

FREESTATE ELECTRICAL

Construction Safety Bulletin

Crystalline Silica Exposure Control Program

This Freestate Program is for minimizing employee exposure to Silica in the workplace. Recognizing the hazard, adopting measures to reduce possible exposure and / or controlling through various means for everyone's protection is the objective of this program. Crystalline Silica has been shown to cause chronic respiratory problems even contributing with other causes premature death.

Scope

This program covers all operation that have the potential of exposure for an employee, subcontractors, and anyone else that may come in contact with the dust created by working with products that contain crystalline silica.

Purpose

To reduce employee exposure to airborne crystalline silica to below the action level (AL), and most certainly below the permissible exposure limit (PEL) by means of work arounds, substitutions, work methods, engineering controls, administrative controls and personal protective equipment.

Identifying Silica Hazards

Crystalline silica is a natural constituent of the earth's crust and is a basic component of sand, concrete, brick, asphalt, granite, and some wall spackling materials. People may be exposed to crystalline silica hazards when around activities like:

Abrasive blasting; Jackhammering; Concrete crushing; Hoe ramming operations; Rock drilling; Mixing Concrete or grout; concrete drilling; Sawing concrete, masonry, brick, concrete block; chipping or scarifying concrete; rock crushing; Demolition of these materials; or Housekeeping activities (shoveling, sweeping, vacuuming etc.)

Assessment of Work

Before any activity begins, the Forman needs to assess the work activity and identify potential silica containing materials. This exposure assessment leads to determining which method should be used to eliminate or reduce the hazards to all personnel in that area. Quartz is the most common form of crystalline silica and is one of the most common minerals in the earth's crust. Also, whenever available consult the SDS ('s) for the materials with which you are dealing. Even materials containing small amounts of crystalline silica maybe hazardous if they are used in ways that produce high concentrations.

Methods of Compliance

There are three methods of Compliance for work to be completed.

- Specified Exposure Control Methods.
For each employee engaged in a task identified in Table 1, 1926.1153, Freestate shall fully and properly implement the engineering controls, work practices, and respiratory protection specified for the task in Table 1.
OBJECTIVE DATA
Freestate will maintain a record of the Objective Data associated with any and all equipment used to comply with Table 1. This Data supplied by the manufacturer in most cases, will be available per 29 CFR 1910.1020 for review along with the equipment manuals of the manufacturer.
Freestate may provide an assessment that could provide measurable exposures of the employee to respirable crystalline silica below the AL in accordance with ***Alternate Exposure Control Measures*** as also noted in OSHA 1926.1153.
- Alternate Exposure Control Methods.
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 in Table 1, then two options are available:
PERFORMANCE 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 two testing assessments, seven days apart result in Below the Action Level, then monitoring can be discontinued until changes occur in the work.

- Scheduled Monitoring Option.

Monitoring shall initially be done for 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 the employees for each shift, for each job classification, in each work area.

If the monitoring indicates that employee exposures are below the Action Level, the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring.

Where the exposure monitoring indicates that employee exposures are at or above the Action Level but at or below the PEL, the employer shall repeat such monitoring within six months of the most recent monitoring.

Where the most recent exposure monitoring indicates that employee exposures are above the PEL, the employer shall repeat such monitoring within three months of the most recent monitoring.

Planning for Silica Exposure

In order to manage the silica hazard, project personnel (Forman) must plan for potential employee health and environmental impacts ***before*** the work begins. Each activity with the potential for silica exposure must be addressed in a job specific activity plan that focuses on eliminating or minimizing silica. This should be done through substitution, engineering controls, work practices and methods, air monitoring, effective hygiene practices, PPE, training, environmental controls, and waste disposal.

Establishing a job specific silica protection plan

Training; Documented training will include:

- Information about potential health effects and symptoms of exposure to respirable crystalline silica.
- Safety Data Sheets for quartz silica content and applicable products containing silica.
- Purpose and set up of regulated areas marking the boundaries of work areas containing silica dust.
- Discussion of the importance of engineering controls, work practices, good housekeeping, and personal hygiene in reducing crystalline silica exposure.

- Use and care of appropriate PPE per the standard if applicable
- Use and care of the Engineering Controls in place for proper function and operations, with disposal methods used consistent with reducing exposure.
- Any specific personal hygiene for the tools, equipment, disposal methods used.
- Available air monitoring and medical surveillance as it applies.

Substitution, Engineering Controls, and work practices

There are various methods that should be utilized to control the hazards of crystalline silica in the workplace. First you must look at the alternate methods of doing work. Substitution of a less hazardous product when available, engineering measures, and work practice controls to reduce the exposure to CS to below the OSHA permissible exposure limit (PEL). The job specific plan will contain information on what methods are being used, why or why not some methods are feasible and which controls the job is going to apply to complete the work activity. The 29 CFR 1926.1153 requires us to use feasible engineering or work practice controls to reduce employees' exposure to below the PEL.

Some possible substitution or engineering controls:

- Non-silica containing materials for use while sand blasting
- Alternate methods such as using grout manufactured off site rather than hand mixing on site.
- Local exhaust
- General ventilation.
- Vacuum methods with HEPA filters
- Vacuum shrouded tools
- Dust control products for use on dusty roads, surfaces
- Containment
- Equipment with pressurized cabs and filter systems
- Use of Water hoses, spray booms etc.
- Use of tools with dust control systems (water on saws, or drill bits with shrouds or drip water systems)
- Diamond rope saw to cut concrete

Some possible work practice (administrative) controls:

- working during hours other crews are not

- restricting access to the work areas
- using worker rotation
- Good housekeeping practices
- Specific standard operating procedures that minimizes dust producing tasks

These are suggestions for administrative controls, and there may be others that could be used dependent on the equipment, work methods and the nature of the work.

Written Exposure Control Plan

This can be either an JHA, AHA, or a Summary written plan, all of which contain at least the following elements:

- A description of the tasks in the workplace that involve exposure to respirable crystalline silica.
- A description / listing 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.
- 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 or sole proprietors.

Respiratory Protection

When respiratory protection is required by this standard, Freestate must provide each employee an appropriate respirator that complies with the requirements of OSHA 29 CFR 1910.134. It is required:

- Where specified in Table 1 of 1926.1153.
- For tasks not listed in Table 1, or where Freestate does not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1.

Medical Surveillance

FSE shall make medical surveillance reports available at no cost to the employee, and at a reasonable time and place. Each employee who will be required under

this section to use a respirator for 30 or more days per year will be offered a medical examination.

Initial examination by Freestate will be made available as an initial (baseline) medical examination with 30 days after the initial assignment, unless the employee has received a medical examination that meets the requirements of the 1926.1153 Std. within the last three years.

Recordkeeping

In accordance with 29 CFR 1910.20 and sections in 1926.1153, medical records shall be maintained for at least thirty years after an employee's termination of employment.

All exposure monitoring (air sampling etc.) results shall be kept for thirty years. The results of exposure monitoring shall be reported in writing to the employees it represents or posted in a location available to the employees. If the results are above the PEL, it will include the actions that will be taken to reduce the exposure.

All exposure monitoring worksheets, results, and other pertinent information should be kept on site and a copy sent to the HR and the Director of Safety & Health.

Waste storage and disposal

By itself, dust containing crystalline silica is not regulated as a hazardous waste unless it is mixed with or contains something else that makes it a hazardous waste. Make sure that employees do not 'create' an additional airborne crystalline silica hazard when collecting, emptying, or disposing of the material.

Housekeeping in all areas should be kept free from accumulated dust as much as possible. Use methods that do not employ employee blowers or dry sweeping that could reintroduce dust into the air. Use HEPA vacuums, wet methods or a proper oiled sweeping compound with the aim at not creating more airborne dust.

Subcontractors

All subcontractors of FSE are required to meet or exceed the requirements of this bulletin when performing work that has the potential for crystalline silica exposure above the PEL. Knowledge and adherence to the new OSHA 1926.1153

standard with its respiratory, medical, recordkeeping and monitoring requirements are required.

All FSE subcontractor shall notify FSE of any activity with the potential for crystalline silica exposure and the methods they will employ to control that exposure.

FSE employees performing work that has the potential for crystalline silica exposure to non-FSE employees shall, prior to beginning the activity, notify all potentially affected parties of the expected exposure. Health hazards from CS, and the methods they can use to protect themselves against overexposure should be reviewed with all employees.

Each contractor is responsible for the safety of their own workers, whether they create the hazard or not. A contractor is also responsible for its subcontractors. Therefore, control of silica dust must be a coordinated effort. Failure to protect the workers is not a viable option.

Definitions

Action Level means a concentration of airborne respirable crystalline silica of 25 ug/m³ as an 8-Hour TWA

Competent Person (Silica CP), per 29 CFR 1926.32 (F), “One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.” Silica competent persons specifically identify and control silica hazards in construction settings by effective implementation and management of a construction work site silica control program. In implementing and managing a construction work site silica control program, silica competent persons must:

- Anticipate the potential for worker silica exposures (e.g. observation, tasks to be performed, historical data);
- Make the initial evaluation of the work site for potential worker silica exposures;
- Select, implement, and manage the appropriate control strategy(ies) in simple situations or recommend involving a silica qualified person for more complex situations; and

- Monitor the work site and take prompt corrective action to ensure that safe work conditions are maintained.

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

High- Efficiency Particulate Air (HEPA) filter means a filter that is at least 99.97 percent efficient in removing mono-dispersed particles of 0.3 micrometers in diameter.

Objective Data means 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.

Respirator Program means: Occupational use of respirators must be in compliance with applicable health and safety standards such as 29 CFR 1910.134 in the U.S. Use must also comply with any applicable substance -specific regulations that may be in force.

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 ISO 7708:1995; Air Quality – Particle Size Fraction Definitions.

AES Electrical, Inc.
FREESTATE ELECTRICAL CONST. CO.

Date: _____ Location _____

Instructor's Names: _____

PROGRAM / Length of Training Session : Silica Hazard Awareness

Detailed Course Description: DVD: Crystalline Silica EE Training; Overview of silica as a product, its presence in the workplace and Health effects with exposures. Review ways to identify silica in the workplace; the new 1926.1153 Std. and the three options OSHA has laid out for Compliance. Work activities are reviewed in conjunction with engineering controls, housekeeping practices and Best Practices to ensure compliance with the standard.

[illegible]



OSHA CRYSTALLINE SILICA RULE



**Occupational
Safety and Health
Administration**

www.osha.gov

OSHA recently issued new standards to protect workers from exposure to respirable crystalline silica – which will allow employers to tailor solutions to the specific conditions in their workplaces.

Reduces the permissible exposure limit (PEL) or respirable crystalline silica to 50 micrograms per cubic meter of air, averaged over an 8-hour shift.



COMPLIANCE IS AS EASY AS: IDENTIFY – SELECT – ATTACH

HAMMER	SELECT ATTACHMENTS	ATTACH TO A VACUUM
M12™ SDS PLUS 2416 2412	49-90-1958 + 5261-DE 	 8960-20 OR 2306-22 *
M18™ SDS PLUS 2713 2605 2612	49-90-1958 + 5261-DE 	 8960-20 OR 2306-22 *
M18 FUEL™ 1" 2712-22 (Kit) 2712-22DE (Kit w/ Dust Extractor) 		M18™ DEDICATED HAMMERCAC 2712-DE <ul style="list-style-type: none"> • Objective Data Compliant • Best in class solution • Best in class HEPA filter • Powered by dedicated M18 FUEL rotary hammer
M18 FUEL™ 1-1/8" 2715-22 (Kit) 2715-22DE (Kit w/ Dust Extractor) 		M18™ DEDICATED HAMMERCAC 2715-DE <ul style="list-style-type: none"> • Objective Data Compliant • Best in class solution • Best in class HEPA filter • Powered by dedicated M18 FUEL rotary hammer
CORDED 5263-21 5262-21 5368-21 5363-21	49-90-1957 + Hollow Core Bits 49-90-1958 + 5261-DE 	 8960-20 OR 2306-22 *
CORDED 1-9/16" M18 FUEL™ 1-9/16" 5316-21 5317-21 CORDED SDS MAX SDS SPLINE 2" & 2-3/4" 5426-21 5446-21 5342-21 5339-21 5340-21 5337-21	49-90-1957 + Hollow Core Bits 49-90-1959 + 5317-DE 5317-DE + 5318-DE 	 8960-20
















CORDLESS: 1/2" - 1-9/16"

MODEL	DESCRIPTION
2412-22XC	M12™ 1/2" SDS PLUS ROTARY HAMMER KIT W/2 XC BAT
2416-22XC	M12 FUEL™ 5/8" SDS PLUS HAMMER KIT W/2 BAT
2612-21	M18™ 5/8" SDS+ KIT 1 BATTERY
2605-22	M18™ ROTARY HMR 7/8" SDS KIT
2713-22	M18 FUEL™ D-HANDLE KIT
2712-22	M18 FUEL™ 1" SDS PLUS ROTARY HAMMER KIT
2712-22DE	M18 FUEL™ 1" SDS PLUS ROTARY HAMMER W/ DE KIT
2715-22	M18 FUEL™ 1-1/8" SDS PLUS ROTARY HAMMER KIT
2715-22DE	M18 FUEL™ 1-1/8" SDS PLUS ROTARY HAMMER W/ DE KIT
2717-22HD	M18 FUEL™ 1-9/16" SDS MAX HAM KT

CORDED: 5/8" - 2"

MODEL	DESCRIPTION
5263-21	ROTARY HMR 5/8" SDS KIT
5262-21	ROTARY D-HANDLE HMR 7/8" SDS KIT
5268-21	ROTARY HAMMER 1-1/8" SDS PLUS KIT
5316-21	ROTARY HMR 1-9/16" SPLINE KIT
5317-21	ROTARY HMR 1-9/16" SDS KIT
5426-21	RTRY HMR 1-3/4" SDS-MAX
5446-21	DML HMR 15LBS SDS-MAX
5342-21	RTRY HAMMER 2" SDS MAX
5339-21	DML HMR 25LB 14A SDS MAX
5340-21	RTRY HAMMER 2" SPLINE
5337-21	DML HMR 25LB 14A 3/4" HEX

*Self Containing Unit,
no attachments necessary

GRINDER	SELECT ATTACHMENTS	ATTACH TO A VACUUM
M18 FUEL™  2780-20  2783-20	GRIND  49-90-1959 +  49-90-1960 +  49-40-6101	 8960-20
4-1/2" / 5"  	CUT  49-90-1959 +  49-40-6110	 8960-20
7" 	 49-90-1958 +  49-40-6105	 8960-20

MODEL	DESCRIPTION
2780-22	M18 FUEL™ 4-1/2"/5" PAD, KIT
2780-22	M18 FUEL™ 4-1/2"/5" PAD, TOOL ONLY
2780-20	M18 FUEL™ 4-1/2" / 5" BRAKING GRINDER - KIT
2783-22	M18 FUEL™ 4-1/2" / 5" BRAKING GRINDER - TOOL ONLY
6121-31	4.5" 10A SAG - TRIGGER
6142-31	4-1/2" SAG PADDLE, NO-LOCK

MODEL	DESCRIPTION
6142-31	6" 13A SAG - PADDLE
6117-31	5" 13A SAG - PADDLE
6124-31	5" 13A SAG - TRIGGER
6089-31	7/9" ROTO-LOK™ LAG (NON LOCK-ON)
6088-31	7/9" LAG (NON LOCK-ON)

ACCESSORIES

TABLE 1 COMPLIANT



MODEL	DESCRIPTION
5317-DE	SDS Max Dust Extraction
6117-33S	5" Small Angle Grinder w/Shroud Slide, Lock-On
6142-31S	4-1/2" Small Angle Grinder w/Shroud Paddle, Lock-On
8960-20	8 Gallon Dust Extractor
49-40-6110	Cutting Dust Shroud
49-90-1952	HEPA Filter
49-90-1953	Main Filter
49-90-1954	Plastic Dust Bag - 5PK
49-90-1955	Fleece Dust Bag - 5PK
49-90-1957	Power Tool Adapter
49-90-1958	Hose Sleeve
49-90-1959	Hose Clip Adapter
49-90-1960	Dust Extraction Adapter
5318-DE	SDS Max Chisel Boot
49-40-6101	4" - 5" Surface Grinding Dust Shroud
49-40-6105	7" Universal Surface Grinding Dust Shroud
49-40-6190	18" Hose Adapter

SDS PLUS AND SDS MAX HOLLOW CORE VACUUM DRILL BITS



MODEL	DESCRIPTION
48-20-2102	7/16" SDS Plus Vacuum Bit
48-20-2106	1/2" SDS Plus Vacuum Bit
48-20-2110	9/16" SDS Plus Vacuum Bit
48-20-2114	5/8" SDS Plus Vacuum Bit
48-20-2118	3/4" SDS Plus Vacuum Bit
48-20-2100	SDS Plus Vacuum Bit Replacement Adapter
48-20-2152	5/8" SDS MAX Vacuum Bit
48-20-2156	3/4" SDS MAX Vacuum Bit
48-20-2160	7/8" SDS MAX Vacuum Bit
48-20-2164	1" SDS MAX Vacuum Bit
48-20-2168	1-1/8" SDS MAX Vacuum Bit
48-20-2172	1-3/8" SDS MAX Vacuum Bit
48-20-2150	SDS MAX Vacuum Bit Replacement Adapter





MILWAUKEE TOOL


13135 West Lisbon Road • Brookfield WI 53005 • 262-781-3600

29 CFR 1926.1153

Milwaukee® OSHA® Compliance Solutions

To Whom It May Concern,

Milwaukee®, in partnership with the Wisconsin Occupational Health Laboratory, has conducted testing on the Milwaukee SDS Plus M12™ HAMMERVAC™ Universal Dust Extractor. Results show that the 2306-20/22 SDS Plus M12™ HAMMERVAC™ Universal Dust Extractor is below the Permissible Exposure Limit (PEL) as described by OSHA 29 CFR 1926.1153 assuming it is used in accordance with manufacturer's instructions. Testing results and procedures are outlined below:

Unit Tested	Average Holes Drilled	Average Sample Duration (Minutes)	Average Respirable Crystalline Silica Concentration (µg/m ³)	Permissible Exposure Limit (PEL) in OSHA 29 CFR 1926.1153
2306-22 	55	62.5	33.5 µg/m ³ TWA	50 µg/m ³ over an 8 hour period

- All drilling was performed overhead using a Milwaukee 2713-22 M18™ FUEL™ 1" SDS Plus D-Handle Rotary Hammer and a Milwaukee 2306-22 M12™ HAMMERVAC™ Universal Dust Extractor.
- The hole size was 5/8" in diameter and 4" deep.*
- Test procedure included both the drilling of holes and a method of emptying the dust box:
 - The dust box on the extractor was emptied and the HEPA filter was knocked out every 2 holes.
 - The dust box and filter were knocked out lightly into a bucket placed on the ground next to the drilling location.
- Concrete blocks were poured from a 5000 PSI concrete mix.
- The room size was 12'9" x 26'5" x 8'.
- The room surfaces were wiped down between trials to ensure accurate measurements
- Samples were analyzed using OSHA ID-142 by the Wisconsin Occupational Health Laboratory, an AIHA Accredited laboratory. The sampling method used meets the definition of respirable crystalline silica in 1926.1153 (a) and Appendix A of the OSHA Respirable Crystalline Silica Standard (1926.1153).
- The Time Weighted Average (TWA) was calculated assuming zero exposure to respirable crystalline silica for the non-sampled portion of a 480 minutes (8 hour) shift. Longer exposure times, assuming that the dust exposures would be similar to those collected in these trials, would likely result in higher TWAs. Factors that would affect actual user exposures include, but are not

*A 5/8" drill bit reflects the highest dust generating application, suggesting that other bit sizes would also be compliant when using the Milwaukee 2306-20/22 M12™ HAMMERVAC™ Universal Dust Extractor

limited to, the ventilation and air flow patterns in the work space, the presence of other respirable silica dust generating activities in the area, the frequency of and method used to empty the extractor, and the number and depth of the holes drilled.

- Details on how to properly implement the 2306-20/22 as a part of a complete exposure plan are outlined below*:

Maximum Number of Holes per Day**

Hole Depth	Hole Diameter							
	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	
	1"	3,022	1,700	756	425	272	189	139
	1-1/2"	2,015	1,113	504	283	181	126	93
	2"	1,511	850	378	213	136	94	69
	2-1/2"	1,209	680	302	170	109	76	56
	3"	1,007	567	252	142	91	63	46
	3-1/2"	863	486	216	121	78	54	40
	4"	756	425	189	106	68	47	35

Frequency of Need to Empty Dust Box***

Hole Depth		Hole Diameter							
		3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	
		1"	89	50	22	13	8	6	4
		1-1/2"	59	33	15	8	5	4	3
		2"	44	25	11	6	4	3	2
		2-1/2"	36	20	9	5	3	2	2
		3"	30	17	7	4	3	2	1
		3-1/2"	25	14	6	4	2	2	1
		4"	22	13	6	3	2	1	1

It is the responsibility of the user to operate the tool in accordance with manufacturer's instructions. For the latest listings of approvals, visit milwaukeekeetool.com. For technical or service assistance, contact Milwaukee Customer Service at 1-800-729-3878.

* These calculations are offered for reference and are calculated values based on previously recorded test data.

** The user must drill the same number or fewer holes than those listed above for the given application in order to be considered compliant with the objective data clause of 29 CFR 1926.1153 OSHA regulation on crystalline silica dust.

*** The dust box needs to be emptied out at or before the numbers specified above in order to be considered compliant with the objective data clause of 29 CFR 1926.1153 OSHA regulation on crystalline silica dust.



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29 CFR 1926.1153

Milwaukee® OSHA® Compliance Solutions

To Whom It May Concern,

Milwaukee®, in partnership with the Wisconsin Occupational Health Laboratory, has conducted testing on the Milwaukee SDS Plus HAMMERVAC™ Dedicated Dust Extractors. Results show that the 2715-DE and 2712-DE HAMMERVAC™ Dedicated Dust Extractors are below the Permissible Exposure Limit (PEL) as described by OSHA 29 CFR 1926.1153 assuming they are used in accordance with manufacturer's instructions. Testing results and procedures are outlined below:

Unit Tested	Average Holes Drilled	Average Sample Duration (Minutes)	Average Respirable Crystalline Silica Concentration ($\mu\text{g}/\text{m}^3$)	Permissible Exposure Limit (PEL) in OSHA 29 CFR 1926.1153
 2715-DE	81	63.33	14.27 $\mu\text{g}/\text{m}^3$ TWA	50 $\mu\text{g}/\text{m}^3$ over an 8 hour period

- All drilling was performed overhead using a Milwaukee Rotary Hammer and a Milwaukee HAMMERVAC™ Dedicated Dust Extractor.
- The hole size was 5/8" in diameter and 4" deep.*
- Test procedure included both the drilling of holes and a method of emptying the dust box:
 - The dust box on the extractor was emptied and the HEPA filter was knocked out every 5 holes.
 - The dust box and filter were knocked out lightly into a bucket placed on the ground next to the drilling location.
- Concrete blocks were poured from a 5000 PSI concrete mix.
- The room size was 12'9" x 26'5" x 8'.
- The room surfaces were wiped down between trials to ensure accurate measurements
- Samples were analyzed using OSHA ID-142 by the Wisconsin Occupational Health Laboratory, an AIHA Accredited laboratory. The sampling method used meets the definition of respirable crystalline silica in 1926.1153 (a) and Appendix A of the OSHA Respirable Crystalline Silica Standard (1926.1153).
- The Time Weighted Average (TWA) was calculated assuming zero exposure to respirable crystalline silica for the non-sampled portion of a 480 minutes (8 hour) shift. Longer exposure times, assuming that the dust exposures would be similar to those collected in these trials, would likely result in higher TWAs. Factors that would affect actual user exposures include, but are not limited to, the ventilation and air flow patterns in the work space, the presence of other respirable

*A 5/8" drill bit reflects the highest dust generating application, suggesting that other bit sizes would also be compliant when using the Milwaukee 2715-DE and 2712-DE HAMMERVAC™ Dedicated Dust Extractors

silica dust generating activities in the area, the frequency of and method used to empty the extractor, and the number and depth of the holes drilled.

- Details on how to properly implement the 2715-DE or 2712-DE as a part of a complete exposure plan are outlined below*:
-

Maximum Number of Holes per Day**

		Hole Diameter						
		3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"
Hole Depth	1"	10,800	6,075	2,700	1,519	972	675	496
	1-1/2"	7,200	4,050	1,800	1,013	648	450	331
	2"	5,400	3,038	1,350	759	486	338	248
	2-1/2"	4,320	2,430	1,080	608	389	270	198
	3"	3,600	2,025	900	506	324	225	165
	3-1/2"	3,086	1,736	771	434	278	193	142
	4"	2,700	1,519	675	380	243	169	124

Frequency of Need to Empty Dust Box***

		Hole Diameter						
		3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"
Hole Depth	1"	222	125	56	31	20	14	10
	1-1/2"	148	83	37	21	13	9	7
	2"	111	63	28	16	10	7	5
	2-1/2"	89	50	22	13	8	6	4
	3"	74	42	19	10	7	5	3
	3-1/2"	63	36	16	9	6	4	3
	4"	56	31	14	8	5	3	3

It is the responsibility of the user to operate the tool in accordance with manufacturer's instructions. For the latest listings of approvals, visit milwaukeekeetool.com. For technical or service assistance, contact Milwaukee Customer Service at 1-800-729-3878.

* These calculations are offered for reference and are calculated values based on previously recorded test data.

** The user must drill the same number or fewer holes than those listed above for the given application in order to be considered compliant with the objective data clause of 29 CFR 1926.1153 OSHA regulation on crystalline silica dust.

*** The dust box needs to be emptied out at or before the numbers specified above in order to be considered compliant with the objective data clause of 29 CFR 1926.1153 OSHA regulation on crystalline silica dust.

AES Electrical, Inc.

Freestate Electrical Const.

Site Specific Respiratory Protection Plan

Co. Division: _____

Date ____ / ____ / ____

Jobsite Location: _____

Job#: _____

Program Administrator: _____

Jobsite Admin _____

Responsibilities: All the aspects of the site-specific plan including respirator selection, cartridge change out schedules, and evaluating the effectiveness of the plan.

Training: All employees required to use a respirator on this site will be trained in the requirements of this plan and the other items listed in section (17) D-3 Respiratory Protection Policy. Attach the training roster.

Respirator Selection: All respirators and cartridges at this site will be selected by the Administrator, will be specific to each task, and will be included in the activity plan.

Cleaning and Disinfecting:

Who is Responsible: _____

How often will they be cleaned: _____

At what location will they be cleaned: _____

What materials will be used to clean them: _____

Post cleaning procedure at the location used for cleaning. Refer to the Section (17) D-3.

Respirator wipes will be used only during the shift to clean respirators before reuse after breaks or to wipe down the PAPR battery packs and pumps or other equipment at the end of the shift.

Storage Requirements:

Respirators will be stored in these containers: _____

Respirators will be stored at this location: _____

Inspection: Respirators will be inspected before each shift by each employee, whenever they are cleaned, and at any given time there is reason to believe the respirator may have been damaged. Damaged respirators will be immediately removed from service and a replacement obtained from the Administrator.

Medical Approvals: All Employees will have current (within the last 12 months) approval by Safety Director to wear a respirator. The Administrator will monitor this.

Fit Testing: Administrator will ensure all employees have a current fit test (within the last 12 months) for the make, model, style and size respirator they will use on this site.

Standard Operating Procedures: Attach to this plan. Include both emergency and non-emergency procedures for respirator use at this site. Include possible consequences of equipment failure, cartridge breakthrough, uncontrolled chemicals release, fire, explosion, or human error as they apply to this site.

Cartridge Change of Schedule: _____

Expected Airborne Hazards: _____

Other Hazards (skin, heat, stress, etc.): _____

Plan Modification: The Program Administrator will make changes to this plan based on deficiencies identified by observation of respirator use and on conversations with employees who are using respirators. The program Administrator is the only one who can make changes and must communicate to all affected employees.

Freestate Electrical

Division: _____
Jobsite Location: _____

Date ____/____/____
Job#: _____

Appendix D to §1910.134 (Non-Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all the instructions provided by the manufacturer on use, maintenance, cleaning and care, and warning regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Employee: _____
Print

Signature

OSHA[®] FactSheet

OSHA's Crystalline Silica Rule: Construction

OSHA is issuing two standards to protect workers from exposure to respirable crystalline silica—one for construction, and the other for general industry and maritime—in order to allow employers to tailor solutions to the specific conditions in their workplaces.

Who is affected by the construction standard?

About two million construction workers are exposed to respirable crystalline silica in over 600,000 workplaces. OSHA estimates that more than 840,000 of these workers are exposed to silica levels that exceed the new permissible exposure limit (PEL).

Exposure to respirable crystalline silica can cause silicosis, lung cancer, other respiratory diseases, and kidney disease. Exposure can occur during common construction tasks such as using masonry saws, grinders, drills, jackhammers and handheld powered chipping tools; operating vehicle-mounted drilling rigs; milling; operating crushing machines; and using heavy equipment for demolition or certain other tasks.



Photo: NIOSH

Without dust controls, using a handheld power saw to cut concrete can expose workers to high levels of respirable crystalline silica.

The construction standard does not apply where exposures will remain low under any foreseeable conditions; for example, when only performing tasks such as mixing mortar; pouring concrete footers, slab foundation and foundation walls; and removing concrete formwork.

What does the standard require?

The standard requires employers to limit worker exposures to respirable crystalline silica and to take other steps to protect workers.

The standard provides flexible alternatives, especially useful for small employers. Employers can either use a control method laid out in [Table 1*](#) of the construction standard, or they can measure workers' exposure to silica and independently decide which dust controls work best to limit exposures to the PEL in their workplaces.

Regardless of which exposure control method is used, all construction employers covered by the standard are required to:

- Establish and implement a **written exposure control plan** that identifies tasks that involve exposure and methods used to protect workers, including procedures to restrict access to work areas where high exposures may occur.
- Designate a **competent** person to implement the written exposure control plan.
- Restrict **housekeeping** practices that expose workers to silica where feasible alternatives are available.
- 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 workers** on work operations that result in silica exposure and ways to limit exposure.
- **Keep records** of workers' silica exposure and medical exams.

What is Table 1?

Table 1 matches common construction tasks with dust control methods, so employers know exactly what they need to do to limit worker exposures to silica. The dust control measures listed in the table include methods known to be effective, like using water to keep dust from getting into the air or using ventilation to capture dust. In some operations, respirators may also be needed.

Employers who follow Table 1 correctly are not required to measure workers' exposure to silica and are not subject to the PEL.

Table 1 Example: Handheld Power Saws

If workers are sawing silica-containing materials, they can use a saw with a built-in system that applies water to the saw blade. The water limits the amount of respirable crystalline silica that gets into the air.

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 hrs/ shift	> 4 hrs/ shift
(ii) Handheld power saws (any blade diameter)	<p>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <ul style="list-style-type: none"> • When used outdoors. • When used indoors or in an enclosed area. 	<p>None</p> <p>APF 10</p>	<p>APF 10</p> <p>APF 10</p>

Excerpt from Table 1.

*See regulatory text for construction standard, with complete Table 1 at www.osha.gov/silica/SilicaConstructionRegText.pdf.

In this example, if a worker uses the saw outdoors for four hours or less per day, no respirator would be needed. If a worker uses the saw for more than four hours per day or any time indoors, he or she would need to use a respirator with an assigned protection factor (APF) of at least 10. In this case, a NIOSH-certified filtering facepiece respirator that covers the nose and mouth (sometimes referred to as a dust mask) could be used. If a worker needs to use a respirator on 30 or more days a year, he or she would need to be offered a medical exam.

Alternative exposure control methods

Employers who do not use control methods in Table 1 must:

- Measure the amount of silica that workers are exposed to if it may be at or above an **action level of 25 µg/m³** (micrograms of silica per cubic meter of air), averaged over an eight-hour day.
- Protect workers from respirable crystalline silica exposures above the **permissible exposure limit of 50 µg/m³**, averaged over an eight-hour day.
- Use **dust controls** to protect workers from silica exposures above the PEL.
- Provide **respirators** to workers when dust controls cannot limit exposures to the PEL.

When are employers required to comply with the standard?

Construction employers must comply with all requirements of the standard by June 23, 2017, except requirements for laboratory evaluation of exposure samples, which begin on June 23, 2018.

Additional information

Additional information on OSHA's silica rule can be found at www.osha.gov/silica.

OSHA can provide extensive help through a variety of programs, including technical assistance about effective safety and health programs, workplace consultations, and training and education.

OSHA's On-site Consultation Program offers free and confidential occupational safety and health services to small and medium-sized businesses in all states and several territories across the country, with priority given to high-hazard worksites. On-site consultation services are separate from enforcement and do not result in penalties or citations. Consultants from state agencies or universities work with employers to identify

workplace hazards, provide advice on compliance with OSHA standards, and assist in establishing and improving safety and health management systems. To locate the OSHA On-site Consultation Program nearest you, call 1-800-321-OSHA (6742) or visit www.osha.gov/dcsp/smallbusiness.

For more information on this and other health-related issues impacting workers, to report an emergency, fatality, inpatient hospitalization, or to file a confidential complaint, contact your nearest OSHA office, visit www.osha.gov, or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

For assistance, contact us. We can help. It's confidential.



**Occupational
Safety and Health
Administration**

www.osha.gov (800) 321-OSHA (6742)

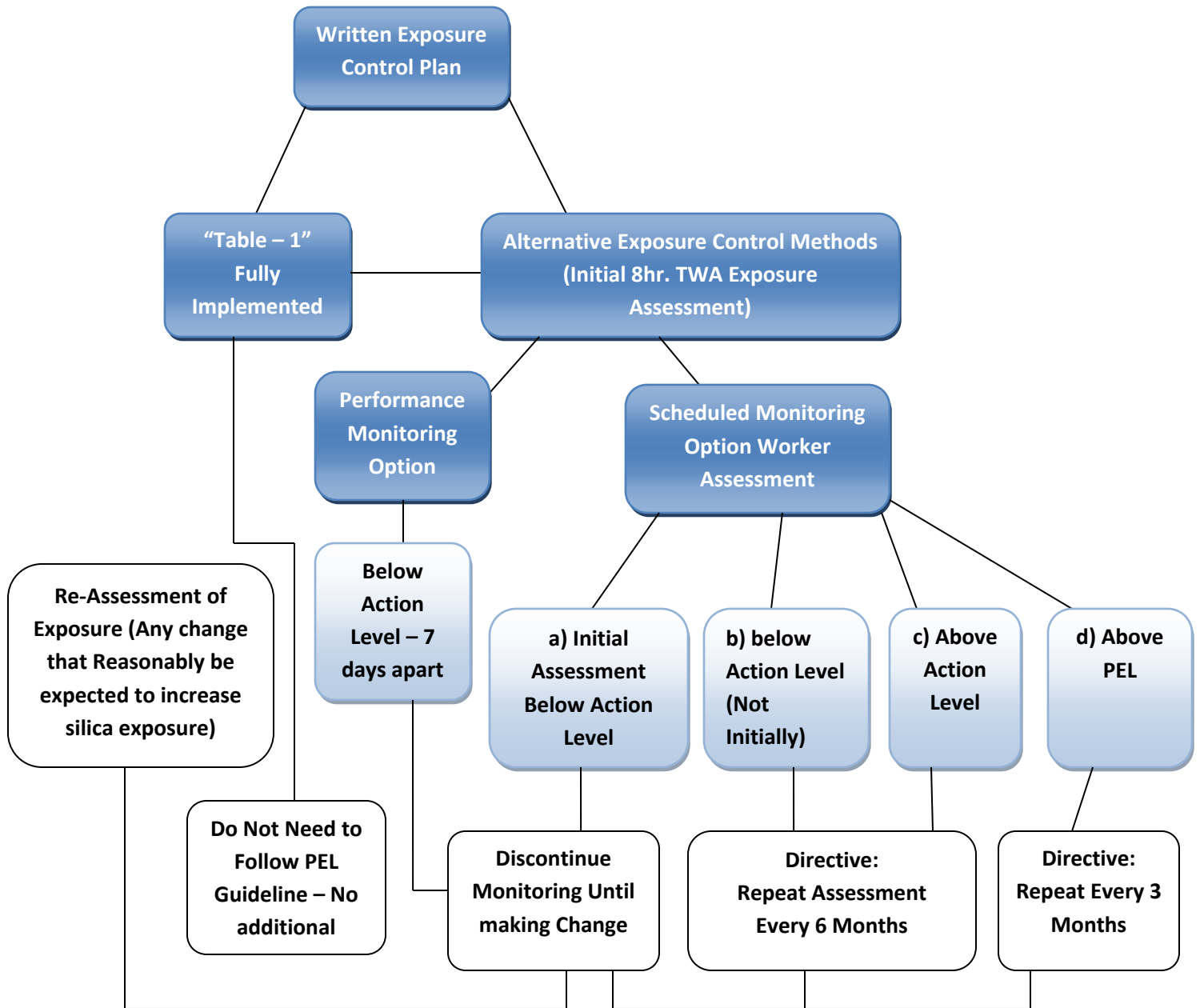


U.S. Department of Labor

The following table contains OSHA standards that impact the way we handle hazards related to silica and that may be cited under the right circumstances.

OSHA Requirement	General Industry Standard	Construction Standard
Respiratory Protection	1910.134	1910.134
Permissible Exposure Limit and Controls	1910.1000	1926.55 & .57
Accident Prevention and Warning Signs	1910.145	1926.200
Access To Employee Exposure and Medical Records	1910.20	1926.33
OSHA 300 Forms	1904	1904, 1926.22
Abrasive Blasting, Breathing Air, Enclosures, Controls	1910.94	1926.28, .55, .95, .100, .101, .102, .103 and .300
Hygiene	1910.141	1926.27 and .51
General PPE	1910.132	1926.28, .95, .100 to .105
Hazard Communication	1910.1200	1926.59
Safety and Health Program	--	1926.59
General Training	--	1926.20
Silica Standard	1910.1053	1926.1153

New Silica Rule – Roadmap of Exposure Control Methods



The table below looks at each significant part of the OSHA standard indicated on the flow chart and acts as a guide to the challenges for silica exposure monitoring in each area and how a real-time monitoring solution from TSI can address these challenges.