GERSTEL
MAKING LABS WORK

Dynamic Headspace (DHS)

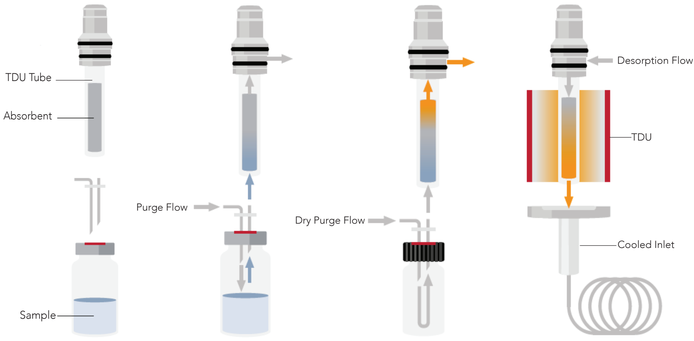
What is Dynamic Headspace?

The dynamic headspace (DHS) technique provides the best means for determining volatile compounds at very low detection limits in liquid or solid samples. The technique involves constantly sweeping the headspace of the sample onto an absorbent trap. This prevents the analytes in the sample and headspace from reaching equilibrium providing exhaustive extraction of analytes. The GERSTEL DHS option completely automates the process while adding the additional benefits of individual trap selection and elimination of sample foaming.

Why GERSTEL Dynamic Headspace?

- Low detection limits due to exhaustive analyte extraction
- Minimal analyte discrimination
- Completely automated
- Individual trap selection avoids analyte carry-over
- Highly flexible system parameters
- Headspace gas sweep versus sample purge eliminates foaming and water management issues

Process



Preparation

Sample is added to the vial and an appropriate adsorbent is chosen based on the analytes of interest.

Extraction

Sample is agitated and/or heated while the headspace is purged to trap analytes onto the adsorbent tube.

Dry Purge

If necessary, the adsorbent tube can be dry purged for water removal.

Introduction

The adsorbent tube is heated, and the analytes are focused in a cryocooled inlet. The inlet is then rapidly heated, to introduce the analytes onto the GC column.

DHS Techniques

- DHS (1-5 g/mL)
  - Volatile and semi-volatile compounds
- FEDHS (mg/µL)
  - Volatile, non-volatile, and hydrophilic compounds
- DHS Large (up to 1 L)
  - Large and inhomogeneous bulk samples

Full evaporative dynamic headspace (FEDHS) and DHS Large greatly expand the usefulness of the DHS option. FEDHS uses the DHS option to fully vaporize a small amount of sample. This allows all volatile compounds to be swept to the adsorbent while the non-volatile matrix is left in the vial. This is a quick means of obtaining low detection limits from more difficult sample matrices and is especially useful when determining polar hydrophilic compounds.

The DHS Large option uses up to 1 liter vessels to extract analytes from large, bulky, inhomogeneous samples. It is the only fully automated means of simulating material emission measurements that are normally performed in larger, more expensive chambers and can be used for a wide variety of sample types, such as food products, pharmaceuticals, electronic components and building materials.

For more information:
www.gerstel.com | www.gerstelus.com