



TFC/PCD/CBN Milling

Advanced Cutting Materials

 Made in Germany

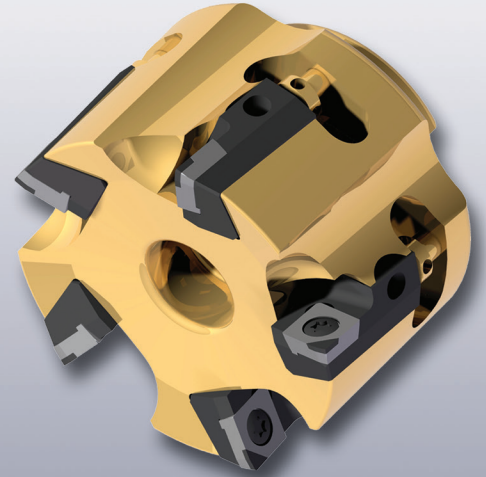


TVC Carb

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

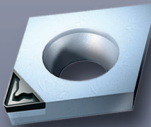
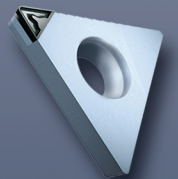
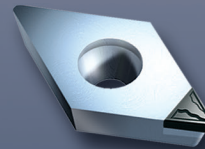
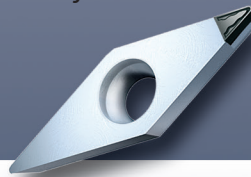


TFC Features & Benefits

- 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

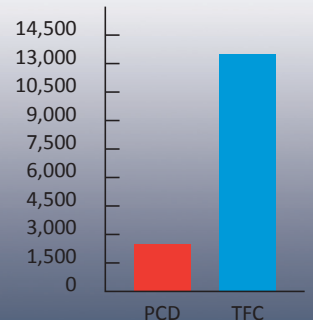
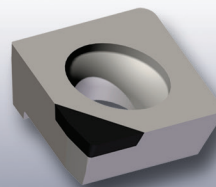
Milling the face of a cast aluminum oil pan.
Material is A380 Aluminum consisting of 9% silicon.

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

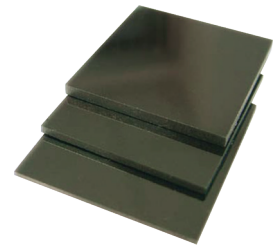


540% Increase in tool life using TFC!

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

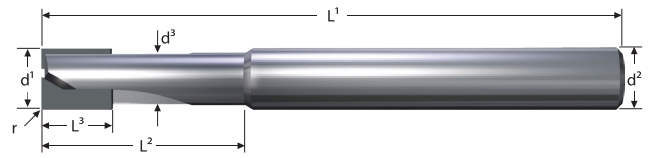
standard polycrystalline diamond tools. With this advancement in technology in cutting material, the technology to prepare the cutting tools has also evolved drastically. All of the “TFC” tips produced at TyCarb are adhered using a high vacuum brazing process that ensures excellent quality. Due to the 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 |
|-----------------------|--------------------|--|---|
| Diamond Grades | | | |
| TFC | PD | 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. |
| PDC | DP Compound | 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. |
| PDC-S | DP Compound | 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. |
| PDC-CU-S | DP Compound | 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. |
| PCBN Grades | | | |
| PBC-10 | BH | Uncoated PcBN grade with very high CBN content (95%) in standard design. Fine grit size (1 - 1.5 μ). | Grey cast iron Super alloys Sintered powdered steel ap = .004" - .016" |
| PBC-15 | BH | Uncoated PcBN grade with high CBN content (90%) in standard design. Super fine grit size (0.75 μ). | Nodular cast iron Sintered powdered steel Super alloys Grey cast iron ap = .002" - .016" |
| PBC-25 | BL | Uncoated PcBN grade with low CBN content (65%) in standard design. Fine grit size (3 μ), for continuous to heavily-interrupted cut. | Hard milling, dry HRc = 52 - 65 ap = .002" - .016" Ra = 0.2 - 3.2 μ |
| PBC-40 | BL | 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 32 μ in - 63 μ in ap = .002" - .012" |

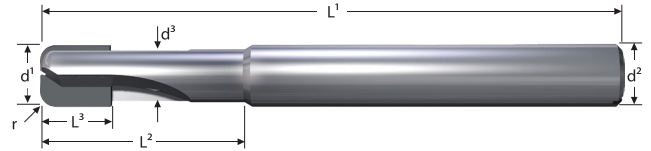


"TFC MillCut" End Mills



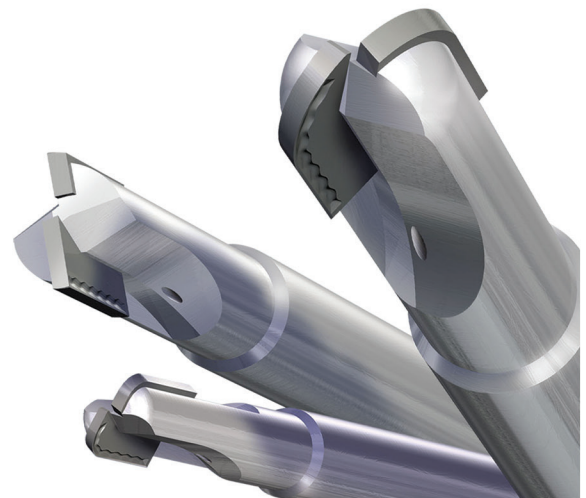
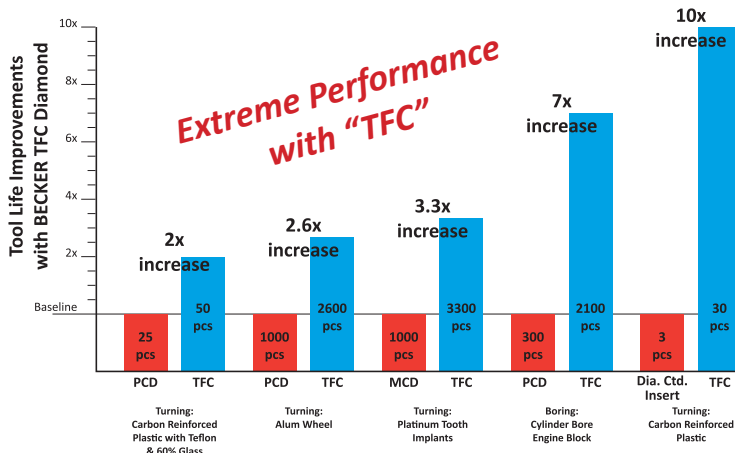
2 Flutes Square End Mill (metric dimensions)

| Designation | d ¹ | r | d ² | d ³ | flutes | Axial Angle | L ¹ | L ² | L ³ | 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 |



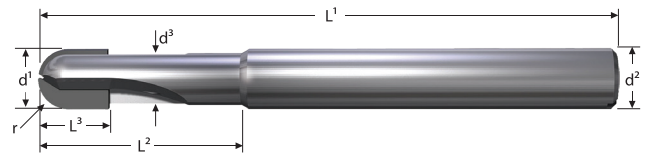
2 Flutes Toroid End Mill (metric dimensions)

| Designation | d ¹ | r | d ² | d ³ | flutes | Axial Angle | L ¹ | L ² | L ³ | 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 |



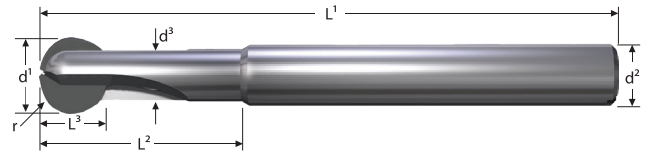


"TFC MillCut" End Mills



2 Flutes Radius End Mill (metric dimensions)

| Designation | d ¹ | r | d ² | d ³ | flutes | Axial Angle | L ¹ | L ² | L ³ | 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 ¹ | r | d ² | d ³ | flutes | Axial Angle | L ¹ | L ² | L ³ | 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"

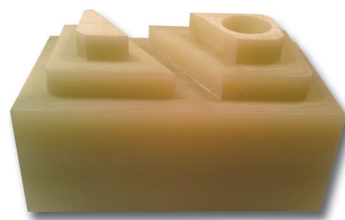
66 Linear Inches

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

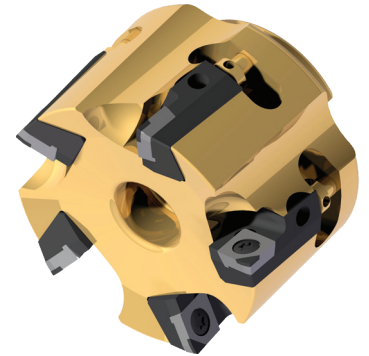
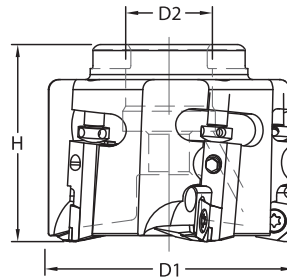
"TFC MillCut" Tools
with Chipbreaker
available upon request

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 ¹ | s | l | l ¹ | r | TFC | PDC-CU-S |
|---------------|------|----------------|------|------|----------------|------|-----|----------|
| | | | | | | | PD | DP |
| CPGX-32.51PDR | .375 | .173 | .156 | .382 | .169 | .016 | ■ | ■ |
| 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.

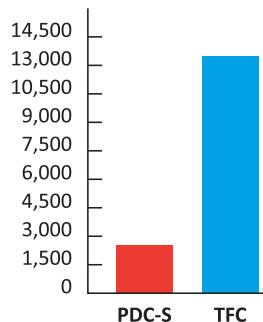
Cutting Data:

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)

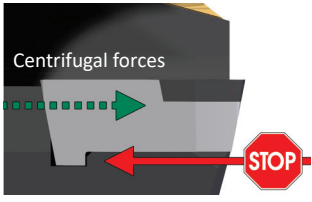
PDC-CU-S

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

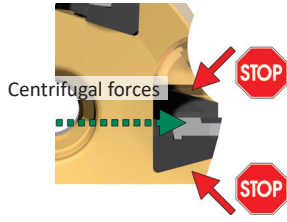
Insert Double Lock



Secondary insert step locks against matching step on insert cartridge

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

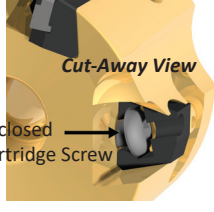
Cartridge Dovetail Lock



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

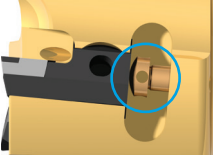


Unique cartridge shrouds cartridge clamp screw within steel body

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 ± 0.0004 with a master gauge insert

Through Coolant Enabled



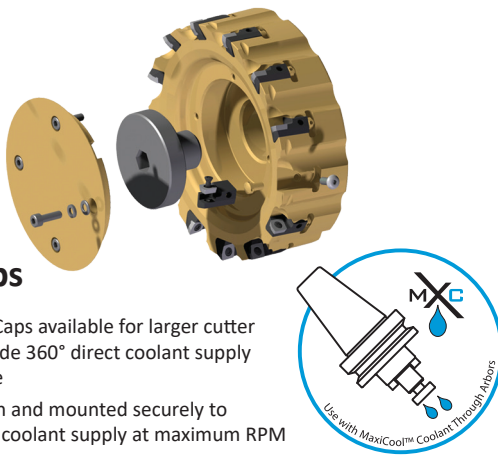
Coolant ports are directed at the cutting edge to extend tool life and improve surface finishes

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 |

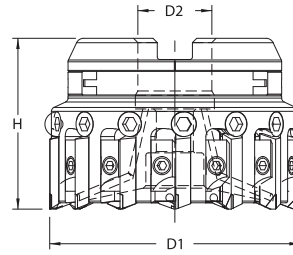
When ordering Coolant Caps, Mounting Cap Screws and Washers are included. Thru Coolant Cap Screw must be purchased separately.

| Materials | Conditions of Chip Removal | Application Range - Cutting Speed | | |
|--|--------------------------------|------------------------------------|------------------------------------|------------------------------------|
| | | N01 - N40 | | |
| N Nonferrous metals Aluminum alloys without silicon | High-Speed Milling | N01 - N20 (HSC) 3.2µin - 100µin | N20 - N30 (HSC) 100µin - 200µin | N25 - N40 (HSC) 200µin - 400µin |
| | continuous | TFC | PDC-CU-S / TFC | PDC-CU-S / TFC |
| | heavily + slightly interrupted | 2600-14625 | 2600-13000 | 2600-8125 |
| N Nonferrous metals Aluminum alloys with less than 12% silicon | continuous | PDC-CU-S / TFC | PDC-CU-S / TFC | PDC-CU-S / TFC |
| | heavily + slightly interrupted | 2600-13000 | 2600-11375 | 2600-8775 |
| N Nonferrous metals Copper and copper alloys brass, bronze, precious metals | continuous | PDC-CU-S / TFC | PDC-CU-S / TFC | PDC-CU-S / TFC |
| | heavily + slightly interrupted | 2600-9750 | 2600-8125 | 2275-7150 |
| N Non-metallics with re-inforcement (GFK/CFK/Graphite) | continuous | TFC | PDC-CU-S / TFC | PDC-CU-S |
| | heavily + slightly interrupted | 1000-7000 | 700-6000 | 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

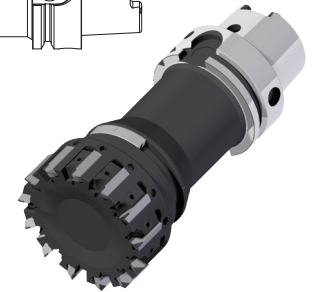
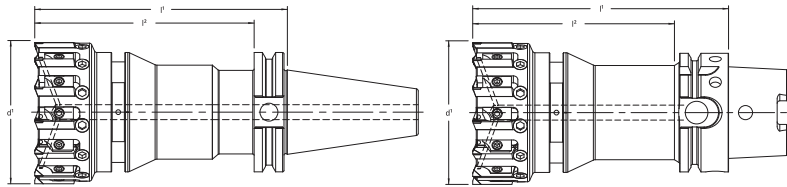


DiaMill-FEED 90° Face & Shoulder Milling Cutter with through coolant

| Designation | d ¹ mm | d ² 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

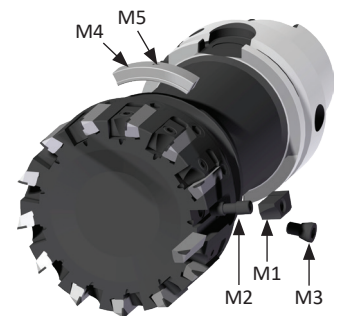
- Integral design HSK-A63 and SK-40
- Type DMFS with through coolant
- Fine-balanced G 2,5



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

| Designation | d ¹ mm | l ¹ mm | l ² 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

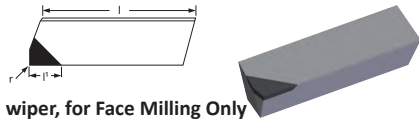


Spare Parts for DiaMill-FEED Milling Cutters

| 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

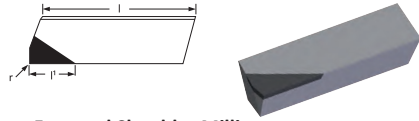
DiaMill-FEED Balanceable Milling Program



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 | |

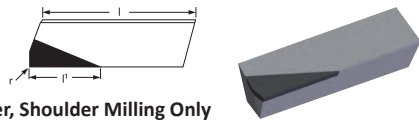
fz = 0.02 - 0.3 mm ap = 0.07 - 2 mm



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

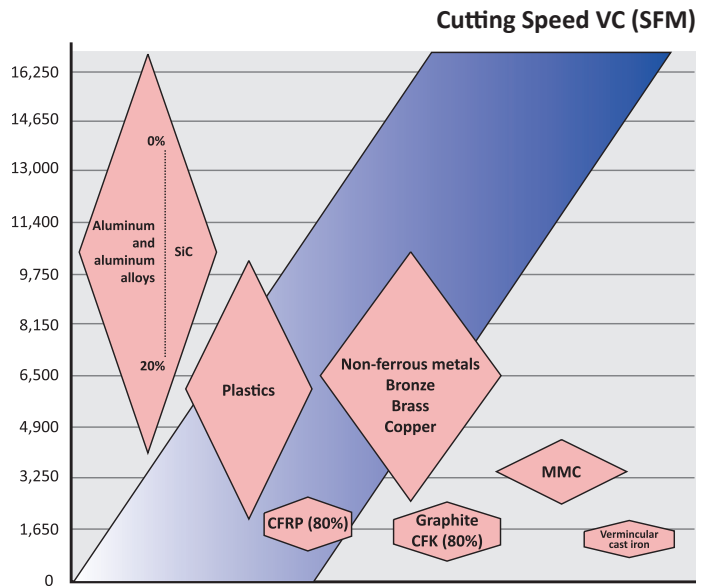


BSM Milling Blade no wiper, Shoulder Milling Only

| 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

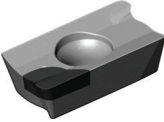
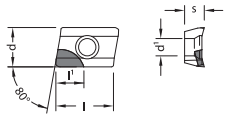
Cartridges can be easily pre-set to within microns. All new milling cutters are factory pre-set to 0.01mm using a Master Gauge insert

Insert Wedge Clamping

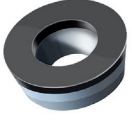
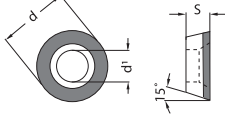
Full top face clamping provides safe and secure operation in high speed machining

PCD / TFC Inserts

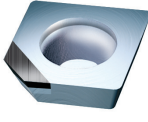
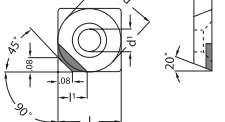
APKW..PDR Milling Insert Right Hand

| | | | | | | | | TFC | PDC | PDC-S | PDC-CU-S | |
|---|----------------|------|----------------|------|------|----------------|------|------|-----|-------|----------|--|
|   | Designation | d | d ¹ | s | l | l ¹ | 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 | | | | ■ | |

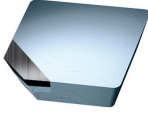
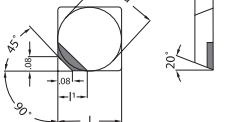
RDHX Milling Insert Fullface

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

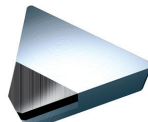
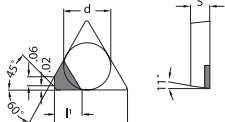
SEHW..AFN Milling Insert Neutral

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

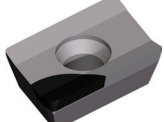
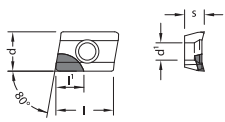
SEKN..AFN Milling Insert Neutral

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

TPKN..PDR Milling Insert Right Hand

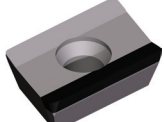
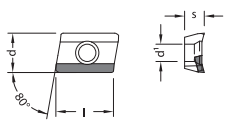
| | | | | | | | | TFC | PDC | PDC-S | PDC-CU-S |
|---|--------------|------|----------------|------|------|----------------|----|-----|-----|-------|----------|
|   | Designation | d | d ¹ | s | l | l ¹ | r | PD | DP | | |
| | TPKN-32PDR-4 | .375 | -- | .125 | .650 | .157 | -- | | | | |

XDHW / XPHW Milling Insert Right Hand

| | | | | | | | | TFC | PDC | PDC-S | PDC-CU-S | |
|---|-------------|------|----------------|------|------|----------------|------|-----|-----|-------|----------|--|
|   | Designation | d | d ¹ | s | l | l ¹ | 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 ¹ | s | l | l ¹ | 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 | | | | | | .150 | .016 | ■ | | ■ | |

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



| Materials | Conditions of Chip Removal | Range of Application H01 - H15 | |
|---|--------------------------------|--------------------------------|------------------|
| H 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 |
| heavily & slightly interrupted | PBC-40 | PBC-40 | |
| | | PBC-15 | |
| H 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 | | |
|---|--------------------------------|--|-----------------|-----------------|
| | | N01 - N20 (HSC) | N20 - N30 (HSC) | N25 - N40 (HSC) |
| N 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 |
| | | 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 | |
| N 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 |
| N 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 |
| N Non-metals 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 | | | |
|---|--------------------------------|--------------------------------|-------------|-----------------|-------------|
| | | K01 - K15 (HSC) | | K01 - K25 (HSC) | |
| K Cast irons (grey cast iron) GG10 GG15 GG20 | High Speed Milling | 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 | | | |
| K Cast irons (grey cast iron) GG25 GG30 GG35 | unstable (varied depth) | PBC-15 | | PBC-15 | PBC-15 |
| | continuous | PBC-10 | PBC-15 | | PBC-15 |
| | | PBC-15 | PBC-25 | | |
| | heavily & slightly interrupted | PBC-10 | PBC-15 | | PBC-15 |
| | PBC-15 | PBC-25 | | | |
| K 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 | | | | | |

TYSON TOOL

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