

## Safety Data Sheet

### Advanced Silicon Carbide Materials CVC SiC<sup>®</sup>

(Chemical Vapor Composite silicon carbide)

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#### SECTION 1. IDENTIFICATION

Production name : Advanced Silicon Carbide Materials CVC SiC<sup>®</sup> (silicon carbide, solid)

Product code : CVC SiC<sup>®</sup> (solid form)

CAS Number : 409-21-2

##### Manufacturer or supplier's details

Company name of supplier : Advanced Silicon Carbide Materials

Address : 3038 Aukele St.  
Lihue, Hawaii 96766

Telephone : (808) 245-6465

Emergency telephone : CHEMTREC: (800) 424-9300

##### Recommended use of the chemical and restrictions on use

Recommended use : Grinding, lapping, polishing to produce optics, lens molds, parts for semiconductor manufacturing. No restrictions on use.

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#### SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture: Silicon Carbide (SiC) is not classified as dangerous substance or mixture according to Council Directive 67/548/EEC or Directive 1999/45/EC or Regulation (EC) No 1272/2008.

Label elements: No labelling required for SiC.

Other hazards: Silicon Carbide (SiC) does not fulfill the criteria for the classification as PBT or vPvB as it is inorganic. No specific toxicity is described for SiC crude and grains. SiC is not an officially listed hazardous substance. According to ACGIH, SiC is insoluble or made of poorly soluble particles not otherwise specified (PNOS).

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	:	Substance
Substance name	:	Silicon carbide
CAS Number	:	409-21-2
Ingredients	:	100% silicon carbide (Beta matrix with secondary alpha particle grain structure)

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### SECTION 4. FIRST AID AND MEASURES

Eyes	:	Flush powder from eyes with large amounts of water for at least 15 minutes. <u>Do not rub eyes.</u> Get medical attention if irritation persists.
Skin	:	Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.
Inhalation	:	Supply fresh air. If required, provide artificial respiration.
Ingestion	:	Seek medical attention. May cause gastrointestinal disturbance.

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### SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media : Silicon carbide is non-combustible. Use extinguishing media suitable for type of surrounding fire.

Special protective equipment and precautions for firefighters:

NFPA Codes: Flammability: 0 Health: 1 Reactivity: 0 Special: 0

Hazardous combustion products: Product is non-combustible. However, extreme heat can cause oxides of silicon (including SiO<sub>2</sub> and SiO) and carbon (including CO<sub>2</sub> and CO) to form.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment, and emergency procedures: Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator.

Methods and materials for containment and cleaning up: Pick up large pieces and dispose in a closed container. Follow precaution stated in above section for clean-up.

**SECTION 7. HANDLING AND STORAGE**

Precautions for safe handling: Silicon carbide is a non-combustible, non-reactive material. In bulk solid form, potential health effects are primarily related to skin puncture or laceration due to sharp edges (where sharp edges may be present due to item design, or due to fracture of item). Dust that may form when silicon carbide is crushed, cut, ground, or machined can be an irritant to the eyes, lungs, skin and gastrointestinal system. Frequently clean work areas with HEPA filtered vacuum or wet sweeping to minimize accumulation of debris. Do not use compressed air for clean-up.

Conditions for safe storage, including any incompatibilities: Store in a manner to minimize airborne dust.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Control parameters:

Components with specific control parameters as limit values

	409-21-2 Silicon carbide (100.0%) 8-Hour TWA (mg/m <sup>3</sup> )	
	Inhalable dust	Respirable dust
Norway	10	5
France	10	5
Germany	10	3
USA (ACGIH)	10	3

HMIS	
Health	1
Fire	0
Reactivity	0

## Safety Data Sheet

Engineering controls : Use engineering controls to ensure compliance (implies air monitoring strategy, proper selection of air sampling equipment and statistical analysis of dust levels) with applicable dust exposure limits.

### Personal protective equipment:

**Skin** – Wear full body clothing, gloves, hat, and eye protection as necessary to prevent skin irritation. Washable or disposable clothing may be used. If possible, do not take unwashed work clothing home. If soiled work clothing must be taken home, employers should ensure employees are trained on the best practices to minimize or avoid non-work dust exposure (e.g., vacuum clothes before leaving the work area, wash work clothing separately, rinse washer before washing other household clothes, etc.).

**Eye** – As necessary, wear goggles or safety glasses with side shields.

**Respiratory** – When it is not possible or feasible to reduce airborne particulate levels below the appropriate PEL/OEL through engineering controls, use NIOSH-certified particulate respirators in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. Avoid inhaling the dust; if in specific circumstances, compliance cannot be achieved, use a disposable (P2 as a minimum) dust protection mask.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Solid, dark gray	
Odor	:	Not applicable	
Odor Threshold	:	Not applicable	
pH	:	Not applicable	
Melting Point	:	2,730° C	
Initial Boiling Point/Range:		Not applicable	
Flashpoint	:	Not applicable	
Evaporation Rate	:	Not applicable	
Flammability	:	Not applicable	
Upper/Lower Flammability or Explosive Limits	:		Not applicable
Vapor pressure	:	Not applicable	
Vapor density	:	Not applicable	
Solubility	:	Not soluble in water	



## Safety Data Sheet

Relative Density : 3.21  
Partition Coefficient: n-Octanol/water : Not applicable  
Auto-ignition temperature: Not applicable  
Decomposition Temperature: Not applicable  
Viscosity : Not applicable  
Molecular weight : 40.1 g/mole

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### SECTION 10. STABILITY AND REACTIVITY

Reactivity : None  
Chemical Stability : The material is stable  
Possibility of Hazardous Reaction: Will not occur  
Conditions to Avoid : None  
Incompatible Materials : Powerful oxidizers; fluorine, manganese trioxide, oxygen disulfide  
Hazardous decomposition products: Extreme heat can cause oxides of silicon (including SiO<sub>2</sub> and SiO) and carbon (including CO<sub>2</sub> and CO) to form.  
Conditions to avoid : Avoid large accumulation of dust in air.

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### SECTION 11. TOXICOLOGICAL INFORMATION

General information : No hazardous effects known under normal conditions.

*“Non-fibrous forms of SiC, sometimes referred to as “angular” particles, are irregular in shape and occur as respirable and non-respirable particles. The non-fibrous forms of SiC have very low toxicity in humans and experimental animals. The TLV-TWA for non-fibrous forms, is therefore, set at the level of “poorly” soluble particles, not otherwise specified (PNOS), being 10 mg/m<sup>3</sup> for inhalable particles, and 3mg/m<sup>3</sup> for respirable particles.” (ACGIH Toxicology review 2001).*

Acute toxicity : No harmful effects identified, based on available data  
Irritation : May cause irritation to skin  
Corrosivity : No harmful effects identified, based on available data  
Sensitization : No harmful effects identified, based on available data  
Repeated dose toxicity : No harmful effects identified, based on available data  
Carcinogenicity : No harmful effects identified, based on available data  
Mutagenicity : No harmful effects identified, based on available data  
Toxicity for reproduction : No harmful effects identified, based on available data

## SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity (aquatic and terrestrial, where available): These products are not reported to have any ecotoxicity effects.

Bio-accumulative potential: No information for the product  
 Mobility in soil : No information for the product  
 Other adverse effects : No adverse effects of this material on the environment are anticipated if handled and treated in accordance with standard industrial practice.

## SECTION 13. DISPOSAL CONSIDERATIONS

### Waste Management and Disposal:

To prevent waste materials from becoming airborne during waste storage, transportation and disposal, a covered container or plastic bagging is recommended.

### Additional information:

This product, as manufactured, is not classified as a listed or characteristic hazardous waste according to U. S. Federal regulations (40 CFR 261). Any processing, use, alteration or chemical additions to the product, as purchased, may alter disposal requirements. Under U. S. Federal regulations, it is the waste generator's responsibility to properly characterize a waste material for hazardous waste determination per 40 CFR, Part 262. Check local, regional, state or provincial regulations to identify all applicable disposal requirements.

## SECTION 14. TRANSPORTATION INFORMATION

UN number : DOT, ADR, AND, IATA, IMDG are all not applicable;  
 non-hazardous material  
 UN Proper Shipping Name: DOT, ADR, AND, IATA, IMDG are all not applicable;  
 non-hazardous material  
 Transportation Hazard Class: DOT, ADR, AND, IATA, IMDG are all not applicable;  
 non-hazardous material  
 Packing Group : DOT, ADR, AND, IATA, IMDG are all not applicable;  
 non-hazardous material  
 Environmental hazards : Not applicable; non-hazardous material

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:  
 Not applicable; non-hazardous material

Safety Data Sheet

Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises:  
Not applicable; non-hazardous material

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**SECTION 15. REGULATORY INFORMATION**

United States Regulations

**SARA Title III:** This product does not contain any substances reportable under Sections 302, 304, 313 (40 CFR 372). Sections 311 and 312 apply.

**OSHA:** Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103.

**TSCA:** All substances contained in this product are listed in the TSCA Chemical Inventory. Contact your local agency if in doubt.

**California Proposition 65:** Substance not listed

International Regulations

**Canadian WHMIS:** Class D-2A Materials Causing Other Toxic Effects

**Canadian EPA:** All substances in this product are listed, as required, on the Domestic Substance List (DSL).

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**SECTION 16. OTHER INFORMATION**

HMIS Hazard Rating

HMIS Health : 1  
HMIS Flammable : 0  
HMIS Reactivity : 0  
HMIS Personal Protective Equipment : X (to be determined by user)

Abbreviations:

TLV-TWA : Threshold Limit Value-Time Weighted Average (8 hours);  
ACGIH : American Conference of Governmental Industrial Hygienists  
PNOS : Particles Not Otherwise Specified

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**Disclaimer**



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MATERIALS

## Safety Data Sheet

This information is presented in good faith and believed to be accurate as of the effective date noted. Employers may use this SDS to supplement other information gathered by them in their efforts to provide a safe workplace environment. Given the summary nature of this document, Advanced Silicon Carbide Materials, Inc. does not extend any warranty (expressed or implied), assume any responsibility, or make any representation regarding the completeness of this information or its suitability for the purposes envisioned by the user.

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End of SDS