



Aroma, Odor and Flavor Analysis

HOW TO MEASURE ODOR (in controlled indoor environments)

1. Odors in hotel rooms, restaurants, airplane cabins, bedrooms with a new mattress, newly constructed building; rooms with new ceiling tile installation, warehouses, transportation vehicles, workplace, etc. are mostly a concern from a perception point of view. There are lots of sources of odor. Rarely is there a health threat from commonly encountered odor compounds.
2. There are no hand-held odor detectors. There are no electronic noses that detect odors. There are hand-held detectors for some individual target volatile compounds and some of these compounds may have odors. There are people with good noses who can describe the odors and indicate how intense they are.
3. For the professional who is involved in the design of indoor spaces, the selection of ventilation and air filtering systems and their specific use in that space, a true analytical approach to measuring odor, one that gives “hard” numerical values, is what is needed.
4. There are two steps in measuring odor.
 - a. First, the identity of the odor compounds must be determined. Odor identity will tell what the sources are of the odors. There are many possible sources, some of which may not be obvious.
 - i. To identify odor, the environment or component of the environment (ceiling tile for example) is sampled to collect the volatile compounds present. If a ventilation system is being evaluated, then volatiles are collected in such a way that shows differences in its operation.
 - ii. The collected volatiles are injected into an instrument (Microanalytics AromaTrax system) designed to separate the odor compounds from the normally large number of volatiles present.
 - iii. The separated odors are “sniffed” by a human operator and their mass spectra are simultaneously recorded. The result is a list of all odors, their chemical identities and their intensity contributions to the overall odor of the entire sample.
 - b. Second, a method is set up that measures the target odors.
 - i. Volatile compounds are collected as before.
 - ii. A specific instrumental condition is set up to quantify the separated odor compounds.

The result will be non-subjective and give “hard” numerical values showing relative odor levels among samples. This methodology is useful when comparing ventilation designs, when choosing construction materials, when evaluating one location with another, when evaluating one odor remediation method over another, etc.