



SINTER-PUR[®]

Non-Oxide Ceramics



Sinter-Pur[®] Ceramic Powders:

Sinter-Pur[®] are high performance, sub-micron, Silicon Carbide & Boron Carbide powders for the Advanced Ceramics Industry, which includes non-oxide ceramic applications such as wear parts, composites and armor. Our sinterable Beta Silicon Carbide and Boron Carbide powders are ideal for processing into parts providing proven mechanical properties, along with traditional corrosion/oxidation resistance, high hardness and thermal conductivity. Superior Graphite employs state-of-the-art milling technologies to create these advanced non-oxide ceramic powders. We manufacture virgin powders, as well as custom formulations. The finest grades of Beta-SiC and Boron Carbide (B_4C) can be processed into sintered shapes that exhibit the excellent mechanical properties, hardness, corrosion resistance, and thermal conductivity required for high-performance applications.

Beta SiC

Our Beta SiC is synthesized in our continuous Electro-Thermal Treatment/Purification Technology. It is cubic in structure, microcrystalline, provides wear resistance in coatings and composites, is compatible with advanced sintering processes and pre-ceramic polymer formulations, and is sinterable in submicron size. It is used in high performance wear parts, such as seal rings and pump parts, ceramic composites, and suitable for additive manufacturing processes. Beta SiC is also used as an additive to toner for increased flowability and internal printer cleaning, and as additive to nickel, chrome, aluminum and other materials for strength.

Applications:

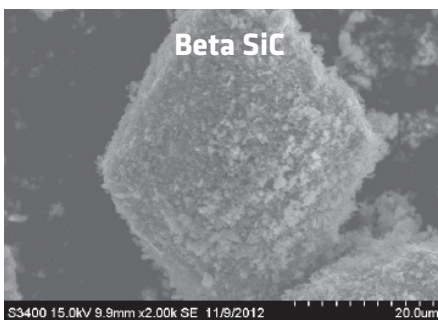
Toner, sintered ceramic parts, ceramic composites, coatings, and abrasive applications, such as high performance brake parts, wire-sawing.

Boron Carbide

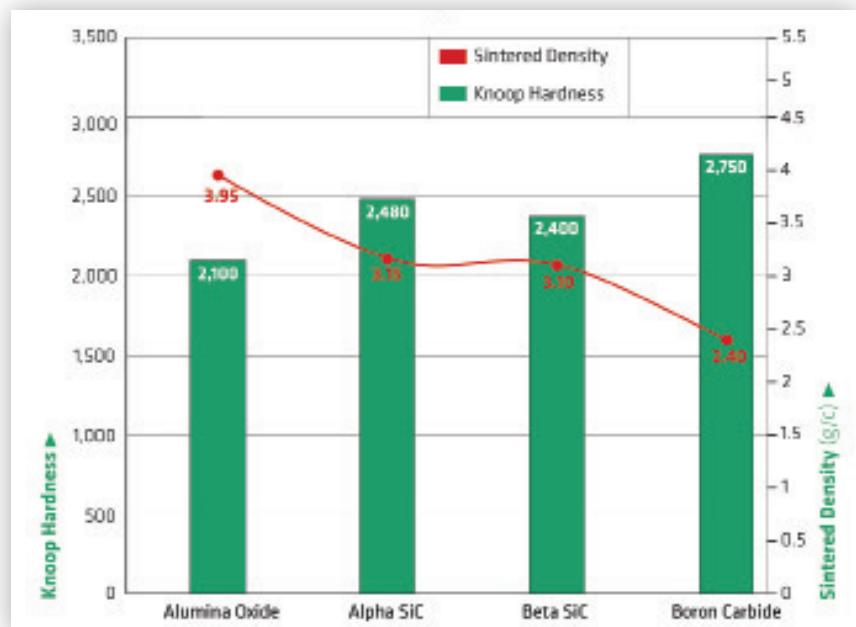
B_4C has a complex crystal structure, and is an extremely hard ceramic with Vickers hardness >30 MPa and a high cross section for absorbing neutrons. It is used in wear parts, abrasives (for ultrasonic cutting and lapping), nuclear shielding, ceramic armor, and as a sintering aid.

Applications:

Wear parts, abrasives (for ultrasonic cutting and lapping), nuclear shielding, ceramic armor, and also used as a sintering aid.



Sinter-Pur[®] materials are used for ballistic armor, abrasives, composites, brake linings, heating elements, nozzles and igniters due to their extreme hardness.



Sinter-Pur® Solutions

Issue

Additive manufacturing: there can be difficulty with achieving optimum sintered part density.

Solution

Using controlled and tight particle size powders, Superior Graphite provides multiple additive manufacturing (3D printing) technologies with the ideal particle sizes for their process.

Issue

Advanced sintering processes: this application can experience part failure, or sub-optimal density parts, if materials with lower purity or incorrect particle size distribution are utilized. The requirement for rapid part consolidation can be a problem with an unsuitable powder composition.

Solution

We offer binderless powders without any additives to complement a historic portfolio of powders with sintering aids and binders. These products are suitable for Field Assisted (FAST), Spark Plasma (SPS), and Direct Current (DCS) Sintering, and other advanced processes.

Issue

Micro-abrasives: ultra-fine lapping and polishing surfaces for semiconductor applications and other processes, such as chemical-mechanical planarization (CMP), demand extremely fine, uniform, sub-micron particles.

Solution

Superior Graphite offers ultra-fine SiC and B₄C powders, with controlled particle size distributions, for the finest grain and grit abrasives, with superior hardness.

Issue

The demands on armor ceramics can be difficult to meet with a single ceramic powder.

Solution

Superior Graphite's decades long experience as a world class producer of sinterable and hot pressable powders, with or without binders, enable users to customize their armor formulations to meet specific threats. In addition, Superior Graphite offers blending and mixing of these powders to achieve custom specifications.

Our Mission:

We create value for our customers by providing SUPERIOR SOLUTIONS - utilizing our unique technologies, processes and talents - while contributing to the company's long-term success.



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