

Crystalline Silica Fact Sheet



What is crystalline silica?

Crystalline silica is a common mineral component of materials such as sand, stone, rock, concrete, brick, block and mortar. Crystalline silica may become respirable size particles when workers chip, cut, drill or grind objects that contain crystalline silica.



What are the OSHA exposure limits for the new silica rule?

- Permissible Exposure Limit (PEL) of **50 µg/m³** as an 8-hr time-weighted average (TWA)
- Action Level (AL) of **25 µg/m³** as an 8-hr TWA

What industries are affected by the new OSHA rule?

Construction Industry possible exposures may result from concrete cutting and mixing, rock or mineral mining, rock excavation, any sand or gravel operation, and all stages of fracking. General Industry exposures may result from glass manufacturing, foundry work, refractory products, stone or marble cutting, sand or concrete packing, brick and block manufacturing, and gravestone processing.



What are the compliance dates for the new rule?

- September 23, 2017 – Construction industry compliance
- June 23, 2018 – General industry, maritime and analytical laboratory compliance
- June 23, 2021 – Engineering controls for hydraulic fracturing compliance

How do I sample for respirable crystalline silica?

Airborne particulate sampling is most commonly conducted using either respirable dust cyclone with attached filter cassette or parallel particle impactor (PPI). Each sampling device has a specified flow-rate to maintain for proper operation. When using a cyclone type, never allow the sample assembly to become inverted, as this may deposit oversized material onto the filter. Also, overloading of the filter should be avoided when using either sampling type.

How do laboratories analyze for respirable crystalline silica?

Laboratories use X-Ray Diffraction (XRD) to analyze air and bulk samples. The analytical method typically used is NIOSH 7500/OSHA ID-142. Beginning June 23, 2018, laboratories will be required to meet the methods of sample analysis set forth in Appendix A of the OSHA rule.

Where can I get more information?

You can find more information about OSHA's silica rule at <https://www.osha.gov/silica/>







www.j3resources.com

713-290-0221

Respirable Silica Sampling Guide

Required Volume 400L to 1000L (Per NIOSH 7500)

Type	Flow Rate*	Pros	Cons	Comments
 <p>10mm Nylon Dorr-Oliver with attached cassette</p>	1.7 LPM	<ul style="list-style-type: none"> Long history of use Original respirable fraction sampler 	<ul style="list-style-type: none"> Nylon creates static electricity concerns Orientation bias Dust sticks to top during closed face operation Cumbersome 	<ul style="list-style-type: none"> Outdated Haven't seen in 20 years
 <p>SKC Aluminum Cyclone with attached cassette</p> <p style="text-align: right;">Calibration Adaptor</p>	2.5 LPM	<ul style="list-style-type: none"> Prevents static electricity Open-face design enhances collection Calibration adaptor offers user convenience Proven track record 	<ul style="list-style-type: none"> Cyclone must remain pointing downward Aluminum considered spark risk in underground mining Bulky 	<ul style="list-style-type: none"> Dumps large particles on filter if inverted Do NOT remove end cap while sampling Able to see thru cassette to monitor filter loading
 <p>SKC GS-3 Plastic Cyclone with attached cassette</p> <p>“The Explosion Proof Cyclone”</p>	2.75 LPM	<ul style="list-style-type: none"> Prevents static electricity 3 inlet slits overcome orientation bias Open-face collection using 3-piece design prevents particulate loss 	<ul style="list-style-type: none"> Cyclone must remain pointing downward Bulky 	<ul style="list-style-type: none"> Dumps large particles on filter if inverted Do NOT remove end cap while sampling Able to see thru cassette to monitor filter loading
 <p>SKC Parallel Particle Impactors (PPI's)</p> <p>(No cyclone needed)</p> <p style="text-align: right;">Calibration Adaptor</p>	<p style="text-align: center;">2 LPM <i>8-hr TWA</i></p> <p style="text-align: center;">4 LPM <i>TWA sampling ≥ 4hr</i></p> <p style="text-align: center;">8 LPM <i>Short term Low Concentration</i></p>	<ul style="list-style-type: none"> Small size Can be used in ANY orientation Can achieve minimum 400L air volume faster 	<ul style="list-style-type: none"> Single use Expensive Cannot see filter to check for overloading 	<ul style="list-style-type: none"> Make sure to use the correct flow rate when sampling Available empty or with filters

* Flow MUST be within 5% to maintain proper collection of respirable fraction