SECTION 1. IDENTIFICATION

GHS product identifier        Silicon Carbide
Other means of identification SC-2 Reaction Bonded Silicon Carbide
Relevant identified uses of the substance or mixture and uses advertised against Solid

RECOMMENDED USE AND RESTRICTIONS

Supplier's details          CoorsTek, Inc.
                             14143 Denver West Parkway, Suite 400
                             Golden, CO 80401
                             Phone: +1 303 271 7100
                             Fax: +1 303 271 7009
                             www.coorstek.com
Emergency telephone number  +1 303 271 7100
(with hours of operation)   7:00 AM - 4:00 PM MST

SECTION 2. HAZARDS IDENTIFICATION

OSHA/HCS status              While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the mixture Not classified

GHS LABEL ELEMENTS

Signal word                  No signal word
Hazard Statements            No known significant effects or critical hazards

PRECAUTIONARY STATEMENTS

Prevention                   Not applicable
Response                     Not applicable
Storage                      Not applicable
Disposal                     Not applicable
Hazards not otherwise classified None known
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other means of identification</td>
<td>SC-2 Reaction Bonded Silicon Carbide</td>
</tr>
</tbody>
</table>

CAS NUMBER /OTHER IDENTIFIERS

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product code</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>%</th>
<th>CAS NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon Carbide</td>
<td>75 - 90</td>
<td>409-21-2</td>
</tr>
<tr>
<td>Silicon</td>
<td>10 - 30</td>
<td>7440-21-3</td>
</tr>
</tbody>
</table>

Any concentration shown as a range is to protect confidentiality or is due to batch variation. There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4. FIRST AID MEASURES

DESCRIPTION OF NECESSARY FIRST AID MEASURES

**Eye contact**
Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

**Inhalation**
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

**Skin contact**
Flush contaminated skin with plenty of water. Get medical attention if symptoms occur.

**Ingestion**
Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED

Potential acute health effects

**Eye contact**
No known significant effects or critical hazards

**Inhalation**
No known significant effects or critical hazards

**Skin contact**
No known significant effects or critical hazards

**Ingestion**
No known significant effects or critical hazards
SECTION 4. FIRST AID MEASURES, CONTINUED

OVER-EXPOSURE SIGNS/SYMPTOMS

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>No known significant effects or critical hazards</td>
</tr>
<tr>
<td>Inhalation</td>
<td>No known significant effects or critical hazards</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No known significant effects or critical hazards</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No known significant effects or critical hazards</td>
</tr>
</tbody>
</table>

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED, IF NECESSARY

Notes to physician: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments: No specific treatment

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

SECTION 5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable extinguishing media</td>
<td>Use an extinguishing agent suitable for the surrounding fire.</td>
</tr>
<tr>
<td>Unsuitable extinguishing media</td>
<td>None known</td>
</tr>
<tr>
<td>Specific hazards arising from the chemical</td>
<td>No specific fire or explosion hazard</td>
</tr>
<tr>
<td>Hazardous thermal decomposition products</td>
<td>Decomposition products may include the following materials:</td>
</tr>
<tr>
<td></td>
<td>carbon dioxide</td>
</tr>
<tr>
<td></td>
<td>carbon monoxide</td>
</tr>
<tr>
<td></td>
<td>metal oxide/oxides</td>
</tr>
<tr>
<td>Special protective actions for fire-fighters</td>
<td>No special measures are required.</td>
</tr>
<tr>
<td>Special protective equipment for fire-fighters</td>
<td>Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.</td>
</tr>
</tbody>
</table>
SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in “For non-emergency personnel”.

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil, or air).

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

Spill: Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling: Put on appropriate personal protective equipment (see Section 8).

Protective measures: Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed.

Advice on general occupational hygiene: Workers should wash hands and face before eating, drinking, and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities: Store in accordance with local regulations. Do not store in unlabeled containers. Store in a cool, dry location. Any dust generated during handling or processing should be removed by wet mopping or vacuuming.
SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTROL PARAMETERS

<table>
<thead>
<tr>
<th>Occupational exposure limits</th>
<th>INGREDIENT NAME</th>
<th>Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Silicon</td>
<td>NIOSH REL (United States, 10/2013)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 5 mg/m³ 10 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 10 mg/m³ 10 hours. Form: Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL (United States, 2/2013)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 5 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 15 mg/m³ 8 hours. Form: Total dust</td>
</tr>
</tbody>
</table>

Appropriate engineering controls
Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls
Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

INDIVIDUAL PROTECTION MEASURE

Hygiene measures
Wash hands, forearms, and face thoroughly after handling chemical products, before eating, smoking, and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection
Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases, or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

SKIN PROTECTION

Hand protection
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection
Personal protective equipment for the body should be selected based on the task being performed, and the risks involved and should be approved by a specialist before handling this product.

Other skin protection
Appropriate footwear and any additional skin protection measures should be selected based on the task being performed, and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection
Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Physical state  Solid
Color  Black
Odor  None
Odor threshold  Not available
pH  Not known
Melting point/freezing point  Not applicable
Boiling point/boiling range  Not available
Flash point  Not applicable
Evaporation rate  Not applicable
Flammability (solid, gas)  Not available
Lower and upper explosive (flammable) limits  Not applicable
Vapor pressure  Not applicable
Vapor density  Not applicable
Relative density  3.1
Solubility  Negligible solubility in water
Partition coefficient: n- octanol/water  Not applicable
Auto-ignition temperature  Not available
Decomposition temperature  Not available
Viscosity  Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity  No specific test data related to reactivity available for this product or its ingredients
Chemical stability  The product is stable.
Possibility of hazardous reactions  Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid  None known
Incompatible materials  Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis
Hazardous decomposition products  Under normal conditions of storage and use, hazardous decomposition products should not be produced.
SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

<table>
<thead>
<tr>
<th>PRODUCT/INGREDIENT NAME</th>
<th>RESULT</th>
<th>SPECIES</th>
<th>DOSE</th>
<th>EXPOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>3160 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

Irritation/corrosion

<table>
<thead>
<tr>
<th>PRODUCT/INGREDIENT NAME</th>
<th>RESULT</th>
<th>SPECIES</th>
<th>SCORE</th>
<th>EXPOSURE</th>
<th>OBSERVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>Eyes</td>
<td>Mild Irritant</td>
<td>Rabbit</td>
<td>3 mg</td>
<td>-</td>
</tr>
</tbody>
</table>

Sensitization There is no data available.

Mutagenicity There is no data available.

Carcinogenicity There is no data available.

Reproductive toxicity There is no data available.

Teratogenicity There is no data available.

Specific target organ toxicity
  (single exposure) There is no data available.

Specific target organ toxicity
  (repeated exposure) There is no data available.

Aspiration hazard There is no data available.

Information on the likely routes of exposure

Dermal Contact

POTENTIAL ACUTE HEALTH EFFECTS

Eye contact No known significant effects or critical hazards

Inhalation No known significant effects or critical hazards

Skin contact No known significant effects or critical hazards

Ingestion No known significant effects or critical hazards

DELAYED AND IMMEDIATE EFFECTS AND
ALSO CHRONIC EFFECTS FROM SHORT
AND LONG TERM EXPOSURE

Short term exposure

Potential immediate effects No known significant effects or critical hazards

Potential delayed effects No known significant effects or critical hazards

Long term exposure

Potential immediate effects No known significant effects or critical hazards

Potential delayed effects No known significant effects or critical hazards
SECTION 11. TOXICOLOGICAL INFORMATION, CONTINUED

POTENTIAL CHRONIC HEALTH EFFECTS

General Chronic exposure to dusts may affect breathing capacity
Carcinogenicity No known significant effects or critical hazards
Mutagenicity No known significant effects or critical hazards
Teratogenicity No known significant effects or critical hazards
Developmental effects No known significant effects or critical hazards
Fertility effects No known significant effects or critical hazards

NUMERICAL MEASURES OF TOXICITY

Acute toxicity estimates There is no data available.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicological Information There is no data available.
Persistence and degradability There is no data available.
Bioaccumulative potential

<table>
<thead>
<tr>
<th>PRODUCT/INGREDIENT NAME</th>
<th>LogP&lt;sub&gt;OW&lt;/sub&gt;</th>
<th>BCF</th>
<th>POTENTIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>57 to 77</td>
<td>-</td>
<td>High</td>
</tr>
</tbody>
</table>

MOBILITY IN SOIL

Soil/water partition coefficient (K<sub>OC</sub>) Not available
Other adverse effects No known significant effects or critical hazards

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions, and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.
SECTION 14. TRANSPORT INFORMATION

Disposal Methods

<table>
<thead>
<tr>
<th>DOT</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Number</td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Packing group</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Additional information</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

AERG : Not applicable

Special precautions for user

Transport within users’ premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

SECTION 15. REGULATORY INFORMATION

U.S. Federal regulations

- TSCA 8(a) CDR Exempt/Partial exemption: Not determined
- United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112

- (b) Hazardous Air Pollutants (HAPs) Not listed

Clean Air Act Section 602 Class I Substances Not listed

Clean Air Act Section 602 Class II Substances Not listed

DEA List I Chemicals (Precursor Chemicals) Not listed

DEA List II Chemicals (Essential Chemicals) Not listed

SARA 302/304

- Composition/information on ingredients: No products were found.

SARA 304 RQ Not applicable

SARA 311/312 Not applicable

SARA 313 Composition/information on ingredients

<table>
<thead>
<tr>
<th>NAME</th>
<th>%</th>
<th>FIRE HAZARD</th>
<th>SUDDEN RELEASE OF PRESSURE</th>
<th>REACTIVE</th>
<th>IMMEDIATE (ACUTE) HEALTH HAZARD</th>
<th>DELAYED (CHRONIC) HEALTH HAZARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>≥10 - ≤25</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

SARA 313 There is no data available.
SECTION 15. REGULATORY INFORMATION, CONTINUED

STATE REGULATIONS

Massachusetts  The following components are listed: Silicon carbide; Silicon
New York  None of the components are listed.
New Jersey  The following components are listed: Silicon carbide; Silicon
Pennsylvania  The following components are listed: Silicon carbide; Silicon
California Prop. 65  No products were found.

SECTION 16. OTHER INFORMATION

Procedure used to derive the classification  CLASSIFICATION  JUSTIFICATION
Not classified  -

HISTORY

Date of issue mm/dd/yyyy  05/31/2016
Date of previous issue mm/dd/yyyy  12/30/2012
Version  2
Prepared by  KMK Regulatory Services Inc.

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