

## SAFETY DATA SHEET

### Section 1: Product Identification

**Product Identifier:** CrystX™ silicon carbide

**CAS #** 409-21-2

**EINECS #** 206-991-8

**Recommended Use of the Chemical and Restrictions:** Power electronic devices

**Supplier Information:**

GTAT Corporation  
5 Wentworth Drive Unit #1  
Hudson, NH 03051 USA  
Telephone Number: (603) 921-2986

### Section 2: Hazard Identification

Silicon Carbide boules and wafers as sold do not pose health hazards. Upon transport or further processing, dust may result. Lacerations may also occur from broken pieces if sharp. Any dust generated contains the following hazards.

**Signal Word:** Warning



#### Precautionary statement(s)

- P202 Do not handle until all safety precautions have been read and understood.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
- P280 Wash thoroughly after handling. Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P308 + P313 If exposed or concerned: Get medical advice/attention.
- P501 Dispose of contents/ container in accordance with local/regional/national/international regulations.
- P305 + P 351 + P 338 If in eyes, rinse cautiously with water for several minutes. Remove contact lenses. Continue rinsing.

#### Hazard Statement(s)

- H315 Causes skin irritation.
- H320 Causes eye irritation.
- H351 Suspected of causing cancer by inhalation.

### Section 3: Composition/Information on Ingredients

**Substance(s)**

Silicon Carbide

CAS # 409-21-2

100%

### Section 4: First Aid Measure

**Inhalation:** Remove or Provide fresh air. If not breathing, provide artificial respiration. Seek immediate medical attention.

**Eyes:** Rinse with running water for at least 20 minutes. Consult a physician.

**Skin:** Wash with soap and water immediately. Seek medical attention if rash develops.

**Ingestion:** Seek medical attention.

**Most important symptoms and effects, both acute and delayed:**

No data available

**Indication of immediate medical attention and special treatment needed:**

No data available

### Section 5: Fire Fighting Measures

**Extinguishing media:**

Carbon dioxide, Dry chemical, Water spray. Use fire extinguishing methods suitable for surrounding conditions.

**Specific hazards arising from the chemical:**

Carbon dioxide and Carbon monoxide can be generated if burned.

**Special protective equipment and precautions for fire-fighters:**

Firefighters should wear positive pressure respiratory protection and protective firefighting clothing.

### Section 6: Accidental Release Measures

**Personal precautions, protective equipment, and emergency procedures:**

Avoid generation of dust.

**Methods and materials for containment and cleaning up:**

Fragments may be sharp should be swept up and then discarded as a solid waste. If breakage produces dust or particles, moisten the area prior to sweeping to avoid generation of airborne dust.

### Section 7: Handling and Storage

**Precautions for Safe Handling:**

Material is subject to breakage.

Do not eat, drink or smoke when handling.

Prevent formation of dust.

Any unavoidable deposits of dust must be regularly removed.

Use only in well ventilated area.

Avoid breathing dust.

**Conditions for safe storage:**

Store away from oxidizing agents and other incompatible materials.

Store in cool, dry, well-ventilated area.

Keep packaging tightly closed.

## Section 8: Exposure Controls/Personal Protection

### Silicon Carbide dust

#### Exposure Limits:

Occupational Safety and Health Administration (OSHA)

TWA PEL 15 mg/ m<sup>3</sup> (total dust)      TWA 5 mg/m<sup>3</sup> (respiratory)

National Institute for Occupational Safety and Health (NIOSH)

TWA REL 10 mg/ m<sup>3</sup> (total dust)      TWA 5 mg/m<sup>3</sup> (respiratory)

American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV),

TWA TLV 10 mg/ m<sup>3</sup> (total dust)      TWA 3 mg/m<sup>3</sup> (respiratory)

#### Appropriate engineering controls:

Local Exhaust ventilation when processing the boule or wafer.

#### Individual protection measures:

Respiratory Protection: Not required under normal conditions of use. When processing, respiratory protection may be necessary if local exhaust ventilation does not control dust to safe levels.

Eye Protection: Safety Glasses or goggles.

Hand Protection: Nitrile Rubber.

Body Protection: Protective work clothing.

## Section 9: Physical and Chemical Properties

### Appearance (physical state, color, etc.)

Crystalline disc 5- 20 mm thick,150-200 mm diameter, opaque, dull grey to shiny.

Crystalline thin wafer, semi-transparent to opaque, grey to brownish shade.

### Odor:

None

### Odor Threshold:

No data available

### pH:

Not Applicable

### Melting point/freezing point:

Not Applicable

### Initial boiling point and boiling range

No data available

### Sublimation temperature start:

2700° C (4892° F)

### Flammability (Solid, gas);

No data Available

### Ignition Temperature:

No data available

### Flammability or Explosive limits

Lower: No data available

Upper: No data available

### Vapor Density:

Not Applicable

**Evaporation Rate:**

Not Applicable

**Solubility in water:**

Insoluble

**Partition coefficient (n-octanol/water):**

No data available

**Viscosity:**

Not Applicable

**Autoignition temperature:**

No data available

**Decomposition temperature:**

No data available

## Section 10: Stability and Reactivity

**Reactivity:**

No data available

**Chemical Stability:**

Stable under recommended storage conditions.

**Possibility of hazardous reactions:**

Reacts with strong oxidizing agents.

**Incompatible materials:**

Oxidizing agents

**Conditions to avoid:**

No data available

**Hazardous decomposition products:**

Carbon dioxide, Carbon monoxide, Silicon oxide.

## Section 11: Toxicological Information

**Acute toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data on this material.

**LD/LC50**

No data available

**Skin irritation or corrosion:**

Causes skin irritation.

**Eye irritation or corrosion:**

Causes slight to moderate irritation.

**Sensitization:**

No effects known

**Germ cell mutagenicity:**

No effects known.

**Carcinogenicity:**

OSHA Not listed.

IARC A2 Probably carcinogenic to humans.

ACGIH A2 Suspected human carcinogen.

RTECS Contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.

**Specific target organ toxicity – repeat exposure:**

No effects known.

**Specific target organ toxicity - single exposure:**

May cause respiratory irritation.

**Aspiration hazard:**

No effects known.

**Subacute to chronic toxicity:**

RTCES contains multiple dose toxicity data for this substance.

**Section 12: Ecological Information**

**Aquatic Toxicity:**

No data available

**Persistence and Degradability:**

No data available

**Bioaccumulative Potential:**

No data available

**Mobility in soil:**

No data available

**Additional Ecological Information:**

Do not allow undiluted dust particles reach groundwater, or sewage systems without appropriate permits.

**Section 13: Disposal Considerations**

**Waste Disposal:**

Disposal should be in accordance with applicable Local, Regional/ National, and International laws and regulations.

**Section 14: Transportation Information**

**UN Number:**

Not Applicable

**UN Proper Shipping Name:**

Not Applicable

**Transportation Hazard Class:**

Not Applicable

**Packaging Group:**

Not Applicable

**Environmental Hazard:**

Not Applicable

**Marine Pollutant:**

No

**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

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC code:**

Not Applicable

**Section 15: Regulatory Information**

**Safety, Health and Environmental Regulations/Legislation specific for the substance or mixture**

**USA**

SARA Section 355 (Extremely Hazardous Substances)	Substance is not on list
SARA Section 313 (Specific toxic chemical Listing)	Substance is not on list
TSCA (Toxic Substance Control Act)	Substance is listed
Proposition 65	
Chemicals known to cause cancer	Substance is listed
Chemicals known to cause reproductive toxicity in Females	Substance is not on list

Chemicals known to cause reproductive toxicity in Males	Substance is not on list
Chemicals known to cause developmental toxicity	Substance is not on list
Carcinogenic Categories	
EPA (Environmental Protection Agency)	Substance is not listed
IARC SiC Whiskers	Group 2A

#### Canada

Canadian Domestic Substances List (DSL)	Substance is listed
Canadian Ingredient Disclosure list (limit 0.1%)	Substance is not listed

### Section 16: Other Information

The information above is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. GTAT shall not be held liable for any damage resulting from handling or from contact with the above product.

The information in this Safety Data Sheet was obtained from sources which we believe are reliable; however, the information is provided without any representation or warranty, expressed or implied, regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of this product.

#### Additional Information:

When processing the boule, the accumulation of airborne dust particles may lead to health and safety risks not identified in this document. The use of good industrial hygiene practices will mitigate this risk.

The health risks from inhalation of dust particles varies due to particle concentration, exposure length, number of exposures and particle size. Wear personal protective equipment when processing the boule or wafer.

In rare instances, combustible dusts may present a potential explosion hazard when airborne. While the boule and wafer are considered noncombustible, during processing the overall airborne environment should be considered when determining the need for mitigation of this potential hazard.

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