SAFETY DATA SHEET (SDS) Crystalline Silica

Ricci Bros Sand Company, Inc.
1/24/2018. The current version of this document can be obtained from http://www.riccisand.com/.

SDS Espanol http://www.riccisand.com/sdsesp.html.
SDS Francais http://www.riccisand.com/sdsfr.html.

1 IDENTIFICATION

Product Identifier: Silica Sand, Crystalline Silica, Silicon Dioxide, Sandblast Sand, Filter Sand, Filter Gravel, Custom Blend or trade name. Industrial Sands: OOO, OO, OON, O, 1, 2, 3, 1Q, 2Q, 3Q, 4Q, 10 grit-50 grit. Filter Media: 0.10-3.0 mm. Foundry Sand: AFS 30 thru 100, cement lining sand, P30, P40, etc. Well Gravel: OO thru #4. Gravels: Sizes 1.2 -63.0mm. Other Media: C-3, reactor sand, runway traction sand, torpedo sand, pump sand, pool filter sand, play sand, sewage sand, mason sand. Blends: O-1 blend, 20-30 grit, 0.8-2.0mm, etc.

Manufacturer: Ricci Bros Sand Co., Inc.
2099 Dragston Rd. P.O. Box 664 Port Norris NJ USA 08349
856-785-0166, 888-807-4224 or 856-785-2136 fax

Emergency Phone Number: 1-856-785-0166

Recommended Uses: Commercial, building, concrete, mason, filtration, abrasive, ceramic, metal casting, glass, grout, hydraulic fracturing, proppant, custom blend, industrial, construction sand and gravel, drinking well gravel and pack, de-watering , and other trade uses.

Restrictions on Use: If sandblasting use a respirator approved by NIOSH for abrasive blasting operations. Enclose the operation in a properly designed and maintained blasting enclosure.

2: HAZARD IDENTIFICATION

Physical: Not Hazardous
Health: Carcinogenic 1A, Specific Target Organ Toxicity, Repeated Exposure Category 1
Environmental: Not Hazardous
H320: Silica can scratch eye lens, Practical Experience
H331: Silica can be Toxic if inhaled, Epidemiological studies
H332: Silica can be Harmful if inhaled, Epidemiological studies
H333: Silica can be Harmful if inhaled, Epidemiological studies
H334: Silica may cause allergy, asthma, breathing difficulties if inhaled, Practical experience
H335: Silica may cause respiratory irritation, Practical experience
H350: Silica may cause cancer, Epidemiological Studies
H373: Silica may damage to organs, prolonged or repeated exposure, Epidemiological studies

QUARTZ CRYSTALLINE SILICA CAS 14804-60-7

SIGNAL WORD: WARNING

HAZARD STATEMENT:

Prolonged exposure to crystalline silica can cause silicosis, a fibrosis (scarring) of the lungs that can be progressive and may lead to death. This product has been reviewed by the International Agency for Research on Cancer (IARC). Exposure to crystalline silica from occupational sources by inhalation is considered carcinogenic to humans. IARC lists crystalline silica as a Class I carcinogen. The risk of injury is dependent on the concentration of crystalline silica in the workplace air and the length of employee exposure to the air. Refer to materials safety data sheet (MSDS) and Other Health and Safety References for more information.

PRECAUTIONARY STATEMENTS:

PREVENTION:

P103 Read label before use.
P210 DO NOT SMOKE WHEN USING THIS PRODUCT.
P261 Avoid creating and breathing dust. Test the employee personal breathing zone for crystalline silica using dust sampling and real time dust monitoring equipment.
P262 WEAR EYE PROTECTION. Do not get in eyes, on skin or on clothing.
P280 USE RESPIRATORS that offer protection to the highest concentrations of crystalline silica if the actual concentrations are unknown. Use and maintain ANSI-approved (Z88.2 Part 11) particulate respirators with this product. Select respirators based on the level of silica exposure as measured by dust sampling. Use designed ventilation and dust collection systems to control dusts from this product. Put in place a respiratory protection and monitoring program that complies with 29CFR1910.34 and all other federal and state laws. Use administrative controls such as water spray and job rotation to supplement the engineering controls and the respiratory protection. If sandblasting use a respirator approved by NIOSH for abrasive blasting operations. Enclose the operation in a properly designed and maintained blasting enclosure.
P284 DO NOT BREATHE DUST! WEAR RESPIRATORY PROTECTION.

RESPONSE:

P304 If inhaled, remove person to fresh air and keep comfortable for breathing.
P305, P338 If eye irritation persists, Remove contact lenses if present and easy, rinse with water, get medical treatment.
P340, P342 If experiencing respiratory symptoms, remove person to fresh air and keep at rest in a position comfortable for breathing. Seek medical treatment.

STORAGE:

P402, P403 Store in a dry and well ventilated place.

DISPOSAL:

P502 DO NOT USE BROOMS OR COMPRESSED AIR TO CLEAN UP THIS PRODUCT. CLEAN UP PRODUCT WITH A HEPA-TYPE WET VACUUM AND/OR WATER SPRAY.

SUPPLIER INFORMATION:

RICCI BROTHERS SAND COMPANY INC 2099 DRAGSTON ROAD PO BOX 664 PORT NORRIS NJ 08349 856-785-0166 WWW.RICCISAND.COM.

EINECS # 238-878-4. Xn, R48/20, S22, S38

3: COMPOSITION / INFORMATION ON INGREDIENTS

CAS # 14808-60-7 EINECS # 238-878-4

Chemical Components: Silica, Crystalline Quartz (respirable in the form of Quartz). Specific Chemical Identity: Silicon Dioxide, SiO2. Composition: SiO2: 90% minimum. Balance: Fe2O3, CaO, Na2O, MgO Al2O3, K2O, TiO2. UE Classification (67/548/EEC) Xn R48/20. Trade Secret Claims: None.

4: FIRST AID MEASURES

Important Symptoms/Effect, Acute, and Delayed: Solid particles can irritate the eyes or scratch the lens of the eye. Inhalation of dust can cause respiratory tract and lung irritation. Symptoms include, cough, sore throat, nasal congestion, sneezing, wheezing and shortness of breath. Prolonged inhalation of respirable crystalline silica above certain concentrations may cause lung diseases, including silicosis and lung cancer.

Gross Inhalation: Remove person to fresh air. If breathing has stopped, perform CPR. If breathing is difficult administer oxygen using qualified personnel. Get prompt medical attention. Skin Contact: No first aid should be necessary. Wash skin with soap and water. Eye Contact: Flush eyes immediately with water. Get medical attention if eyes are irritated, scratched or if material is imbedded in the eye. Ingestion: get medical attention if large amounts are swallowed.

5: FIRE, EXPLOSION AND REACTIVITY DATA

Flash Point: non-flammable. Flammable Limits: none. LEL: none. UEL: none. Extinguishing Media: none required. Special Firefighting Procedures: Use extinguishing media appropriate for surrounding fire. Unusual Fire and Explosion Hazards: N/A Stability: Product is stable and is not flammable, combustible or explosive. Chemical Hazards from Fire: Respirable silica can be present in the air during a fire. Use P100 particulate, airline or self-contained breathing respirators to protect from breathing silica.

6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures: Report releases to regulatory authorities if required by local, state and federal regulations. There are no specific environmental precautions.

Protective Equipment: Use gloves, protective clothing, ANSI approved respirator and ANSI-approved eye protection.

Proper Containment and Cleanup Methods: Use dustless method (water or wet HEPA-type vacuum) if not contaminated. Use water sprays and shovels to clean up spills. Do not dry sweep

this product with brooms. Do NOT use compressed air to clean up product. If contaminated use recommended method for contaminate source material. Dispose in accordance with federal, state and local regulations.

7: HANDLING AND STORAGE PRECAUTIONS

Avoid creating dust. Use every means possible to reduce exposure levels below the recommended threshold limits. Silica may be in the air without a visible cloud of dust. Prevent and contain spills when they occur.

Use designed ventilation systems as the primary method to remove crystalline silica from workplace air. Use administrative controls such as job rotation and water spray to supplement engineering controls and respiratory protection.

If sandblasting, use a respirator approved by NIOSH for abrasive blasting operations. Enclose the operation in a properly designed and maintained blasting enclosure (See reference 8).

Test the employee personal breathing zone for crystalline silica using dust sampling equipment and dust monitoring equipment (refer to reference 9). Use NIOSH/MSHA approved (ANSI Z88.2 Part 11) particulate respirators with this product (refer to Reference 12). Put in place a respiratory protection and monitoring program which meets the requirements of 29CFR 1910.134: "Respiratory Protection" (Refer to references 6 and 7). Select respiratory based on the results of the workplace dust surveys.

8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure to airborne crystalline silica shall not exceed an 8 hour time weighted average (TWA) or permissible and recommended exposure limits (PEL, REL) below (Refer to references 1, 2 and 3).

OSHA PEL and MSHA TLV for Crystalline Silica (Quartz): 10/(%crystalline silica +2) mg/m3 (See references 1 and 2).

ACGIH TLV: 0.025mg/m3 for 8 hour time weighted average of respirable silica (See reference 3).

NIOSH REL: 0.05 mg/m3 for 10 hr shift, 40 hr. week for 100% crystalline silica (See reference 4).

Crystalline silica (quartz) can change to tridyimite if heated to more than 870 degrees C. Crystalline silica (quartz) can change to crystobalite if heated to more than 1450 degrees C. The PEL, TLV and REL for tridymite and crystobalite are half of the limit for crystalline silica (quartz).

Follow the guidelines in “Section 6: Accidental Release,” and “Section 7: Handling and storage,” when working with this product.

Use respirators that protect against the highest concentrations of crystalline silica if the actual concentration is unknown. Maintain, clean and fit test respirators in accordance with ANSI, OSHA, MSHA and NIOSH regulations (refer to references 6 thru 13). Choose respiratory protection using the Respirator Logic published by NIOSH (reproduced from Reference 12, refer to document for full guidance):

ASSIGNED PROTECTION FACTOR	TYPE OF RESPIRATOR
5	Quarter mask respirator
10	Any air-purifying elastomeric half-mask respirator equipped with appropriate type of particulate filter.2 Appropriate filtering facepiece respirator.2,3 Any air-purifying full facepiece respirator equipped with appropriate type of particulate filter.2 Any negative pressure (demand) supplied-air respirator equipped with a half-mask.
25	25 Any powered air-purifying respirator equipped with a hood or helmet and a high efficiency (HEPA) filter. Any continuous flow supplied-air respirator equipped with a hood or helmet.
50	50 Any air-purifying full facepiece respirator equipped with N-100, R-100, or P-100 filter(s). Any powered air-purifying respirator equipped with a tight-fitting facepiece (half or full facepiece) and a high-efficiency filter. Any negative pressure (demand) supplied-air respirator equipped with a full facepiece. Any continuous flow supplied-air respirator equipped with a tightfitting facepiece (half or full facepiece). Any negative pressure (demand) self-contained respirator equipped with a full facepiece.

1 The protection offered by a given respirator is contingent upon (1) the respirator user adhering to complete program requirements (such as the ones required by OSHA in 29CFR1910.134), (2) the use of NIOSH-certified respirators in their approved configuration, and (3) individual fit testing to rule out those respirators that cannot achieve a good fit on individual workers.

2 Appropriate means that the filter medium will provide protection against the particulate in question. See step 9.2 for information on the presence or absence of oil particulates.

3 An APF of 10 can only be achieved if the respirator is qualitatively or quantitatively fit tested on individual workers.

ASSIGNED PROTECTION FACTOR	TYPE OF RESPIRATOR
1000	1,000 Any pressure-demand supplied-air respirator equipped with a halfmask.
2000	2,000 Any pressure-demand supplied-air respirator equipped with a full facepiece.
10000	10,000 Any pressure-demand self-contained respirator equipped with a full facepiece.
	Any pressure-demand supplied-air respirator equipped with a full facepiece in combination with an auxiliary pressure-demand selfcontained breathing apparatus.
1 The protection offered by a given respirator is contingent upon (1) the respirator user adhering to complete program requirements (such as the ones required by OSHA in 29CFR1910.134), (2) the use of NIOSH-certified respirators in their approved configuration, and (3) individual fit testing to rule out those respirators that cannot achieve a good fit on individual workers.	

Warn and train your employees and customers of the hazards of this product in accordance with applicable "Right to Know" practices. Do not smoke if working with silica products. Refer to the guidelines in references 11, 12 and 13 while working with crystalline silica.

Make bi-annual annual medical evaluations available to all workers whom may be exposed to crystalline silica. Include in the evaluations the employee medical history, chest X-Ray, pulmonary functions and review by a physician (See reference 4).

Skin Protection: Wear gloves if susceptible to dermatitis or sensitive skin.

Eye Protection: Wear safety glasses with side shields or wear goggles.

Other: None known.

9: PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance: white, gray, brown or tan powder, no odor.

Melting Point: 3050F	pH: 3.0-8.0
Flash Point: Does Not Flash	Boiling Point: 4046 F
Flammable Limits: None	Evaporation Rate: N/A
Combustible Limits: Not Combustible	UEL: N/A
Vapor Pressure: none, solid	Vapor Density: N/A
Relative Density: 2.65	Solubility: Insoluble in Water
Partition coefficient: none, solid	Auto Ignition Temp: Not Determined
Decomposition Temperature: N/A	Viscosity: N/A

10: STABILITY AND REACTIVITY

Stability: stable. Conditions to Avoid: none. Incompatibility (materials to avoid): Contact with agents such as molten magnesium, fluorine, chlorine triflouride, manganese trioxide, oxygen difluoride, or hydrofluoric acid may cause fires or corrosive gases. Hazardous Combustion Products: Silica will dissolve in hydrofluoric acid producing silicon tetra fluoride, a hazardous gas. Hazardous polymerization: will not occur.

11: TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation? Yes. Skin? No. Ingestion? No. Eyes: No

Acute and Chronic Health Hazards: Prolonged exposure to crystalline silica by inhalation may cause silicosis, a fibrosis (scarring) of the lungs which can be progressive and may lead to death.

Silica as Related to Carcinogenicity: Crystalline silica (quartz) inhaled from occupational sources is classified by the International Agency for Research on Cancer (IARC) as class I: carcinogenic to humans (See reference 5). Signs and Symptoms of Exposure: Shortness of breath reduced pulmonary function, coughing, wheezing, and possible chest illness.

Chronic Silicosis is most common and can occur after 10-20 years of inhalation of respirable crystalline silica. It is identified by x-ray as radiographic opacities in the upper lung. Chronic silicosis can progress to Complicated Silicosis, which is identified as radiographic opacities greater than 1 cm I diameter. Reduced pulmonary function may be observed in both cases. Complicated Silicosis may lead to death.

Accelerated Silicosis can occur by inhalation of high concentrations of respirable crystalline silica over shorter time periods. Opacities can occur with 5 years of initial exposure, and reduced lung function can occur more rapidly. Acute Silicosis can occur after exposure to very high concentrations of respirable silica over very short time periods (as short as a few months). Symptoms are shortness of breath, fever, cough, weakness and weight loss. Acute silicosis is fatal.

See references 5 thru 13 for information regarding Silicosis and carcinogenicity.

Numerical measures of Toxicity:

Crystalline Silica (quartz): LD50 oral rat > 2255 mg/kg (Reference 14).

Medical Conditions Generally Aggravated by Exposure: Bronchitis, Emphysema and Asthma. Smoking is known to aggravate the effects of exposure. Persons with silicosis may develop tuberculosis (See reference 6). Exposure to crystalline silica may also result in scleroderma, autoimmune or kidney disease (See reference 6).

12: ECOLOGICAL INFORMATION

Eco-toxicity: Crystalline silica is not known to be eco-toxic. Degradability: Silica is not degradable. Bio-accumulative: Silica is not bio-accumulative. Mobility in Soil: Silica is not mobile in soil. Other Adverse effects: No data Available.

13: DISPOSAL

Silica is not classified as a hazardous waste under USEPA RCRA regulations. If not contaminated, the product can be disposed as an inert mineral. If contaminated use recommended method for contaminate source material. Dispose in accordance with federal, state and local regulations.

14: TRANSPORT

Silica is not regulated under USDOT hazard classifications.

15: REGULATORY

SARA 311/312: Category Chronic Health (See reference 15)

SARA 313: no reporting requirements under 40CFR 372. (See reference 15)

California Proposition 65: The product contains crystalline silica (respirable) which is known to the State of California to cause cancer. (See reference 16)

Toxic Substances Control Act: Listed on inventory or exempt. (See reference 17)

European Inventory of Commercial Chemical Substances: Listed on inventory or exempt. (See reference 18)

European Community Labeling:

Xn, Harmful, contains crystalline silica (238-878-4)
R48/20 Harmful: Danger of Serious Health Damage by prolonged inhalation exposure.

S22: Do not breathe dust.
S38: Incase of insufficient ventilation, wear suitable respiratory (See reference 18)

Canadian Environmental Protection Act: Listed on inventory or exempt. See reference 19)

Canadian WHMIS Classification: Class D, Division 2, Subdivision A (Very Toxic Material causing other Toxic Effects). The MSDS prepared according to Controlled Products Regulation and contains all necessary information. (See reference 20)

Japan METI: All components defined in the Chemical Substance Control Law. (See reference 21)

Australian Inventory of Chemical Substances: Listed on inventory or exempt. (See reference 22)

Australian NOHSCS: Hazardous according to Australian commission status: Xn,R48/20. (See reference 23)

Korea: Listed on ECL Inventory or exempt. (See reference 24)

Philippines: Listed on PICCS inventory or exempt. (See reference 25)

16: OTHER

NFPA Hazard Rating: Health 1, Fire 0, Reactivity 0 (See reference 26)

HMIS Hazard Rating: Health *, Fire 0, Reactivity 0 (See reference 27)
* Warning – Chronic health effect possible – inhalation may cause lung injury.

17: REFERENCES

1. Code of Federal Regulations 29CFR1910.1000: "Air Contaminants," Occupational Safety and Health Administration (OSHA), Washington, DC, http://www.osha.gov.

2. Code of Federal Regulation 30CFR56.5000 and 30CFR57.500: “Air Quality,” Mine Safety and Health Administration (MSHA), Washington, DC. http://msha.gov.

3. Threshold Limit Values and Exposure Indices for Chemical Substances in Workroom Air," American Conference of Governmental Industrial Hygienists (ACGIH), Cincinnati, OH, 1988. http://www.acgih.org.

4 National Technical Information Service, Springfield VA (703/487-4650): Criteria for a Recommended Standard - Occupational Exposure to Crystalline Silica, HEW Publication No. (NIOSH) 75-120, NTIS Acquisition No. PB 246-697. http://www.ntis.gov.

5. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans-Silica and Some Silicates, Coal Dust and Para-Agamid Fibrils, Vol. 68, 1997 . World Health Organization, International Agency for Research on Cancer (IARC), Lyon, France, 1997. http://www.iarc.fr.

6. Crystalline Silica Health Effects. National Industrial Sand Association (NISA), Calverton, MD, 1997. http://www.sand.org/.

7. Code of Federal Regulations, 29CFR Part 1910.134: "Respiratory Protection," Occupational Safety and Health Administration (OSHA), Washington, DC 1993. http://www.osha.gov.

8. "American National Standards Institute (ANSI) Practices for Respiratory Protection," ANSI Z88.2-1992, ANSI, New York, http://www.ansi.org.

9. "Air Quality: Health Standards for Abrasive Blasting...Final Rule," Federal Register 59.34, 2/18/94.

10. ASTM E1132-89 (Reapproved 1993): "Standard Practice for Health Requirements Relating to Occupational Exposure to Quartz Dust," American Society for Testing and Materials (ASTM), Phila, PA, http://www.astm.org.

11. National Institute for Occupational Safety and Health (NIOSH), "A Guide to Working Safely with Silica," 1997. http://www.cdc.gov/niosh/otherpub.html.

12. NIOSH Publications (1992-2017). https://www.cdc.gov/niosh/topics/respirators. The National Institute for Occupations Safety and Health – Respirators 2017. https://www.cdc.gov/niosh/docs/2005-100/pdfs/2005-100.pdf. NIOSH Respirator Logic, 2005. http://www.cdc.gov/niosh/consilic.html. Preventing Silicosis and Deaths in Construction Workers--DHHS (NIOSH) Publication No. 96-112. http://www.cdc.gov/niosh/92-107.html. Preventing Silicosis and Deaths from Rock Drilling--DHHS (NIOSH) Publication No. 92-107. http://www.cdc.gov/niosh/92-102.html. Preventing Silicosis and Deaths from Sandblasting--DHHS (NIOSH) Publication No. 92-102. https://www.cdc.gov/niosh/topics/respirators. The National Institute for Occupations Safety and Health – Respirators, 2017. https://www.cdc.gov/niosh/topics/silica. NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica.

13. NIOSH Respirator User's Notice: Attention: All Users of Type CE, Abrasive-Blast Supplied-Air Respirators, National Institute for Occupational Safety and Health (NIOSH), May 23,1996. http://www.cdc.gov/niosh.

14. RTECS Registry of Toxic Effects of Chemical Substances, Canadian Centre for Occupational Health and Safety. http://www.ccohs.ca/products/rtecs/.

15. “SARA Overview,” United States Environmental Protection Agency (USEPA), Washington, DC. http://www.epa.gov/superfund/policy/sara.htm.

16. "Proposition 65," California Office of Environmental Health Hazard Assessment. http://www.oehha.ca.gov/prop65/prop65_list/Newlist.html.

17. Summary of the Toxic Substances Control Act, USEPA, Washington, DC. http://www.epa.gov/regulations/laws/tsca.html.

18. "ESIS: European Chemical Substances Information System," European Commission Joint Research Center. http://ecb.jrc.ec.europa.eu/esis//

19. CEPA Environmental Registry, Environment Canada. http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=D44ED61E-1.

20. Workplace Hazardous Materials Information System (WHMIS), Health Canada. http://www.hc-sc.gc.ca/ewh-semt/occup-travail/whmis-simdut/index-eng.php.

21. Ministry of Economy, Trade, Industry (METI), Japan. http://www.meti.go.jp/english/index.html.

22. Safe Work Australia. http://www.safeworkaustralia.gov.au/Pages/default.aspx.

23. Hazardous Substances Information System, Safe Work Australia. http://hsis.ascc.gov.au/.

24. Regulated Chemicals Information. CAS, a Division of the American Chemical Society. http://www.cas.org/expertise/cascontent/regulated/substance.html.

25. Philippine Inventory of Chemicals and Chemical Substances. Department of the Environment and Natural Resources. http://www.emb.gov.ph/eeid/PICCS.htm.

26. FAQ – NFPA 704, National Fire Protection Association. http://www.nfpa.org/faq.asp?categoryID=928.

27. HMIS III: Hazardous Materials Identification System, American Coatings Association. http://www.paint.org/resources/programs/hmis.html.

NOTICE:

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