

COI Ceramics Nicalon™ HI Type S SiC Ceramic Fiber

Category : Ceramic , Carbide

Material Notes:

Description: A stoichiometric beta-SiC fiber manufactured near-oxygen-free using decarbonization pyrolysis and electron-beam curing. It has higher modulus, creep resistance and oxidation resistance than Hi-Nicalon™. HI-Nicalon™ Type S is highly resistant to oxidation and chemical attack and is available in a variety of product forms, depending on the intended use. The fiber is coated with polyvinyl alcohol (PVA) sizing for improved handleability. **Special Properties:** CMC's reinforced with HI-Nicalon™ Type S ceramic fiber offers distinct advantages over other materials. Oxide fiber and superalloys generally lose mechanical properties above 800C. SiCO fiber generally loses properties above 1000C. 100 micron diameter monofilament SiC fiber is generally not weavable. HI-Nicalon™ Type S ceramic fiber overcomes these drawbacks. **Product Forms:** Continuous Fiber: Supplied as multi-filament tow, spooled on 3 inch ID bobbins to 500 meters in length (100 grams in weight). Also available in random lengths at a reduced price. Woven Cloth: Available as Plain Weave, 5HS Weave or 8HS Weave, as identified in Table 2, HI-NICALON™ Type S cloth is typically supplied as 30 centimeter-wide continuous rolls of specific lengths. Other widths, weave or braid styles can be made available. Chopped Fiber: Available as 1-mm length chopped multi-filament tow. Longer lengths also available. **Uses:** HI-Nicalon™ Type S ceramic fiber is primarily designed to be used as reinforcement for high temperature ceramic composites. It can also be used as a reinforcement for plastic, and metal matrix composites. Surface treatments are normally recommended to facilitate processing and maximize composite properties. The fiber can also be used to form fibrous products such as high temperature insulation, filters, etc. Its resistance to chemical attack allows the fiber to be used in harsh environments. Information from COI Ceramics, Inc.

Order this product through the following link:

http://www.lookpolymers.com/polymer_COI-Ceramics-Nicalon-HI-Type-S-SiC-Ceramic-Fiber.php

Physical Properties	Metric	English	Comments
Density	3.10 g/cc	0.112 lb/in ³	
Filament Diameter	12 µm	12 µm	
Fiber Count	1800 dtex	1620 denier	

Mechanical Properties	Metric	English	Comments
Tensile Strength	2600 MPa	377000 psi	
Tensile Modulus	420 GPa	60900 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	5.10 µm/m-°C	2.83 µin/in-°F	
	@Temperature 25.0 - 500 °C	@Temperature 77.0 - 932 °F	
Specific Heat Capacity	0.700 J/g-°C	0.167 BTU/lb-°F	
	@Temperature 25.0 °C	@Temperature 77.0 °F	

Thermal Properties	Metric	English	Comments
	1.15 J/g-°C	0.275 BTU/lb-°F	
	@Temperature 500 °C	@Temperature 932 °F	
Thermal Conductivity	16.3 W/m-K	113 BTU-in/hr-ft ² -°F	
	@Temperature 500 °C	@Temperature 932 °F	
	18.4 W/m-K	128 BTU-in/hr-ft ² -°F	
	@Temperature 25.0 °C	@Temperature 77.0 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	31 %	31 %	
Oxygen, O	0.20 %	0.20 %	
Silicon, Si	69 %	69 %	

Electrical Properties	Metric	English	Comments
Volume Resistivity	0.10 ohm-cm	0.10 ohm-cm	

Descriptive Properties	Value	Comments
C/Si Atomic Ratio	1.05	
Filaments per tow	500	

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