



SINTERED SILICON CARBIDE (SiC) COMPONENTS

Centre for Non-oxide Ceramics

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Overview

Silicon carbide (SiC) is one of the most attractive ceramic materials because of its excellent mechanical properties such as high strength, moderate toughness, and high wear and oxidation resistance, and strength retention at elevated temperature. ARCI has the expertise to manufacture SiC parts with various size and shapes by pressureless sintering using solid-state or liquid phase sintering additives and also by hot pressing technique. SiC parts of complex geometry can also be manufactured through machining at the green stage using 5-axis CNC machine. Dimensional accuracy can also be achieved on sintered SiC parts by final shaping with the help of sophisticated ultrasonic machining.

Technology Highlights

- Tuneable density and other thermo-mechanical properties.
- Flexibility in producing SiC parts incorporating solid-state or liquid phase sintering additives.
- Capable to produce SiC components up to 750 mm diameter.
- SiC parts with critical can be manufactured.

Applications

- Mechanical seals particularly for corrosive environment.
- Impact and abrasion resistance parts.
- Light-weight structural parts for aerospace applications.
- Impact and wear resistant parts



Complex Shaped Sintered SiC Parts for Aerospace Applications

Technology Status

**Intellectual Property Development Indices*

IPDI	1	2	3	4	5	6	7	8	9	10
Activities	Basic concepts and understanding of underlying scientific principles	Shortlisting possible applications	Research to prove technical feasibility for targeted application	Coupon level testing in stimulated conditions	Check repeatability/ consistency at coupon level	Prototype testing in real-life conditions	Check repeatability/ consistency at prototype level	Reassessing feasibility (IP, competition technology, commercial)	Initiate technology transfer	Support in stabilizing production
Status										