

SAMPLE SETUP GUIDE

Sampling Train — Sampling with ULTRA Passive (Diffusive) Samplers

Passive sampling is the collection of airborne gases and vapors at a rate controlled by a physical process such as diffusion, **without** the use of an air sampling pump. Passive (diffusive) samplers rely on the movement of contaminant molecules across a concentration gradient (i.e., molecules diffuse from an area of high concentration in air to an area of low concentration onto the sampler). This rate of diffusion can be calculated mathematically and determined experimentally for individual chemicals. SKC provides diffusion or sampling rates for many organic vapors that can be sampled with SKC ULTRA Passive Samplers. This Sample Setup Guide demonstrates the basic operation of SKC ULTRA Passive Samplers and defines the critical sampling information that should be sent to a laboratory for analysis.

Introduction

SKC offers ULTRA Passive Samplers with a choice of sorbents. Choose the sampler with the sorbent best suited for the chemical(s) of interest. Refer to the SKC Passive Sampling Guide on the SKC website, www.skcinc.com, for more information. The sorbents and analysis for ULTRA Passive Samplers are the same as those specified in the active EPA Method TO-17. ULTRA samplers provide for low parts per billion (ppb) to parts per trillion (ppt) detection of organic vapors in ambient and indoor air.¹ Consult the SKC Passive Sampling Guide for sampling rates and minimum and maximum sampling times.

ULTRA Passive Samplers are offered in two configurations. Select the configuration that best fits your application.

Prefilled ULTRA Passive Samplers

The ULTRA sampler housing is prefilled with purged sorbent. The compartment access port on the back of the sampler provides for easy and direct transfer of sorbent to a thermal desorption tube in a laboratory.

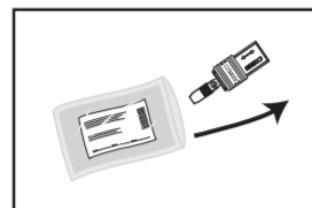


User-filled ULTRA Passive Samplers

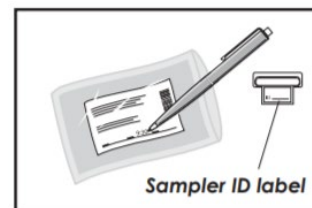
Sorbent for the ULTRA Sampler is provided separately in glass vials with PTFE lids to maintain low sorbent background. The sampler's compartment access port and transfer funnel accessory allow the user to transfer purged sorbent from the vial directly into the housing before sampling. After sampling, the user either ships the sample sorbent in the sampler or transfers the sorbent back into the vial for shipment. Samplers or vials are shipped to a laboratory for thermal desorption and analysis.

1. Sample Collection

Remove the sampler from the resealable pouch.

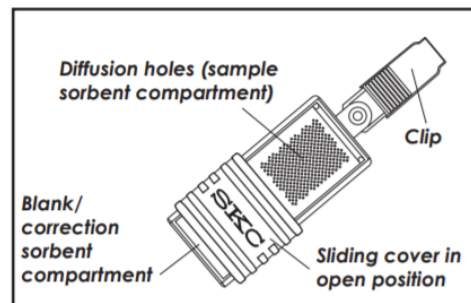


Record sample ID number, sampling location, and date on the pouch.



Prepare the passive sampler for sampling.

For Prefilled ULTRA: Slide sampler cover to open position (diffusion holes visible). Write the sample start time on the pouch label.

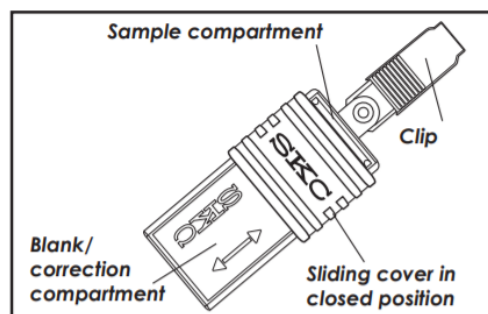


For User-filled ULTRA:

Using the Transfer Funnel accessory, transfer sorbent from vial to sampler. Slide sampler cover to open position (diffusion holes visible). Write the sample start time on pouch label.



When sampling is completed, slide sampler cover to closed position.



For Prefilled ULTRA: Write the sample stop time on the pouch label. Measure and record ambient temperature and atmospheric pressure and include in information sent to the laboratory. Ensure ID number on sampler matches ID number on pouch and place sealed sampler in resealable pouch.

For User-filled ULTRA: Write the sample stop time on the pouch label. Measure and record ambient temperature and atmospheric pressure and include in information sent to the laboratory.

- Ensure ID number on sampler matches ID number on pouch and place sealed sampler in resealable pouch.
Or
- Transfer sorbent from the sampler body into a vial and place vial in envelope.

2. Sampler Storage and Shipment to Analytical Laboratory

Before Sampling:

Prefilled: 30 days (except charcoal - 6 months) in a clean, organic solvent-free environment

User-filled: 60 days (except charcoal - 1 year) in a clean, organic solvent-free environment

After Sampling: 21 days at ≤ 39.2 F (4 C) in a clean, organic solvent-free environment

Carefully package sealed pouch(es) containing sampler(s) or sorbent vial(s) and blank(s). Use expedited shipping to send sample(s), pertinent information, and Chain of Custody Form(s) to a laboratory for analysis.

3. Critical Information to Include in Sample Shipment

The laboratory will need to know the air volume for the chemical of interest. Calculate as follows:

$$\text{Chemical sampling rate supplied by SKC (ml/min)} \times \text{Sampling time (min)} = \text{Air volume (ml or L)}$$

The laboratory will determine the total micrograms (μg) found on the sampler for the chemical of interest. The air volume will be used to report the chemical concentration in air as ppb or ppt.

4. Analysis

Thermal desorption (TD) followed by analysis using gas chromatography (GC) with a detector specified in the method for the compound of interest. See *Analysis Instructions at www.skcinc.com/instructions/40125.pdf or www.skcinc.com/instructions/40127.pdf (charcoal).*

References

- ¹ SKC Update to EPA Method TO-17 available at www.skcinc.com

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