

Specialty Materials, Inc.

SCS SILICON CARBIDE FIBER

Specialty Materials' SCS silicon carbide fibers are the result of more than twenty years of research and development. These fibers are used in metal, ceramic and polymer matrix composites and are extremely effective for high-temperature applications. Silicon carbide reinforced titanium (TMC), aluminum (MMC) and ceramic composites (CMC) are high in strength and stiffness, lightweight, and maintain their properties at high temperatures.

Tests have proven that high fiber strength is maintained up to 1200°C in an inert gas atmosphere. SiC fibers do not react with typical matrix alloys. SCS-6™ - The lowest cost fiber, with high strength properties, wettability for metals, low electrical conductivity, high heat resistance, and corrosion resistance/chemical stability. SCS-Ultra™ - A fiber for the most demanding applications. Produced at the same diameter as SCS-6, it is 50% stronger and 10% higher in modulus.

- Produced primarily in 5.6-mil diameter
- Beta silicon carbide on (33μm) carbon monofilament
- Smooth surface with duplex SiC/C coating
- High strength / high modulus
- Designed for use in metal-matrix composites
- Successfully used in ceramic-matrix composites
- Resistant to liquid-phase aluminum
- Resistant to titanium bonding processes
- Surface texture not optimum for interface with resin matrices



SCS Silicon Carbide Fiber Properties
SCS Silicon Carbide Fiber Technical
Presentation
Testing of SCS-6 Fibers
Carbon Monofilament

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SILICON CARBIDE FIBER PROPERTIES

Property	Units	Silicon Carbide SCS-6	Silicon Carbide SCS-Ultra
Cross-Section		Round	Round
Aspect Ratio		Continuous	Continuous
Diameter	um	142	142
	in. $\times 10^{-3}$	5.6	5.6
Density	g/cc	3.08	3.08
	lbs/in ³	0.11	0.11
Thermal Expansion	PPM/°C	4.1	4.1
	PPM/°F	2.3	2.3
Tensile Strength	MPa	3,900	5,900
	ksi	560	850
Tensile Modulus	GPa	380	415
	msi	56	60