

Information Sheet

Selecting a Laboratory for Respirable Crystalline Silica Analysis



The Mine Safety and Health Administration's (MSHA's) Respirable Crystalline Silica standard ([30 CFR part 60](#)) requires that mine operators collect respirable dust samples to monitor miners' occupational exposure to respirable crystalline silica. Initial sampling must be performed by April 14, 2025, for coal mine operators and April 8, 2026, for metal and nonmetal (MNM) mine operators.

Accredited Laboratories



X-Ray diffraction (XRD) analyzer. XRD is used for analyzing silica in MNM samples and can also be used for coal samples.

Respirable dust samples must be sent for respirable crystalline silica analysis to an accredited laboratory that meets the international standard, **ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories."** Many industrial hygiene laboratories in the United States receive accreditation through the American Industrial Hygiene Association Laboratory Accreditation Program ([AIHA LAP](#)).

There are other ISO 17025 accrediting bodies such as the American Association for Laboratory Accreditation ([A2LA](#)), the American National Standards Institute ([ANSI](#)), the International Accreditation Service ([IAS](#)), and Perry Johnson Laboratory Accreditation, Inc. ([PJLA](#)). MSHA reviewed the directories of accredited laboratories for these organizations and determined that as of October 2024, none accredit United States-based laboratories that have approved respirable crystalline silica analytical methods within their scope.

Approved Analytical Methods

For respirable crystalline silica analysis, laboratories must use analytical methods specified by: MSHA; the National Institute for Occupational Safety and Health (NIOSH); or the Occupational Safety and Health Administration (OSHA).

Two main analytical techniques are used to measure respirable crystalline silica: **X-ray diffraction (XRD)** and **infrared (IR) spectroscopy**. XRD methods can be used to analyze either respirable coal mine dust (RCMD) or MNM respirable dust samples, whereas IR methods are used only for RCMD samples. This means that respirable dust samples from MNM mines must **not** be sent for analysis by an IR method (MSHA P-7, NIOSH 7602, or NIOSH 7603). Table 1 lists the six analytical methods approved for respirable crystalline silica analysis:

Table 1: Approved Respirable Crystalline Silica Analytical Methods

Method #	Method Title	RCMD Samples	MNM Respirable Dust Samples
MSHA P-2	X-Ray Diffraction Determination of Quartz and Cristobalite in Respirable Mine Dust	✓	✓
MSHA P-7	Infrared Determination of Quartz in Respirable Coal Mine Dust	✓	
NIOSH 7500	Silica, Crystalline, by XRD (filter redeposition)	✓	✓
NIOSH 7602	Silica, Respirable Crystalline, by IR (KBr pellet)	✓	
NIOSH 7603	Silica, Respirable Crystalline, by IR (Redeposition)	✓	
OSHA ID-142	Crystalline Silica, Quartz and Cristobalite, by XRD	✓	✓

Note: URL links to these methods are provided in Table 4 at the end of this document.

In addition to following one of the six analytical methods for respirable crystalline silica analysis, laboratories have to use an analytical method called “[NIOSH 0600](#), *Particulates Not Otherwise Regulated, Respirable*” for the analysis of respirable dust. This is because mine operators are required to report the concentrations of both respirable dust and respirable crystalline silica.

The sections that follow provide tips on selecting a laboratory, getting started with sampling, instructions for searching the AIHA LAP directory of accredited laboratories, and a list of commercial laboratories that met MSHA requirements as of October 2024.

Tips on Selecting a Laboratory

- **Check the laboratory’s website** to determine what analytical methods the laboratory offers.
 - Analytical methods are typically listed in a searchable database or catalog.
 - Many laboratories list modified methods, for example, “mod. NIOSH 7500.” MSHA accepts modified versions of the approved methods.
- **Contact the laboratory directly** to confirm which methods it uses and to ask questions about sampling and analysis.
 - Confirm that the laboratory accepts commercial samples.
 - Confirm that the laboratory offers methods that are correct for your sample type
 - NIOSH 7602, NIOSH 7603, and MSHA P-7 are only suitable for RCMD samples, not MNM respirable dust samples.
 - Confirm that the laboratory offers NIOSH 0600 analysis for respirable dust.
 - Confirm that the laboratory report will include both the respirable dust and respirable crystalline silica concentrations for each sample and that both concentrations will be calculated as a full-shift, 8-hour time-weighted average (TWA) as required by MSHA.
- **Discuss the costs and services** provided by the laboratory.
 - Determine the cost for your preferred turnaround time (TAT).
 - Ensure that the laboratory will provide pre-weighed filters which are preloaded in a standard sampling cassette or impactor.
 - Discuss whether separate respirable size-selective devices (usually cyclones) will be needed, and where to obtain them.

- If interested, find out whether the laboratory can provide the additional equipment needed to perform sampling. Some laboratories loan or rent air sampling pumps, airflow calibrators and calibration adapters.

Getting Started

- Before collecting samples:
 - Set up **an account with the laboratory** you have selected.
 - Discuss **the laboratory's procedures for collecting, packing, and submitting samples**. Laboratories will require a chain of custody (COC) which documents sampling information necessary for analysis, such as the pump flow rate and sampling duration.
- When **completing the COC** form:
 - **Request** that the analysis report include **both the respirable dust and respirable crystalline silica concentrations for each sample**.
 - Request that both concentrations for each sample be **reported as a full-shift, 8-hour TWA** as required by MSHA.

Searching the AIHA LAP Directory

To help operators identify accredited laboratories, MSHA has prepared instructions for searching the [AIHA LAP Directory](#), which is shown below.

Search the Directory

Keyword Search

City

Zip Code

State

Distance

Country

Program

Category

FoT

Sub-Type/Detector

Method

After each selection is made, the next dropdown box will appear:

- For *Program*, select IHLAP.
- For *Category*, select Spectrometry Core.
- For *FoT* (Field of Testing), select either X-ray Diffraction or Infrared.
- For *Sub-Type/Detector*, select the blank row, “-.”
- When the drop-down box for *Method* appears, click the “Submit” button on the right-hand side to generate a list of all laboratories that offer the selected Field of Testing (either X-ray Diffraction or IR analysis).

An example search result list is shown below:

Name	Discipline	Status	Start Date	End Date	Lab ID	Contact Name	Contact Phone	City	State	Country	Certificate	Scope Document
Liberty Mutual Insurance Industrial Hygiene Laboratory	IHLAP	ACCREDITED	12/01/2023	01/01/2026	LAP-100045	Laura Melton	(508) 544-5348	Hopkinton	MA	USA	View	View
Washington State Department of Labor and Industries, DOSH Industrial Hygiene Laboratory	IHLAP	ACCREDITED	06/01/2023	06/01/2025	LAP-101887	Jesus Villiegas	(360) 902-6804	Tumwater	WA	USA	View	View

Click “View” in the “Scope Document” column to check for the required methods.

- Confirm that the scope document lists an approved respirable crystalline silica analytical method (NIOSH 7602, 7603, or MSHA P-7 for IR analysis of RCMD samples, or NIOSH 7500, OSHA ID-142, or MSHA P-2 for X-ray diffraction analysis of either RCMD or MNM samples).
- Also confirm that the scope document lists [NIOSH 0600](#), *Particulates Not Otherwise Regulated, Respirable*. An excerpt from a scope document is shown in Table 2 below:

Table 2: Excerpt from AIHA LAP Scope Document

IHLAP Scope Category	Field of Testing (FoT)	Technology Sub-Type/ Detector	Published Reference Method/Title of In-house Method	Component, Parameter, Characteristic, Material, or Product Tested
Spectrometry Core	X-ray Diffraction (XRD)	-	NIOSH 7500	Crystalline Silica
Miscellaneous Core	Gravimetric	-	NIOSH 0600	Respirable Dust

Note: “Gravimetric” means that the filter is weighed to determine the weight of respirable dust on the filter.

The AIHA LAP Directory includes private laboratories that do not accept commercial samples. Mine operators will need to confirm whether a laboratory accepts commercial samples. Most commercial laboratories have a website where the mine operator can confirm that the laboratory accepts commercial samples, or the operator can call the laboratory using the phone number listed in the AIHA LAP Directory. Note that the AIHA LAP Directory includes some accredited laboratories that are based outside the United States. As long as these laboratories reference an approved NIOSH, OSHA, or MSHA method in their scope document, the laboratory would be acceptable.

Laboratories Accredited for Analysis of Respirable Crystalline Silica

As shown in Table 3, MSHA compiled a list in October 2024 of commercial laboratories meeting the criteria for respirable crystalline silica analysis by searching the AIHA LAP Directory of Accredited Laboratories. To confirm that one or more of the six accepted respirable crystalline silica analytical methods were listed (in addition to NIOSH 0600 for respirable dust), MSHA reviewed each laboratory's scope of accreditation. (At present, no commercial laboratories are identified that list MSHA P-2 or P-7 in their scope documents.)

(Note that MSHA also reviewed the laboratory accreditation directories of other ISO 17025 accrediting bodies including the American Association for Laboratory Accreditation ([A2LA](#)), the American National Standards Institute ([ANSI](#)), the International Accreditation Service ([IAS](#)), and Perry Johnson Laboratory Accreditation, Inc. ([PJLA](#)). MSHA determined that none of these accrediting bodies currently lists MSHA-approved respirable crystalline silica analytical methods in the scope documents for the United States-based laboratories that they accredit).

Table 3 is organized by laboratory name and provides accreditation end date, contact information, location, and the sampling and analytical methods under each laboratories' scope of accreditation. Note that laboratories are typically accredited for two years, and then must be reaccredited. For the most current information, operators should consult the [AIHA LAP Directory of Accredited Laboratories](#), which is the most relevant accrediting body.

Table 3: Laboratories Accredited for Analysis of Respirable Crystalline Silica as of October 21, 2024

Name	Accredited Until	Contact Phone	City, State	NIOSH 7500	OSHA ID 142	NIOSH 7602 RCMD only	NIOSH 7603 RCMD only	NIOSH 0600
A&B Environmental Services, Inc.	10/1/2026	(713) 453-6060	Houston, TX	✓	✓			✓
Adirondack Environmental Services, Inc.	12/1/2025	(518) 434-4546	Albany, NY	✓				✓
ALS Environmental	6/1/2026	(801) 266-7700	Salt Lake City, UT	✓	✓			✓
Armstrong Forensic Laboratory, Inc.	4/1/2025	(817) 275-2691	Arlington, TX	✓				✓
Bureau Veritas North America, Inc.	8/1/2025	(248) 344-1770	Novi, MI	✓				✓
Clark Laboratories, LLC	6/1/2026	(814) 882-0549	Jefferson Hills, PA	✓				✓
DCM Science Laboratory, Inc.	11/1/2024	(303) 463-8270	Wheat Ridge, CO	✓				✓
EMSL Analytical, Inc.	1/1/2025	(856) 303-2546	Cinnaminson, NJ	✓	✓			✓
EMSL Analytical, Inc.	6/1/2025	(856) 303-2546	Indianapolis, IN	✓	✓			✓
EMSL Analytical, Inc.	7/1/2026	(856) 303-2546	San Leandro, CA	✓				✓
EMSL Analytical, Inc.	12/1/2024	(856) 303-2546	Pineville, NC	✓	✓	✓		✓
Environmental Hazards Services, LLC	5/1/2026	(804) 275-4788	Richmond, VA			✓		✓
Eurofins Analytics, LLC	6/1/2025	(804) 365-3000	Ashland, VA	✓				✓
Eurofins J3 Resources (Pasadena TX)	12/1/2024	(713) 290-0223	Pasadena, TX	✓	✓			✓
LA Testing Huntington Beach	11/1/2024	(800) 755-1794	Huntington Beach, CA	✓	✓			✓
Liberty Mutual Insurance Industrial Hygiene Laboratory	1/1/2026	(508) 544-5348	Hopkinton, MA	✓				✓
NVL Laboratories, Inc.	7/1/2025	(206) 805-6405	Seattle, WA	✓				✓
RJ Lee Group, Inc.	5/1/2026	(724) 387-1995	Monroeville, PA	✓			✓	✓
Schneider Laboratories Global	8/1/2025	(804) 353-6778	Richmond, VA			✓		✓
Scientific Analytical Institute, Inc.	11/1/2026	(877) 292-3888	Greensboro, NC	✓				✓
SGS Forensic Laboratories	7/1/2025	(510) 887-8828	Hayward, CA			✓	✓	✓
SGS Galson, a division of SGS North America, Inc.	10/1/2026	(888) 432-5227	East Syracuse, NY	✓	✓			✓
The Hartford Risk Engineering Laboratory	12/1/2024	(860) 547-8864	Hartford, CT	✓	✓			✓
Travelers Industrial Hygiene and Forensics Laboratory	2/1/2026	(860) 687-7434	Windsor, CT	✓	✓			✓

Note 1: Laboratories are accredited for two years, and then must be reaccredited. For the most current accredited laboratories, please use the [AIHA LAP Directory](#), which is the most relevant accrediting body.

Note 2: NIOSH 7500 and OSHA ID-142 can be used for RCMD and/or MNM sample analysis. NIOSH 7602 and NIOSH 7603 should only be used for RCMD (coal) samples.

Note 3: All laboratories listed in Table 3 have NIOSH 0600, Particulates Not Otherwise Regulated, Respirable within their scope of accreditation. Mine operators are required to report the concentrations of both respirable dust and respirable crystalline silica.

Table 4: URLs for Approved Respirable Silica Analytical Methods

Method #	Method Title	URL
MSHA P-2	X-Ray Diffraction Determination of Quartz and Cristobalite in Respirable Mine Dust	https://www.msha.gov/sites/default/files/Support_Resoures/PUBLIC%20FINAL%20New_P2%202024.pdf
MSHA P-7	Infrared Determination of Quartz in Respirable Coal Mine Dust	https://www.msha.gov/sites/default/files/Support_Resoures/PUBLIC%20FINAL%20New_P7%202024.pdf
NIOSH 7500	Silica, Crystalline, by XRD (filter redeposition)	https://www.cdc.gov/niosh/docs/2003-154/pdfs/7500.pdf
NIOSH 7602	Silica, Respirable Crystalline, by IR (KBr pellet)	https://www.cdc.gov/niosh/nmam/pdf/7602.pdf
NIOSH 7603	Silica, Respirable Crystalline, by IR (Redeposition)	https://www.cdc.gov/niosh/nmam/pdf/7603.pdf
OSHA ID-142	Crystalline Silica, Quartz and Cristobalite, by XRD	https://www.osha.gov/sites/default/files/methods/osha-id142.pdf

For further assistance, check the MSHA website or contact your MSHA District Office.