AVOMEEN

Key Tests and Equipment for Analytical E-Liquids Testing

For small scale e-liquids manufacturers, understanding the complex analytical testing and instrumentation required for regulatory compliance can be a challenging and daunting task. You may be wondering if you need to perform all of the analytical tests that are available or what exactly is required by the different regulatory agencies.

Below are some Cliff Notes to help you navigate this complicated environment, including an overview of the common e-liquids testing methods and how the relevant instruments really work.

Testing Services

Carcinogenic flavoring analysis

Synthetic flavors or flavor enhancers can contain a wide variety of cancer-causing (carcinogenic) chemicals. Some have been banned by the FDA; others are allowed up to a certain threshold. Either way, your product range will have to undergo testing to understand the make-up of each flavor.

VG/PG ratio analyses

For successful premarket tobacco product applications (PMTA), you must outline the ratio of vegetable glycerin (VG) and propylene glycol (PG) found in your e-liquid or e-juice products.

Metals testing

These studies are performed to identify metallic impurities that may be present in your product. Approximately two dozen different metals may be present in e-liquids and e-cigarettes depending on the formulation.

Deformulation analysis

Deformulation is the "reverse engineering" of flavor packages, agents, or additives to understand what ingredients are present in your e-liquid product, including any substances that may be restricted or banned.

Particle size in vapor testing

This is an analysis of the particle size and distribution of the vapor produced by an electronic nicotine delivery system (ENDS). It's important for understanding the dose of chemicals that the consumer is really absorbing.

Nicotine dosing studies

These tests help determine the amount of nicotine expressed per puff in the e-cigarette/e-liquid combination. They're performed using real-life use conditions, following the manufacturer's instructions.

Emissions testing

To make a judgment on safety, the FDA requires emissions testing to understand the ingredients and impurities found in your ENDS.

Stability studies

These studies are designed to assess if an e-liquid product formulation will change over time during ambient or accelerated storage conditions.

Analytical Instruments Used

LC/HPLC-MS

Liquid chromatography or high-pressure liquid chromatography is used to separate individual components in a complex mixture of molecules. In tandem with mass spectrometry, LC/HPLC-MS can precisely determine the exact chemical identity of compounds found in your e-liquids.

ICP-MS

This elemental analysis method, known as inductively coupled plasma mass spectrometry, is an ultra-sensitive method for detecting metals in e-liquid products.

GC-MS

The use of gas chromatography/mass spectrometry can be used for the analysis of small, volatile compounds present in e-liquids or e-juices.

Do I qualify as a "small-scale" tobacco product manufacturer?

The FDA defines "small-scale" as a manufacturer of any regulated tobacco product with 150 employees or fewer and annual total revenues of $5,000,000 or less.

Do these tests fit together in a single pricing package?

Reach out to one of our scientists for a project-specific quote.

Do I need to do all these tests with all these instruments?

You may only need a nicotine analysis, deformulation, or carcinogenic flavoring analysis. However, many of these tests are done together to meet larger regulatory requirements for harmful and potentially harmful constituents (HPHC) testing and PMTA. Service providers like Avomeen can assist you with this further.