

**SUPERIOR SILICA SANDS LLC**DATE: November 16, 2009;  
amended March 8, 2010**MATERIAL SAFETY DATA SHEET****SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME: Silica Sand

SYNONYMS / SOLD AS: Silica Sand, Quartz, Crystalline Silica, Ground Silica, Frac Sand, Filtration Sand, Bunker Sand, Turf Sand, Foundry Sand, 100 Mesh Frac Sand, 16/30 Sand, 20/40 Sand, 30/70 Sand, 40/70 Sand, 50/50 Sand Golf Course Sand, 75/25 Sand (75% Greens Plus 25% Texas Best) 80/20 Sand (TB 20% & Greens Plus 80% Mix), 90/10 Mix, C-144 White (Mason Sand), C-144 Yellow (Mason Sand), Caylor White (Golf Course Sand), Green Colored Sand, F50 Sand, Greens Mix Greens (mix for golf course), Greens Plus (Golf Course Sand), Klassic White (Mason Sand), Ottawa White 20/40 frac, Ottawa White 40/70 frac, P50 Sand Kosse, Perma Pore Mix (Mix with Caylor White & Perma Pore), Stone White (Mason Sand), Texas Best White (Bunker Sand) (collectively referred to herein as "Crystalline Silica Sand")

MANUFACTURER: Superior Silica Sands LLC. Product is sold under various names including "Superior Silica Sands LLC" and "Texas Sport Sands Inc."

Superior Silica Sands LLC  
3014 LCR 704  
Kosse, TX 76653  
Phone: (254) 746-7977

EMERGENCY TELEPHONE: CHEMTREC (800) 424-9300

**WARNING: Never Use This Material (Crystalline Silica Sand) for Sand Blasting****SECTION 2 – HAZARDS IDENTIFICATION****A. EMERGENCY OVERVIEW**

A white or tan sand that is granular, crushed or ground. It is mined in several locations in Wisconsin and Kosse, Texas. Uses include, but are not limited to, as sand for golf courses and in horse arenas, in the stone and masonry industry, and in oil and natural gas well fracing. It is not flammable, combustible or explosive. Do not breathe this material - a "National Institute for Occupational Safety and Health" ("NIOSH") approved personal respirator (discussed in Section 8) should be used as directed in Section 8. Additional measures to protect skin and eyes, as set forth in Section 8, should also be taken. Crystalline Silica Sand is not known to be an environmental hazard, however, it is classified as "hazardous" by the Occupational Safety and Health Administration ("OSHA"). This material is a carcinogen, as classified by International Agency for Research on Cancer ("IARC") and The National Toxicology Program ("NTP"). See

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010

## MATERIAL SAFETY DATA SHEET

Section 11. Crystalline Silica Sand is incompatible/reactive with ammonia, acetylene, hydrofluoric acid, fluorine, chlorine, and other powerful oxidizers as described in Section 10.

### B. POTENTIAL HEALTH EFFECTS

**EYE:** Crystalline Silica Sand can cause moderate to severe irritation of eyes, including discomfort or pain, local redness and swelling of the conjunctiva.

**SKIN:** Contact by Crystalline Silica Sand can cause dryness or moderate irritation of skin.

**INGESTION:** None known.

### INHALATION:

- a. Silicosis - Respirable Crystalline Silica Sand can cause silicosis, a fibrosis (scarring) of the lungs. Silicosis may be progressive; it may lead to disability and death.
- b. Lung Cancer - Crystalline Silica Sand is classified by IARC and NTP as a known human carcinogen.
- c. Tuberculosis - Silicosis increases the risk of tuberculosis.
- d. Autoimmune Disease - Some studies show excess numbers of cases of scleroderma, lupus and other autoimmune diseases, rheumatoid arthritis, chronic kidney diseases and end-stage kidney disease in workers exposed to respirable Crystalline Silica Sand.
- e. Non-Malignant Respiratory Diseases (other than silicosis) - Some studies show an increased incidence in chronic bronchitis and emphysema in workers exposed to respirable Crystalline Silica Sand.

**CHRONIC EFFECTS / CARCINOGENICITY:** Silicosis, cancer, scleroderma, tuberculosis, nephrotoxicity, emphysema, chronic bronchitis, lupus, and arthritis are potential chronic effects of exposure. See Section 11 for further information regarding these conditions.

**SIGNS AND SYMPTOMS OF EXPOSURE:** There are generally no signs or symptoms of exposure to Crystalline Silica Sand. Often, chronic silicosis has no symptoms. The symptoms of chronic silicosis, if present, are shortness of breath, wheezing, cough and sputum production. Accelerated silicosis is similar, but symptoms may develop earlier than with chronic silicosis, and may also include weight loss. The symptoms of acute silicosis are the same, but also may include weight loss and fever. Symptoms of chronic bronchitis include a productive cough on most days for at least three months of two sequential years. Chronic coughing is also a symptom of emphysema; other emphysema symptoms include wheezing, shortness of breath, chest tightness, reduced capacity for physical activity, fatigue, reduced appetite, and weight loss. The

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010**MATERIAL SAFETY DATA SHEET**

symptoms of scleroderma include thickening and stiffness of the skin, particularly in the fingers, shortness of breath, difficulty swallowing and joint problems. Joint pain, swelling, inflammation, and stiffness are the primary symptoms of rheumatoid arthritis. Lupus has a wide range of potential symptoms, including fatigue, fever, weight loss or gain, joint pain, stiffness and swelling, skin lesions or rash, mouth sores, hair loss, white or blue fingers under cold or stressful conditions, shortness of breath, chest pain, dry eyes, easy bruising, anxiety, depression, and memory loss. Symptoms of chronic kidney disease include changes in urine output or color, blood in urine, swelling of the legs, ankles, feet, face, or hands, fatigue, skin rash/itching, metallic taste in the mouth/ammonia breath, nausea and vomiting, shortness of breath, anemia, dizziness or trouble concentrating, and side, back, or leg pain.

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:** The condition of individuals with lung disease (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure. See Section 11 for additional detail on potential adverse health effects.

**POTENTIAL ENVIRONMENTAL EFFECTS:** None known.

**SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS**

<u>HAZARDOUS INGREDIENTS</u>	<u>CAS Registry No.</u>	<u>Percentage (wt/wt)</u>
Crystalline silica (quartz)	14808-60-7	90-99.9*

OSHA Regulatory Status: This ingredient is classified as hazardous under OSHA regulations.

\* The remaining 10-0.1% of the material is considered to be inert.

**SECTION 4 – FIRST AID MEASURES**

**EYE:** Quickly and gently blot or brush away sand. Do not rub eyes. Do not attempt to manually remove material stuck to the eye(s). Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 15 minutes or until the sand is removed, while holding the eyelid(s) open. Occasionally lift eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from eye(s). Seek medical attention immediately.

**SKIN:** Wash with soap and water. Seek medical attention if irritation persists.

**INGESTION:** Never give anything by mouth if the victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. If irritation or discomfort occurs, obtain medical advice immediately.

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010**MATERIAL SAFETY DATA SHEET**

**INHALATION:** Remove source of contamination or move victim to fresh air. Seek medical attention if necessary. If breathing has stopped, give artificial respiration. If high airborne concentrations are present, take proper precautions to ensure your own safety before attempting rescue (i.e., wear proper protective equipment as described in Section 8).

**SECTION 5 – FIRE FIGHTING MEASURE****A. Flammable Properties**

Flash Point: Not Flammable

Method: N/A

**B. Extinguishing Media**

None required. Use suitable extinguishing media for surrounding fire.

**C. Fire & Explosion Hazards**

None.

**D. Fire Fighting Instructions**

None.

**SECTION 6 – ACCIDENTAL RELEASE MEASURES**

**SPILL /LEAK PROCEDURES:** Use dustless methods (vacuum equipped with HEPA filters) and place in closable container for disposal or flush with water. Do not dry sweep. Use proper protective equipment indicated in Section 8.

**SECTION 7 – HANDLING AND STORAGE**

**HANDLING:** Keep in tightly closed containers. Protect containers from physical damage. Avoid direct skin contact with the material. Crystalline Silica Sand material contains fine dust. If you breathe this dust you can suffer severe, irreversible lung damage and death. Some medical reports state inhalation of Crystalline Silica Sand dust may increase the risk of lung cancer. Medical reports also link breathing Crystalline Silica Sand dust to crippling arthritis, and link direct contact to skin and eye irritation. See Section 11 for further information. Any time that a potential exists for you to be exposed to Crystalline Silica Sand in excess of the permissible exposure limit (PEL), you must use a NIOSH-approved respirator. The work area must also be thoroughly ventilated by the use of forced air ventilation during and after use of Crystalline Silica Sand. If the work area is dusty, use protective goggles. An eye wash station must be

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010

## MATERIAL SAFETY DATA SHEET

readily available where Crystalline Silica Sand is used. Prior to use or handling, you are advised to review and thoroughly understand all health precautions outlined in this Material Safety Data Sheet.

**STORAGE:** Store in a cool, dry, and well-ventilated location. Do not store near incompatible materials such as hydrofluoric acid, fluorine, chlorine, and other incompatible chemicals as described in Section 10.

### SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Use sufficient air ventilation and exhaust ventilation to reduce the level of respirable Crystalline Silica Sand to below the PEL. See ACGIH "Industrial Ventilation, A Manual of Recommended Practice" (latest edition). Process or personal enclosure, control of process conditions, and process modification are other potential engineering control options.

**RESPIRATORY PROTECTION:** Use NIOSH-approved respirators whenever conditions create a risk of employee exposure to airborne concentrations in excess of the PEL. It is a violation of federal safety laws (OSHA) for employers to permit workers to be exposed to Crystalline Silica Sand without sufficient respiratory protection. The OSHA regulations that apply are: 29 CFR § 1910.134; 29 CFR § 1910.1000; 29 CFR § 1910.94 – (This last one is the regulation for sand blasting and this MSDS provides that this substance should not be used for sand blasting). Engineering controls must be first instituted whenever feasible; when such controls are not feasible to achieve full compliance, then personal protective equipment or other protection should be used. Personal protective equipment should be available for use in emergencies such as spills. The following chart specifies the types of respirators that may provide respiratory protection for Crystalline Silica Sand.

#### MINIMUM RESPIRATORY PROTECTION\*

##### Particulate Concentrations

**0.5 mg/m<sup>3</sup> or less** - Any air-purifying respirator with a high-efficiency particulate filter (Assigned Protection Factor ("APF") = 10).

**1.25 mg/m<sup>3</sup> or less** - Any powered air-purifying respirator with a high-efficiency particulate filter (APF = 25) OR Any supplied-air respirator operated in a continuous-flow mode (APF = 25).

**2.5 mg/m<sup>3</sup> or less** - Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter (APF = 50) OR Any powered air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter (APF = 50).

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010**MATERIAL SAFETY DATA SHEET**

**25 mg/m<sup>3</sup> or less** - Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode (APF = 1,000).

**Emergency or planned entry into unknown concentrations or immediately dangerous to life and health (IDLH) conditions** - Any self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) OR Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in a pressure-demand or other positive-pressure mode (APF = 10,000).

**Escape** - Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter (APF = 50) OR Any appropriate escape-type SCBA.

Also see 42 CFR Part 84.

**\*Regardless of the type of respirator required, use only NIOSH-approved equipment that, if available, employs an end of service life indicator. See 29 CFR § 1910.134. See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection".**

APFs are based on the NIOSH recommended exposure limit (REL) of 0.05 mg/m<sup>3</sup>; an APF of 10, for example, is protective at concentrations up to 10 times the REL.

PEL = permissible exposure limit

TLV = threshold limit value

REL = recommended exposure limit

IDLH = immediately dangerous to life and health

**SKIN PROTECTION:** Use appropriate gloves to prevent skin contact. Clothing should fully cover arms and legs and be tight fitting at the cuffs, neck and ankles to prevent dust from contacting the body. Clothing should be regularly washed to prevent dust accumulation.

**EYE PROTECTION:** Use safety goggles.

**EXPOSURE GUIDELINES:** Crystalline Silica Sand (respirable)

OSHA PEL (8-hour time weighted average [TWA])  
TWA)

ACGIH TLV (8-hour

10 mg/m<sup>3</sup> ÷ (% silica in the dust plus 2)

0.025 mg/m<sup>3</sup>

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010**MATERIAL SAFETY DATA SHEET****ADDITIONAL EXPOSURE GUIDELINES:** Crystalline Silica Sand (respirable)**NIOSH REL (10-hour TWA)****IDLH CONCENTRATION**0.05 mg/m<sup>3</sup>50 mg/m<sup>3</sup>

Crystalline Silica Sand exists in several forms, the most common of which is quartz. If Crystalline Silica Sand is heated to more than 870°C it can change to a form of crystalline silica known as trydimite, and if crystalline silica (quartz) is heated to more than 1470°C, it can change to a form of crystalline silica known as cristobalite. Crystalline silica as trydimite and cristobalite are more fibrogenic than crystalline silica as quartz.

The OSHA PEL for crystalline silica as trydimite and cristobalite is one-half the PEL for crystalline silica (quartz); the ACGIH TLV for crystalline silica as trydimite and cristobalite is one-half the TLV for crystalline silica as quartz; the IDLH concentration for crystalline silica as trydimite and cristobalite is one-half the IDLH concentration for crystalline silica (quartz, tripoli).

**SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES****APPEARANCE:** White or tan sand; granular, crushed, or ground**ODOR:** Odorless**BOILING POINT:** 4046°F**MELTING POINT:** 3110°F**VAPOR PRESSURE:** N/A (0 mmHg approximate)**MOLECULAR WEIGHT:** 60.08**SOLUBILITY IN WATER:** Insoluble**SPECIFIC GRAVITY:** 2.66**PH:** N/A**SECTION 10 – STABILITY AND REACTIVITY****STABILITY:** Chemically stable**MATERIAL TO AVOID:** Contact with powerful oxidizing agents such as fluorine, boron

## MATERIAL SAFETY DATA SHEET

trifluoride, chlorine trifluoride, manganese trioxide, oxygen difluoride, hydrogen peroxide, and others may cause fires and/or explosions. Heating a mixture of powdered magnesium with slightly wet silica may cause a violent explosion. A violent reaction may result from combination of manganese trifluoride and silica. Finely divided silica (sand) will often react with burning sodium. Combination with xenon hexafluoride may form the explosive xenon trioxide. The *NIOSH Pocket Guide to Chemical Hazards* also indicates incompatibility/reactivity with ammonia and acetylene; details are not specified.

**CONDITIONS TO AVOID:** Generation of dust.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Silica will dissolve in hydrofluoric acid and produce a corrosive gas – silicon tetrafluoride.

### SECTION 11 – TOXICOLOGICAL INFORMATION

No median lethal dose (“LD50 or LC50”) has been identified for Crystalline Silica Sand.

#### A. SILICOSIS

The major concern is silicosis, caused by the inhalation and retention of respirable Crystalline Silica Sand dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute.

Chronic or Ordinary Silicosis is the most common form of silicosis, and can occur after many years of exposure to relatively low levels of airborne respirable Crystalline Silica Sand dust. It is further defined as either simple or complicated silicosis.

Simple silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function, or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF).

Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (cor pulmonale).

Accelerated Silicosis can occur with exposure to high concentrations of respirable Crystalline Silica Sand over a relatively short period; the lung lesions can appear within five (5) years of the initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or



SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010

## MATERIAL SAFETY DATA SHEET

ordinary silicosis, except that the lung lesions appear earlier and the progression is more rapid.

Acute Silicosis can occur with exposures to very high concentrations of respirable Crystalline Silica Sand over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is fatal.

### B. CANCER

The International Agency for Research on Cancer ("IARC") concluded that there was "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources," and that there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz and cristobalite." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans (Group 1)*." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 68, "Silica, Some Silicates..." (1997). (Emphasis added) NTP - The National Toxicology Program, in its Sixth Annual Report on Carcinogens, concluded that "silica, crystalline (respirable)" may reasonably be anticipated to be a carcinogen, based on sufficient evidence in experimental animals and limited evidence in humans.

Crystalline Silica Sand is not regulated by OSHA as a carcinogen.

### C. SCLERODERMA

There are several studies that show exposure to respirable Crystalline Silica Sand or the disease silicosis is associated with the increased incidence of scleroderma, an immune system disorder manifested by a fibrosis (scarring) of the lungs, skin and other internal organs. The following may be consulted for additional information on silica, silicosis and scleroderma (also known as progressive systemic sclerosis): Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994). "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010

## MATERIAL SAFETY DATA SHEET

### D. TUBERCULOSIS

Individuals with silicosis are at increased risk to develop tuberculosis, if exposed to persons with tuberculosis. The following may be consulted for further information: Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994). "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

### E. NEPHROTOXICITY

Several studies suggest that exposure to respirable Crystalline Silica Sand or the disease silicosis is associated with the increased incidence of kidney disorders. The following may be consulted for additional information on silica, silicosis and nephrotoxicity: Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases," Parkes, W. Raymond (1994). "Further evidence of human silica nephrotoxicity in occupationally exposed workers", British Journal of Industrial Medicine, Vol. 50, No. 10, pp. 907-912 (1993). "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

Several studies have reported excess cases of kidney diseases, including end-stage renal disease, among silica-exposed workers. For additional information, the following may be consulted: "Kidney Disease and silicosis," Nephron, Vol. 85, pp. 14-19 (2000).

### F. ARTHRITIS

There are recent studies suggesting that exposure to respirable Crystalline Silica Sand or the disease silicosis is associated with the increased incidence of arthritis. The following may be consulted for additional information on silica exposure and arthritis: American Journal of Industrial Medicine, Volume 35, pp. 375-381 "Connective Tissue Disease and Silicosis", Rosenman KD; Moore-Fuller M.; Reilly MJ. (1999). Environmental Health Perspective, Volume 107, pp. 793-802 "Occupational Exposure to Crystalline Silica and Autoimmune Disease", Parks CG; Conrad K; Cooper GS. (1999).

### H. NON-MALIGNANT RESPIRATORY DISEASES

For information concerning the association between exposure to Crystalline Silica Sand and chronic bronchitis, emphysema and small airways disease, refer to Section 3.5 of the NIOSH Special Hazard Review. There are studies that disclose an association between dusts found in various mining occupations and non-malignant respiratory diseases, particularly among smokers. It is unclear whether the observed associations exist only with underlying silicosis, only among smokers, or result from exposure to mineral dusts generally (independent of the presence or absence of Crystalline Silica Sand, or the level of crystalline silica in the dust).

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010

## MATERIAL SAFETY DATA SHEET

### Sources of Information:

The *NIOSH Hazard Review - Health Effects of Occupational Exposure to Respirable Crystalline Silica* published in April 2002 summarizes the medical and epidemiological literature on the health risks and diseases associated with occupational exposures to respirable Crystalline Silica Sand. The *NIOSH Hazard Review* should be consulted for additional information, and references to published studies on health risks and diseases associated with occupational exposures to respirable Crystalline Silica Sand. The *NIOSH Hazard Review* is available from NIOSH - Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226, or by calling 1-800-356-4646, or through the NIOSH web site, [www.cdc.gov/niosh/topics/silica](http://www.cdc.gov/niosh/topics/silica). then click on the link "NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica."

### SECTION 12 - ECOLOGICAL INFORMATION

**ECOTOXICITY:** Crystalline Silica Sand is not known to be eco-toxic; i.e., no data suggests that Crystalline Silica Sand is toxic to birds, fish, invertebrates, microorganisms or plants.

**ENVIRONMENTAL FATE:** This material shows no bioaccumulation effect or food chain concentration toxicity.

### SECTION 13 - DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable federal, state, and local environmental regulations. The material may be landfilled; however, used material may contain materials derived from other sources that because of contamination may not be disposed of in landfills. Disposed material should be covered to minimize generation of airborne dust.

Crystalline Silica Sand is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §§ 261 *et seq.* However, the material may be contaminated during use, and it is the responsibility of the user to assess the appropriate disposal of the used material.

### SECTION 14 - TRANSPORT INFORMATION

**US DOT:** Not Regulated

**PROPER SHIPPING NAME:** N/A

**CLASS:** N/A

**UN NUMBER:** N/A

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010**MATERIAL SAFETY DATA SHEET**

PACKING GROUP: N/A

**SECTION 15 – REGULATORY INFORMATION****A. United States EPA**

RCRA Hazardous Waste Number (40 CFR 261.33): not listed.

RCRA Hazardous Waste Classification (40 CFR 261): not classified.

CERCLA Hazardous Substance (40 CFR 302.4): unlisted specific per RCRA, Sec. 3001; CWA, Sec. 311(b)(4); CWA, Sec. 307(a), CAA, Sec. 112.

CERCLA Reportable Quantity (RQ): not listed.

SARA 311/312 Codes: not listed (note: it should be reported under SARA 311/312 if more than 10,000 pounds at facility, based on 29 CFR § 1910.1200(c), definition of a hazardous chemical, assuming OSHA requires maintenance of an MSDS.)

SARA Toxic Chemical (40 CFR 372.65): not listed.

SARA EHS (Extremely Hazardous Substance) (40 CFR § 355): not listed.

Threshold Planning Quantity (TPQ): not listed.

TSCA: All chemical ingredients are listed on the U.S. TSCA Inventory List.

**B. Food and Drug Administration**

Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3)(xxvi).

**C. OSHA/MSHA Regulations**Air contaminant (29 CFR 1910.1000, Table Z-3): 10 mg/m<sup>3</sup> ÷ (% silica in the dust plus 2) TWA-8 hour PEL.

MSHA: not listed.

OSHA Specifically Regulated Substance (29 CFR § 1910): not listed.

OSHA Hazard Communication Evaluation: meets the criteria for hazardous material, as defined by 29 CFR § 1910.1200.

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010**MATERIAL SAFETY DATA SHEET****SECTION 16 – OTHER INFORMATION****A. Hazardous Materials Identification System**

Health Risks - 1\*

Flammability - 0

Physical Hazards - 0

**Health Hazards:**

4. Severe hazard; Life-threatening, major or permanent damage may result from single or repeated overexposures.
  3. Serious hazard; Major injury likely unless prompt action is taken and medical treatment is given.
  2. Moderate hazard; Temporary or minor injury may occur.
  1. Slight hazard; Irritation or minor reversible injury possible.
  0. Minimal hazard; No significant risk to health.
- \* Chronic hazard; chronic (long-term) health effects may result from repeated overexposure.

**Flammability Hazards:**

4. Severe hazard; Flammable gases, or very flammable volatile liquids with flash points below 73 °F, and boiling points below 100 °F. Materials may ignite spontaneously with air.
3. Serious hazard; Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 °F and boiling points above 100 °F, as well as liquids with flash points between 73 °F and 100 °F.
2. Moderate hazard; Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 °F but below 200 °F.
1. Slight hazard; Materials that must be preheated before ignition will occur. Includes liquids, solids, and semi solids having a flash point above 200 °F.
0. Minimal hazard; Materials that will not burn.

**Physical Hazards:**

4. Severe hazard; Materials that are readily capable of water reaction, detonation, or explosive decomposition at normal temperatures and pressures.
3. Serious hazard; Materials that may form explosive mixtures with water are capable of detonation or explosive reaction in the presence of a strong initiating source or undergo chemical change at normal temperature and pressure with moderate risk of explosion.
2. Moderate hazard; Materials that are unstable and may undergo violent chemical change and normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

SUPERIOR SILICA SANDS LLC

DATE: November 16, 2009;  
amended March 8, 2010**MATERIAL SAFETY DATA SHEET**

1. Slight hazard; Materials that are normally stable but can become unstable at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.
0. Minimal hazard; Materials that are normally stable under fire conditions and will not react to water, polymerize, decompose, condense, or self-react.

**B. National Fire Protection Association**

Health Hazard - 1

Fire Hazard - 0

Reactivity - 0

**Health Hazards:**

4. Deadly
3. Extreme danger
2. Hazardous
1. Slightly hazardous
0. Normal material

**Fire Hazards - Flash Point Temp.:**

4. Below 73° F
3. Below 100° F
2. Below 200° F
1. Above 200° F.
0. Will not burn

**Reactivity:**

4. May detonate
3. Shock or heat may detonate
2. Violent chemical reaction
1. Unstable if heated
0. Stable