

# SAMPLE SETUP GUIDE

## Sampling Train — Air Sample Bags

Air sample bags are a convenient and accurate means of sampling gases and vapors when the concentration is higher than the detection limits of common analytical instruments. Air sampling using bags is usually performed for short periods of time to give an indication of peak airborne concentrations. In areas where the chemical levels remain constant, several samples can be used to determine time-weighted average (TWA) exposures. SKC air sample bags are designed for one-time use. SKC manufactures sample bags from Tedlar<sup>®</sup>, FlexFoil<sup>®</sup> PLUS, and Standard FlexFoil materials that are inert to a wide range of chemicals. SKC bags have been shown to have the lowest sample loss in storage. This Sample Setup Guide demonstrates how to set up a **Sampling Train Using Air Sample Bags**.

### Required Equipment

1. An **air sampling pump** capable of sampling at the recommended flow rate with the sampling medium in line, such as:
  - SKC Grab Air
  - SKC Pocket Pump TOUCH
2. An **airflow calibrator** such as:
  - SKC Low Flow chek-mate<sup>®</sup> Calibrator Cat. Nos. 375-00205N, 375-00205, and 375-00205S
  - SKC Medium Flow chek-mate Calibrator with CalChek Cat. Nos. 375-0550N, 375-0550, and 375-0550S
3. SKC **Air Sample Bag** specified in the method or appropriate to the application
4. **PTFE tubing**

### Introduction

#### About the Pump

The pump used for bag sampling must be both a suction and pressure sampler, i.e., the pump must be able to pull air from the environment as well as push air into the sample bag. To determine the correct flow rate for the chemical of interest, refer to the appropriate analytical method.



Check the pump operating instructions to ensure that it is both a suction and pressure sampler and that it is capable of sampling at the correct flow rate.

#### About SKC Sample Bags

All SKC sample bags are supplied with fittings. See the following descriptions.

- **SKC single fittings (polypropylene and stainless steel)** contain within one fitting the following: (1) a hose/valve for flushing and filling the bag and sealing it off after sampling and (2) a syringe port with septum for removing the sample for analysis. Within the single polypropylene fitting is a port for filling and a port for removing the sample, while the single stainless steel fittings contain a single port that is used for all functions.
- **Dual-fitted bags** contain separate hose/valve and syringe port fittings. The syringe port contains a septum.

#### 1. Calibrating the Flow Rate

If taking a simple grab sample, the flow rate is not important as long as the bag is not overfilled (*Figure 3*). Never fill a bag more than 80% of its maximum volume. If taking a bag sample according to a specific analytical method that specifies a flow rate, calibrate the flow rate before and after sampling.

Set up the pump following pump operating instructions. If sampling according to a specific method, calibrate the pump flow rate using flexible tubing to connect the pump port to the outlet (suction) port of an external calibrator. Allow the pump to equilibrate from one temperature extreme to another and to run for 5 minutes before calibrating. Calibrate to the flow rate specified in the analytical method for the chemical of interest. *See the pump and calibrator operating instructions for calibrating flow rate.*

#### 2. Preparing the Bag

1. Ensure the bag material and fittings are appropriate for the compounds to be sampled (*see Bag Stability Report at [www.skcinc.com/knowledgecenter](http://www.skcinc.com/knowledgecenter)*) and the application's temperature range (*see bag operating instructions*).
2. Flush the bag at least three times with purified air or nitrogen before use.

**Note:** SKC sample bags are designed for single use only.

### 3. Setting Up the Sampling Train — Figures 1 & 2

Attach a piece of PTFE tubing to the hose/valve fitting of the bag. Connect the other end of the tubing to the outlet port or fitting of the pump. Use only PTFE tubing for bag sampling; never use rubber or Tygon<sup>®</sup> tubing.

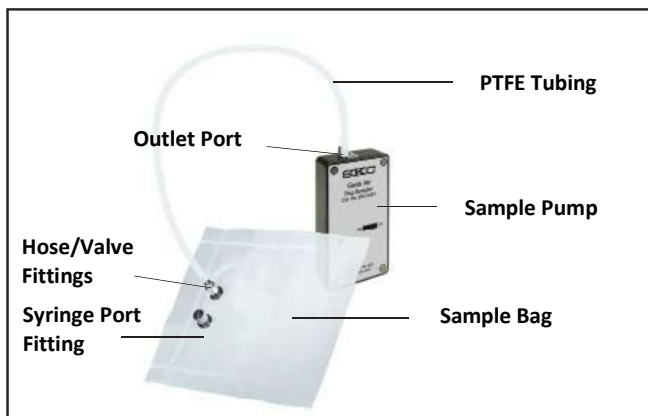


Figure 1. Grab Air Sample Pump connected to a 237 Series Bag with dual stainless steel

### 4. Sampling

To begin sampling, open the valve on the bag fitting; refer to bag operating instructions. Turn on the pump and note the start time and any other sampling information. **Avoid filling a bag more than 80% of its maximum volume (Figure 3).**



Figure 3. Bag Inflation

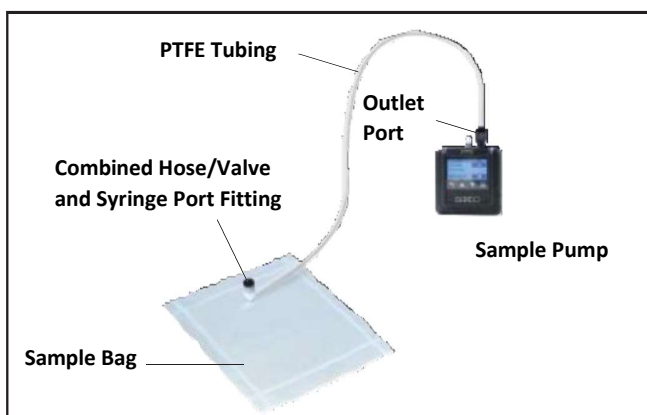


Figure 2. Pocket Pump TOUCH connected to a 236 Series Bag with single polypropylene fitting

### 5. After Sampling

At the end of the sampling period, turn off the pump and close the valve on the bag fitting. Ensure the valve is sealed securely; refer to bag operating instructions. Note the ending time, remove the bag from the pump, and record pertinent sampling information.

### 6. Shipping Bag Samples

Sample bags sent to a laboratory for analysis should be packed loosely and padded to minimize the danger of being punctured during shipment. Bag samples should not be shipped by air unless the cargo cabin is pressurized. A significant decrease in barometric pressure may cause sample bags to burst. Do not use bags to collect unstable or highly reactive compounds.

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