

SPECIALTY MATERIALS, INC.

Manufacturers of Boron and SCS Silicon Carbide Fibers and Boron Nanopowder

SAFETY DATA SHEET

Silicon Carbide Continuous Fiber

SECTION 1 – IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Substance Identifier : Silicon Carbide

Form : Continuous monofilament

Product Names: SCS-6, SCS-Ultra, SCS-LCTE
Product Uses: Reinforcing fiber in high temperature metal and ceramic composite material systems; edge-defined film-fed growth process.

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SECTION 2 – HAZARDS IDENTIFICATION

Classification: Not classified as hazardous in accordance to Directive 1999/45/EC

Overview: This is a non-combustible, non-reactive solid material in a continuous monofilament form having a diameter of 142 microns. Its primary acute hazard is puncture of the skin during handling. There are no known chronic hazards associated with the continuous fiber form. See Section 11.

Potential Health Effects: Should the continuous fiber be subjected to machining or grinding operations that result in the generation of fine dust particulates, slight-to-moderate eye and skin irritation can occur. In addition, ingestion and inhalation of fine particle dust may result in gastrointestinal irritation and irritation to the respiratory tract, respectively. See Section 8.

Manufacturing Process Note: Continuous silicon carbide fiber comes into contact with liquid mercury during production in the chemical vapor deposition (CVD) process. Mercury is non-wetting to silicon carbide fiber. Testing has not revealed the presence of mercury on the fiber surface. The detection limit of this test is 0.00002% (0.2 ppm).

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SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS #	EINECS #	Wt.%
Silicon Carbide	409-21-2	206-991-8	98%
Carbon	7440-44-0	N/A	2%

SECTION 4 – FIRST AID MEASURES

First Aid: Skin

Remove splinters with clean tweezers and swab with alcohol as soon as possible to avoid any infections. Removal of splinters in skin can be difficult. Medical assistance may be required in some instances.

If skin becomes irritated due to contact with silicon carbide particulates, remove contaminated clothing. Wash affected areas with soap and rinse with clean water. If irritation persists, seek medical attention.

First Aid: Eyes

Check for the presence of contact lenses and remove if possible. Flush eyes with plenty of water for at least 15 minutes, periodically lifting the upper and lower eyelids. Seek medical attention as soon as possible.

First Aid: Ingestion

Do not induce vomiting or administer anything by mouth. Seek medical attention as soon as possible.

First Aid: Inhalation

Remove from exposure area to fresh air immediately. If not breathing, administer artificial respiration – do not administer mouth-to-mouth resuscitation. If breathing with difficulty, administer oxygen. Seek medical attention as soon as possible.

SECTION 5 – FIRE FIGHTING MEASURES

Flammability of the substance:

Non-flammable. Use an extinguishing media suitable for the surrounding fire.

Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus appropriate to the surrounding fire conditions.

Explosion hazards:

Not expected to be an explosion hazard.

Hazardous Combustion Products:

None known.

NFPA Ratings:

Health: 1; Fire: 0; Reactivity: 0; Other: 0

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SECTION 6 – ACCIDENTAL RELEASE MEASURES

Overview:	This is a non-combustible, non-reactive solid material in a continuous monofilament form having a diameter of 142 microns.
Personal precautions:	Use gloves and eye protection (see Section 8) while collecting segments of fiber. To minimize splinters, avoid coiling tightly or doubling-over. Minimize exposure to dust by following the recommendations in Section 8.
Environmental Precautions:	None if substance remains in continuous fiber form. Should the substance be reduced to fine particulate or dust form, treat as any inert particulate or dust by avoiding dispersal into waterways, drains and sewers.
Methods for containment/cleanup:	Place lengths of fiber into plastic bags and place bags into disposal containers. Vacuum or sweep up smaller lengths of fiber and place debris into plastic bags or containers. Follow personal protection precautions (Section 8).

SECTION 7 – HANDLING AND STORAGE

Precautions for safe handling:	Use appropriate personal protective equipment (Section 8). Eating, drinking and smoking should be prohibited in areas where this material is being handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Fiber should remain on provided spools until processing.
Conditions for safe storage:	Store in a dry area with the spool axis in the horizontal position.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters:	This is a non-combustible, non-reactive solid material in a continuous monofilament form having a diameter of 142 microns. No special monitoring procedures or environmental controls are required.
Exposure limits:	
Silicon carbide continuous fiber:	ACGIH – none; NIOSH – none; OSHA PELs – none
Silicon carbide respirable:	<u>ACGIH</u> – 10 mg/m ³ (particulate matter containing no asbestos and <1% crystalline silica). <u>NIOSH</u> - 10 mg/m ³ TWA; respirable dust: 5 mg/m ³ TWA. <u>OSHA Final PELs</u> - 15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)

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Exposure controls:	No special ventilation requirements under normal and intended conditions of product use.
Personal protective equipment:	<u>Respiratory protection</u> : is not required unless the continuous fiber is reduced to particulate or dust form. <u>Hand protection</u> : is recommended to protect against fiber splinters. Nitrile gloves, or thin leather gloves if operations can be performed using them, are recommended. <u>Eye protection</u> : safety glasses with side shields are recommended when handling fiber and during processing. <u>Skin protection</u> : no special protective clothing is required while handling silicon carbide fiber, unless an airborne particulate or dust environment has been generated.
Hygiene measures:	Workers should wash hands and face before eating, drinking and smoking.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	Not Applicable
Specific Gravity (H ₂ O = 1):	2.8 to 3.0
Vapor Pressure (mm Hg):	Negligible
Solubility in Water:	Negligible
Reactivity in Water:	None
Melting Point:	Sublimes @ 2300 – 2500°C
Appearance and Odor:	Odorless gray-to-black cylindrical fiber, diameter range from 50 to 150 µm
Composition:	Silicon Carbide on a Carbon substrate

SECTION 10 – STABILITY AND REACTIVITY

Stability:	Unstable () Stable (X)
Incompatibility (Materials to Avoid):	soluble in fused potassium hydroxide, fused alkalis, and molten iron
Hazardous Decomposition Products:	None under normal conditions of storage and use.
Hazardous Polymerization:	May Occur () Will Not Occur (X)
Conditions to Avoid:	Avoid airborne dust accumulation

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute toxicity:	May cause eye, skin and respiratory irritation when reduced to fine powder form.
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Chronic health effects: Carcinogenicity:
National Toxicology Program: Yes () No (X)
I.A.R.C. Monographs: Yes () No (X)
OSHA: Yes () No (X)
LD50/LC50: Not available
Epidemiology: An examination of 53 silicon carbide crushers showed 15 cases of pneumoconiosis in workers employed on the crushing, sieving and packing of silicon carbide have been reported.

SECTION 12 – ECOLOGICAL INFORMATION

Environmental effects: No known significant effects or critical hazards.
Mobility: Product is not hazardous to water.
Other adverse effects: No known significant effects or critical hazards.
AOX: The product does not contain organically bound halogens which could lead to an AOX value in waste water.

SECTION 13 – DISPOSAL CONSIDERATIONS

Methods of disposal: Not a hazardous waste. However, disposal/maintenance personnel must be aware of the splinter hazard. Disposal of this product should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority regulations
Hazardous waste: To the suppliers knowledge, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC.

SECTION 14 – TRANSPORTATION INFORMATION

International transport regulations: ADR/RID/IMDG/IATA classes: Not regulated by any transport mode
US DOT information: Hazard class: none
UN/NA #: none
Required labels: none

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TDG information:

Hazard class: none

UN/NA #: none

Required labels: none

SECTION 15 – REGULATORY INFORMATION

EU regulations:

Classification and labeling have been determined according to EU Directives 67/548/EEC and 1999/45/EC.

US Federal regulations:

None of the product's components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

The < 0.00002% (0.2 ppm) non-detect amount for the presence of mercury is well below regulatory minimums.

SECTION 16 – OTHER INFORMATION

Notice:

THE INFORMATION PRESENTED HERE IN IS BASED UPON DATA CONSIDERED TO BE ACCURATE AS OF THE DATE OF MANUFACTURE OF THIS MATERIAL DATA SAFETY DATA SHEET. HOWEVER, NO WARRANTY OR REPRESENTATION, EXPRESSED OR OTHERWISE, IS MADE AS TO THE ACCURACY OR COMPLETENESS OF THE FOREGOING DATA AND SAFETY INFORMATION, NOR IS ANY AUTHORIZATION GIVEN OR IMPLIED TO PRACTICE ANY PATENTED INVENTION WITHOUT A LICENSE. IN ADDITION, THE VENDOR CAN ASSUME NO RESPONSIBILITY FOR ANY DAMAGE OR INJURY RESULTING FROM ABNORMAL USE, FROM ANY FAILURE TO ADHERE TO RECOMMENDED PRACTICES, OR FROM ANY HAZARDS INHERENT IN THE NATURE OF THE PRODUCT.

SDS history:

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