

LET'S PLAY

3D PRINTING

Advanced Ceramic Solutions  
in New Dimension

**Additive  
Manufacturing with  
SiSiC and Al<sub>2</sub>O<sub>3</sub>**



LET'S 3D PLAY

ADVANCED CERAMIC SOLUTIONS IN NEW DIMENSIONS  
3D PRINTING BY CERAMTEC

## Additive manufacturing with SiSiC and Al<sub>2</sub>O<sub>3</sub>

Advanced ceramics from batch size 1 – individually designed additive manufacturing

### Additive manufacturing solutions from CeramTec – your benefits

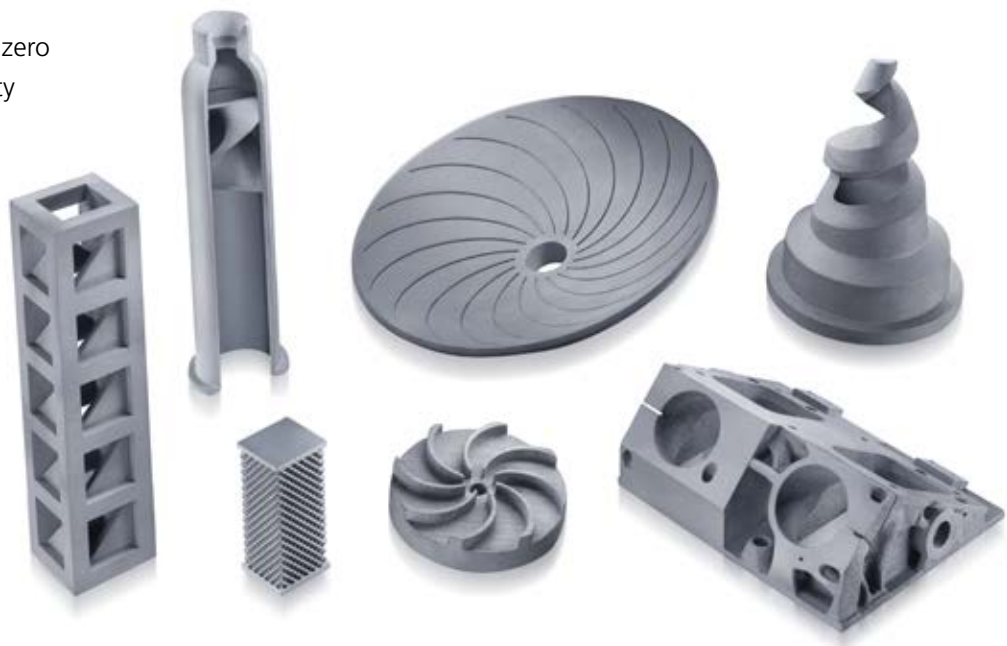
- + Maximum design freedom
- + Flexibility: single-batch customization possible
- + Short delivery times
- + Competent service team
- + Maximum homogeneity, stability and product reliability
- + Simultaneous production of several components on one 3D printer

CeramTec combines the unique product properties of advanced ceramics with the unbeatable process advantages of 3D printing. This is how high-quality, additively manufactured components made of silicon carbide (SiSiC) and aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) are created: in a large design variety and in the shortest possible production time.

# Additive manufacturing without compromise – Silicon Carbide

## SiSiC – outstanding material properties

- + Temperature resistance up to 1,350 °C
- + High hardness, stiffness and flexural strength
- + Lower density than metal
- + Very abrasion-resistant
- + Thermal expansion near zero
- + High thermal conductivity
- + Resistant to oxidation
- + Erodible



## CeramTec SiSiC 3D Printing Process

System Specifications	
Build area (w/d)	1 job box, 500 x 400 x 300 mm / 19.7 x 15.7 x 11.8 in
Layer thickness	150 microns
Building speed	Approx. 10 mm height per hour
Material	SiC

Part Quality	
Accuracy	± 0,4% (min. ± 0.3 mm)
Minimum feature size	2 mm
Surface roughness	N11 / Ra25

# Additive manufacturing without compromise – Aluminium Oxide

## Al<sub>2</sub>O<sub>3</sub> – outstanding material properties

- + Very good electrical insulation
- + high mechanical & compressive strength
- + High hardness (>1600 HV)
- + Moderate thermal conductivity
- + High corrosion and wear resistance
- + Good gliding properties
- + Low density
- + Operating temperature without mechanical load above 1,000°C



Copyright by XJet

## CeramTec Al<sub>2</sub>O<sub>3</sub> 3D Printing Process

System Specifications	
Build area (w/d) on removable build tray	2 trays, 500 x 140 mm / 19.7 x 5.5 in, each
Layer thickness	10 microns
Building speed	Up to 1 mm height per hour
Material	Alumina Soluble support ceramics

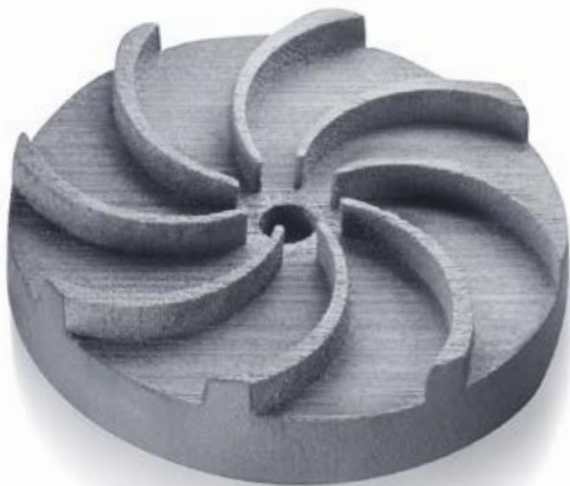
Part Quality	
Accuracy	± 50 micron on dimensions up to 5 mm 1% of larger dimensions up to ± 100 micron
Minimum feature size	200 microns
Surface roughness	N7 - N9 / Ra1,6 - 6,3



---

# Benefit from a streamlined process for your success

- + Print directly from CAD data
- + No tools required
- + Cavities and undercuts possible
- + Short production lead and tooling
- + Maximum flexibility: make design changes with a mouse click
- + Digitalization of existing components possible
- + Competent service team



Copyright by XJet

**CeramTec**  
THE CERAMIC EXPERTS

Additive Manufacturing  
CeramTec-Platz 1-9  
73207 Plochingen, Germany

Telefon +49 (0) 7153.611-11900  
Email [myceramtec@ceramtec.de](mailto:myceramtec@ceramtec.de)

