

Air-O-Cell Cassettes (AOC):

Airborne Particle Sampling

Air-O-Cell cassettes, unlike standard filters, rely on a gel to collect particles. Air-O-Cell cassettes are a good collection media where mold spores and pollen are the focus of the analysis. Specific flow rates and sampling times need to be followed. For AOC's, Zefon recommends 15 liters per minute as the flow rate for a total volume of between 75 to 150 liters in typical office environments.

Limited Optical Particle Identification (OPID) is also possible with Air-O-Cell cassettes. However, care should be taken during sampling as the media is easily overloaded. If mold and pollen are not the focus of the analysis MCE filters may yield a more comprehensive result.

Wipe Sampling:

Settled Dust Sampling

It is often necessary to collect dust samples by "wipe" techniques. For example, dark patches on walls or heat registers where carbon black is suspected. We find that 1"x1" alcohol wipes are the most efficient media to use under these conditions. They are also inexpensive and readily available at any pharmacy. Wipe samples can be analyzed for OPID and FPID analysis. Some fine particles and alcohol soluble particles may be lost in the process.

Whenever possible use a grab-bag or micro-vacuum technique to collect the sample. Unlike airborne particle sampling, there is no need to worry about overloading a filter. If you look into the micro-vacuum cassette and there is a large dust ball rolling around... you have a good sample.



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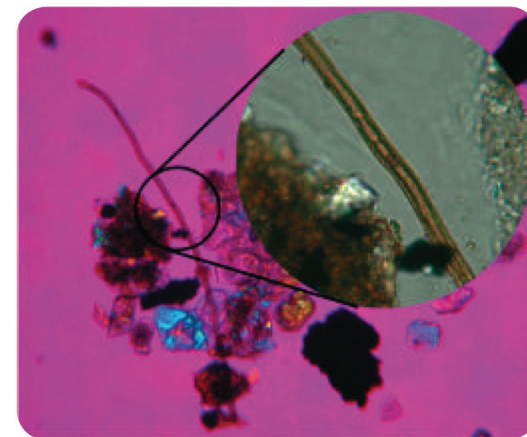
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Brief Descriptions of
Sampling Media



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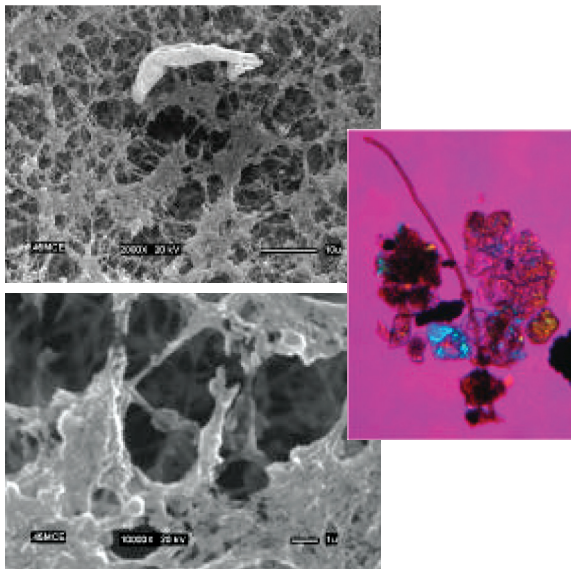
Various Sampling Media for Particle Analysis:

Mixed Cellulose Ester Filters (MCE):

Airborne Particle Sampling

MCE filters are a good choice for air sampling when Optical Particle Identification (OPID) is required. Although the filter media is composed of a spongelike media the filter is easily prepared for observation with the light microscope. In addition, OPID analysis focuses on larger particles that can be easily observed under optical microscopy such as the hyphae, quartz and skin fragment in the pink image below. If you are interested in OPID analysis these are the filters of choice.

The MCE filter is not suited for Scanning Electron Microscopy (SEM), which is used for Full Particle Identification (FPID). In the black and white photos below you can see the topography of the filter media. The sponge-like texture entraps fine particle obscuring them from view during SEM analysis.

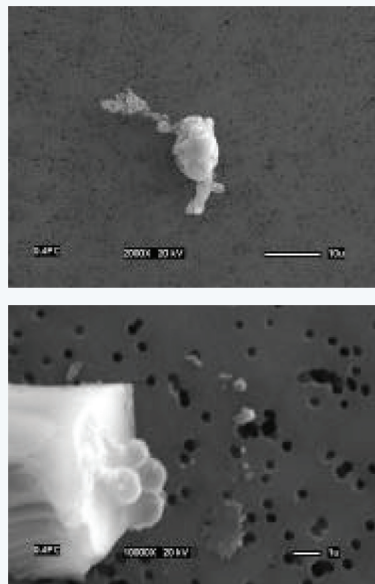


Polycarbonate Filters (PC):

Airborne Particle Sampling

Polycarbonate filters are the choice when sampling fine airborne particulate for Full Particle Identification (FPID). Unlike the sponge-like texture of the MCE the PC filter is more like Saran wrap with clean round holes punched in it. This enables analysts to observe very fine particles as shown in the images below. The dark "spots" are the pores of the filter, in this case 0.4um.

Due to the polymeric nature of the filter, static charges will also build-up on the membrane as air flows through it. This enables particles smaller than the pore size to "stick" to the filter instead of passing through the pore. If you are going to sample airborne particulate for FPID analysis this is the media to use.



Forensic Adhesive Lifts:

Settled Dust Sampling

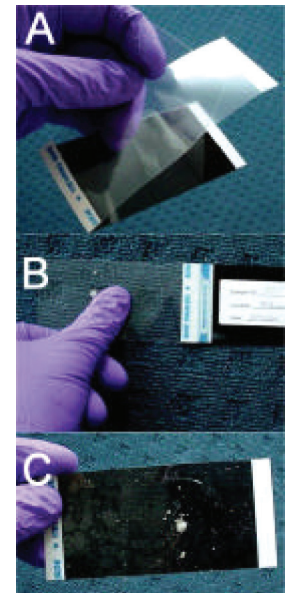
Forensic Adhesive Lifts are the media to use where "tape samples" are necessary. These sampling lifts have a low adhesive content that does not interfere with identification of the particles. Tape with heavy adhesives should be avoided. Packing tape, electrical tape and especially Duct Tape should not be used. These items have so much adhesive that particles become entrapped and analysis may be hindered.

Use of the Forensic Adhesive Lift is easy as illustrated below.

First peel off the protective inner the adhesive (A).

Next press the adhesive against the sampling area (B).

Fold over the adhesive onto the backing entrapping the particles (C).



Place the sealed sample into a Zip- Lock™ plastic bag and ship in for analysis.

Forensic Adhesive Lifts are good for larger (visible) particle collection.