

# 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® Touch Series** (for 2 and 4 L/min)
  - SKC **Leland Legacy®** (for 8 L/min)
2. A **flowmeter** such as:
  - SKC **Medium Flow chek-mate® Flowmeter with CalChek** Cat. Nos. 375-0550N, 375-0550, and 375-0550S
  - SKC **High Flow chek-mate Flowmeter with CalChek** Cat. Nos. 375-50300N, 375-50300, and 375-50300S with required Pulsation Dampener Cat. No. 375-150 for flow rate verification of high flow pumps



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. 225-17-33 (for thoracic metalworking fluids)
5. SKC **MCE Filter** Cat. No. 225-1939 (for thoracic)
6. SKC **Cellulose Support Pads** Cat. No. 225-27
7. SKC **Impaction Substrates** Cat. No. 225-388

### Optional Equipment:

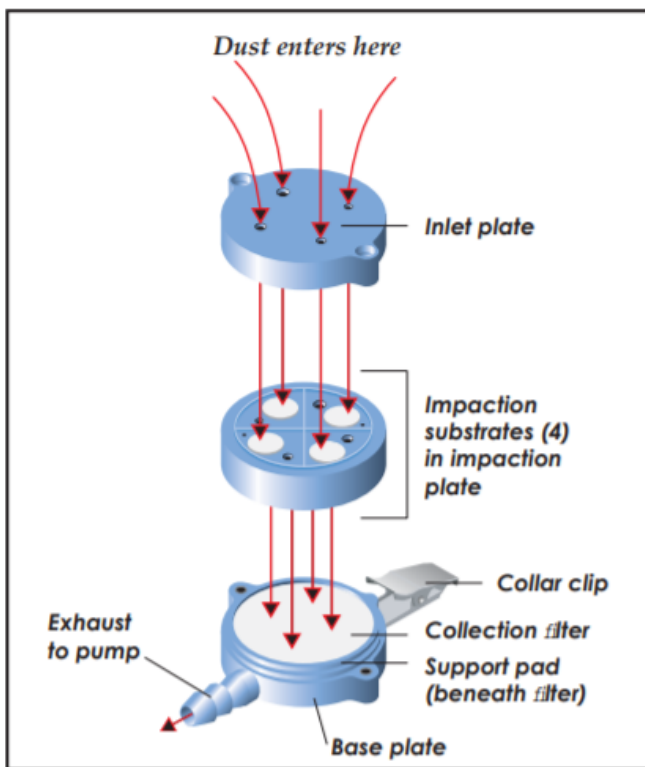
1. SKC **Multi-purpose Calibration Jar** Cat. No. 225-111

### Introduction

The selected PPI model will determine the required flow rate at which the sampler will provide either a 4- $\mu$ m cut-point (respirable) or 10- $\mu$ 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 Flow Rate Verification Train.

*The Reusable PPI Sampler arrives assembled. Disassemble the PPI Sampler (Figure 1) to load it with representative sampling media for flow verification, 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 flow rate verification). 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 flow rate verification train with a calibration jar as follows (for jarless calibration method, see Reusable PPI Sampler operating instructions):*



**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 flowmeter. **Note:** *When using High Flow chek-mate Flowmeter and a high flow pump, Pulsation Dampener Cat. No. 375-150 is required in line between the representative sampling media and flowmeter suction port. See sampler operating instructions.*

## 2. Verify the Flow Rate.

After setting up the flow rate verification train, allow the pump to equilibrate from one temperature extreme to another and run it for 5 minutes before flow rate verification. With the representative sampling media in line as directed in Step 1, verify the sampler to the flow rate of the PPI Sampler model being used (2, 4, or 8 L/min). See *pump and flowmeter operating instructions for verifying flow rate*. Once the flow rate has been verified, remove the PPI Sampler from the flowmeter 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 flow rate verification train as directed in Step 1 to verify pump flow rate. See *pump and flowmeter 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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