

# Fumiscope Version 5.1 Manual

## PRINCIPLES OF OPERATION

The Fumiscope is a portable instrument which measures the concentration of gases in air. The Fumiscope is calibrated for the measurement of Methyl Bromide and Vikane gases in the range of concentrations used in fumigations.

The display indicates the concentration of these fumigant gases in dry air to an accuracy of 2 percent of the full scale reading, in the range from 0 - 2999 Oz. Per 1000 Cu. Ft. (G/M<sup>3</sup>).

The Fumiscope contains an air pump and gas flow meter to allow a sample to be drawn through the thermal conductivity cell at a controlled rate. The Fumiscope compares the thermal conductivity of the mixture of gas and dry air to that of ambient air. This difference is converted into an electric current which represents the concentration of the fumigant and is shown on the digital LED display.

The copper inside the Fumiscope creates a Faraday's cage to block outside interference.

The flow rate of the sample may be adjusted to a constant value by the flow adjustment knob, regardless of the length of the sample tubing. A line filter is placed in the gas sample line to prevent water and dirt from entering the instrument. The line filter stays in place regardless of other materials used in sampling. See U.S.D.A. on page 3.

The Fumiscope, being a portable instrument, requires a level place to sit, and a grounded power source. The power requirement of the Fumiscope is only 200 watts, so a small 12 volt inverter can be used to increase instrument portability. The Fumiscope requires no additional auxiliary equipment.

Note: Extreme heat or extreme cold will effect the operation of the Fumiscope.

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## THE FUMISCOPE

### Adjustment Knobs

The Fumiscope should be set to zero prior to taking a reading and adjusted to zero after each reading. Turn the Recenter Zero red knob first, then the Zero Adjust knob.

### Recenter Zero Red Knob

This adjustment is used to bring the display to read as close to zero as possible after the instrument has warmed up for twenty minutes and settled. This adjustment is set prior to the Zero Adjust knob.

### Zero Adjust Knob

Once the Recenter Zero adjustment knob is set to as close to zero as possible, adjust the Zero Adjust knob to settle the unit on zero.

### Digital Display

The digital LED display registers the concentration in ounces per 1000 cubic foot (grams per cubic meters), where 1 ounce = 250ppm.

### Exhaust

An outlet fitting is provided to return exhausted gases back to the fumigation structure.

### Flow Meter

The flow meter indicates the amount of gas sample being drawn through the unit. The flow meter may need to be adjusted after sample lines are attached and/or disconnected. The flow rate must always read 1.0.

### Fumigant Selector Switch

As marked by Me Br and Vikane/Profume/SO<sub>2</sub>F<sub>2</sub> this switch changes the display to register the concentration of the selected gas.

### Inlet

¼" ID polyvinyl clear sample tubing is recommended. Do not attach adapters or couplings. See U.S.D.A. on page 3.

### RFI Power Module

The RFI power module is used to turn the instrument on and off. The Fumiscope is designed to stay on for many days at a time.

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## OPERATING INSTRUCTIONS

The Fumiscope is used to monitor the gas concentration during fumigation. Set up the Fumiscope in a location outside the area to be fumigated, but easily accessible to the operator and a reliable source of power and light.

The sample tubing used is ¼" ID polyvinyl clear tubing. The tubing should be clean and dry. Clear tubing is used so that it may be inspected for dirt and water. Do not use the tubing if dirt and/or water are present. Dirt and/or water will damage the Fumiscope. The sample tubing should be placed at a point in the fumigation area that best represents the whole structure being fumigated.

Allow the Fumiscope to warm up for twenty minutes. It is highly recommended that the Fumiscope be kept at the same temperature as the fumigated structure. The Fumiscope can take up to two hours to acclimate if the unit is move to and from extreme temperatures.

After the display settles the flow meter should be set to 1.0. Use the "Recenter Zero" Knob and then the "Zero Adjust" Knob to set the Fumiscope to zero. The Fumiscope is now ready to take readings.

After the gas has been introduced to the structure and allowed to reach equilibrium, connect the sample tubing to the filter and allow the pump to draw a sample into the Fumiscope. This may take a few minutes depending on the length of the sample tubing.

The Fumiscope is ready when the display shows a consistent reading for 30 seconds. This is the gas reading. When the sample tubing is disconnected the instrument should return to zero.

### Maintenance

The line filter should be clean and dry. Replace the filter if the flow rate of 1.0 can not be obtained or moisture is present. Avoid water and/or dirt from entering the Fumiscope. Check the sample tubing to be sure there is no moisture in the lines. It is advisable to run the Fumiscope before going to the fumigation jobsite. Allow the Fumiscope to run for several hours especially if the unit has not been operated for long periods of time.

### Returns

For all products returned for repairs or calibration, please include a company name, shipping address, telephone & fax number, and a contact person. Use bubble wrap around the Fumiscope to protect it from the shipping process.

### U.S.D.A.

The Fumiscope 5.1 utilizes an internal dryer. It is no longer necessary to use Drierite material as a dryer medium. However, if the instrument is intended for monitoring regulatory fumigations under U.S.D.A. supervision, drierite and ascarite must be used as per the PPQ Treatment Manual.