Aura Personal Air Sampler Kit

cat.# 26484 (Electropolished) and cat.# 26485 (Siltek-Treated)

Overview

The Aura personal air sampler (PAS) was developed to help environmental and occupational health experts monitor personal exposure to airborne volatile organic compounds (VOCs). The Aura PAS was specifically designed as an alternative to diffusive sampling badges and/or active sampling with thermal desorption (TD) tubes. The Aura PAS was engineered to avoid some of the significant shortcomings associated with the aforementioned personal sampling devices, and it delivers the following advantages:

1. A passive sampling device that does not require a pump and manages variations in face velocity, temperature, and humidity better than traditional sampling approaches.
2. A whole air sampling approach that affords multiple analyses of over 100 VOCs.
3. A simple, quick connection to start and stop flow; does not require flow calibration.

The Aura PAS passively collects an 8-hour, whole air sample via vacuum in a 400 cc canister. The Aura PAS does not use a flow controller like other canister sampling approaches; rather, flow is controlled by a proprietary critical orifice. Each Aura PAS is delivered with a pre-calibrated starting flow that is approximately 0.310 mL/min. The Aura PAS will maintain a near-constant flow (i.e., the ending flow will be within 15% of the starting flow) throughout the 8-hour sampling duration. This flow will result in a fully evacuated (e.g., 29–30" Hg) canister being filled to ~35% full (i.e., 140 mL). All of the aforementioned flows, ranges, and volumes have been established to ensure the Aura PAS is compliant with OSHA's 25% bias requirement.

Note: Kit components must be used together to ensure proper sampling. Correct flow may not be obtained if sampling lines of different dimensions or canisters of different volumes are used.

This document provides step-by-step instructions on how to use the Aura PAS.

Aura Personal Air Sampler Kit Components

A – 400 cc miniature canister with 1/4" quick-connect stem (1)

B – 1/8" quick-connect body (1)

C – disposable 8-hour sampler lines (10)

D – holster (1)

E – sampler line clip (1)

F – belt (1)

G –clean-cut tubing cutter (1)

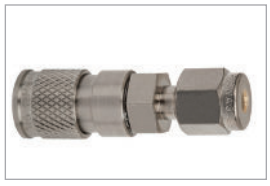
Prior to Use

The 400 cc canister with quick-connect stem (A) is shipped under 30 psig of pressure. Prior to use, you must depressurize the canister using the following steps:

1. Unpack the 400 cc canister with quick-connect stem (A) and remove the black rubber protective cap from the stem. Do not discard the black rubber protective cap; you will need to place it back on the stem after sampling.
2. Unpack the quick-connect body (B).
3. Attach the quick-connect body (B) to the 400 cc canister with quick-connect stem (A). To obtain a complete connection, you will need to pull back the knurled end of the quick-connect body (B).

   You should hear nitrogen release as the canister depressurizes. If you do not hear this, please contact Restek Technical Service at support@restek.com or 1-814-353-1300, ext. 4.

Step 1



Step 2

Step 3

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Pure Chromatography

Cleaning and Evacuating the Sampling Canister

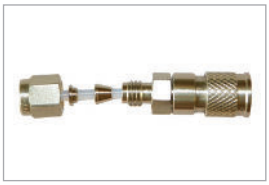
If the 400 cc canister with quick-connect stem (A) has already been cleaned/evacuated, then proceed to step 1 in the Sampler Setup section.

Otherwise, perform the following steps for cleaning/evacuating the 400 cc canister with quick-connect stem (A).

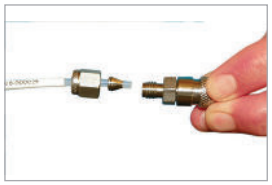
1. Connect the 400 cc canister with quick-connect stem (A) to your canister cleaning/evacuating system using the quick-connect body (B). The quick-connect body (B) has a 1/8" end; therefore, if your cleaning/evacuating system is set up for 1/4" connections, a 1/8" tube to 1/4" tube end reducer (cat.# 23178) is required. To save time, we recommend you buy an additional quick-connect body and attach it to your canister cleaning/evacuating system and/or autosampler. (Go to www.restek.com/raveqc for product information.)
2. Clean the 400 cc canister with quick-connect stem (A) following your internal standard operating procedure (SOP), but do not exceed 110 °C.
3. After cleaning, fully evacuate (e.g., 29–30" Hg) the 400 cc canister with quick-connect stem (A).
4. Disconnect the 400 cc canister with quick-connect stem (A) from the cleaning system by disconnecting the quick-connect body (B) from the canister stem.
5. Verify and record the vacuum of the 400 cc canister with quick-connect stem (A) with the use of the quick-connect body (B) attached to an appropriate vacuum gauge.
6. Remove the quick-connect body (B) from the cleaning system.

Assembling the Sampler

1. The quick-connect body (B) ships with a nut and a two-piece ferrule that you need to remove and discard.
2. Screw the quick-connect body (B) onto a sampler line (C) using the nut and pre-swaged ferrule on the end of the sampler line (C).
3. Use two 7/16" wrenches to tighten the quick-connect body (B) onto the sampler Line (C).



Step 1



Step 2

Step 3

Mounting the Personal Air Sampler on the User

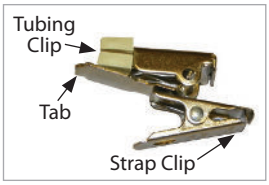
1. Insert the end of the sampler line (C) into the opening on the underside of the holster (D) strap. The opening is adjacent the Restek label.
2. Slide the sampler line (C) through the holster (D) strap until the end protrudes from one of the eight exit holes on the other end of the strap. The exit holes allow the user to customize the fit. Once the holster (D) is on, the user can adjust the fit by changing which exit hole is used.
3. If you have not already done so, be sure to verify and record the vacuum of the 400 cc canister with quick-connect stem (A) using the quick-connect body (B, cat.# 27343) attached to an appropriate vacuum gauge. Restek offers a vacuum gauge preassembled with the proper quick-connect fitting for use with the Aura PAS (cat.#24224).
4. Insert the 400 cc canister with quick-connect stem (A) into the holster (D).
5. Have the user place his or her head and one arm through the holster (D) strap. The exit holes in the holster (D) strap should be across the wearer's chest and facing out, so that the end of the sampler line (C) is on the front of the user.
6. Using the adjustment on the holster (D) strap, adjust the fit so the holster (D) lies on the side of the hip. Restek offers an extension strap (cat.#26481) if additional length is needed for a comfortable fit.
7. Connect the quick-connect body (B) that is attached to the sampler line (C) to the 400 cc canister with quick-connect stem (A). Sampling has now begun, so be sure to record the start time.
8. The sampler line (C) needs to protrude from a hole in the strap near the breathing zone. Move the tubing to a new exit hole, if necessary, so that the end of the sampler line (C) is placed correctly. Make sure there is no slack in the sampler line (C) and that all of the line has been pulled through holster (D) strap.
9. Using a Restek clean-cut tubing cutter (cat.# 25069), cut the sampler line (C) so approximately 2-3" protrude from an appropriate hole in the holster (D) strap. Remember that the end of the sampler line (C) is required to be in the breathing zone.

Step 1

Steps 5 and 6

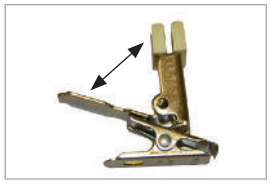
Step 9

10. Unpack the sampler line clip (E), which is shipped in the closed position. This clip is composed of two clips that are attached together: a tubing clip and a strap clip. Open the entire sampler line clip (E) by pulling the padded end of the tubing clip up off of the tab. Once the entire sampler line clip (E) is in the open position, the padded end of the tubing clip will be open and ready for insertion of the sampler line (C).
11. Place the sampler line (C) between the tubing clip pads and close the entire sampler line clip (E).
12. Attach the sampler line clip (E) to the strap on the holster (D) with the strap clip.
13. Connect belt (F) to holster (D) and adjust length for a comfortable fit.



Closed Position


Step 10


Open Position


Steps 11–12


Step 13

After Sampling

1. After 8 hours of sampling, disconnect the quick-connect body (B) from the 400 cc canister with quick-connect stem (A). Sampling has now stopped, so be sure to record the end time.
2. Remove the sampler from the wearer.
3. Verify and record the vacuum of the 400 cc canister with quick-connect stem (A) using an appropriate vacuum gauge that is equipped with a quick-connect body (B).
4. Place the black rubber protective cap back on the stem of the 400 cc canister with quick-connect stem (A).
5. Ship the 400 cc canister with quick-connect stem (A) to a laboratory capable of conducting U.S. EPA TO-15 analyses.

In the Laboratory

1. If you have not already done so, verify and record the vacuum of the 400 cc canister with quick-connect stem (A).
2. Download the testing data template Excel file from the Aura kit product page.
3. Enter your information into the cells marked "enter data." The mean flow based on vacuum and volume will be automatically calculated for you using the data you entered.

End user must enter data in green cells.					
Serial Number of 400 cc Canister:	***Enter Data***		**Sampling Start Time*:**	***Enter Data***	
Serial Number of Sampler Line:	***Enter Data***		**Sampling End Time*:**	***Enter Data***	
Date:	***Enter data***		**Sampling Elapsed Time:**	***#VALUE***	
Mean Flow Based on Vacuum and Volume					
Starting Vacuum (" Hg)	**Ending Vacuum (" Hg)**	**Vacuum Remaining (%)**	**Volume Consumed (mL)**	**Sampling Duration (hr)****	**Mean Flow (mL/min)**
Enter Data	***Enter Data***	#VALUE	#VALUE	***Enter Data***	#VALUE

*Enter hours and minutes based on a 24-hour clock (e.g., 22:00 for 10 p.m.)

**Enter hours and minutes to the nearest quarter hour (e.g., 8 hours and 10 minutes = 8.25)

This example shows typical results for an 8-hour sampling event:

Starting Vacuum (" Hg)	Ending Vacuum (" Hg)	Vacuum Remaining (%)	Volume Consumed (mL)	Volume Remaining (mL)	Mean Flow (mL/min)
28.65	18.64	65.1	139.8	260.2	0.29

4. Analyze field samples following your internal SOP for the analysis of canisters (e.g., fill canister to desired pressure and analyze via U.S. EPA Method TO-15).

Note: The Aura PAS canister will be partially filled ~35% (i.e., 140 mL); therefore, most analytical laboratories will need to fill the canister in order to conduct a TO-15 analysis. We recommend that the canister be filled to 7.5 psig and 200 mL of sample be analyzed. If larger sample volumes are desired, the canister may be filled to 15 psig. The filling of the canister to 7.5 psig will generally result in a 4x dilution of your sample.

Aura Personal Air Sampler Kits

Description	Material	cat.#
Aura Personal Air Sampler Kit Includes: 400 cc miniature canister with 1/4" quick-connect stem; quick-connect body; holster and belt; 10-pk. of disposable 8-hour sampler lines; tubing cutter; and lapel clip	Electropolished	26484
	Siltek Treated	26485

26484

Aura Personal Air Samplers (Disposable 8-Hour Sampler Lines)

Description	qty.	cat.#
Aura Personal Air Samplers (Disposable 8-Hour Sampler Line)	ea.	26475
	10-pk.	26476


26476

Replacement Filter with 2 µm Frit for Aura Personal Air Samplers

Description	qty.	cat.#
Filter with 2 µm Frit for Aura Personal Air Samplers	ea.	26479


26479

Replacement 2 µm Frits for Aura Personal Air Samplers

Description	qty.	cat.#
2 µm Frit for Aura Personal Air Sampler	ea.	26477
	10-pk.	26478


26477

Accessories for Aura Personal Air Samplers

Description	qty.	cat.#
Holster and Belt for Aura Personal Air Sampler	ea.	26480
Belt Extension for Aura Personal Air Sampler, adjustable, 12–24" (30.5–61 cm)	ea.	26481
Lapel Clip	ea.	26486


26480

RAVEqc Quick-Connect Air Valves

Description	Material	qty.	cat.#
Female RAVEqc Valve to 1/8" Male Compression Fitting	Stainless Steel	ea.	27343
	Siltek Treated	ea.	27344


27343

Questions about this or any other Restek product?
Contact us or your local Restek representative (www.restek.com/contact-us).

www.restek.com

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