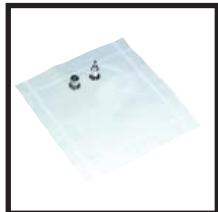




Application Guide

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 FluoroFilm, Tedlar®, FlexFoil®, and SamplePro® FlexFilm materials that are inert to a wide range of chemicals. SKC bags have been shown to have the lowest sample loss in storage. This Application 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 Sampler
2. An **airflow calibrator**, such as:
 - Defender Primary Standard Calibrator 717 Series
3. SKC **Air Sample Bag** specified in the method or appropriate to the application
4. An **appropriate Septum**
5. **PTFE tubing**

Introduction

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 as well as push air into the sampling 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.

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 (see 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 using a primary standard calibrator.

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. Ensure pump has 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

The 231, 237, and 248 Series Sample Bags are supplied with dual stainless steel fittings — a hose/valve fitting and a septum fitting. The hose/valve fitting is used to flush and fill the bag and to seal off the bag after sample collection. The septum fitting is used to remove samples for analysis. The 232, 236, and 247 Series Bags feature a single fitting made of inert polypropylene that combines the hose/valve and septum fitting into one unit. The 233 Series Bags utilize a single stainless steel fitting combining the hose/valve and septum. The 240 Series bags contain a single stainless steel or PTFE fitting and 245 Series bags are offered with either a stainless steel or polypropylene fitting. A special PTFE-coated septum is used in all bag fittings.

Sampling Train — Air Sample Bags

3. Setting Up the Sampling Train — See 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 PTFE tubing only for bag sampling, never use rubber or Tygon® tubing.

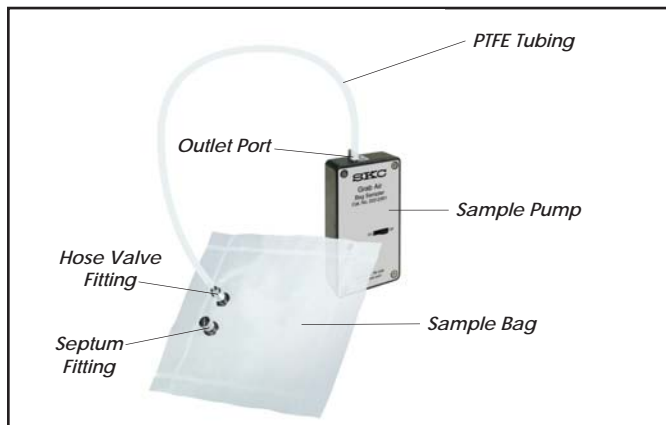


Figure 1. Grab Air Sampler connected to a 231 Series Bag with stainless steel fittings

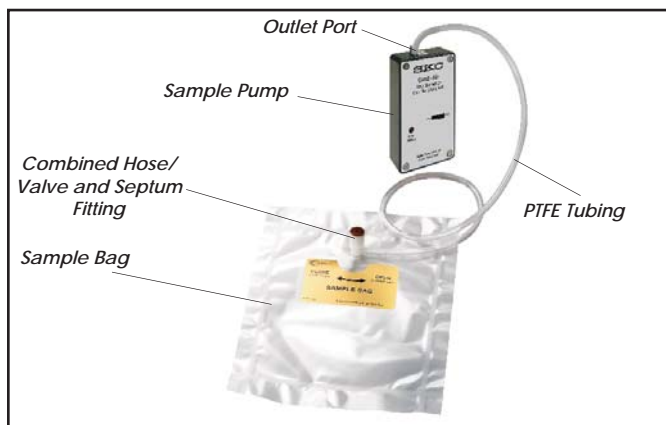


Figure 2. Grab Air Sampler connected to a 232 Series Bag with polypropylene fitting

4. Sampling

To begin sampling, open the valve on the bag. Refer to the operating instructions for each bag. 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

5. After Sampling

At the end of the sampling period, turn off the pump and close the valve on the bag. Ensure the fitting and valve are sealed securely. Refer to the operating instructions for each bag. Note the ending time, remove the bag from the pump, and record any pertinent sampling information.

6. Shipping Bag Samples

Sample bags sent out 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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