

A Safety Data Sheet is not legally required for this product under the OSHA Hazard Communication Standard (29 CFR 1910.1200). The following information is provided as a courtesy service to our customers.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING**1.1 Product identifier**

Trade name: **CARBOBOND® RCS C**
Registration number: NA
Synonym(s): Curable Resin-Coated Sand Proppant; Crystalline Silica Sand; Silicon Dioxide, Quartz Sand
Preparation/Revision date: 29 April 2015

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Proppant for oil and natural gas well hydraulic fracturing
Uses advised against: None known

1.3 Details of the supplier of the safety data sheetManufacturer / Supplier

Company name: CARBO Ceramics Inc.
Address: 575 N. Dairy Ashford Road, Suite 300
Houston, Texas 77079, USA
Customer service: 1-337-367-6151

1.4 Emergency telephone number

For Chemical Emergency
Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300

SECTION 2: HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture**

The product has been assessed and /or tested for its physical, health and environmental hazards and the following classifications apply.

Classification according to the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Classification: Not classified

SECTION 2: HAZARDS IDENTIFICATION (CONT'D)**2.2 Label elements**

Contains:	Crystalline silica - contains less than 1% respirable crystalline silica
Hazard pictogram:	None
Signal word:	None
Hazard statement:	None
Precautionary statements:	
- Prevention:	None
- Response:	None
- Storage:	None
- Disposal:	None
Supplemental label information:	None

2.3 Other hazards

None

Hazard summary

Physical hazards:	Not classified for physical hazards.
Health hazards:	Prolonged and/or massive inhalation of respirable crystalline silica dust may cause lung fibrosis, commonly referred to as silicosis. Occupational exposure to respirable crystalline silica dust should be monitored and controlled. Contains less than 1% respirable silica. Prolonged inhalation of insoluble, respirable (less than 10 micron) dusts can lead to pulmonary damage. Use standard hygienic practices to minimize exposure to dusts that may form.
Environmental hazards:	Not classified for hazards to the environment.
Main symptoms:	Prolonged or repeated exposure to crystalline silica dust may cause silicosis. Principal symptoms of silicosis are cough and breathlessness. Exposure to dust may cause irritation of eyes, nose, throat and mucous membranes. Prolonged contact with skin may cause irritation. Use of the product as intended does not result in exposure to dust.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS**3.1 Article**

Chemical Name	Percent	CAS No.	Notes
Crystalline silica, quartz	95 - 100	14808-60-7	#
Phenol formaldehyde resin	0 - 5	9003-35-4	-

#: This substance has workplace exposure limit(s)

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS (CONT'D)

Composition comments: May contain respirable silica sand / quartz as an impurity – less than 1% of total product. The full text for all H- phrases is displayed in Section 16. All concentrations are in percent by weight unless ingredients are a gas. Gas concentrations are in percent by volume.

SECTION 4: FIRST AID MEASURES**General Information**

Show this Safety Data Sheet to the medical professional in attendance. Exposure is not anticipated with use of this product as intended. If symptoms occur, follow first aid measures as appropriate.

4.1 Description of first aid measures

Inhalation:

Remove to fresh air. Get medical attention if irritation or symptoms persist.

Skin contact:

Wash with soap and water. Get medical attention if irritation develops or persists.

Eye contact:

Rinse immediately with plenty of water, including under the eyelids, for at least 15 minutes. Get medical attention if irritation or symptoms persist.

Ingestion:

Rinse mouth. Do not induce vomiting. Get medical attention.

Notes to Physician:

None specified

4.2 Most important symptoms and effects, both acute and delayed

Prolonged or repeated exposure to crystalline silica dust may cause silicosis. Principal symptoms of silicosis are cough and breathlessness. Exposure to dust may cause irritation of eyes, nose, throat and mucous membranes. Prolonged contact with skin may cause irritation. Use of the product as intended does not result in exposure to dust.

4.3 Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptoms as needed.

SECTION 5: FIRE FIGHTING MEASURES**General fire hazards**

Product may ignite if exposed to open flame or other ignition sources.

5.1 Extinguishing Media

Suitable extinguishing media:

CO₂, dry chemical, foam or water

Unsuitable extinguishing media:

Not applicable

SECTION 5: FIRE FIGHTING MEASURES (CONT'D)

5.2 Special hazards arising from the substance or mixture

Not applicable

5.3 Advice for firefighters

Special protective equipment for firefighters:

In the event of fire, wear self-contained breathing apparatus.

Special firefighting procedures:

Not applicable

Special remarks on fire hazards:

None

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

Avoid dust formation. Wear suitable protective clothing. Avoid contact with skin and eyes.

For emergency responders:

Use personal protection recommended in Section 8 of the SDS.

6.2 Environmental Precautions

None known

6.3 Methods and materials for containing and cleaning up

Sweep up spilled substance and remove to safe place. Pick up and arrange for disposal without creating dust. Collect and dispose of spillage as indicated in Section 13.

6.4 Reference to other Sections

For personal protection, see Section 8. For waste disposal, see Section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid dust formation. Avoid breathing dust. Provide appropriate exhaust ventilation at places where airborne dust is generated. In case of insufficient ventilation, wear suitable respiratory protective equipment. Observe good industrial hygiene practices.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Store in accordance with local, regional, national and international regulations.

7.3 Specific end use(s)

Industrial use – oil & gas well stimulation.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

United States of America. Occupational Exposure Limits

Component	CAS No.	Type	Value	Form
Silica, crystalline, quartz	14808-60-7	ACGIH TLV – TWA	0.025 mg/m ³	Respirable fraction
Silica, crystalline, quartz	14808-60-7	NIOSH REL - TWA	0.05 mg/m ³	Respirable dust
Silica, crystalline, quartz	14808-60-7	NIOSH REL - IDLH	50 mg/m ³	Respirable dust
Quartz	14808-60-7	OSHA PEL - TWA	(30)/(%SiO ₂ + 2) mg/m ³	Total dust
Quartz	14808-60-7	OSHA PEL - TWA	(250)/(%SiO ₂ + 5) mppcf	Respirable fraction
Quartz	14808-60-7	OSHA PEL - TWA	(10)/(%SiO ₂ + 2) mg/m ³	Respirable fraction
Phenol formaldehyde resin	9003-35-4	N/A	N/A	N/A

Consult local authorities for acceptable exposure limits

8.2 Exposure Controls

Appropriate engineering controls: Observe occupational exposure limits and prevent generation of dusts. Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below specified exposure limits. If user operations generate dust, fumes or mist, use ventilation to keep exposure to airborne particles below the exposure limit.

Individual Protective Measures

General Information: Personal protective equipment should be chosen according to applicable standards and in consultation with the supplier of the personal protective equipment. Spilled material can reduce traction and may present a slip hazard.

Eye/face protection: Wear safety glasses with side shields or goggles. Avoid wearing contact lenses while handling.

Skin protection:

- Hand protection: Wear protective gloves.
- Other: Minimize skin contact.

Respiratory protection: In case of inadequate ventilation or risk of inhalation of dust, use a suitable air purifying respirator with particle filter or dust mask (Type P2).

Thermal hazards: Not applicable

Hygiene measures Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls Environmental manager must be informed of all major releases. Avoid wind dispersal and fugitive dust generation.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Form	Solid spheres or grains	Explosive properties	Not applicable
Color	Pale green to pale yellow	Explosive limit	Not applicable
Odor	Odorless	Vapor pressure	Not applicable
Odor threshold	Not applicable	Vapor density	Not applicable
pH	Not applicable	Evaporation rate	Not applicable
Melting/freezing point	Not applicable (Cross-linked resin coating) 2,930 °F / 1,610 °C (Estimated – Substrate)	Relative density	2.5 (water = 1)
Boiling point, initial boiling point and boiling range	Not applicable	Partition coefficient (n-octanol/water)	No data available
Flash point	Not applicable	Solubility (water)	Insoluble in water
Auto-ignition temperature	Not applicable	Decomposition temperature	No data available
Flammability (solid, gas)	Not applicable	Bulk density	90 lb/ft ³ (1,442 kg/m ³)
Flammability limit-lower%	Not applicable	Viscosity	Not applicable
Flammability limit-upper%	Not applicable	VOC (weight %)	0 %
Oxidizing properties	Not applicable	Percent volatile	Not applicable

9.2 Other Information

No relevant additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2 Chemical stability	Material is stable under normal conditions.
10.3 Possibility of hazardous reactions	Hazardous polymerization does not occur under normal conditions.
10.4 Conditions to avoid	None specified
10.5 Incompatible materials	None specified
10.6 Hazardous decompositions products	Not applicable

SECTION 11: TOXICOLOGICAL INFORMATION

General information on likely routes of exposure

Ingestion: May cause discomfort if swallowed.

SECTION 11: TOXICOLOGICAL INFORMATION (CONT'D)

Inhalation:	Inhalation of significant amounts of silica dust may cause respiratory irritation and health effects, including lung fibrosis / silicosis. Use of this product as intended does not result in exposure to dust.
Skin contact:	Dust may irritate skin. Use of this product as intended does not result in exposure to dust.
Eye contact:	Dust may irritate eyes. Use of this product as intended does not result in exposure to dust.
Symptoms:	Prolonged or repeated exposure to crystalline silica dust may cause silicosis. Principal symptoms of silicosis are cough and breathlessness. Exposure to dust may cause irritation of eyes, nose, throat and mucous membranes. Prolonged contact with skin may cause irritation. Use of the product as intended does not result in exposure to dust.

11.1 Information on toxicological effects

Acute Toxicity:	No data were identified for this product.
Serious Eye Damage/Irritation:	No data were identified for this product.
Skin corrosion/Irritation:	No data were identified for this product.
Respiratory/Skin Sensitization:	No data were identified for this product.
Germ Cell Mutagenicity:	Results of genotoxicity studies of quartz/crystalline silica are conflicting. A direct genotoxic effect for quartz has not been confirmed or ruled out.
Carcinogenicity:	Inhalation of respirable silica crystalline-Cristobalite in excess of established human exposure limits is known to cause cancer. According to the International Agency for Research on Cancer (IARC), crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1), and amorphous silica is not classifiable as to its carcinogenicity to humans (Group 3). Available data indicate that the cancer effect is indirect via inflammation, i.e., through silicosis.
Reproductive Toxicity:	No data were identified for this product.
Developmental Effects:	No data were identified for this product.
STOT – Single Exposure:	Limited data in animal studies showed pulmonary inflammatory effects following single exposures to aerosolized quartz/crystalline silica particles.
STOT – Repeated Exposure:	Prolonged and/or massive exposure to respirable crystalline silica-containing dust may cause silicosis, a nodular pulmonary fibrosis caused by deposition in the lungs of fine respirable particles of crystalline silica. While the use of this product as intended generally does not create respirable dusts, small amounts may form from transport or conveyance. Prolonged inhalation of insoluble, respirable (less than 10 micron) dusts can lead to pulmonary damage.
Aspiration Hazard:	Not relevant based on physical form of the product.

Conclusion/Summary

This product is not expected to produce toxic effects.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity / Aquatic ecotoxicity	No data were identified for this product or its constituents.
12.2 Persistence and degradability	Product is not biodegradable with low solubility in water and is not expected to decompose in the environment.
12.3 Bioaccumulative potential	Product is not biodegradable with low solubility in water and is not expected to accumulate in the environment.
12.4 Mobility	No data available
12.5 Results of PBT and vPvB assessment	Not a PBT or vPvB material
12.6 Other adverse effects	This product is not classified as hazardous to the environment.
Conclusion/Summary	This product is believed to be non-toxic in the environment.

SECTION 13: DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

Residual waste:	Dispose of in accordance with all applicable regulations.
Contaminated packaging:	Empty containers should be taken to an approved waste handling site for recycling or disposal.
Disposal methods/information:	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local, regional, national, international regulations.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14: TRANSPORT INFORMATION

14.1 UN Number	Not applicable, not regulated as hazardous for transport.
14.2 UN proper shipping name	Not applicable, not regulated as hazardous for transport.
14.3 Transport hazard class(es)	Not applicable, not regulated as hazardous for transport.
14.4 Packing group	Not applicable, not regulated as hazardous for transport.
14.5 Environmental hazards	Not applicable, not regulated as hazardous for transport.
14.6 Special precautions for user	Not applicable, not regulated as hazardous for transport.

SECTION 14: TRANSPORT INFORMATION (CONT'D)**14.7 Transport in bulk according to Annex II MARPOL73/78 and the IBC**

Code Not applicable, not regulated as hazardous for transport.

The transport regulation may vary based on the country of use. Check for the appropriate regulations in the country of transport or usage of this product.

SECTION 15: REGULATORY INFORMATION**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****USA Federal Regulations**

29 CFR 1910.1200 Hazard Communication Standard (HCS):	Not hazardous
TSCA - U.S. Inventory (TSCA 8b):	Exempt/Compliant
SARA Title III – Section 302, Extremely Hazardous Substances (EHS):	Not listed
CERCLA - Hazardous substances:	Not listed

Release of CERCLA hazardous substances in excess of any reportable quantity threshold to the environment requires notification to the National Response Center (+1-800-424-8802 or +1-202-267-2675).

SARA Title III – 311/312, Hazard Classes:

Fire / Flammability	No
Reactivity	No
Release of Pressure	No
Acute Health Hazard	No
Chronic Health Hazard	No

SARA 313 – Toxic Chemicals: Not listed

USA State Regulations

California Prop 65:	Silica, crystalline, airborne particles of respirable size
Massachusetts – Right to Know:	Crystalline silica, quartz
New Jersey - Right to Know:	Crystalline silica, quartz
Pennsylvania – Right to Know:	Crystalline silica, quartz

Other Regulations None specified

SECTION 16: OTHER INFORMATION

Label Requirements	None
List of abbreviations	
CAS	Chemical Abstract Service
EC50/90	Effective Concentration (median / 90 th percentile)
LC50/90	Lethal Concentration (median / 90 th percentile)
NOEC	No Observed Effect Concentration
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative
References	ChemAdvisor List of Lists (LOLI) IARC Monographs. Overall Evaluation of Carcinogenicity IUCLID DATA Set
Information on evaluation method leading to the classification of mixture	The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available. For details refer to Sections 9, 11 and 12.
Full test of any statements or R-phrases and H-phrases under Section 2 to 12	None
Training information	Follow training instructions when handling this material.
SDS Revisions	SDS prepared on 29 April 2015.
Disclaimer	The information in the sheet was written based on the best knowledge and experience currently available.