

## Silica Analysis Appendix A Methods of Sample Analysis Guidance for AIHA-LAP Labs

Section	Classification	Requirement	Guidance	Comments	RJLG Comments
1	Methods	OSHA ID-142 (XRD), NIOSH 7500 (XRD), NIOSH 7602 (IR), NIOSH 7603 (IR), MSHA P-2 (XRD), MSHA P-7 (IR)	Laboratories must use one of these methods. IR is acceptable	Verify use of one of the approved methods	RJLG is using NIOSH 7500 (XRD) for silica analysis which is one of the required methods
2	Accreditation	ISO 17025 by a body accredited under ISO 17011	AIHA LAP accreditation meets the criteria	No additional actions necessary.	The RJLG AIHA LAP accreditation meets the criteria
3	Calibration	NIST or NIST traceable standard material	Specific to the respirable fraction. NIST SRM 1878a or later (quartz) and SRM 1879a (cristobalite) would be needed. Laboratories using alternative material would need to demonstrate that their standard is traceable to the most current NIST SRMs. Lab must have in place a verification	Verify compliance with SRM traceability	RJLG is currently using the following NIST standards: <b>1878a Quartz</b> <b>1879a Cristobalite</b>
4	Quality Control	Internal QC program evaluating uncertainty and provide estimate of SAE to customers	Consistent with LAP policy. NIST makes filters spiked with reference materials SRM 2950 (quartz) and SRM 2960 (cristobalite). LAP suggests that laboratories incorporate these SRM filters periodically	Labs must provide SAE to customers. OSHA defines pump error as 5%. See addendum on sheet 2.	RJLG has an internal QC program that can evaluate the measurement of uncertainty for a certain analysis. These data are available upon request.
5	Analysis	Identifying polymorphs of respirable silica present. Identify any interfering materials and make appropriate corrections	IR acceptable for known matrices. Laboratory must have characterization data on each sample to minimize interferences.	Verify laboratory's process of verifying sample matrices are devoid of interferences and multiple polymorphs.	This requirement is incorporated into RJLG's standard operating procedure for silica analysis  RJLG has capability to ID and evaluate interfering minerals Full scan mineral ID services by XRD CDD PDF-2 and PDF-4 reference library
	Analysis	Quantitative analysis of crystalline silica correcting for interferences, as needed	Consistent with current LAP policies	No additional actions necessary.	The RJLG AIHA LAP accreditation meets the criteria
6.1	Analysis	Instrument calibration checks with silica standards bracketing the sample concentrations	Consistent with current LAP policies	No additional actions necessary.	The RJLG AIHA LAP accreditation meets the criteria
6.1	Analysis	Each day that samples are analyzed, performs instrument calibration checks with standards that bracket the reported sample concentrations	Daily RL sample and CCV (if at the mid-point) may not meet this requirement.	Verify use of high standard as CCV	This requirement is incorporated into RJLG's standard operating procedure for silica analysis
6.2	Analysis	Use at least a 5-point calibration curve	LAP will alert laboratories to this requirement.	Verify use of at least 5-point standard curve	This requirement is incorporated into RJLG's standard operating procedure for silica analysis
6.3	Analysis	Provide a quantitative limit of detection representing a value no higher than 25% of PEL based on air volume	Laboratory must demonstrate that their reporting limit is $\leq 10$ ug. Laboratory must have a RL of 10 ug to meet 25% detection limit based on an 8-hr TWA PEL	Verify limit of detection, and daily RLS check during SA	This requirement is incorporated into RJLG's standard operating procedure for silica analysis