

TFC

Solid Polycrystalline CVD Diamond

The next generation of Diamond Cutting Tools



- First choice for composites
- Extreme hardness, toughness and wear resistance
- Sharpest cutting edge
- Dramatically improved tool life
- Superior surface finish
- Reduced cutting pressure

TFC Features & Benefits

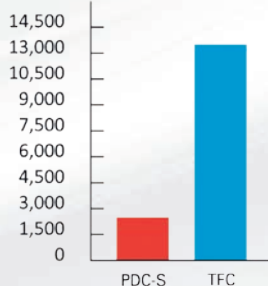
- Harder, more wear resistant
2 to 10x life of PCD
- Pure diamond (no binder)
no edge erosion or chemical interaction
- Highest thermal conductivity
lowest cutting temperatures
- Sharpest cutting edge
reduced cutting forces
smoother more consistent finish

Application Materials

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

540% Increase in tool life using TFC!

Workpieces



Application: TCP90 Milling Cuter

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

Cutting Data:

100mm diameter cutter (Z = 10)
8000 RPM (through tool coolant)
5420 mm/min feedrate
1-2 mm D.O.C.
 $R_z = 1,8 \mu\text{m}$

Part life:

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



www.beckerdiamant.de



TFC

Solid Polycrystalline CVD Diamond

The next generation of Diamond Cutting Tools



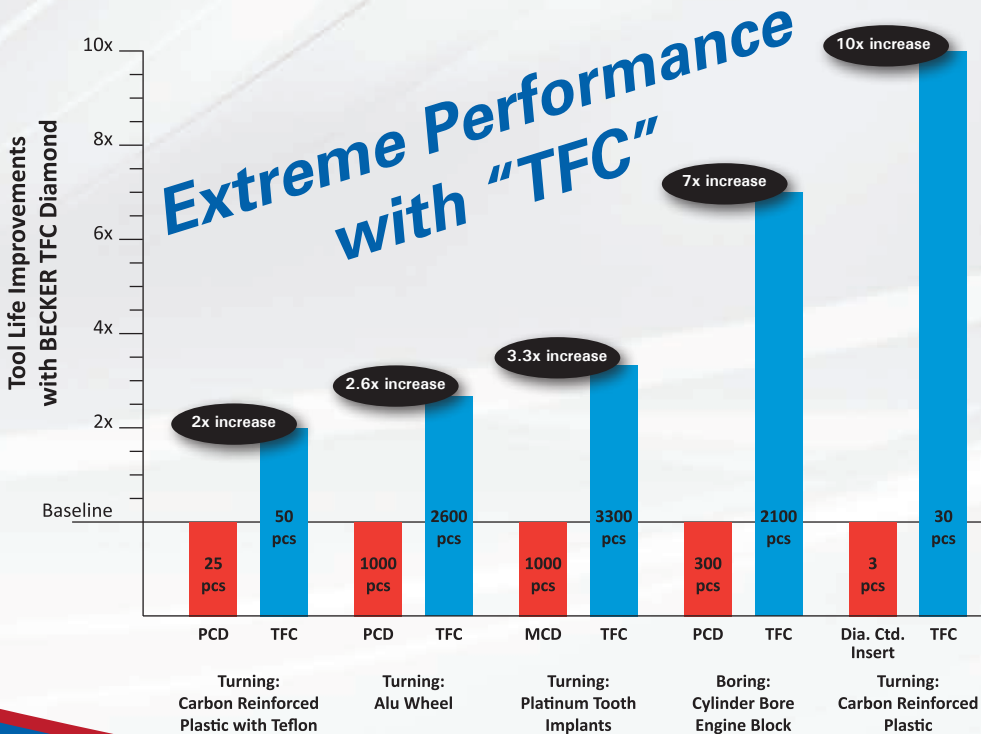
"TFC" solid polycrystalline CVD diamond. This outstanding new program of cutting tools from BECKER has such extreme consistent hardness that its wear properties are anywhere from 2 to 10x that of PCD. This new diamond is grown in a chemical vapour deposition reactor in

thicknesses of 0.5mm - 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 BECKER "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" segments produced at BECKER 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 BECKER company 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.



CFK
Carbon fiber



GFK
EGS 619:
80% glass & 20% epoxy



© BECKER Diamantwerkzeuge GmbH
D-82178 Puchheim/Munich, Benzstraße 13
Tel. +49 (0) 89 89 02 28-0 / Fax +49 (0) 89 89 02 28-30
sales@beckerdiamant.de / www.beckerdiamant.de