

SAMPLE SETUP GUIDE

Sampling Train — Reusable PPI Samplers

SKC Reusable Aluminum Parallel Particle Impactor (PPI) Samplers are specifically designed to provide the closest match to the ISO 7708/CEN thoracic and respirable criteria (required by the OSHA 2016 Final Rule on Respirable Crystalline Silica). The PPI Sampler inlet contains four miniature impactors, each with a unique 50% cut-point that corresponds to a specific point along the ISO/CEN curve. The user inserts a pre-oiled porous plastic impaction disc into each impactor that scrubs larger particles, while smaller particles collect on a single standard 37-mm filter for analysis. Respirable PPI Samplers are available for use with a sample pump at 2, 4, or 8 L/min, providing options for pump choice, sample duration, and contaminant concentration. The 4 and 8 L/min respirable models allow for collection of more contaminant mass for lower occupational exposure limits (OELs) or for short-term task monitoring. The thoracic PPI Sampler is available for use at 2 L/min. This Sample Setup Guide demonstrates how to set up a **Sampling Train Using Reusable PPI Samplers**.

Required Equipment:

1. An **air sampling pump** capable of sampling at the recommended flow rate with the sampling medium in line, such as:
 - SKC **AirChek® XR5000 or AirChek TOUCH** (for 2 and 4 L/min)
 - SKC **Leland Legacy®** (for 8 L/min)
2. An **airflow calibrator** such as:
 - SKC **chek-mate® Calibrator with CalChek** Cat. No. 375-0550N
 - TSI 4146 Calibrator Cat. No. 740-4146
3. SKC **Reusable Parallel Particle Impactor (PPI)**, such as:
 - 2 L/min (respirable) PPI Cat. No. 225-380
 - 2 L/min (thoracic) PPI Cat. No. 225-381
 - 4 L/min (respirable) PPI Cat. No. 225-382
 - 8 L/min (respirable) PPI Cat. No. 225-383



4. Recommended Collection Filters:

- SKC **PVC Filter** Cat. No. 225-5-37 (for respirable)
- SKC **PTFE Filter** Cat. No. 225-27-07 (for thoracic metalworking fluids)

5. SKC **MCE Filter** Cat. No. 225-5 (for thoracic)

6. SKC **Cellulose Support Pads** Cat. No. 225-27

7. SKC **Impaction Substrates** Cat. No. 225-388

Optional Equipment:

1. SKC **Multi-purpose Calibration Jar** Cat. No. 225-111

Introduction

The selected PPI model will determine the required flow rate at which the sampler will provide either a 4- μ m cut-point (respirable) or 10- μ m cut-point (thoracic) meeting the ISO 7708/CEN criteria. See individual pump operating instructions to ensure the pump is capable of sampling at the required flow rate.

1. Set Up the Calibration Train.

The Reusable PPI Sampler arrives assembled. Disassemble the PPI Sampler (*Figure 1*) to load it with representative sampling media for calibration, that is, impaction substrates, filter, and support pads representative of the type to be used in the field (conditioning and preweighing are not required for representative sampling media used for calibration). Remove the two screws that hold the inlet and base plates together and separate the plates. Using forceps, insert a support pad and collection filter into the base plate. Using forceps again, insert one impaction substrate into each of the four indentations in the impaction plate. Align the plates in their original order and install and tighten the screws to reassemble the PPI Sampler. Continue to set up the calibration train with a calibration jar as follows:

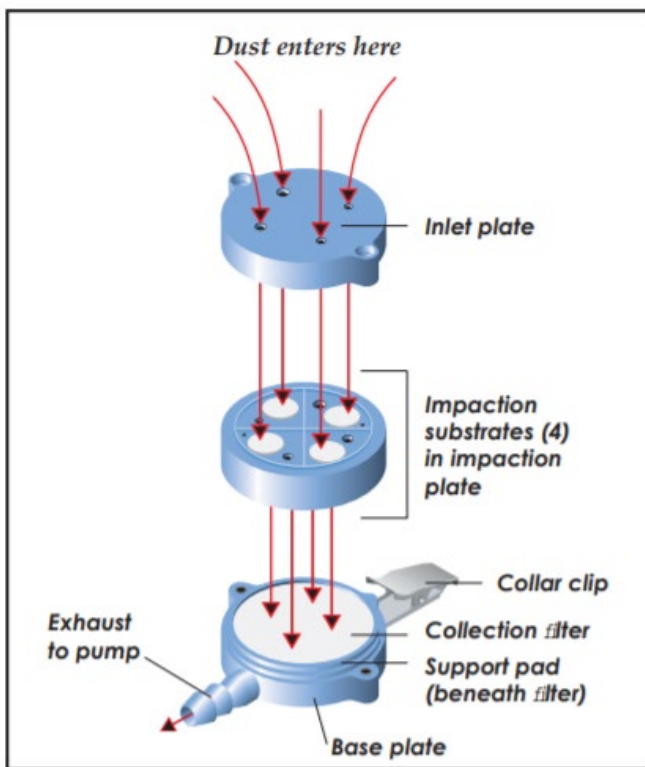


Figure 1. Reusable PPI Assembly

Start with a PPI Sampler loaded with representative sampling media as directed above. Attach the soft-tubing end of the adapter supplied with the jar to the PPI Sampler's exhaust. Attach the rigid end of that adapter to the Luer adapter on the inside center of the calibration jar lid. Install the lid on the jar and tighten it. The sampler is now attached to the jar lid and closed inside the jar. Attach the flexible tubing from the outside center of the calibration jar lid to the pump inlet. Use a length of flexible tubing to connect the elbow fitting on the outside of the jar lid to the suction port on the calibrator.

2. Calibrate the Flow Rate.

After setting up the calibration train, allow the pump to equilibrate from one temperature extreme to another and run it for 5 minutes before calibrating. With the representative sampling media in line as directed in Step 1, calibrate the sampler to the flow rate of the PPI Sampler model being used (2, 4, or 8 L/min). *See pump and calibrator operating instructions for calibrating flow rate.* Once the flow rate has been calibrated, remove the PPI Sampler from the calibrator and calibration jar. Record the pre-sample flow rate. Remove the representative sampling media from the PPI Sampler and set it aside to verify the flow rate after sampling.

3. Prepare the Sample Media.

Condition and preweigh a method-specified filter according to method procedures. When ready to start sampling, follow the procedure in Step 1 to insert the new sampling media (impaction substrates, support pad, and conditioned, preweighed collection filter) into the PPI Sampler (*Figure 1*).

4. Sample.

Use flexible tubing to connect the PPI Sampler exhaust to the inlet of the calibrated sample pump. Clip the PPI Sampler to the worker's collar in the breathing zone and the pump to the worker's belt. Run the sample pump. Note the start time and any other pertinent sampling information.

5. End Sampling.

At the end of the sampling period, place the pump in Hold or stop the pump and record the sample stop time and other pertinent information. Remove the sampler from the sample pump.

6. Remove the Collection Filter and Impaction Substrates from the Sampler.

Remove the two screws holding the plates together. Using forceps, remove the collection filter from the base plate and impaction substrates from the impaction plate. Place the filter in an appropriate container for shipment. Discard impaction substrates. Reinstall the representative sampling media and calibration train as directed in Step 1 to verify pump flow rate. *See pump and calibrator operating instructions for verifying flow rate.*

7. Prepare Samples for Shipment and Analysis. Pack samples, field blanks, and all pertinent sampling information securely for shipment to a laboratory for analysis.

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