



Material Safety Data Sheet

Silicon Carbide (SiC) Whisker, All Versions

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY

- 1.1 Identification of the substance or preparation:
Commerical product name: Silar[®] Silicon Carbide Whiskers: SC-9, SC-9M
SI-TUFF[™] Silicon Carbide Whiskers: SC-050
- 1.2 Company: Advanced Composite Materials, LLC
Address:
Street: 1446 South Buncombe Road
City: Greer
State: South Carolina
Postal Code: 29651
Country: United States
- Telephone: +01 864-877-0123
Fax: +01 864-879-6615
- Emergency Information: Emergency Telephone: +01 864-877-0123
- Contact for General Information: Technical Department

2. COMPOSITION / INFORMATION ON INGREDIENTS

- Chemical characterization (substance):
Definition according to EC directive: Silicon Carbide
CAS No.: 409-21-2
EINECS No.: 206-991-8

3. HAZARDS IDENTIFICATION

- Critical hazards to man and environment:
EC/R: Dry airborne product only: 37, 38, 40

4. FIRST AID MEASURES

- 4.1 Inhalation: If dust is inhaled, and if symptoms of pulmonary involvement develop (coughing, wheezing, or shortness of breath), remove immediately from the exposure area to fresh air. If symptoms persist, seek medical attention.
- 4.2 Skin contact: Not expected to present a significant skin hazard under anticipated conditions of normal use, but, if irritation or rash occurs, seek medical attention for symptomatic treatment.

4. FIRST AID MEASURES (continued)

- 4.3 Eye contact: In case of eye irritation due to contact with material, immediately rinse with copious quantities of clean water, occasionally lifting upper and lower eyelids, until no evidence of material remains (approximately 15-20 minutes). If symptoms persist, such as pain, blinking, tears, or redness, seek medical attention.
- 4.4 Ingestion: Not expected to present a significant ingestion hazard under anticipated conditions of normal use.

5. FIRE FIGHTING MEASURES

- 5.1 General information: Not flammable.
- 5.2 Suitable extinguishing media: Use extinguishing measures appropriate for the source of the fire.
- 5.3 Extinguishing media which must not be used for safety reasons: None known.
- 5.4 Special exposure hazards arising from the substance itself, combustion products, or resulting gases: None known. Above 700 °C silicon carbide whiskers may slowly oxidize and produce carbon monoxide.
- 5.5 Special protective equipment: Wear pressure-demand, self-contained breathing apparatus and full firefighting protective clothing.

6. ACCIDENTAL-RELEASE MEASURES

- 6.1 Personal precautions: Wear personal protective equipment if warranted (see also item 8.3).
- 6.2 Environmental precautions: No special measures required.
- 6.3 Methods for cleaning up: Wet down spillage, pick-up mechanically, and dispose of according to regulations.

7. HANDLING AND STORAGE

- 7.1 Handling:
Precautions for safe handling: Avoid dust formation. Use an engineered closed system if possible during handling.
- Precautions against fire and explosion: No danger of fire and dust explosion.
- 7.2 Storage:
Conditions of storage rooms and vessels: Tightly sealed containers in a clean, secure area. Identify the contents of all containers.
- Advice of storage of incompatible materials: None
- Further information for storage: None

8. EXPOSURE CONTROLS / PERSONAL PROTECTION EQUIPMENT

- 8.1 Further information for system design and engineering measures: Not applicable.
- 8.2 Components with specific control parameters as limit values: For dry airborne silicon carbide whiskers, maximum recommended exposure limit is 0.1 fibers/cc TWA respirable fibers as referenced by the American Council of Governmental Industrial Hygienists (ACGIH®).
- 8.3 Personal protection equipment:
General protection and hygiene measures: Observe standard industrial hygiene practice.
Respiratory protection: A fine-dust mask with category P1 filter must be used if fine dust limits are exceeded.
Hand protection: Not normally considered a skin hazard. Where use can result in skin contact, practice good personal hygiene, and wash hands and other exposed areas with mild soap and water before eating, drinking, smoking, using toilet facilities, or leaving work.
Eye protection: Protective goggles.
- 8.4 Exposure of the environment limited and controlled: Not applicable.
- 8.5 Further information for system design and engineering measures: Not applicable.

9. PHYSICAL AND CHEMICAL PROPERTIES

- 9.1 Appearance:
Form: Powder.
Color: Variable, typically gray-green.
Odor: Odorless.
- 9.2 Safety parameters:
Change in physical state: Silicon carbide whiskers will not melt in air.
Flash point: Not flammable.
Flammability: Not flammable.
Ignition temperature: Not applicable.
Autoflammability: Not applicable.
Oxidizing properties: Not applicable.
Explosive limits: Not applicable.
Vapor pressure: Not applicable.
Specific gravity (Water =1): 3.2
Bulk density: Variable, but usually less than 0.4 g/cm³.
Solubility in Water: Insoluble in water.
pH-value: Nominal 7.0
Partition coefficient n-octanol/water: Silicon carbide whisker is insoluble in both water and n-octanol.

10. STABILITY AND REACTIVITY

- 10.1 General information: This material is stable, no hazardous reactions known.
- 10.2 Conditions to avoid: Not applicable.
- 10.3 Materials to avoid: Not applicable.
- 10.4 Hazardous decomposition products: None known.

11. TOXICOLOGICAL INFORMATION

- 11.1 General information: No hazardous effects known.
- 11.2 Acute toxicity: Not known.
- 11.3 Further toxicological information: Silicon carbide whiskers are not bioactive and not known to absorb into living tissues. Dry airborne silicon whiskers are a fibrous form of single-crystal silicon carbide having an aspect ratio of 3:1 or greater. Hazardous whiskers are those in the respirable size range. Silicon carbide whiskers are not classified as a carcinogen. International Agency for Research on Cancer (IARC) classifies the family of ceramic fibers, which includes silicon carbide whiskers, as group 2B: possibly carcinogenic to humans (group 2B: There is sufficient evidence for the carcinogenicity of ceramic fibers in experimental animals; no data were available on the carcinogenicity of ceramic fibers to humans"). ACGIH[®] has classified fibrous forms of silicon carbide as A2: Suspected Human Carcinogen in "Silicon Carbide" TLV[®] Chemical Substances 7th Edition Documentation, ACGIH[®] Publication #7 DOC-530, 2003." ("The carcinogen designation of A2, Suspected Human Carcinogen, is recommended for fibrous forms, based on inhalation experiments in several species showing lung and pleural carcinogenicity, and limited human data for lung cancer...").
- IARC and ACGIH[®] Carcinogenicity estimates are for dry, airborne, respirable silicon carbide whiskers and does not apply to silicon carbide whiskers in reinforced composites.

12. ECOLOGICAL INFORMATION

- 12.1 Ecotoxicity: No likelihood of damaging effect on water organisms.
- 12.2 Mobility: Silicon carbide whiskers are insoluble in water.
- 12.3 Persistence and degradability:
Further information: Silicon carbide whiskers are insoluble in water. Separation by sedimentation.

- 12.4 Bioaccumulation potential:
Further information: Silicon carbide whiskers are not bioactive and are insoluble in water. No harmful effects expected.
- 12.5 Other harmful effects: None known.
- 12.6 Further ecological information:
General information: No environmental problems expected if handled and treated in accordance with standard industrial practices and local regulation where applicable.

13. DISPOSAL CONSIDERATIONS

- 13.1 Materials: Spillage or unused materials should be disposed in accordance with country and local solid waste regulations.
- 13.2 Contaminated packaging: Containers should be sealed to prevent drying and subsequent airborne emissions during transportation and at the disposal site. It is recommended that containers be externally labeled to indicate that container should remain sealed.

14. TRANSPORT INFORMATION

- 14.1 Land transport GGVSE / ADR and RID:
Road ADR: Not regulated.
Railway RID: Not regulated.
- 14.2 Inland navigation GGVBisch / ADNR: Not regulated.
- 14.3 Transport by sea GGVSee / IMDG - code: Not regulated.
- 14.4 Air Transport ICAO-TI / IATA - DGR: Not regulated.
- 14.5 Transport / Further information:
Postal and courier service: Permitted.

15. REGULATORY INFORMATION

- 15.1 Classification according to EC guidelines: Non dangerous according to the guidelines relevant EC directives.
- 15.2 Danger-symbol and danger-text of the product: None
EC / R, aqueous dispersion as-supplied: 36
EC / S, aqueous dispersion as-supplied: 48 (keep wet with water)
- 15.3 National regulations: e.g. Germany
Water pollution category: Not water polluting (VwVwS (Germany) from 17.05.1999, enclosure 3)

16. OTHER INFORMATION

This information covers the safety requirements of the product(s) exclusively and is based on current knowledge and experience. It does not represent a guarantee for properties of the described product(s) in terms of legal warranty regulations.