



# Air-O-Cell™ Sampling Guide

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The Air-O-Cell™ Air Sampling cassette is a sampling device designed for the rapid collection and analysis of a wide range of airborne particles. These include fungal spores, pollen, insect parts, skin cell fragments, fibers, and inorganic particulates. Air enters the cassette, the particles become impacted on the adhesive substrate, and the air leaves through the exit orifice. The airflow and patented cassette housing is designed in such a way that the particles are distributed and deposited equally as a “trace” on a special glass slide with adhesive contained in the cassette housing.

## Benefits

1. Useful for initial site testing, especially if fungal growth is not visible.
2. Quick and simple procedure.
3. Fast turn around times available.
4. Low chance of sample contamination.

## Disadvantages

1. Fungi cannot be fully speciated with this method. For example, *Aspergillus* sp. and *Penicillium* sp. are normally reported together due to the similarities in spore morphology.
2. Spore viability cannot be assessed.

## Materials

1. Air-O-Cell™ cassette.
2. Vacuum pump suitable for operating at 15 liters per minute (lpm).
3. Rotameter (for calibration of vacuum pump).
4. Flexible tubing.

## Recommended Sampling Procedure

The cassette is designed to operate at a recommended flow rate of 15 lpm. Lower flow rates may result in a loss of some spores and the accumulation of others in a non-uniform manner. Higher flow rates may damage the spores. Therefore, it is important not to run the sampling pumps at lower flow rates for longer times to achieve the recommended air volume.

## Calibration of Sampling Flow Rate

A specially designed bubble tube, available from the manufacturer, can be used to set the flow rate for the ½” Air-O-Cell mini pump. It can not be used with any other style of pump or Mini pump and any other type of sampling pump.

## Sampling Duration

The sampling time is dependent on the density of particulate in the environment. It is important not to overload the sample, otherwise it will be impossible to quantify the types of spores, pollen and particulates that are present. The following table represents typical sample times to attain a sharply defined trace with good dispersion of the spores:



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## Recommended Sampling Intervals for the Air-O-Cell™ Air Sampling Cassette At Typical Collection Flow Rates.

Typical Environmental Conditions Flow Rates Collection at 15 lpm	
Clean “office” or outdoors (no visible dust)	10 minutes
Indoor environment, high activity and personnel	5 minutes
Indoor environment, drywall renovation or heavy industrial dust	1 minute

## Sampling Procedure

1. Prior to sampling, calibrate the pump to 15 liters per minute.
2. Remove and retain tape seals covering Air-O-Cell™ inlet and outlet.
3. Attach the outlet (round hole) to the supplied tubing adapter (available upon request), or use standard ½” PVC tubing (for use with high volume pumps only).
4. Start the sampling pump and sample for an appropriate period of time (see chart above).
5. Remove Air-O-Cell™ from tubing and reseal with the original tape seal. Label sample.
6. Complete an EMSL Chain of Custody (COC), available on the website ([www.emsl.com](http://www.emsl.com)), detailing client name and information, project name or number, sample #, description of area, and volume of air used.
7. To reduce shipping damage, it is recommended that the Air-O-Cell™ be placed in a corrugated box to ensure safe arrival at the laboratory.

## Quality Control Suggestions

1. An effective interpretation is based on the comparison of indoor and outdoor samples. An outdoor sample comparison will help demonstrate whether spore amplification is occurring indoors.
2. Obtain a control sample from a non-complaint area for comparison.
3. Periodically sending a blank cassette for analysis is a good practice.
4. Flow rate is critical for accurate results. **Remember to calibrate and recalibrate the pump prior to all sampling (15 liters/minute).**
5. Never use cassettes that are damaged or expired.

### For more information contact:

Zefon International at [www.zefon.com](http://www.zefon.com)

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