

International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

Balapur P.O., Hyderabad – 500005, Telangana, India



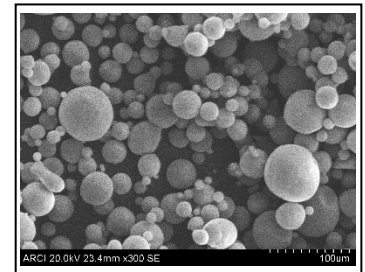
Ready-to-press and sinterable silicon carbide (RTP SiC) granules

Overview

Ready-to-press silicon carbide (RTP SiC) granules is being produced using spray drying or spray freeze drying technique through an intermediate aqueous processing route. This method is capable of producing different size spherical shaped granules with narrow size distribution and free flow properties. As the granules are produced from uniformly dispersed aqueous slurries of SiC powder, hence wide range of additives can be accommodated in the formulation of the RTP granules. This process is beneficial to manufacture the feedstock for producing green SiC compacts with high density and defect free homogenous microstructure. The sintered products thus produced exhibit superior properties than conventionally produced SiC.

Key Features

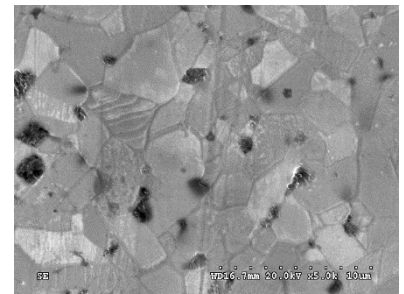
- Cost effective technique to produce RTP SiC granules.
- Flexibility to incorporate either solid-state or liquid-phase sintering additives in the formulation of RTP granules.
- Control on granule size with narrow distribution
- The process can be adopted for manufacturing various oxide or non-oxide ceramics.



SEM micrograph of spray-freeze-dried RTP SiC granules

Potential Applications

- Feedstock for manufacturing of SiC components



SiC inserts produced by use of ARCI produced RTP SiC granules

Intellectual Property Development Indices (IPDI)

- RTP granules processed in the laboratory scale
- Scaling up the process is in progress

Status	1	2	3	4	5	6	7	8	9	10
--------	---	---	---	---	---	---	---	---	---	----

Major Publications

1. P. Barick, B. P. Saha, S. V. Joshi and R. Mitra, Spray-freeze-dried nano-crystalline SiC containing granules: processing, compaction behaviour and sintering, *J. Euro. Ceram. Soc.*, 36 (2016), 3863-3877

Centre for Non-Oxide Ceramics (CNOc)

ARCI, Balapur PO., Hyderabad 500005, Telangana, India

Tel: +91 40 2445 2441 / 2445 2324; Fax: +91 40 2444 2699

Email: prasenjit [at] arci [dot] res [dot] in / bpsaha [at] arci [dot] res [dot] in / royjohnson [at] arci [dot] res [dot] in