

The following outline briefly describes the Occupational Safety and Health Administration's regulations governing occupational exposure to respirable crystalline silica. For additional details, see the standard referenced above at www.osha.gov.

NOTE ON 1% SILICA: Previously, if a material had less than (<) 1% silica by weight it was not considered to be a silica-containing material. OSHA has not included a threshold concentration exception in these standards. The Agency has concluded that it would not be appropriate to establish a threshold crystalline silica concentration because the evidence in the rulemaking record is not sufficient to lead OSHA to determine that the suggested concentration thresholds would be protective of employee health. The Agency's exposure assessment findings show that exposures to respirable crystalline silica can exceed the action level of 25 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) or PEL of 50 $\mu\text{g}/\text{m}^3$ even at threshold concentrations less than 1 or 0.1 percent. Issues with regard to requirements for labels and SDSs are addressed in the standard summary and explanation of requirements for *Communication of Respirable Crystalline Silica Hazards to Employees* in this preamble.

SCOPE AND APPLICATION (1926.1053, a)

Applies to construction occupational exposures to all crystalline silica exposures, except where employee exposure to respirable crystalline silica will remain below 25 micrograms per cubic meter of air (25 $\mu\text{g}/\text{m}^3$) as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

SPECIFIED PERMISSIBLE EXPOSURE LIMIT (PEL) (1926.1053, c)

For each employee engaged in a task identified on Table 1 (Attached), the employer shall implement the engineering controls, work practices, and respiratory protection specified for the task on Table 1 (provided at the end of this summary), unless the employer assesses and limits the exposure of the employee to respirable crystalline silica in accordance with paragraph (d) of this standard.

ALTERNATIVE EXPOSURE CONTROL METHODS (1926.1053, d)

For tasks not listed in Table 1, or where the employer does not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1, the employer shall ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50 $\mu\text{g}/\text{m}^3$ calculated as an 8-hour TWA.

The employer shall assess the exposure of each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the Action Level (AL) of 25 $\mu\text{g}/\text{m}^3$ TWA in accordance with the options below:

Scheduled Monitoring Option: The employer shall perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each job classification, in each work area. Where several employees perform the same tasks on the same shift and in the same work area, the employer may sample a representative fraction of these employees in order to meet this requirement. In

representative sampling, the employer shall sample the employee(s) who are expected to have the highest exposure to respirable crystalline silica.

Performance–Oriented Option: The employer shall assess the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data or objective data sufficient to accurately characterize employee exposures to respirable crystalline silica.

If initial monitoring indicates that employee exposures are below the AL, monitoring can be discontinued. If monitoring reveals employee exposures to be at or above the AL, the employer shall perform periodic monitoring at least every 6 months. If monitoring reveals employee exposures to be above the PEL, the employer shall perform monitoring at least every 3 months. If periodic monitoring indicates employee exposures are below the AL, the exposures must be confirmed using additional monitoring taken at least seven days later. The employer may discontinue monitoring for those employees if both results are below the AL.

The employer shall reassess exposures when there has been any change in the production process, control equipment, personnel, or work practices that may result in new or additional exposures to respirable crystalline silica at or above the AL, or when the employer has any reason to believe that new or additional exposures have occurred.

Employee Notification of Results: Within five (5) working days after completing an exposure assessment, the employer shall either post the results in an appropriate location that is accessible to all affected employees or shall notify each affected employee individually in writing of the results. Whenever an exposure assessment indicates that employee exposure is above the PEL, the employer shall describe in the written notification the corrective action being taken to reduce employee exposure to or below the PEL.

RESPIRATORY PROTECTION (1926.1053, e)

The employer shall provide and require the use of respirators and develop and implement a written respiratory protection program in accordance with the OSHA Respiratory Protection Standard 1910.134. Respiratory protection is required: (i) where specified in Table 1; (ii) for tasks not listed in Table 1 or where the employer does not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1; (iii) where exposures exceed the PEL during periods necessary to install or implement feasible engineering and work practice controls; (iv) during work operations, such as maintenance and repair activities, for which engineering and work practice controls are not feasible; (v) during work operations for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL.

HOUSEKEEPING (1926.1053, f)

Dry sweeping and dry brushing are not allowed unless HEPA-filtered vacuuming, wet sweeping, or other methods that minimize exposure have been tried and found not to be feasible.

Compressed air shall not be allowed to clean clothing or surfaces unless: (A) the compressed air is used in conjunction with a ventilation system designed to capture the dust cloud created by the compressed air; or (B) no alternative method is feasible.

WRITTEN CONTROL PROGRAM (1926.1053, g)

The employer shall establish and implement a written exposure control plan that contains descriptions of tasks in the workplace that involve exposure to respirable crystalline silica, engineering controls, work practices, respiratory protection used to limit employee exposure, housekeeping measures used to limit employee exposure, 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. The employer shall designate a competent person to make regular inspections of job sites, materials, and equipment to implement the written exposure control plan. The plan should be reviewed annually and updated as necessary.

MEDICAL SURVEILLANCE (1926.1053, h)

Employers shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this section to use a respirator for 30 or more days per year.

The employer shall make available a baseline medical examination within 30 days after initial assignment unless the employee has received a medical examination that meets the requirements of this section within the last three years. Periodic exams shall be made available at least every three years or more frequently if recommended by a Physician or other licensed health care professional (PLHCP).

The medical examination shall consist of a medical and work history, with emphasis on: past, present, and anticipated exposure to respirable crystalline dust and other agents affecting the respiratory system; any history of respiratory system dysfunction; any signs or symptoms of respiratory disease, history of tuberculosis, and smoking status and history; a physical examination with emphasis on the respiratory system, including chest x-ray, pulmonary function test, tuberculosis test, and any additional tests deemed appropriate by the examining PLHCP. See the standard for additional requirements.

COMMUNICATION OF HAZARDS (1926.1053, i)

The employer shall include respirable crystalline silica in the hazard communication program established to comply with the Hazard Communication Standard (HCS). Employees should have access to labels on containers, safety data sheets, and shall be trained in accordance with the provisions of the HCS. Training shall consist of respirable crystalline silica health effects, tasks in the workplace that could result in exposure, exposure controls, contents of the standard, identity of the competent person designated to inspect job sites, materials and equipment as part of the exposure control plan, and the purpose of medical surveillance.

RECORDKEEPING (1926.1053, j)

The employer shall make and maintain an accurate record of all exposure measurements and objective data obtained to assess employee exposure to respirable crystalline silica. The exposure records shall include at least the following information: the date of measurement for each sample taken; the task monitored; sampling and analytical methods used; number, duration, and the results of samples taken; the identity of the laboratory that performed the analyses, type of personal protective equipment, such as respirators worn; and name, social security number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored.

The employer shall establish and maintain an accurate record for each employee covered by medical surveillance. The employer shall also ensure that exposure records, objective data, and medical surveillance records are maintained and made available in accordance with 29 CFR 1910.1020.

DATES (1926.1053, I)

The standard becomes effective on June 23, 2016.

Employers shall comply with all requirements of the standard by June 23, 2017, except:

Employers are required to comply with the methods of sample analysis by June 23, 2018

ESIS Health, Safety & Environmental Services: “Creating Success through Solutions”

ESIS HSE can take a holistic approach to assessing your risk, offering a wide array of services to meet your safety and property preservation needs. Our recommendations for reducing the potential and severity of loss are tailored to the needs of your operations, facility, and budget. We have specialized in Risk Control for over 50 years.

Website: www.esis.com/hse

E-mail: hse@esis.com

Fax: 215.640.5470

Address: ESIS HSE, PO Box 1000, 436 Walnut Street, Philadelphia PA 19106

In accepting this report, you understand that ESIS loss control services are not a substitute for, nor does it excuse you from, fulfilling any legal duty you may have to provide a safe workplace, premises, product or operation. ESIS loss control services are not intended as a substitute for advice from legal counsel, nor are they intended to supplant any duty to provide a safe workplace, operation, product or premises. Any duty to implement ESIS’ recommendations rests with the client not with ESIS.
(Rev. E-10/2015)

TABLE 1—SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA

Equipment/task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤4 hours/shift	>4 hours/shift
(i) Stationary masonry saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None.
(ii) Handheld power saws (any blade diameter).	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions: —When used outdoors	None	APF 10.
(iii) Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less).	—When used indoors or in an enclosed area	APF 10	APF 10.
	For tasks performed outdoors only: Use saw equipped with commercially available dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.	None.	None.
(iv) Walk-behind saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions: —When used outdoors	None	None.
(v) Drivable saws	—When used indoors or in an enclosed area	APF 10	APF 10.
	For tasks performed outdoors only: Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None.
(vi) Rig-mounted core saws or drills.	Use tool equipped with integrated water delivery system that supplies water to cutting surface. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None.
(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills).	Use drill equipped with commercially available shroud or cowling with dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.	None	None.
	Use a HEPA-filtered vacuum when cleaning holes.		
(viii) Dowel drilling rigs for concrete	For tasks performed outdoors only: Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.	APF 10	APF 10.
	Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.	None	None.
(ix) Vehicle-mounted drilling rigs for rock and concrete.	OR Operate from within an enclosed cab and use water for dust suppression on drill bit.	None	None.
	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact: —When used outdoors	None	APF 10.
(x) Jackhammers and handheld powered chipping tools.	—When used indoors or in an enclosed area	APF 10	APF 10.
	OR Use tool equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.		

TABLE 1—SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA—Continued

Equipment/task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤4 hours/shift	>4 hours/shift
(xi) Handheld grinders for mortar removal (<i>i.e.</i> , tuckpointing).	<p>Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism:</p> <p>—When used outdoors</p> <p>—When used indoors or in an enclosed area</p> <p>Use grinder equipped with commercially available shroud and dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</p>	<p>None</p> <p>APF 10</p> <p>APF 10</p>	<p>APF 10.</p> <p>APF 10.</p> <p>APF 25.</p>
(xii) Handheld grinders for uses other than mortar removal.	<p>For tasks performed outdoors only:</p> <p>Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>OR</p> <p>Use grinder equipped with commercially available shroud and dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism:</p> <p>—When used outdoors</p> <p>—When used indoors or in an enclosed area</p>	<p>None</p>	<p>None.</p>
(xiii) Walk-behind milling machines and floor grinders.	<p>Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>OR</p> <p>Use machine equipped with dust collection system recommended by the manufacturer.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</p> <p>When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.</p>	<p>None</p> <p>None</p> <p>None</p> <p>None</p>	<p>None.</p> <p>APF 10.</p> <p>None.</p> <p>None.</p>
(xiv) Small drivable milling machines (less than half-lane).	<p>Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant.</p> <p>Operate and maintain machine to minimize dust emissions.</p>	<p>None</p>	<p>None.</p>
(xv) Large drivable milling machines (half-lane and larger).	<p>For cuts of any depth on asphalt only:</p> <p>Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust.</p> <p>Operate and maintain machine to minimize dust emissions.</p> <p>For cuts of four inches in depth or less on any substrate:</p> <p>Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust.</p> <p>Operate and maintain machine to minimize dust emissions.</p> <p>OR</p> <p>Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant.</p> <p>Operate and maintain machine to minimize dust emissions.</p>	<p>None</p> <p>None</p> <p>None</p> <p>None</p>	<p>None.</p> <p>None.</p> <p>None.</p> <p>None.</p>
(xvi) Crushing machines	<p>Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (<i>e.g.</i>, hoppers, conveyers, sieves/sizing or vibrating components, and discharge points).</p> <p>Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.</p>	<p>None</p>	<p>None.</p>

TABLE 1—SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA—Continued

Equipment/task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤4 hours/shift	>4 hours/shift
(xvii) Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials.	Operate equipment from within an enclosed cab When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.	None None	None. None.
	(xviii) Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: Demolishing, abrading, or fracturing silica-containing materials.	Apply water and/or dust suppressants as necessary to minimize dust emissions. OR When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None None