

# StarPCS™ Bulk Molding Compound

## SBMC-900 SBMC-998

Bulk Molding Compound



POLYMER-TO-CERAMIC™ TECHNOLOGY

### Technical Data Sheet

StarPCS™ Bulk Molding Compound (BMC) products are carbon fiber reinforced molding compounds containing a discontinuous carbon fiber, a specially formulated StarPCSTM polycarbosilane resin, and refractory particulate. SBMC-900 and SBMC-998 can be used in the cured state, but are specifically designed for use as a ceramic matrix composite (CMC) thermal or mechanical structure.

### Green Body Curing

To create a green body, StarPCS™ BMCs are compression molded using standard compression molding techniques, tooling, and typical pressures, and are cured at temperatures between 180-250°C.

### Ceramic Matrix Composite (CMC)

To create high temperature ceramic matrix composite structures, these green bodies are pyrolyzed to temperatures between 850°C (minimum) and 1,200°C at atmospheric pressure and in inert environments to create a porous ceramic matrix preform. Vacuum infiltration fills the pore volume to allow creation of an amorphous silicon carbide CMC. Ideal infiltration polymers include StarPCSTM SMP-10 or SMP-877.

### Product Highlights

- Compression Moldable
- No Solvent Removable Necessary
- Standard Modulus Carbon Fiber Reinforced with varying fiber lengths
- Configurable Thermal and Mechanical Properties
- Designed for High Temperature applications
  - o Heat Shields
  - o Friction
  - o Furnace Tooling and Hardware

Physical Properties of StarPCSTM BMC	
Material Designation	SBMC-900 / SBMC-998
Density (as molded)	1.57 +/- 0.05 g/cm <sup>3</sup>
Density (as received)	0.5 +/- 0.05 g/cm <sup>3</sup>
Bulk Factor	2:1
Appearance	Dark gray colored grass clipping; non tacky; flexible
Odor	Odorless
Storage	Refrigerate

Product	Product Description		Flexural Properties of Ceramic Matrix Composite*			
			Flexural Strength		Flexural Modulus	
BMC Product	Carbon Fiber Reinforced Bulk Molding Compound	Fiber Length Distribution	KSI	MPa	MSI	GPa
SBMC-998		½"	10	69	4.8	33
SBMC-900**		2" Distribution	18	124	6.0	41

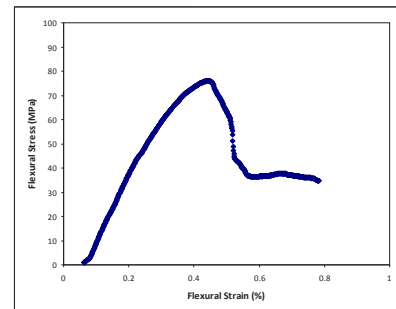


Figure 1: Stress-Strain Curve for SBMC-998 Ceramic Composite

\*Ceramic Matrix Composite comprised of BMC, infiltrated with SMP-10, pyrolyzed to 850°C, inert environment, tested per ASTM C1341-00 3-point bend test

\*\*expected values of ceramic composite when processed with SMP-10, 850°C pyrolysis

### Warranty

No analysis of this product is permitted. The data provided relates only to the material identified above, as supplied by Starfire Systems®, Inc. (SSI). Because conditions and methods of use of our products are beyond our control, this information should not be used as a substitution for customer's tests to ensure that SSI's products are safe, effective, and fully satisfactory for the intended end use. SSI's sole warranty is that the product will meet sales specifications in effect at the time of shipment.