



## Silica, crystalline quartz (respirable dust) — OSHA ID 142

OSHA Method ID 142 is applicable to the collection of airborne respirable quartz and/or cristobalite. The primary method of analysis can distinguish and quantitate the different polymorphs of free silica.

### Required Equipment:

1. An **air sampling pump** capable of sampling at the recommended flow rate with the sampling medium in line, such as:
  - SKC **Universal Sampler**
  - SKC **AirChek® 2000 Sampler**
  - SKC **AirChek XR5000 Series Sampler**
  - SKC **AirChek 52 Sampler**
2. An **air flow calibrator**, such as:
  - Defender Primary Standard Calibrator Cat. No. 717 Series
3. SKC **Filter** Cat. No. 225-8-01SC
4. SKC **Cassette Blank** Cat. No. 225-3LF
5. SKC **Filter Cassette Holder** Cat. No. 225-1
6. SKC **Cyclone** Cat. No. 225-01-02
7. SKC **Calibration Chamber** Cat. No. 225-01-03

### Optional Equipment:

1. SKC **Cassette Sealing Bands** Cat. No. 225-25

### SKC Application Guides:

1. Sampling Train—Filters, #1166
2. Calibrating a Pump Using an Electronic Calibrator, #1366

	TWA
Flow Rate	varies
Sample Time	varies
Air Volume	varies
OSHA PEL (per 29 CFR 1910.1000 Table Z-3)	10 mg/m <sup>3</sup> % SiO <sub>2</sub> +2

### Sampling and Analysis:

1. To set up a filter cassette sampling train with a cyclone, prepare a three-piece filter cassette, remove the inlet section of the cassette, seal the two remaining sections with a sealing band (optional), and place the cyclone securely into the middle ring of the cassette. Insert the filter cassette/cyclone assembly into the filter cassette holder with the cyclone stem down and remove the filter cassette outlet plug. Connect the fitting on the end of the rubber tubing of the filter cassette holder to the filter cassette outlet. With the flexible tubing

provided, connect the filter cassette holder to the pump inlet. *Request SKC Application Guide #1166 for more information on preparing filter sampling trains.*

2. For calibrating the pump, use the sampling train described above, but firmly place the SKC cyclone calibration chamber over the cyclone stem. Connect the inlet of the calibration chamber to the calibrator with flexible tubing. The cap on the stem of the cyclone (grit pot) should remain in place during calibration. Calibrate the pump flow rate to the rate specified in the method. When calibration has been completed, remove the calibration chamber and the filter cassette. Reinsert the filter cassette plugs and save the filter cassette for recalibration at the end of sampling. *Request SKC Application Guide #1366 for more information on calibrating a pump.*

3. For sampling, set up a sampling train as above except use a new filter and cassette. Attach the cassette holder clip to a worker's collar and the pump to the worker's belt. Turn on the pump.

4. Sample at an accurately known flow rate for the recommended period of time.

5. At the end of the sampling period, turn off the pump and note the ending time. Remove the cyclone from the filter cassette and discard the dust accumulated in the cyclone grit pot. Close the cassette firmly with the inlet section and cap the inlet and the outlet of the cassette with the plugs provided. Record any pertinent sampling information.

6. Calibrate the pump with the representative sampling media in line to verify that the flow has not changed by more than 5%.

7. Submit field blanks from the same lot number as the sample filters. Field blanks should be subjected to exactly the same handling as the samples (load, seal, and transport) except that no air is drawn through them.

8. Pack sample filters, field blanks, and all pertinent information securely for shipment to a laboratory for analysis.

### Analyzing Method:

X-ray diffraction (X DIF); Gravimetric analysis (GR)

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