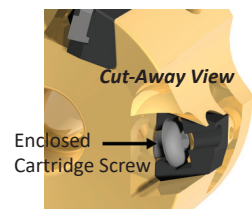
#### Cartridge Dovetail Lock



Insert cartridge is fitted into cutter body with dovetail design

Centrifugal forces acting on insert cartridge are neutralized by wedge profile of cartridge and matching shape on cutter body

#### Enclosed Cartridge Clamping Screw

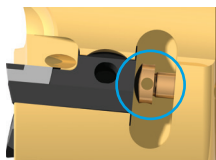


Unique cartridge shrouds cartridge clamp screw within steel body

Potential screw breakage is contained within steel of cartridge – the screw has no place to eject

### Performance Features

#### Micro Adjustable



Easily pre-set cartridges to within microns

All new milling cutters are factory pre-set in height to within  $\pm 0.0004$  with a master gauge insert

#### Through Coolant Enabled



Coolant ports are directed at the cutting edge to extend tool life and improve surface finishes

#### Wiper Radius



Unique wiper is a compound radius that outperforms traditional wiper flats

With every insert in the cutter loaded with the wiper radius, super finishing is easily attained

## Coolant Caps

- Optional Coolant Caps available for larger cutter diameters to provide 360° direct coolant supply at the cutting edge
- Balanced by design and mounted securely to maintain constant coolant supply at maximum RPM
- Made from the same lightweight 7075-T6 aviation grade aluminum as cutter bodies for reliable long term use and service



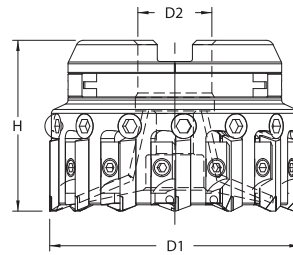
Cutter Designation	Thru Coolant Cap Screw	Coolant Cap	Mounting Cap Screw	Lock Washer	Washer
TCP90-5000-AL	CCS-125	CTP-125	SHCS-M4	LW-M4	W-M4
TCP90-6000-AL	CCS-160	CTP-160	SHCS-M5	LW-M5	W-M5
TCP90-8000-AL	--	CTP-200	SHCS-M8	LW-M8	W-M8

When ordering Coolant Caps, Mounting Cap Screws and Washers are included. Thru Coolant Cap Screw must be purchased separately.

Materials	Conditions of Chip Removal	Application Range - Cutting Speed N01 - N40		
		N01 - N20 (HSC)	N20 - N30 (HSC)	N25 - N40 (HSC)
<b>N</b> Nonferrous metals Aluminum alloys without silicon	High-Speed Milling	3.2µin - 100µin	100µin - 200µin	200µin - 400µin
	continuous	TFC	PDC-CU-S / TFC	PDC-CU-S / TFC
	heavily + slightly interrupted	2600-14625 PDC-CU-S / TFC	2600-13000 PDC-CU-S / TFC	2600-8125 PDC-CU-S
<b>N</b> Nonferrous metals Aluminum alloys with less than 12% silicon	continuous	PDC-CU-S / TFC 2600-1300	PDC-CU-S / TFC 2600-11375	PDC-CU-S / TFC 2600-8775
	heavily + slightly interrupted	PDC-CU-S / TFC 2600-13000	PDC-CU-S / TFC 2600-11375	PDC-CU-S 2600-8775
<b>N</b> Nonferrous metals Copper and copper alloys brass, bronze, precious metals	continuous	PDC-CU-S / TFC 2600-9750	PDC-CU-S / TFC 2600-8125	PDC-CU-S / TFC 2275-7150
	heavily + slightly interrupted	PDC-CU-S / TFC 2600-9750	PDC-CU-S / TFC 2600-8125	PDC-CU-S 2275-7150
<b>N</b> Non-metallics with re-inforcement (GFK/CFK/Graphite)	continuous	TFC 1000-7000	PDC-CU-S / TFC 700-6000	PDC-CU-S 500-5000
	heavily + slightly interrupted	PDC-CU-S / TFC 1000-7000	PDC-CU-S / TFC 700-6000	PDC-CU-S 500-5000
Coolant: Flood or through coolant		Proper wiper radius required for application		

# DiaMill-FEED Balanceable Milling Program

- Type DMFA with through coolant
- Pre-Balanced

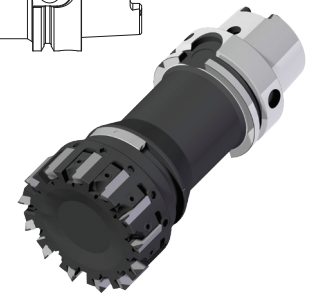
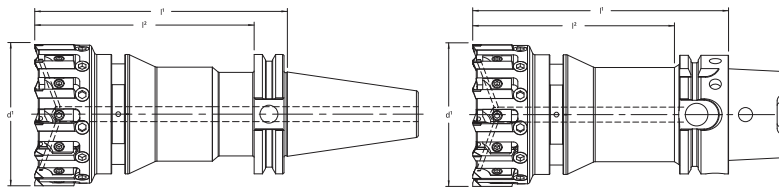


## DiaMill-FEED 90° Face & Shoulder Milling Cutter with through coolant

Designation	d <sup>1</sup> mm	d <sup>2</sup> mm	h mm	Flutes	RPM max. r / min	Milling Blades	
						face milling	shoulder milling
DMFA-63-10-28	63	22	55	10	19,000	BFMW-2805.. BFSM-2805..	BFSM-2805.. BSM-2805..
DMFA-80-13-28	80	27	55	13	17,000		
DMFA-100-15-28	100	32	60	15	15,000		

Please Note: The max speeds listed are only valid if cutters are used as part of a balanced assembly

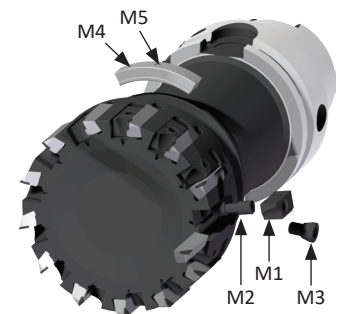
- Integral design HSK-A63 and SK-40
- Type DMFS with through coolant
- Fine-balanced G 2,5



## DiaMill-FEED 90° Face & Shoulder Milling Cutter with through coolant

Designation	d <sup>1</sup> mm	l <sup>1</sup> mm	l <sup>2</sup> mm	Tool holder	Flutes	RPM max. r / min	Milling Blades	
							face milling	shoulder milling
DMFS-40-6-28-A	40	125	95	HSK-A63	6	24,000	BFMW-2805.. BFSM-2805..	BFSM-2805.. BSM-2805..
DMFS-50-8-28-A	50	125	95	HSK-A63	8	22,000		
DMFS-63-10-28-A	63	125	95	HSK-A63	10	19,000		
DMFS-80-13-28-A	80	130	100	HSK-A63	13	17,000		
DMFS-40-6-28-K	40	125	95	SK-40	6	24,000		
DMFS-50-8-28-K	50	125	95	SK-40	8	22,000		
DMFS-63-10-28-K	63	125	95	SK-40	10	19,000		
DMFS-80-13-28-K	80	130	100	SK-40	13	17,000		

Please Note: The max speeds listed are only valid if cutters are used as part of a balanced assembly



## Spare Parts for DiaMill-FEED Milling Cutters

Clamping Wedge (M1)	Screw for Clamping Wedge (M2)	Wrench for Clamping Wedge	Adjustment Screw (M3)	Wrench for Adj. Screw	Balancing Weight for diameters... (M4)					Screw for Balancing Weight (M5)	Molykote
					40 mm 3gr	50 mm 3gr	63 mm 6gr	80 mm 7gr	100 mm 8gr		
WB 17	AB 231	KEY 455	JU 220	KEY 320	RB 20040	RB 2050	RB2063	RB2080	RB20100	KEY 870	VAR 5101

Clamping Torque for wedge: 4Nm



# DiaMill-FEED Balanceable Milling Program



**BFMW** Milling Blade with wiper, for Face Milling Only

Designation	PDC-CU-S			TFC			l	l'	r
	Neutral	CB1	CB2	Neutral	CB1	CB2			
BFMW-280504-3.5	■		■	■	■		3.5	0.4	
BFMW-280508-3.5	■		■	■	■		22.6	3.5	0.8
BFMW-280516-3.5	■		■	■	■		3.5	1.6	

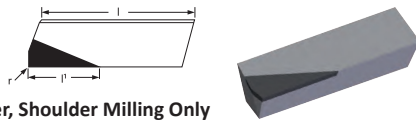
fz = 0.02 - 0.3 mm ap = 0.07 - 2 mm



**BFSM** Milling Blade no wiper, Face and Shoulder Milling

Designation	PDC-CU-S			TFC			l	l'	r
	Neutral	CB1	CB2	Neutral	CB1	CB2			
BFSM-280504-5.5				■	■		5.5	0.4	
BFSM-280508-5.5				■	■		22.6	5.5	0.8
BFSM-280516-5.5				■	■		5.5	1.6	

fz = 0.02 - 0.3 mm ap = 0.1 - 4 mm

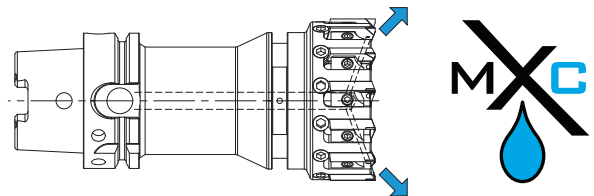
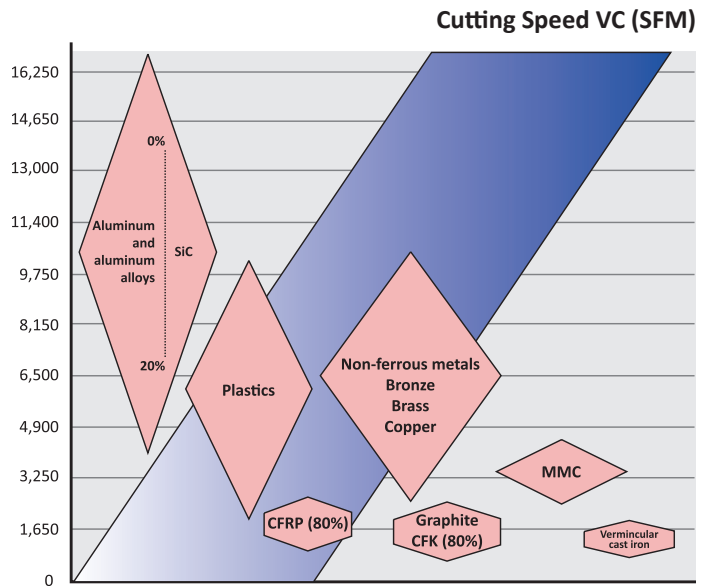


**BSM** Milling Blade no wiper, Shoulder Milling Only

Designation	PDC-CU-S			TFC			l	l'	r
	Neutral	CB1	CB2	Neutral	CB1	CB2			
BSM-280504-8.0	■		■				8.0	0.4	
BSM-280508-8.0	■		■				22.6	8.0	0.8
BSM-280516-8.0	■		■				8.0	1.6	

fz = 0.06 - 0.4 mm ap = 0.25 - 6 mm

## Recommended Cutting Data Turning & Milling

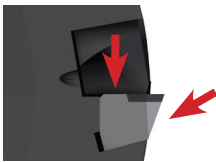


MaxiCool™

These Cutters are equipped with through coolant channels

## Design Features

### Insert Wedge Profile



The bottom seating location of the insert has a wedge shape that is clamped inwards and downwards for maximum stability and security

### Balancing Weights



Shell Mills and Integral Mills feature built-in adjustable balancing weights for accurate balancing of tools. Benefits include increased machine spindle life, and improved surface finish and tool life

### Integral Tooling



HSK63A, DIN69871 and other machine tapers available as integral milling cutters to ensure maximum stability and accuracy

### Wiper Radius



Proprietary compound wiper radius outperforms traditional wiper flats

### Micro Adjustable



Cartridges can be easily pre-set to within microns. All new milling cutters are factory pre-set to 0.01mm using a Master Gauge insert

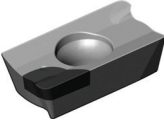
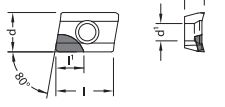
### Insert Wdge Clamping



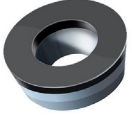
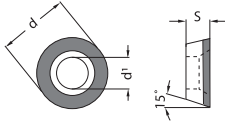
Full top face clamping provides safe and secure operation in high speed machining

# PCD / TFC Inserts

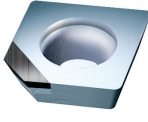
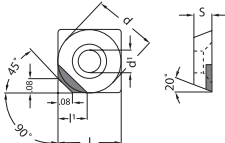
## APKW..PDR Milling Insert Right Hand

								TFC	PDC	PDC-S	PDC-CU-S
 	Designation	d	d <sup>1</sup>	s	l	l <sup>1</sup>	r	PD	DP		
	APKW-100302PDR						.008			■	
	APKW-100304PDR	.260	.110	.138	.431	.150	.016			■	
	APKW-100308PDR						.032			■	
	APKW-160404PDR	.375	.177	.207	.681	.150	.016			■	
	APKW-160408PDR						.031			■	

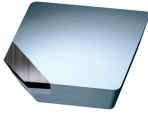
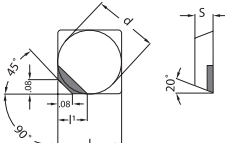
## RDHX Milling Insert Fullface

								TFC	PDC	PDC-S	PDC-CU-S
 	Designation	d	d <sup>1</sup>	s	l	l <sup>1</sup>	r	PD	DP		
	RDHX-0501MO	.197	.079	.059	--	--	--			■	
	RDHX-0702MO	.276	.106	.094	--	--	--			■	
	RDHX-1003MO	.394	.150	.125	--	--	--			■	
	RDHX-12T3MO	.472	.150	.156	--	--	--			■	

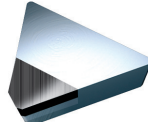
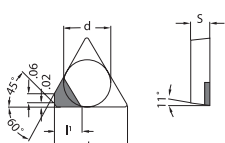
## SEHW..AFN Milling Insert Neutral

								TFC	PDC	PDC-S	PDC-CU-S
 	Designation	d	d <sup>1</sup>	s	l	l <sup>1</sup>	r	PD	DP		
	SEHW-43AFN-4						.157	--		■	
	SEHW-43AFN-6	.500	.217	.187	.500		.236	--		■	

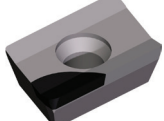
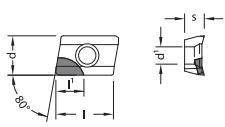
## SEKN..AFN Milling Insert Neutral

								TFC	PDC	PDC-S	PDC-CU-S
 	Designation	d	d <sup>1</sup>	s	l	l <sup>1</sup>	r	PD	DP		
	SEKN-42AFN-4						.157	--		■	
	SEKN-42AFN-6	.500	--	.125	.500		.236	--		■	

## TPKN..PDR Milling Insert Right Hand

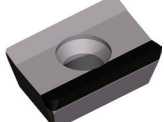
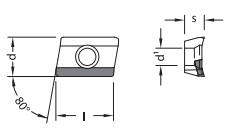
								TFC	PDC	PDC-S	PDC-CU-S
 	Designation	d	d <sup>1</sup>	s	l	l <sup>1</sup>	r	PD	DP		
	TPKN-32PDR-4	.375	--	.125	.650	.157	--			■	

## XDHW / XPHW Milling Insert Right Hand

								TFC	PDC	PDC-S	PDC-CU-S
 	Designation	d	d <sup>1</sup>	s	l	l <sup>1</sup>	r	PD	DP		
	XDHW-090308	.250	.110	1/8	.381	.150	.031	■		■	
	XPHW-160408	.375	.173	3/16	.635	.150	.031	■		■	

Used in our TX90 Milling Program

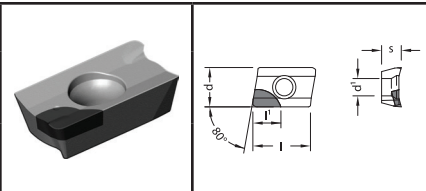
## XDHW-GS / XPHW-GS Full Edge Milling Insert Right Hand

								TFC	PDC	PDC-S	PDC-CU-S
 	Designation	d	d <sup>1</sup>	s	l	l <sup>1</sup>	r	PD	DP		
	XDHW-090308-GS	.250	.110	1/8	.381		.031			■	
	XPHW-160412-GS	.375	.173	3/16	.635		.047			■	

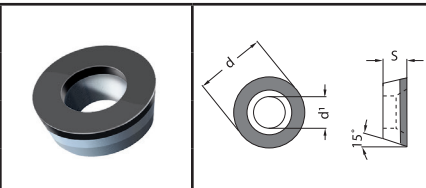
Used in our TX90 Milling Program

# CBN Inserts

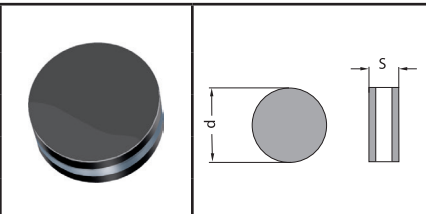
## APKW..PDR Milling Insert Right Hand

								PBC-10	PBC-15	PBC-25	PBC-40
		Designation	d	d'	s	l	l'	r	BH	BL	
		APKW-100302PDR	.260	.110	.138	.431		.150 .008	■		■
		APKW-100304PDR							■		■

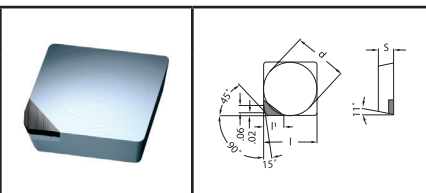
## RDHX Milling Insert Fullface

								PBC-10	PBC-15	PBC-25	PBC-40
		Designation	d	d'	s	l	l'	r	BH	BL	
		RDHX-0702MOT-VM	.276	.106	.094	--	--	--	■	■	■
		RDHX-1003MOT-VM	.394	.150	.125	--	--	--	■	■	■
		RDHX-12T3MOT-VM	.472	.150	.156	--	--	--	■	■	■

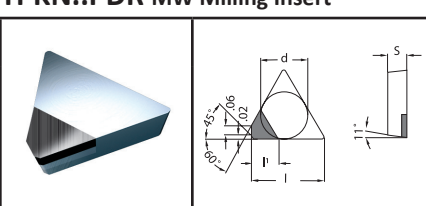
## RNGN Milling Insert Neutral

								PBC-10	PBC-15	PBC-25	PBC-40
		Designation	d	d'	s	l	l'	r	BH	BL	
		RNGN-090300-E-SE	.375	--	.125	--	--	--	■		■
		RNGN-090300-F-SE								■	
		RNGN-120400-E-SE	.500	--	.187	--	--	--	■		■
		RNGN-120400-F-SE								■	

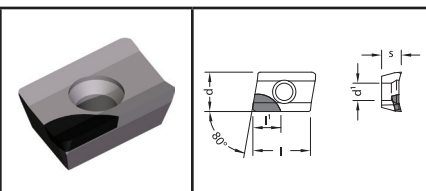
## SPKN..EDR MW Milling Insert

								PBC-10	PBC-15	PBC-25	PBC-40
		Designation	d	d'	s	l	l'	r	BH	BL	
		SPKN-42EDRT-MW	.500	--	.125	.500	.157	--	■		■

## TPKN..PDR MW Milling Insert

								PBC-10	PBC-15	PBC-25	PBC-40
		Designation	d	d'	s	l	l'	r	BH	BL	
		TPKN-32PDRT-MW	.375	--	.125	.650	.157	--	■		■

## XDHW / XPHW Milling Insert Right Hand

								PBC-10	PBC-15	PBC-25	PBC-40
		Designation	d	d'	s	l	l'	r	BH	BL	
		XDHW-090308	.250	.110	1/8	.381	.150	.031		■	■
		XPHW-160408	.375	.173	3/16	.635	.150	.031		■	■

Used in our TX90 Milling Program

# Technical Information



Visit [www.ranitool.com](http://www.ranitool.com)  
for our selection  
of Milling Cutters

Materials	Conditions of Chip Removal	Range of Application H01 - H15	
<b>H</b> Hard materials hardened steel HRc 54-60 hard milling	High Speed Milling	H01 - H15 (HSC)	
		SFM: 1100 - 2500	
	continuous	DOC: .003 - .015	DOC: .010 - .030
		PBC-40	PBC-25
		PBC-25	
	heavily & slightly interrupted	PBC-40	PBC-40
		PBC-15	
<b>H</b> Hard materials hardened steel HRc 58-65 hard milling	continuous	PBC-40	PBC-25
		PBC-25	
	heavily & slightly interrupted	PBC-40	PBC-40
			PBC-15
PCBN Grades, Position 1: Primary Choice   Position 2: Alternate Choice Milling: Without coolant, T-Land version only			

Materials	Conditions of Chip Removal	Application Range - Cutting Speed N01 - N40		
<b>N</b> Nonferrous metals Aluminum alloys without silicon	High-Speed Milling	N01 - N20 (HSC)	N20 - N30 (HSC)	N25 - N40 (HSC)
		3.2µin - 100µin	100µin - 200µin	200µin - 400µin
	continuous	TFC	PDC-CU-S / TFC	PDC-CU-S / TFC
		2600-14625	2600-13000	2600-8125
	heavily + slightly interrupted	PDC-CU-S / TFC	PDC-CU-S / TFC	PDC-CU-S
2600-14625		2600-13000	2600-8125	
<b>N</b> Nonferrous metals Aluminum alloys with less than 12% silicon	continuous	PDC-CU-S / TFC	PDC-CU-S / TFC	PDC-CU-S / TFC
		2600-1300	2600-11375	2600-8775
	heavily + slightly interrupted	PDC-CU-S / TFC	PDC-CU-S / TFC	PDC-CU-S
		2600-13000	2600-11375	2600-8775
<b>N</b> Nonferrous metals Copper and copper alloys brass, bronze, precious metals	continuous	PDC-CU-S / TFC	PDC-CU-S / TFC	PDC-CU-S / TFC
		2600-9750	2600-8125	2275-7150
	heavily + slightly interrupted	PDC-CU-S / TFC	PDC-CU-S / TFC	PDC-CU-S
		2600-9750	2600-8125	2275-7150
<b>N</b> Non-metallics with re-inforcement (GFK/CFK/ Graphite)	continuous	TFC	PDC-CU-S / TFC	PDC-CU-S
		1000-7000	700-6000	500-5000
	heavily + slightly interrupted	PDC-CU-S / TFC	PDC-CU-S / TFC	PDC-CU-S
		1000-7000	700-6000	500-5000
Coolant: Flood or through coolant		Proper wiper radius required for application		

Materials	Conditions of Chip Removal	Range of Application K01 - K25			
<b>K</b> Cast irons (grey cast iron) GG10 GG15 GG20	High Speed Milling	K01 - K15 (HSC)		K01 - K25 (HSC)	
		Vc: SFM		Vc: SFM	
		2900 - 8125	1138 - 2925	2900 - 8125	1138 - 2925
	continuous	PBC-10	PBC-15	PBC-10	PBC-15
		PBC-15	PBC-25		
	heavily & slightly interrupted	PBC-10	PBC-15		
		PBC-25			
<b>K</b> Cast irons (grey cast iron) GG25 GG30 GG35	unstable (varied depth)	PBC-15		PBC-15	PBC-15
					PBC-25
	continuous	PBC-10	PBC-15		PBC-15
		PBC-15	PBC-25		
	heavily & slightly interrupted	PBC-10	PBC-15		PBC-15
		PBC-15	PBC-25		
<b>K</b> Cast irons (nodular cast iron) GG40 GG50 GG60 GG70	unstable (varied depth)				
	continuous		PBC-15		PBC-15
			PBC-25		
	heavily & slightly interrupted		PBC-15		PBC-15
PCBN Grades, Position 1: Primary Choice   Position 2: Alternate Choice Milling: Without coolant, T-Land version only					



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