# Sampling Instructions for Active Sampling

Please read carefully before sampling

CASSEN

## CASSEN Testing Laboratories

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# Sampling Instructions

## 1) Immediately Before Sampling

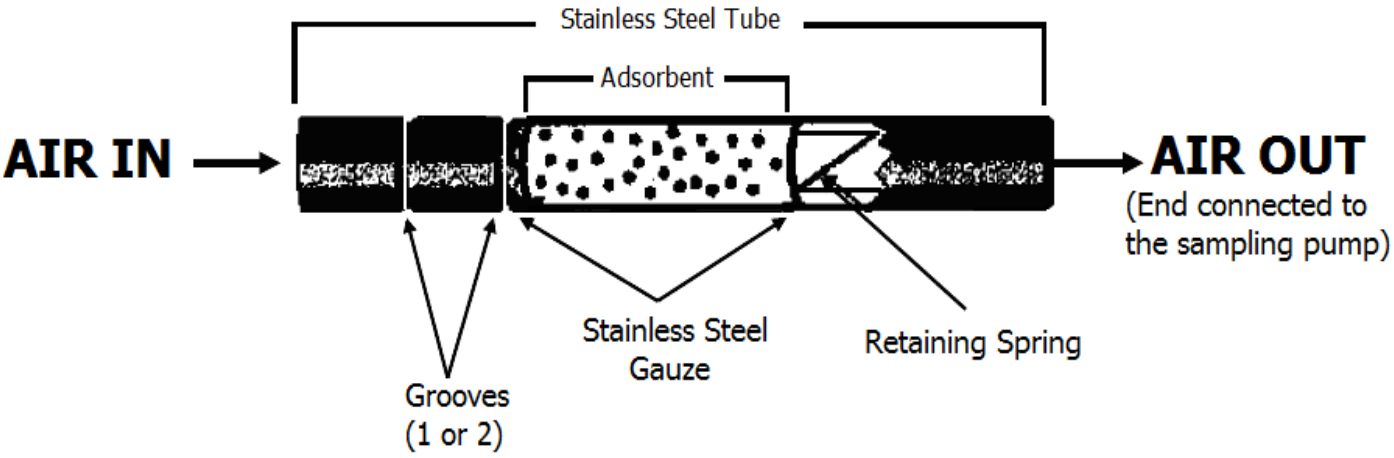
Prior to handling the sorbent tubes, wash hands thoroughly without fragrant soap or hand cream to ensure no fragrant personal products are used. (These sorbent tubes are extremely effective in picking up trace levels of airborne organics; please make every effort to minimize any contamination, i.e. use cotton gloves to handle the tubes if possible)

## 2) Sorbent Tube Identification

All sorbent tubes have unique identification numbers (etched on the side of the stainless steel tube). Compare and match this tube number to the number labelled on the canister. Write down this number on the "Air Sampling Data Sheet" for the location being sampled.

## 3) Direction of Air Flow

Look for the tube end that possesses one or two **grooves that are indented in the tube** (dependant on the manufacturer) - this is the sampling end that provides air entrance. A typical sampling configuration is shown below:




**Be careful not to mistaken the etch marks as the grooves.**

# 4) Recommended Sampling Volume

A. **Open Characterization Analysis** (Semi-Quantitative Only)
In general, collect 5-12 L of air at a flow rate of up to 50 ml/min. If a limited time is allotted for sampling, use a flow rate of up to 100 ml/min.

Total air volumes relating to specific conditions are presented below:

| | |
|---|---|
| **Non-Industrial Indoor Air Quality Evaluation and Odour Complaints:** | 10-12 L |
| **Industrial Environments** | |
| Strong chemical odour (i.e. solvents, oil): | 1-2 L |
| Moderate Odour: | 4 L |
| No Odour: | 8 L |

B. **Target Compounds Analysis** – Non-Industrial Indoor Environments (i.e. offices, schools, hospitals) and Outdoor Air

**For Quantitative analysis of target analytes** – Collect 5 L of air at a flow rate of up to 50 ml/min.

C. **Target Compounds Analysis – Industrial Environments** (i.e. processes involving chemicals)

**Industrial process sampling –** Collect 1-5 L of air at a flow rate of 20-50 ml/min.

Some suggested sampling volumes are:

| | |
|---|---|
| Strong Odour: | 1 L |
| Moderate Odour: | 2-3 L |
| No Odour: | 5 L |

# 5) Humidity

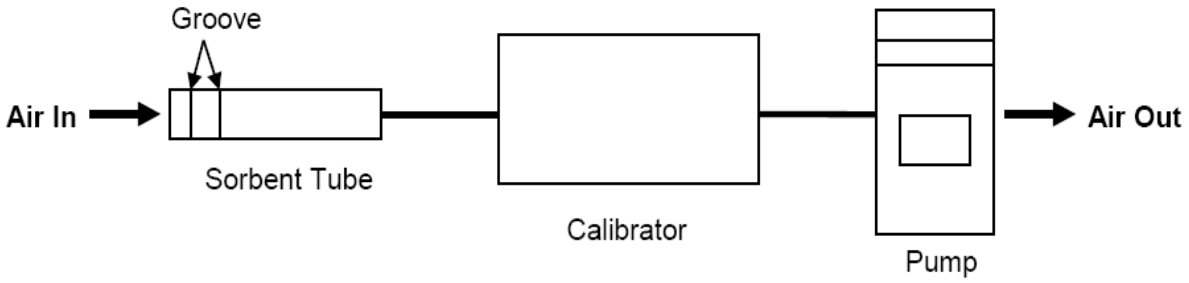
Record the relative humidity during sampling, if inaccessible record the conditions (i.e. dry, raining, indoor/outdoor, etc.) on the Air Sampling Data sheet provided.

**Do not expose the sampling tube to rain or snow.**

# 6) Pump Calibration

a) Use the tube labelled "For Calibration Only" for initial pump calibration; do not use this tube as a field blank or for sample collection. Using this calibration tube, adjust the pump to the desired flow rate. Record this flow rate on the "Air Sampling Data Sheet" prior to sampling.

b) For quantitative analysis, use a calibrator (i.e. DryCal® DC-Lite) between the pump and the tube to check the actual sampling rate.




**Important: Never place the calibrator in front of the sorbent tube**

***Note:*** *Multi-bed sorbent tubes must be oriented so that the air sample passes through the series of sorbents in order of increasing sorbent strength (i.e. weaker sorbent is first). Sampling end can easily be identified by the grooves (1 or 2) at one end of the tube. The grooves indicate the weaker sorbent bed thus the pump must be connected to the end opposite the grooves. Air flowing in through this end allows the less volatile compounds to be adsorbed on weaker adsorbents first and hence enable better desorption, whereas the more volatile components will be trapped by the stronger adsorbent. Reversing this sequence will result in incomplete desorption.*

# 7) Tube Deployment

a) Remove a tube from its canister; identify the two ends of the tube as previously mentioned. Keep the caps on until ready to begin sampling.
b) Using the CapLok™ tool (see Appendix A) or wrenches, remove the hexagonal caps from the tube and promptly connect the appropriate end of the tube to the sampling pump using a clean, non-outgassing, flexible tubing.
c) Keep the caps in the canister to prevent contamination.
d) Position the pump on top of a tripod about 4-5 ft above the floor at a suitable location. Do not position the pump against a painted wall or partition in order to prevent any bias in measured concentration (paint chemicals may have higher concentrations).
e) Orient the tube as required ensuring that the air is passing through the end with the groove(s).
f) While sampling, the sampling tubes must be protected from extreme weather conditions and must not be allowed to come in contact with aerosol or particulate material without appropriate filters. Sampling outside during rainy or snowy conditions is not recommended unless measures are taken to completely protect the tubes.
g) For accurate quantitative analysis, the exact flow rate of each tube must be checked with a calibrator in sequence in the field (see note on Pump Calibration).
h) Record start time, pump flow rate, and other data on the "Air Sampling Data Sheet." Flow rate must be verified after each sampling period. If there is a difference of 5% or less, the averaged value can be used.

## 8) Field Blank

At the sampling site, uncap the tube designated as the field blank and immediately reseal it. The field blank should be transported to and from the monitoring site in a similar manner to that of the sampling tubes.

## 9) After Sampling

a) Record the Sampling Time
b) Disconnect the tube from the pumps
c) Recap the tube with the original hexagonal caps and tighten them using the CapLok™ tool or wrench. Do not over-tighten.
d) Wrap the tube with the provided aluminum foil and immediately place it into the original storage container, ensure the number on the tube matches with the number on the canister. The lab will record the canister number as the sample number if they do not match.
e) Fill in the Chain-of-Custody form provided with the samples. Use the comment field to record any additional important information about the samples. Include an additional comment sheet if necessary so as to detail problems or deviations from the sampling plan.

## 10) Sample Storage

Once sealed with the hexagonal caps, store the tubes at a 4°C temperature. The tubes should not be removed from the canister until they are in the laboratory and ready for analysis.

**Please return the Calibration Tube and CapLok™ tool/ Wrenches with the samples.**

# Appendix A

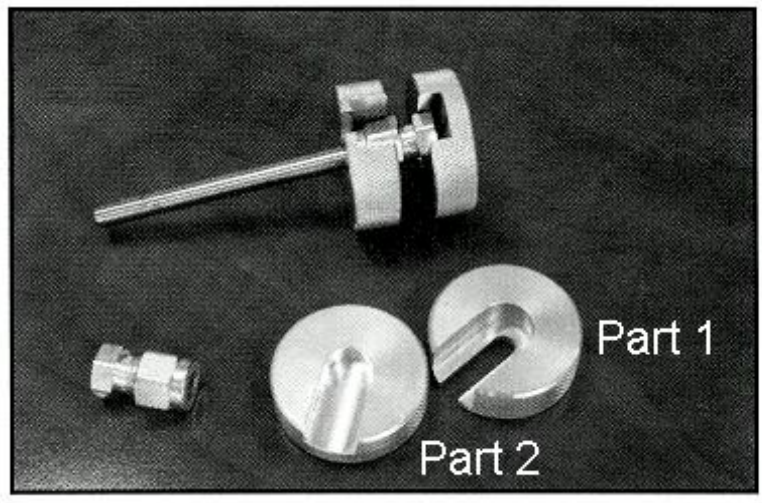
CapLok™ Tool/Wrenches Instructions

Enclosed is a two-piece de-capping tool. Each piece has a groove into which the cap fits (see figure below).

**Placement of CapLok™ Tool:**
The sorbent tube is inserted into the slot of Part 1 so that the bottom of the cap fits snug in the groove. The cap should lock in place. The top of the tube cap is then slid into the groove of Part 2.

**Cap Removal:**
Holding Part 1 stationary, turn Part 2 counter-clockwise to loosen the two-piece cap. The cap can now be removed manually.

**Cap Replacement:**
Ensure the tube is seated properly in cap and seal finger tight. Then place the CapLok™ tool on the cap and turn Part 2 a ¼ turn clockwise.

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http://www.youtube.com/cassenlabs

# Appendix B

Replacement Cost

The sampling tubes and accessories have been designed and engineered to allow for high precision sampling, analysis, and storage. Please handle these items with care to ensure analytical accuracy.

The replacement costs for damaged or lost items are:

| | |
|---|---|
| Stainless Steel Sorbent Tube: | $115 each |
| Hexagonal Cap: | $15 each |
| CapLok™ Tool: | $70 |

Please call CASSEN Testing Laboratories at 1-866-423-3001 if you need assistance in assembling the sampling equipment.

# Field Notes