A GUIDE TO THE OSHA SILICA STANDARD

As of August 1, 2017

From: Nebraska Building Chapter AGC Safety and Health Committee

Provided as a service to the members of the Nebraska Building Chapter AGC

Nebraska Building Chapter

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Acknowledgement

It is important to note that this document offers general guidelines for compliance. As a new rule, this Standard will be subject to interpretations by OSHA. Contractors should carefully read the full content of the Standard to establish any further compliance steps applicable to their specific scope of work.

The Nebraska Building Chapter Safety and Health Committee extends sincere gratitude to the AGC Houston Chapter Safety Committee for sharing their *draft guidelines* with us, which is the basis of this document.

The A.G.C. Houston Chapter Safety Committee formed a taskforce charged with reviewing OSHA's 29 C.F.R. 1926.1153, Respirable Crystalline Silica Standard. The purpose of the Taskforce was to create a document offering guidance to A.G.C. Chapter members on achieving compliance with said Standard. To accomplish this, the Committee assigned specific sections of the Standard to small groups of Committee members. Each group offered a summary of their understanding of the requirements under their assigned section of the Standard.

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PURPOSE

This program has been developed to protect site employees, who in the course of their work, may be exposed to various operations where the dust generated may contain respirable crystalline silica.

SCOPE

This program applies to all **YOUR COMPANY** jobsite locations and establishes the minimum safety guidelines to mitigate, or eliminate any anticipated or known silica exposure. **YOUR COMPANY** will ensure that potential sources of silica exposure on our jobsites are evaluated. This program is intended to address comprehensively the issues of silica exposure; evaluate and identify potential sources of silica exposure, evaluate the associated potential hazards, communicate the information concerning these hazards, and establish appropriate procedures and protective measures for Employees.

PROGRAM OVERVIEW

YOUR COMPANY shall:

- Establish, implement, and maintain a W**ritten Exposure Control Plan** that identifies tasks that involve exposure to respirable silica and methods used to protect workers, including procedures to restrict access to work areas where high exposures may occur. **YOUR COMPANY** will evaluate all processes to determine if compliance using Table 1 in the OSHA silica standard www.osha.gov/silica/SilicaConstructionRegText.pdf or alternate control methods will be implemented.

- Ensure that materials (e.g., tools, equipment, PPE) and other resources such as worker training materials required to fully implement and maintain this exposure control plan are readily available where and when they are required.

- Provide a job/ **Written Exposure Control Plan** which details the work methods and practices that will be followed on each site. Considerations will include:

  - Availability and delivery of all required tools/equipment
  - Scope and nature of work to be conducted
  - Control methods to be used
  - Housekeeping
  - Level of respiratory protection required
  - Coordination plan

- Designate a **competent** person to implement the written exposure control plan. **YOUR COMPANY** site supervision will be trained as competent persons under this plan.

- Restrict **housekeeping** practices that expose workers to silica where feasible alternatives are available.

- Initiate sampling of worker exposure to silica dust when there are non-standard work practices for which the control methods to be used have not been proven to be adequately protective.

- Offer **medical exams**—including chest X-rays and lung function tests—every three years for workers who are required by the standard to wear a respirator for 30 or more days per year.

- **Train supervisors and workers** on work operations that result in silica exposure and ways to limit exposure.

- **Keep records** of workers' silica exposure and medical exams.

- Ensure site subcontractors provide written silica control plans prior to the commencement of any work that may result in the release of silica dust.

- Maintain records of training, safety meetings, inspections, work methods, audits.

- Conduct, at a minimum, annual reviews of this plan to ensure effectiveness. Any identified gaps or incidents may result in more frequent reviews.

RESPONSIBILITIY

NAME/POSITION (ex: SAFETY DIRECTOR) is responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program.

NAME/POSITION (ex: SAFETY DIRECTOR) will develop written detailed instructions covering each of the basic elements in this program, and is the person authorized to amend these instructions.

NAME/POSITION (ex: SAFETY DIRECTOR) is responsible for ensuring the following program elements are implemented and maintained:

- Ensure **Written Exposure Control Plan** is current and details compliance requirements and acceptable industry practices through regular program reviews.
- Implement appropriate silica exposure monitoring program or ensure Table 1 of the OSHA Respirable Crystalline Silica Standard, 29 CFR 1926.1153 is applied.
- Ensure job/task/ **Written Exposure Control Plans** are developed and implemented appropriately (ex. Through inspections/verification visits).
- Review equipment and related technology advancements for consideration of implementation into current work practices (ex. Dust collection/suppression, vacuums, etc.)
- Ensure medical surveillance procedures are implemented and properly maintained.
- Ensure employee training/education related to silica, silica exposure and the requirements of this program are communicated effectively.
- Ensure job/site/task Specific Written Exposure Control Plans are effectively communicated to employees.
- Recordkeeping-maintain appropriate documentation related to this program (monitoring reports, training records, medical surveillance, inspections, etc.)
- Ensure competent persons responsible for implementation of this program make frequent and regular inspections of the job sites, materials, equipment and processes to implement the Written Exposure Control Plan.

POSITIONS (ex: Superintendents/Project Managers) are responsible for silica exposure prevention on their job including:

- Ensure workers are trained in accordance with this document and the requirements for prevention of silica exposure.
- Obtain a copy of the exposure control plan from subcontractor employers.
- Select/implement/direct/document the appropriate control measures for their respective job site.
- Providing adequate instruction to workers on the hazards of working with silica-containing materials (ex: concrete) and on the precautions specified in the job-specific plan covering hazards at the location.
- Ensure that workers are using the proper respirators and have been fit-tested with documented results.

COMPETENT PERSON(S)-will be responsible for ensuring the requirements of this program are in effect on their respective jobs. Competent person responsibilities include:

- Identification of any known and/or anticipated respirable silica hazard related to a job or task.

- Ensure the Written Exposure Control Plan has been created, communicated to all site personnel, and implemented effectively.
- Conduct frequent inspections of the job sites, materials, equipment and processes and having the authority to initiate prompt corrective actions when necessary.

WORKERS/EMPLOYEES are responsible for compliance with the silica exposure control plan. Specific responsibilities include:

- Attending required orientation/training sessions that review silica producing tasks and associated hazards.
- Using and maintaining assigned PPE for prevention of silica exposure.
- Performing tasks/operations following the silica exposure prevention plan.
- Becoming familiarized with conditions or procedures that could potentially expose workers to silica.
- Notify site supervision if the work in which they are involved has not been properly evaluated for silica dust exposure or believe they have been exposed to silica dust.

SUBCONTRACTOR COMPANIES are expected to comply with the requirements of this program. Subcontractors who provide services/perform operations that generate airborne silica dust are required to provide **YOUR COMPANY or NAME OF RESPONSIBLE PERSON**) with their silica exposure control plan prior to the commencement of work.

ENFORCEMENT

YOUR COMPANY will ensure compliance with this program is maintained through frequent site evaluations and/or audits. Questions regarding requirements or compliance should be directed to **(NAME/POSITION, ex. SAFETY DIRECTOR)**. **YOUR COMPANY** reserves the right to remove any subcontractor/supplier/worker from the site for noncompliance with this program.

DEFINITIONS

Action level- a concentration of airborne respirable crystalline silica of 25 µg/m3, calculated as an 8-hour TWA.

Assistant Secretary- the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

B Reader- A **"B" reader** is a physician certified by the National Institute for Occupational Safety and Health (NIOSH) as demonstrating proficiency in classifying radiographs of the pneumoconioses.

Competent person- an individual who is capable of identifying existing and foreseeable respirable crystalline silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them. The competent person must have the knowledge and ability necessary to fulfill the responsibilities set forth in standard.

Director- the Director of the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.

Employee exposure- the exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator.

Exposure Assessment: The initial determination to find if any employee may be exposed to lead at or above the permissible exposure level. Until the assessment is completed, employees shall take all precautions necessary to maintain exposures below the PEL.

High-efficiency particulate air [HEPA] filter- a filter that is at least 99.97 percent efficient in removing mono-dispersed particles of 0.3 micrometers in diameter.

Objective data- information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstrating employee exposure to respirable crystalline silica associated with a particular product or material or a specific process, task, or activity. The data must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

Permissible exposure limit (PEL)- The employer shall ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50 µg/m3, calculated as an 8-hour TWA.

Physician or other licensed health care professional [PLHCP]- an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by this standard

Respirable crystalline silica means quartz, cristobalite, and/or tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle-size-selective samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality – Particle Size Fraction Definitions for Health-Related Sampling.

Silica containing material: Any material, which has the potential to contain silica at levels, which may pose a hazard to employees when the material is manipulated to create airborne particles.

Specialist- an American Board Certified Specialist in Pulmonary Disease or an American Board Certified Specialist in Occupational Medicine.

GENERAL PROGRAM REQUIREMENTS

HAZARD ASSESSMENT AND RISK IDENTIFICATION

(YOUR COMPANY) has completed an evaluation of project tasks and related materials that may expose a worker to respirable silica. The tasks and materials are identified below. ***This list identifies the most common tasks/materials used in commercial construction and should not be considered all inclusive.***

TASKS

Abrasive blasting
Cutting/sawing
Demolition
Drilling
Earth moving
Grinding
Jackhammering
Milling
Polishing
Mixing
Sanding
Sacking/patching
Scarifying
Scraping
Sweeping/cleaning up
Pick and shovel work
Glass cutting
Tuck pointing
Chipping
Scabbling
Installing concrete forms

MATERIALS

Asphalt (for paving)
Brick/masonry
Cement
Concrete
Drywall
Fiber cement products
Grout
Gunite/Shotcrete
Mortar
Paints containing silica
Plaster
Rock/stone
Refractory mortar/castables
Stucco
Terrazo

The competent person for each job site will conduct a silica exposure hazard assessment and generate a *site specific* **Written Exposure Control Plan** prior to the commencement of work.

The **Written Exposure Control Plan** will be reviewed with all employees prior to starting their work. Employees are required to follow the requirements of the Written Exposure Control Plan.

The **Written Exposure Control Plan** will include the following:

- A description of the tasks in the workplace that involve exposure to respirable crystalline silica;
- A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task;
- A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica; and
- A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employers.

The competent person will make frequent and regular inspections of job sites, materials, and equipment to ensure implementation and compliance with the Written Exposure Control Plan.

The plan will be updated as needed. (change in processes/tasks/controls/tools)

YOUR COMPANY shall review this policy and evaluate the effectiveness of the Written Exposure Control Plan at least annually and update it as necessary.

YOUR COMPANY shall make the written exposure control plan readily available for examination and copying, upon request, to each employee covered by this section, their designated representatives, the Assistant Secretary and the Director.

MEDICAL SURVEILLANCE

Program Requirements
A medical surveillance program shall be established for employees who are exposed to respirable silica dust and required to wear a respirator at any time during a workday for 30 or more days per year. The medical surveillance program will be implemented using appropriate, local medical providers, during work hours, and at no cost to the employee. The medical surveillance program shall include the following:

- **Pre-employment and pre-placement medical examinations**- An initial (baseline) medical exam within 30 days after initial assignment shall be performed, unless the employee has received a previous medical examination that meets the requirements of this surveillance program within the last 3 years.

  The initial examination shall consist of:
  - A medical and work history with emphasis on past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system;
  - Any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and smoking status and history;
  - An examination with special emphasis on the respiratory system;
  - A **chest X-ray** (a single posteroanterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems), interpreted and classified according to the International Labour Office (ILO) International Classification of Radiographs of Pneumoconioses by a NIOSH-certified B Reader;
  - A **pulmonary function test** to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH-approved spirometry course;
  - Testing for **latent tuberculosis** infection;
  - Any other tests deemed appropriate by the physician or health care provider.

- **Periodic medical examinations**- Physical examinations with special emphasis on the respiratory system, meeting the requirements of this medical surveillance program shall be made available at least every three years, or more frequently if recommended by a physician or other licensed health care professional.

Information provided to the physician- **YOUR COMPANY** shall ensure that the examining physician or licensed health care provider has a copy of this standard as well as the following information:
- A description of the employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to respirable crystalline silica;
- The employee's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;
- A description of any personal protective equipment used or to be used by the employee, including when and for how long the employee has used or will use that equipment; and
- Information from records of employment-related medical examinations previously provided to the employee and currently within the control of the company.

Medical reports- **YOUR COMPANY** shall ensure that the PLHCP explains to the employee the results of the medical examination and provides each employee with a written medical report within 30 days of each medical examination performed. The written report shall contain:

- A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to respirable crystalline silica and any medical conditions that require further evaluation or treatment;
- Any recommended limitations on the employee's use of respirators;
- Any recommended limitations on the employee's exposure to respirable crystalline silica; and
- A statement that the employee should be examined by a specialist if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.

Physician or Licensed Health Care Professional's Medical Opinion for Employer- **YOUR COMPANY** shall obtain a written medical opinion from the PLHCP within 30 days of the medical examination. The written opinion shall contain only the following:

- The date of the examination;
- A statement that the examination has met the requirements of the silica standard; and
- Any recommended limitations on the employee's use of respirators.

If the employee provides written authorization, the written opinion shall also contain either or both of the following:

- Any recommended limitations on the employee's exposure to respirable crystalline silica;
- A statement that the employee should be examined by a specialist if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.

YOUR COMPANY shall ensure that each employee receives a copy of the written medical opinion within 30 days of each medical examination performed.

Additional examinations/follow up examinations with specialists- If the PLHCP's written medical opinion indicates that an employee should be examined by a specialist, **YOUR COMPANY** shall make available a medical examination by a specialist within 30 days after receiving the PLHCP's written opinion.

- **YOUR COMPANY** shall ensure that the examining specialist is provided with the same information provided for the employee's initial examination;
- **YOUR COMPANY** shall ensure that the specialist explains to the employee the results of the medical examination and provides each employee with a written medical report within 30 days of the examination. The written report shall meet the requirements of the standard and contain:
    - A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to respirable crystalline silica and any medical conditions that require further evaluation or treatment;
    - Any recommended limitations on the employee's use of respirators;
    - Any recommended limitations on the employee's exposure to respirable crystalline silica

Specialist Physician's Medical Opinion for Employer- **YOUR COMPANY** shall obtain a written medical opinion from the PLHCP within 30 days of the medical examination. The written opinion shall contain only the following:

- The date of the examination;
- A statement that the examination has met the requirements of the silica standard; and
- Any recommended limitations on the employee's use of respirators.

COMMUNICATION OF RESPIRABLE CRYSTALLINE SILICA HAZARDS TO EMPLOYEES

Hazard communication- **YOUR COMPANY** shall include respirable crystalline silica in the program established to comply with the hazard communication standard (HCS) (29 CFR 1910.1200).

YOUR COMPANY shall ensure that each employee has access to labels on containers of crystalline silica and safety data sheets, and is trained in accordance with the provisions of HCS and the training requirements outlined in this policy.

Description of Silica- Silica is a one of several chemicals included in the larger classification of silicon dioxide (SiO2). Silicon dioxide is a chemical compound that includes crystalline silica (sand, quartz), amorphoussilica (noncrystalline), and silicates (aluminum silicate). Crystalline silica is the basic component of sand, quartz, and granite rock. This form of silica is obtained from the earth's crust through mining. Crystalline silica can be processed into other materials including silica flour. Silica flouris produced through the milling of crystalline silica into a fine powder. Crystalline silica is present in several forms, including quartz, tridymite, and cristobalite.

Silica related health hazards- Exposure to respirable crystalline silica can occur in a variety of industries and occupations, including construction, sandblasting, and mining. Silicosis, an irreversible but preventable disease, is the illness most closely associated with occupational exposure to the material, which also is known as silica dust. Occupational exposures to respirable crystalline silica are associated with the development of silicosis, lung cancer, pulmonary tuberculosis, and airways diseases. These exposures may also be related to the development of autoimmune disorders, chronic renal disease, and other adverse health effects.

Onset of silicosis can be faster and the severity of disease worse in the setting of high level exposures, which can cause accelerated or acute silicosis.

- **Chronic silicosis**- Most common form, after 15–20 years of moderate to low exposures to respirable crystalline silica. Symptoms associated with chronic silicosis may or may not be obvious; therefore, workers need to have a chest x-ray to determine if there is lung damage. As the disease progresses, the worker may experience shortness of breath upon exercising and have clinical signs of poor oxygen/carbon dioxide exchange. In the later stages, the worker may experience fatigue, extreme shortness of breath, chest pain, or respiratory failure.
- **Accelerated silicosis**- Onset 5-10 years after initial exposure to high concentrations of respirable crystalline silica. Symptoms include severe shortness of breath, weakness, and weight loss. The onset of symptoms takes longer than in acute silicosis.
- **Acute silicosis**- Quickly develops after a few months or as long as 2 years following exposures to extremely high concentrations of respirable crystalline silica. Symptoms of acute silicosis include severe disabling shortness of breath, weakness, and weight loss, which often leads to death.

Examples of occupations with known high silica exposure include: mining, quarrying, sandblasting, rock drilling, road construction, pottery making, stone masonry, and tunneling operations.

PERSONAL HYGIENE

- Use appropriate PPE provided for prevention of exposure to respirable crystalline silica-do not alter.
- No beards or mustaches that prevent a good seal between the respirator and face.
- Do not eat, drink, smoke, or apply cosmetics in areas where crystalline silica dust is present.
- Wash your hands and face outside of dusty areas before eating/drinking.
- **Change work clothes before leaving job or use HEPA filtered vacuum to remove dust from clothes**

COMPLIANCE OPTIONS

YOUR COMPANY will evaluate each task/job process and determine the appropriate compliance approach to prevent employee exposure to respirable crystalline silica.

1. Table 1- List of tasks and equipment control measures OSHA deems necessary to lower airborne respirable crystalline silica to acceptable levels. **Full implementation of Table 1 will remove the requirement of performing air monitoring for that task.**

Compliance with Table 1 requires:

- Fully and proper implementation of the specific control measures identified in the table including:
  - Providing a means of exhaust for tasks performed indoors/enclosed areas
  - Applying water suppression minimize airborne dust
  - Utilizing closed cab equipment ensuring they are:
    - free from settled dust
    - all seals work properly
    - continuous delivery of fresh air circulated through 95% efficient filter
    - heating and cooling systems
- Ensuring employees performing multiple tasks on Table 1 are given proper respiratory protection for work over 4 hours vs. work under 4 hours.

2. Performance option or objective data- OSHA allows objective data to be used that demonstrates control measures being used reduce the airborne respirable crystalline silica exposure to below 50 µg/m3 per 8-hour time weighted average. Objective data would include air monitoring sampling/measurements conducted by the employer, gotten from sources such as other companies, tool manufacturers, universities, national databases, manufacturers, trade organizations, health organizations, etc and would closely mirror the employee exposure conditions for a specific task, process, or activity.

Compliance with the performance options requires:

- Any data collected for evidence under the performance option must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

3. Scheduled monitoring option- Requires the employer to perform air monitoring to evaluate the 8-hour time weighted average exposure of each employee and adhere to a monitoring schedule.

Compliance with the scheduled monitoring option requires:

- Conduct initial monitoring of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each task/job classification, in each work area.
- Conduct representative sampling for tasks/work areas where there are multiple employees doing the same job. Sample the employees who are expected to have the highest exposure to respirable crystalline silica.
- Initial monitoring that reflects exposures below the action level of 25 µg/m3, no additional monitoring is required.

- Recent monitoring results at or above the action level, but below the PEL, requires repeating the monitoring within 6 months.
- Recent monitoring results above the PEL, repeat monitoring within 3 months.
- If the most recent monitoring (non-initial) indicates that exposures are below the action level, repeat within 6 months until two consecutive measurements, taken seven days or more apart, are below the action level. Additional monitoring can be discontinued at this time.
- Reassessment of exposures should be initiated in the event of changes in processes, controls, personnel, or work practices that may be reasonably expected to result in new/additional exposures at or above the action level or when there is reason to believe a new/additional has occurred.

Sample Analysis- **YOUR COMPANY** will ensure that all samples collected for monitoring respirable crystalline silica will be analyzed laboratories meeting the requirements of Appendix A of OSHA's Silica rule, 29 CFR 1926.1153. **YOUR COMPANY** will obtain a statement from the laboratory stating that samples will be analyzed according to Appendix A of the standard.
https://www.osha.gov/silica/AppendixAtosect1926.1153.pdf

CONTROLLING EXPOSURES

Engineering and work practice controls- **YOUR COMPANY** will implement the use of engineering and work practice controls to ensure employee exposures to respirable crystalline silica to or below the PEL, or as outline in Table 1, unless it can be proven that such controls are not feasible.

When engineering and work practice controls are not sufficient alone to bring employee exposures to or below the PEL, **YOUR COMPANY** will supplement the controls with the use of respiratory protection.

RESTRICTED ACCESS TO WORK AREAS

YOUR COMPANY will ensure access is restricted to areas where work being performed may generate dust containing silica.

These work areas will be identified using either warning signs or hard barriers.

Tasks being performed that produce dust containing silica should be scheduled appropriately as to minimize exposures to adjacent workers.

Nonessential and unprotected workers should be informed to stay away from the work area.

Personnel having to enter the work area should be advised that a respirator is required in areas where silica dust levels may be above the PEL.

EMPLOYEE NOTIFICATION OF MONITORING RESULTS

Within 5 working days of completing a silica exposure assessment (results have been received from a laboratory) **YOUR COMPANY** will notify in writing, all affected employees either individually or by posting of results in a conspicuous location.

Monitoring results indicating that exposures are above the PEL, **YOUR COMPANY** will describe in the written notice the corrective actions being taken to reduce the exposure to or below the PEL.

OBSERVATION OF MONITORING

YOUR COMPANY will provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to crystalline silica when being conducted to comply with requirements of the standard.

In the event the monitoring is conducted in an area where protective clothing or equipment is required, **YOUR COMPANY** will provide observers with protective clothing and equipment at no cost. Additionally, **YOUR COMPANY** will ensure the use of protective clothing and equipment by observers.

RESPIRATORY PROTECTION

YOUR COMPANY will ensure appropriate respiratory protection will be provided to employees when:

- Specified by Table 1
- For tasks not listed in Table 1
- When engineering and work practice controls specified by Table 1 are not fully implemented
- Where exposures exceed the PEL during periods necessary to install/implement feasible engineering and work practice controls
- Where exposures exceed the PEL during tasks such as maintenance/repair when engineering and work practice controls are not feasible;
- Where all feasible engineering and work practice controls are implemented and are not sufficient to reduce exposures to or below the PEL.

Respiratory protection program- Respirator use for compliance with this program will be in accordance with 29 CFR 1910.134.

HOUSEKEEPING

YOUR COMPANY does not allow dry sweeping. Wet sweeping, floor sweep compounds, or HEPA-filtered vacuuming will be used to minimize exposure to respirable crystalline silica dust.

Employees are not to use compressed air to clean clothing or surfaces as such activities could contribute to exposure of respirable crystalline silica.

Dust and other debris containing silica should be properly removed from the work area.

TRAINING

Employee training- **YOUR COMPANY** will ensure employees are trained in and can demonstrate knowledge and understanding of this silica policy.

Training content will consist of:

- Health hazards associated with exposure to respirable crystalline silica
- Workplace tasks that could expose workers to silica
- Exposure control measures including engineering controls, work practices, and respiratory protection implemented by **YOUR COMPANY**

- Designated competent persons-who they are, what they do
- Description of the medical surveillance program and its purpose
- Worker responsibilities related to prevention of exposure to respirable crystalline silica as outlined in this policy

YOUR COMPANY will make a copy of the training information and documentation available at no cost to all affected workers.

Competent person training- **YOUR COMPANY** will ensure competent persons responsible for implementation of control measures and work practice activities outlined in the policy receive training to include:

- Review of **YOUR COMPANY** policy related to prevention of exposure to respirable crystalline silica
- Health hazards associated with exposure to respirable crystalline silica
- Workplace tasks that could expose workers to silica
- What is the action level?
- What is the PEL?
- Exposure control measures including engineering controls, work practices, and respiratory protection
- Worker training requirements
- Housekeeping
- Personal hygiene
- Restricted work areas
- PPE
- What is exposure monitoring?
- How to create a written exposure control plan

RECORDKEEPING

Air Monitoring/Sampling

YOUR COMPANY shall make and maintain an accurate record of all exposure measurements taken to assess employee exposure to respirable crystalline silica, as prescribed below:
This record shall include at the least the following information:

- The date of measurement for each sample taken;
- The task monitored
- Sampling and analytical methods used;
- Number, duration, and results of samples taken;
- Identity of the laboratory that performed the analysis;
- Type of personal protective equipment, such as respirators, worn by the employees monitored; and
- Name, social security number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored.

YOUR COMPANY shall ensure that exposure records are maintained and made available in accordance with 29 CFR 1910.1020.

Objective Data

YOUR COMPANY shall make and maintain an accurate record of all objective data relied upon to comply with the requirements of this section.

This record shall include at least the following information:

- The crystalline silica – containing material in question;
- The source of the objective data;
- The testing protocol and result of testing;
- A description of the process, task, or activity on which the objective data were based;
- Other data relevant to the process, task, activity, material, or exposures on which the objective data were based.

YOUR COMPANY shall ensure that objective data are maintained and made available in accordance with 1910.1020.

Medical Surveillance

YOUR COMPANY shall make and maintain an accurate record for each employee covered by medical surveillance as described below.
The record shall include the following information about the employee:

- Name and social security number;
- A copy of the PLHCPs' and specialists written opinions; and
- A copy of the information provided to the PLHCPs and specialists

YOUR COMPANY shall ensure that medical records are maintained and made available in accordance with 29 CFR 1910.1020.

Employee Training

YOUR COMPANY shall make and maintain, an accurate record of each employee trained and covered by this policy. The training record shall include:

- Name
- Date of training
- Employer (if subcontractor)
- Trainer Name
- Content of training/topics

Written Exposure Control Plan for Mitigating Silica within the work place
To be completed regularly and frequently

Project Name: _____ Project No.: _____

Competent Person: _____ Date: _____

Time: _____

Source of respirable silica:

_____

Description of task that may be affected by identified silica:

_____

Personnel on the task or working in affected area:		Trained in Silica:	
1	_____	**Y**	**N**
2	_____	**Y**	**N**
3	_____	**Y**	**N**
4	_____	**Y**	**N**
5	_____	**Y**	**N**
6	_____	**Y**	**N**
7	_____	**Y**	**N**
8	_____	**Y**	**N**
9	_____	**Y**	**N**
10	_____	**Y**	**N**

Detailed description of method(s) used to protect worker(s) from exposure:

_____

Housekeeping method(s) used to limit exposure:

_____

Method to restrict access to affected area:

_____

Competent Person: Complete and submit to: _____

_____ _____

Competent Person Signature Date

U.S. SILICA COMPANY
SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier: Silica Sand, Ground Silica, and Fine Ground Silica

Product Name/Trade Names:
Sand and Ground Silica Sand (sold under various names: ASTM TESTING SANDS • GLASS SAND • FILPRO® · FLINT SILICA • DM-SERIES • F-SERIES • FOUNDRY SANDS • FJ-SERIES H-SERIES • L-SERIES • N-SERIES • NJ SERIES • OK-SERIES • P-SERIES • T-SERIES • hydraulic fracturing sand, all sizes • frac sand, all sizes • MIN-U-SIL® Fine Ground Silica • MYSTIC WHITE II® • #1 DRY • #1 SPECIAL • PENN SAND® • PRO WHITE® · SILURIAN® · Q-ROK® • SIL-CO-SIL® Ground Silica • MICROSIL® • SUPERSIL® • MASON SAND • GS SERIES • PERSPEC • proppant, all sizes • SHALE FRAC® - SERIES • KOSSE WHITE® • OTTAWA WHITE® • OPTIJUMP® • LIGHTHOUSE™

Chemical Name or Synonym:
Crystalline Silica (Quartz), Sand, Silica Sand, Flint, Ground Silica, Fine Ground Silica, Silica Flour.

Recommended use of the chemical and restrictions on use: (non-exhaustive list): brick, ceramics, foundry castings, glass, grout, hydraulic fracturing sand, frac sand, proppant, mortar, paint and coatings, silicate chemistry, silicone rubber, thermoset plastics.

DO NOT USE U.S. SILICA COMPANY SAND OR GROUND SILICA FOR SAND BLASTING

Manufacturer:
U.S. Silica Company
8490 Progress Drive, Suite 300
Frederick, MD 21701
U.S.A.

Phone: 800-243-7500
Emergency Phone: 301-682-0600
Fax: 301-682-0690

2. HAZARD(S) IDENTIFICATION

Classification:

Physical	Health
Not Hazardous	Carcinogen Category 1A Specific Target Organ Toxicity – Repeated Exposure Category 1

DANGER
May cause cancer by inhalation.
Causes damage to lungs through prolonged or repeated exposure by inhalation.
Response:
If exposed or concerned: Get medical advice.
Disposal:
Dispose of contents/containers in accordance with local regulation.

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust.
Do not eat, drink or smoke when using this product.
Wear protective gloves and safety glasses or goggles.
In case of inadequate ventilation wear respiratory protection.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Percent
Crystalline Silica (quartz)	14808-60-7	95-99.9

4. FIRST-AID MEASURES

Inhalation: First aid is not generally required. If irritation develops from breathing dust, move the person from the overexposure and seek medical attention if needed.
Skin contact: First aid is not required.
Eye contact: Wash immediately with plenty of water. Do not rub eyes. If irritation persists, seek medical attention.
Ingestion: First aid is not required.
Most important symptoms/effects, acute and delayed: Particulates may cause abrasive eye injury. Inhalation of dust may cause respiratory tract irritation. Symptoms of exposure may 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.
Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is not required.

5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media: Use extinguishing media appropriate for surrounding fire.

Specific hazards arising from the chemical: Product is not flammable, combustible or explosive.

Special protective equipment and precautions for fire-fighters: None required.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Wear appropriate protective clothing and respiratory protection (see Section 8). Avoid generating airborne dust during clean-up.

Environmental precautions: No specific precautions. Report releases to regulatory authorities if required by local, state and federal regulations.

Methods and materials for containment and cleaning up: Avoid dry sweeping. Do not use compressed air to clean spilled sand or ground silica. Use water spraying/flushing or ventilated/HEPA filtered vacuum cleaning system. Wet before sweeping. Dispose of in closed containers.

7. HANDLING AND STORAGE

Precautions for safe handling:
Avoid generating dust. Do not breathe dust. Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be in the air without a visible dust cloud. Use adequate exhaust ventilation and dust collection to reduce respirable crystalline silica dust levels to below the permissible exposure limit ("PEL"). Maintain and test ventilation and dust collection equipment. Use all available work practices to control

dust exposures, such as water sprays. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Keep airborne dust concentrations below permissible exposure limits.

Where necessary to reduce exposures below the PEL or other applicable limit (if lower than the PEL), wear a respirator approved for silica containing dust when using, handling, storing or disposing of this product or bag. See Section 8, for further information on respirators. Do not alter the respirator. Do not wear a tight-fitting respirator with facial hair such as a beard or mustache that prevents a good seal between the respirator and face. Maintain, clean, and fit test respirators in accordance with applicable standards. Wash or vacuum clothing that has become dusty.

Participate in training, exposure monitoring, and health surveillance programs to monitor any potential adverse health effects that may be caused by breathing respirable crystalline silica. The OSHA Respirable Crystalline Silica Standards; 29CFR1910.1053, 1915.1053 and 1926.1053, the OSHA Hazard Communication Standard, 29 CFR Sections 1910.1200, 1915.1200, 1917.28, 1918.90, 1926.59 and 1928.21, and state and local worker or community "right-to-know" laws and regulations should be strictly followed.

DO NOT USE U.S. SILICA COMPANY SAND OR GROUND SILICA FOR SAND BLASTING

Conditions for safe storage, including any incompatibilities: Use dust collection to trap dust produced during loading and unloading. Keep containers closed and store bags to avoid accidental tearing, breaking, or bursting.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines:

Until Effective Date of New OSHA PEL below:

Component	OSHA PEL	ACGIH TLV	NIOSH REL
Crystalline Silica (quartz)	10 mg/m3 %SiO_2 + 2 TWA (respirable dust) 30 mg/m3 %SiO_2 + 2 TWA (total dust)	0.025 mg/m3 TWA (respirable dust)	0.05 mg/m3 TWA (respirable dust)

If crystalline silica (quartz) is heated to more than 870°C, quartz can change to a form of crystalline silica known as tridymite; if crystalline silica (quartz) is heated to more than 1470°C, quartz can change to a form of crystalline silica known as cristobalite. The OSHA PEL for crystalline silica as tridymite or cristobalite is one- half of the OSHA PEL for crystalline silica (quartz).

New OSHA PEL from 2016 Respirable Crystalline Silica Standard – see Effective Dates below.

Component	OSHA PEL	ACGIH TLV	NIOSH REL
Crystalline Silica (quartz, cristobalite and tridymite)	0.05 mg/m3 TWA (respirable dust)	0.025 mg/m3 TWA (respirable dust)	0.05 mg/m3 TWA (respirable dust)

Effective Dates: Construction 29CFR 1926.1153 Effective June 23, 2017
General Industry and Maritime 29CFR 1910.1053 / 1915.1053 Effective June 23, 2018 Oil and Gas including Hydraulic Fracturing 29CFR 1910.1053 Effective June 23, 2018

Appropriate engineering controls: Use adequate general or local exhaust ventilation to maintain concentrations in the workplace below the applicable exposure limits listed above.

Respiratory protection: If it is not possible to reduce airborne exposure levels to below the OSHA PEL or other applicable limit with ventilation, use the table below to assist you in selecting respirators that will reduce personal exposures to below the OSHA PEL. This table is part of the OSHA Respirator Standard 29CFR1910.134(d). ***Assigned protection factor (APF)*** means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by the Standard. For example, an APF of 10 means that the respirator should reduce the airborne concentration of a particulate by a factor of 10, so that if the workplace concentration of a particulate was 150 ug/m3, then a respirator with an APF of 10 should reduce the concentration of particulate to 15 ug/m3. In additional a cartridge change-out schedule must be developed based on the concentrations in the workplace.

1. -- Assigned Protection Factors[5]

Type of respirator[1], [2]	Quarter mask	Half mask	Full facepiece	Helmet/ hood	Loose-fitting facepiece
1. Air-Purifying Respirator	5	[3]10	50	.....	.....
2. Powered Air-Purifying Respirator (PAPR)	.....	50	1,000	[4]25/1,000	25
3. Supplied-Air Respirator (SAR) or Airline Respirator					
• Demand mode	.....	10	50	.....	.....
• Continuous flow mode	.....	50	1,000	[4]25/1,000	25
• Pressure-demand or other positive-pressure mode	.....	50	1,000	.....	.....
4. Self-Contained Breathing Apparatus (SCBA)					
• Demand mode	.....	10	50	50	.....
• Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	.....	.....	10,000	10,000	.....

Notes:

[1]Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

[2]The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

[3]This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

[4]The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

[5]These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

Skin protection: Maintain good industrial hygiene. Protection recommended for workers suffering from dermatitis or sensitive skin.

Eye protection: Safety glasses with side shields or goggles recommended if eye contact is anticipated.

Other: None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.): White or tan sand: granular, crushed or ground to a powder.
Odor: None.

Odor threshold: Not determined	**pH:** 6-8
Melting point/freezing point: 3110°F/1710°C	**Boiling point/range:** 4046°F/2230°C
Flash point: Not applicable	**Evaporation rate:** Not applicable
Flammable limits: LEL: Not applicable	**UEL:** Not applicable
Vapor pressure: Not applicable	**Vapor density:** Not applicable
Relative density: 2.65	**Solubility(ies):** Insoluble in water
Partition coefficient: n-octanol/water: Not applicable	**Auto-ignition temperature:** Not determined
Decomposition temperature: Not determined	**Viscosity:** Not applicable
Flammability (solid, gas): Not applicable	

10. STABILITY AND REACTIVITY

Reactivity: Not reactive under normal conditions of use.
Chemical stability: Stable.
Possibility of hazardous reactions: Contact with powerful oxidizing agents, such as fluorine, chlorine trifluoride and oxygen difluoride, may cause fires.
Conditions to avoid: Avoid generation of dust in handling and use.
Incompatible materials: Powerful oxidizers such as fluorine, chlorine trifluoride, and oxygen difluoride and hydrofluoric acid.
Hazardous decomposition products: Silica will dissolve in hydrofluoric acid and produce a corrosive gas, silicon tetrafluoride.

11. TOXICOLOGICAL INFORMATION

Acute effects of exposure:
Inhalation: Inhalation of dust may cause respiratory tract irritation. Symptoms of exposure may include cough, sore throat, nasal congestion, sneezing, wheezing and shortness of breath.
Ingestion: Ingestion in an unlikely route of exposure. If dust is swallowed, it may irritate the mouth and throat.
Skin contact: No adverse effects are expected.
Eye contact: Particulates may cause abrasive injury.

Chronic effects: Prolonged **i**nhalation of respirable crystalline silica may cause lung disease, silicosis, lung cancer and other effects as indicated below.

The method of exposure that can lead to the adverse health effects described below is inhalation.

A. SILICOSIS

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 (10 to 20 or more) of prolonged repeated inhalation of relatively low levels of airborne respirable crystalline silica 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. Complicated silicosis or PMF symptoms, if present, are shortness of breath and cough. 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 pumonale).

Accelerated Silicosis can occur with prolonged repeated inhalation of high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that lung lesions appear earlier and progression is more rapid.

Acute Silicosis can occur after the repeated inhalation of very high concentrations of respirable crystalline silica over a short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough, weakness and weight loss. Acute silicosis is fatal.

B. CANCER

IARC - The International Agency for Research on Cancer ("IARC") concluded that “crystalline silica in the form of quartz or cristobalite dust is *carcinogenic to humans (Group 1)”*. For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C,"A Review of Human Carcinogens: Arsenic, Metals, Fibres and Dusts " (2011).

NTP classifies “Silica, Crystalline (respirable size)” as Known to be a human carcinogen.

C. AUTOIMMUNE DISEASES

Several studies have reported excess cases of several autoimmune disorders -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis -- among silica-exposed workers.

D. TUBERCULOSIS

Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to tuberculosis bacteria. Individuals with chronic silicosis have a three-fold higher risk of contracting tuberculosis than similar individuals without silicosis.

E. KIDNEY DISEASE

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

F. NON-MALIGNANT RESPIRATORY DISEASES

The reader is referred to Section 3.5 of the NIOSH Special Hazard Review cited below for information concerning the association between exposure to crystalline silica and chronic bronchitis, emphysema and small airways disease. 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, or the level of crystalline silica in the dust).

Sources of information:
The ***NIOSH Hazard Review - Occupational Effects of Occupational Exposure to Respirable Crystalline Silica*** published in April 2002 summarizes and discusses the medical and epidemiological literature on the health risks and diseases associated with occupational exposures to respirable crystalline silica. The *NIOSH Hazard Review* is available from NIOSH - Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226, or through the NIOSH web site, www.cdc.gov/niosh/topics/silica, then click on the link "NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica".

For a more recent review of the health effects of respirable crystalline silica, the reader may consult *Fishman's Pulmonary Diseases and Disorders*, Fourth Edition, Chapter 57. "Coal Workers' Lung Diseases and Silicosis".

The US Occupational Safety and Health Administration (OSHA) published a summary of respirable crystalline silica health effects in connection with OSHA's Proposed Rule regarding occupational exposure to respirable crystalline silica. The summary was published in the September 12, 2013 Federal Register, which can be found at www.federalregister.gov/articles/2013/09/12/2013-20997/occupational-exposure-to-respirable-crystalline- silica.

Numerical measures of toxicity:
Crystalline Silica (quartz): LD50 oral rat >22,500 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity: Crystalline silica (quartz) is not known to be ecotoxic.
Persistence and degradability: Silica is not degradable.
Bioaccumulative potential: Silica is not bioaccumulative. **Mobility in soil:** Silica is not mobile in soil.
Other adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Discard any product, residue, disposable container or liner in full compliance with national regulations.

14. TRANSPORT INFORMATION

UN number: None
UN proper shipping name: Not regulated
Transport hazard classes(es): None **Packing group, if applicable:** None **Environmental hazards:** None

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not determined
Special precautions: None known.

15. REGULATORY INFORMATION

UNITED STATES (FEDERAL AND STATE)

TSCA Status: Crystalline silica (quartz) appears on the EPA TSCA inventory under the CAS No. 14808-60-7.

RCRA: This product is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): This product contains the following chemicals subject to SARA 302 or SARA 313 reporting: None above the de minimus concentrations.

Clean Air Act: Crystalline silica (quartz) mined and processed by U.S. Silica Company is not processed with or does not contain any Class I or Class II ozone depleting substances.

FDA: 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).

California Proposition 65: Crystalline silica (airborne particles of respirable size) is classified as a substance known to the State of California to be a carcinogen.

California Inhalation Reference Exposure Level (REL): California established a chronic non-cancer effect REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no non-cancer health effects are anticipated in individuals indefinitely exposed to the substance at that level.

Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

Pennsylvania Worker and Community Right to Know Act: Quartz is a hazardous substance under the Act, but it is not a special hazardous substance or an environmental hazardous substance.

Texas Commission on Environmental Quality: The Texas CEQ has established chronic and acute Reference Values and short term and long term Effects Screening Levels for crystalline silica (quartz). The information can be accessed through www.tceq.texas.gov.

CANADA

Domestic Substances List: U. S. Silica Company products, as naturally occurring substances, are on the Canadian DSL.

WHMIS Classification: D2A

OTHER NATIONAL INVENTORIES

Australian Inventory of Chemical Substances (AICS): All of the components of this product are

listed on the AICS inventory or exempt from notification requirements.

China: Silica is listed on the IECSC inventory or exempt from notification requirements.

Japan Ministry of International Trade and Industry (MITI): All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law Registry Number 1-548.

Korea Existing Chemicals Inventory (KECI) (set up under the Toxic Chemical Control Law): Listed on the ECL with registry number 9212-5667.

New Zealand: Silica is listed on the HSNO inventory or exempt from notification requirements.

Philippines Inventory of Chemicals and Chemical Substances (PICCS): Listed for PICCS.

Taiwan: Silica is listed on the CSNN inventory or exempt from notification requirements.

16. OTHER INFORMATION

Date of preparation/revision: August 22, 2016

Hazardous Material Information System (HMIS):
Health *
Flammability 0
Physical Hazard 0 Protective
Equipment E
* For further information on health effects, see Sections 2, 8 and 11 of this MSDS.

National Fire Protection Association (NFPA): Health
0
Flammability 0
Instability 0

Web Sites with Information about Effects of Crystalline Silica Exposure:

The U. S. Silica Company web site will provide updated links to OSHA and NIOSH web sites addressing crystalline silica issues: www.ussilica.com, click on “Info Center”, then click on “Health & Safety”.

The Occupational Safety and Health Administration (OSHA) web site contains information on the OSHA standard related to respirable crystalline silica at https://www.osha.gov/silica/index.html.

The U.S. National Institute for Occupational Safety and Health (NIOSH) maintains a site with information about crystalline silica and its potential health effects at http://www.cdc.gov/niosh/topics/silica.

The IARC Monograph that includes crystalline silica, Volume 100C, can be accessed in PDF form at the IARC web site, http://monographs.iarc.fr/ENG/Monographs/PDFs/index.php.

U. S. Silica Company Disclaimer
The information and recommendations contained herein are based upon data believed to be up to- date and correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any

harmful effects that may be caused by purchase, resale, use or exposure to our silica. Customers and users of silica must comply with all applicable health and safety laws, regulations, and orders. In particular, they are under an obligation to carry out a risk assessment for the particular work places and to take adequate risk management measures in accordance with the national implementation legislation of EU Directives 89/391 and 98/24.