



# AIR ANALYSIS CAPABILITIES

## Silonite™ Canisters

### The Benefits of Silonite

- No pump required:  
Easy to set-up and cost effective
- Extended holding times
- Easier to ship samples
- Lower detection limits

AGAT Laboratories has enhanced its air service capabilities with the adoption of Silonite Canisters, the latest in SUMMA testing technology. Sampling of Volatile Organic Compounds (VOCs) and hydrocarbon fractions is now easier and more effective using EPA methods TO-14A and TO-15A for air analysis.

Our Silonite air services are utilized for the following analysis:

- Ambient Air
- Remediation
- Landfills
- Soil Vapour Extraction (SVE)
- Site Characterization
- Source Emissions Testing
- Indoor Air Quality/LEED Testing
- Wastewater Treatment Plants

## Silonite Canisters

Silonite canisters are passivated 1.4 litre and 6 litre stainless steel vessels. The interiors of these specially designed canisters are electropolished and chemically deactivated, creating a chemically inert surface. This advanced surface treatment minimizes reactions with samples and maximizes recovery of target compounds. Silonite technology also increases the integrity of samples by preventing degradation from excessive exposure to sunlight or the permeation of VOCs through the vessel walls. This resistance to degradation allows for easy shipping and storage over longer periods of time.

## How Silonite Works

Canisters are completely evacuated into a vacuum prior to use, making sampling as simple as opening the valve and allowing the negative pressure to draw air in. Collection of whole air samples can be taken as a grab sample in less than five minutes, or as an integrated sample taken over a controlled period of time. The VOCs are extracted from the canister and separated by gas chromatography and measured by a mass spectrometer (GC/MS analysis).



# AGAT

## Laboratories

## Our Rental Program

AGAT Laboratories rents pre-cleaned, leak checked, certified 1.4 and 6 litre canisters out to clients based on their project needs. 1.4 litre Silonite canisters are mainly used for higher concentration samples such as soil vapour. Our 6 litre canisters are recommended for lower concentration samples such as indoor and ambient air samples. AGAT Laboratories offers two types of canister cleaning certification, 10 per cent and 100 per cent depending on the requirements of the project.

## AGAT Cleaning Certification

Depending on your project requirements, Silonite canisters are provided with 10 per cent or 100 per cent certification.

### 10% Certification

- Canisters are certified free of approximately 60 VOCs using GC/MS analysis.
- Appropriate for routine ambient air applications and high concentration applications such as soil vapour and landfill gas monitoring.

### 100% Certification

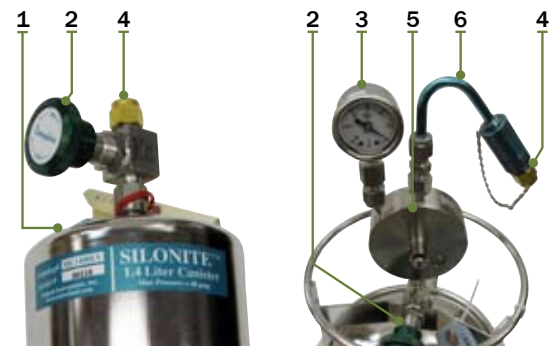
- Each canister is individually certified that they are free of the client-specified list of target compounds using GC/MS.
- Appropriate for ambient and indoor applications driven by risk assessment or litigation requiring pptv (part per trillion by volume) sensitivity.

## Equipment

- **Silonite Canister (1):** 1.4 or 6L canisters are available, cleaned and certified by AGAT Laboratories.
- **Valve (2):** The valve allows for the vacuum to be maintained prior to sampling and seals off the canister once sampling is complete.
- **Vacuum Gauge (3):** Vacuum gauge is used to monitor the vacuum in the canister before, during and after sampling.

**Please note:** Each canister is checked prior to shipment for mechanical integrity, however the vacuum of the canister should still be checked before use. Initial vacuum reading should be greater than 25 in. Hg. If the canister vacuum is less than 25 in. Hg, please contact your AGAT Client Project Manager.

- **Brass Cap (4):** Each canister comes with a ¼ Swagelok brass cap secured to the inlet of the valve assembly. The cap ensures that the valve is sealed, and there is no loss of vacuum or air prior or post sampling. The brass cap should be removed before sampling and replaced following sampling collection.
- **Diaphragm Flow Controller (5):** Diaphragm flow controller combines a Critical Orifice Assembly (COA) with a flexible diaphragm to maintain constant sample flow over longer periods of time. AGAT Laboratories can provide a diaphragm flow controller for sampling up to 24 hours in 6L canisters.
- **Particulate Filter (6):** Flow controllers are provided with a two or seven micron filter, which is a stainless steel frit compressed into a Swagelok fitting. Filters prevent particulate matter from plugging or damaging the flow controller.
- 9/16 or Adjustable Wrench (not provided)



■ Equipment Components

## Types of Air Sampling

The following includes the two primary means of sampling.

**Grab Sampling:** Taken over a short period of time, usually less than five minutes, and provides a “snap shot” picture of the air or gas stream composition at the moment of sampling.

**Integrated Sampling:** Uses a flow controller to regulate the rate of sampling over an extended period of time. This controlled rate of sampling is used when the concentration of target analytes in the air being sampled can possibly fluctuate over time and/or Time Weighted Average (TWA) concentration is desired.

## Silonite Canister Sampling Instructions

The following procedure describes steps for collecting whole air samples using Silonite canisters.

**Before beginning, verify that you have all the equipment required for your Silonite sampling.**

### Grab Sampling Procedure

1. Verify the initial vacuum reading of the canister following the vacuum reading instructions.
2. Remove the brass cap on the canister and attach the particulate filter to the canister, then remove the cap from the particulate filter.
3. Open the valve a half turn (6 L canisters take about 16 seconds to fill). Then close the valve by hand tightening when complete.
4. Remove the particulate filter and record the final vacuum reading following the vacuum reading instructions (try to leave -5 in. Hg).
5. Complete the chain-of-custody form and fill out canister sample tag.
6. Return Silonite canisters and equipment to AGAT Laboratories in the original packaging provided.



## Vacuum Readings

1. Ensure the canister valve is fully closed (the knob should be turned completely clockwise).
2. Remove the brass cap and attach the vacuum gauge. Use the 9/16 wrench to tighten  $\frac{1}{4}$  turn past hand tight. Do not over tighten.
3. Open and close the valve quickly (a few seconds) and record the vacuum reading of the canister on the tag and chain of custody.
4. Remove the vacuum gauge from the canister and replace the brass cap.

## Commonly Requested Analytes

- 1,1-Dichloroethane
- 1,1-Dichloroethene
- 1,1-Dichloropropene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- 1,1,2,2-Tetrachloroethane
- 1,2-Dichlorobenzene
- 1,2-Dichloroethane
- 1,2,4-Trimethylebenzene
- 1,3-Dichlorobenzene
- 1,3-Dichloropropane
- 1,3,5-Trimethylbenzene
- 1,4-Dichlorobenzene
- Aliphatic >C10-C16
- Aliphatic >C6-C8
- Aliphatic >C8-C10
- Aromatic >C10-C16
- Aromatic >C8-C10
- Benzene
- Bromobenzene
- Bromomethane
- Carbon Tetrachloride
- Chlorobenzene
- Chloroethane
- Chloroform
- Chloromethane
- cis-1-2,Dichloroethene
- cis-1-3-Dichloropropene
- Dichlorodifluoromethane
- Ethylbenzene
- Ethylene dibromide
- Hexane
- Isopropylbenzene
- m/p-xylene
- Methyl Ethyl Ketone (MEK)
- Methyl Isobutyl Ketone (MIBK)
- Methyl tert-Butyl Ether (MTBE)
- Methylene Chloride
- o-xylene
- Styrene
- Tetrachloroethene
- Toluene
- trans-1,3-Dichloropropene
- Trichloroethene
- Trichlorofluoromethane
- Vinyl Chloride

**Please note:** Additional analytes and fractions are available.

## Integrated Sampling Procedure

1. Verify the initial vacuum reading of the canister, following the vacuum reading instructions.
2. Ensure the canister valve is fully closed (the knob should be turned completely clockwise). Using the 9/16 wrench, remove the brass cap.
3. Attach flow controller assembly to the valve on top of the canister. Tighten with fingers, then gently tighten with wrench.
4. Place the brass cap at the end of the particulate filter on the flow controller, then quickly open and close the valve to check for leaks (if the vacuum needle drops, try refitting all connections).
5. Remove the brass cap on the particulate filter, record the time, and start sampling by turning the canister valve counter-clockwise half turn.
6. Monitor integrated sampling progress.  
**Please note:** It is important to monitor the progress of the integrated sampling during the sampling interval. The volume of air sampled is a linear function of the canister vacuum. The canister should have half of the initial vacuum remaining mid-way through sampling.
7. At the end of the sampling period, close the canister valve by turning clockwise until hand tight.
8. Remove the flow controller assembly and wrap separately in bubble wrap for shipment.
9. Record the final vacuum of the canister, following the vacuum reading instructions (try to leave -5 in. Hg).
10. Complete the *Chain-of-Custody Form* and fill out canister sample tag.
11. Return Silonite canisters and equipment to AGAT Laboratories in the original packaging provided



For more information on sampling using Silonite Canisters or for any analytical program, please contact our dedicated Client Project Managers.

