

## THE COMPANY



The core competence of FCT Hartbearbeitungs GmbH, a member of the FCT Group, is the precision machining of hard and ultrahard materials.

Our level of expertise is founded in long years of experience, gathered from offering this service to external customers for almost 30 years.

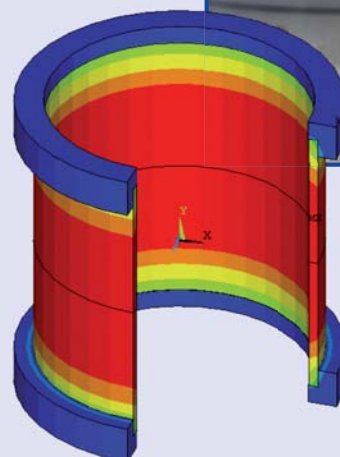
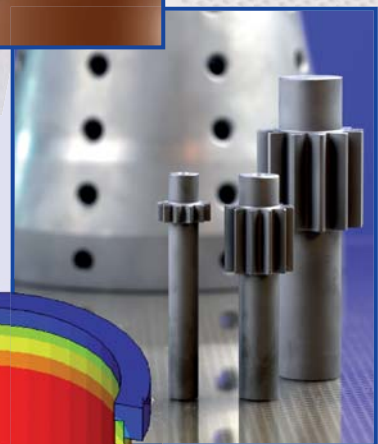
### The range of materials we machine includes:

- Oxides, such as aluminum oxide, zinc oxide, zirconium oxide ...
- Non-oxides, such as aluminum nitride, boron carbide, silicon carbide, molybdenum disilicide, graphite ...
- Composite materials: Particle and fiber-reinforced composites, such as CFC, C/C-SiC, SiC<sub>Wh</sub> - Al<sub>2</sub>O<sub>3</sub> ...
- Hard metals, sputter materials, and special materials ....

FCT Hartbearbeitungs GmbH also produces a wide range of small to large-sized, complex shaped, high-precision ceramic components made of silicon carbide and zirconium oxide. This wide range of different products is made possible by the almost unique technological facilities available within our group of companies.

Our production focuses on prototypes, special parts, and small to medium-size production series made to customer specifications.

We provide our customers competent advice, supported by computer-based analyses like FEM, in connection with the selection of the best suited material and component design to meet ceramic purposes and the most efficient way of production.





**Properties of the materials produced by FCT Hartbearbeitungs GmbH:**

Materials:	Silicon Carbide (Sintered)		Zirconia (Part. Stabilized:Y)	Zirconia (Reinforced: Al <sub>2</sub> O <sub>3</sub> )
	S-SiC	HS-SiC	Y-TZP	Y- Z20A (ATZ)
Denomination / Grade:				
Density [g/cm <sup>3</sup> ]	> 3,10		6,05	5,5
Flexural Strength, RT [MPa] <sup>1</sup>	450	550	1000	1200
1000°C	450	550	300	400
1350°C	400	450	-	-
Weibull-Modulus, RT	≥12	≥14	≥12	≥10
Youngs Modulus, RT [GPa]	400		200	240
Fracture Toughness, [MPa*m <sup>1/2</sup> ]	3 <sup>*(2)</sup>		10 <sup>*(4)</sup>	8 <sup>*(4)</sup>
Hardness, HV/HK, [GPa]	22 <sup>*(3)</sup>		12 <sup>*(5)</sup>	15 <sup>*(5)</sup>
Thermal Expansion, RT-1000°C, [K <sup>-1</sup> ]	4,5 * 10 <sup>-6</sup>		11 * 10 <sup>-6</sup>	9 * 10 <sup>-6</sup>
Thermal Conductivity, RT [W/m*K]	125		2	5

<sup>1</sup> :4-Pt, 40/20 mm

<sup>2</sup> : SEVNB

<sup>3</sup> : HK5

<sup>4</sup> : VHI-ICL

<sup>5</sup> : HV10

The cooperation with our customers is based on reliability, partnership, and trust. It is our challenge to always find the solution that meets your requirements best and to process your orders in the most economically efficient way.

Certified according to DIN EN ISO 9001:2000

**Experience and competence in high-tech ceramics**  
**Challenge us – we find solutions**