PRODUCT NOTE

HS 2400 Headspace Sampler

KEY FEATURES

- Support 10, 20 and 22 ml vials
- Features pressure balanced sampling technology
- 12 position oven for overlapping thermostatting
- Mid-capacity M model with up to 40 vials
- PerkinElmer SimplicityChrom CDS Software
- Waters Empower™ CDS Software control
- Easily accessible information on the GC 2400 Platform touchscreen and browser interface

Connected Into the GC Workflow – In or Outside the Lab

As part of the GC 2400 Platform, the PerkinElmer HS 2400™ Headspace Sampler is seamlessly integrated into the GC workflow communication. This makes the control and functionalities for the HS 2400 Headspace Sampler centralized in a single access point to the PerkinElmer GC 2400™ Platform. Proprietary pressure balanced technology combined with intuitive SimplicityChrom™ Chromatography Data System (CDS) Software make the HS 2400 Headspace Sampler ideal for labs looking for optimizing method development, minimizing re-runs and downtime.

The HS 2400 Headspace Sampler can operate in pressure or constant flow mode. Configurations allow to operate in on column or in split mode, allowing the best set up for even the most demanding applications.

Integrated GC Communication

By being completely integrated into the GC workflow, the HS 2400 Headspace Sampler communicates directly with the PerkinElmer GC 2400 System. The integrated technology allows users to access live status information from the headspace sampler directly on the GC detachable touchscreen, in and outside the lab.

The iconography used in SimplicityChrom CDS Software and the familiarity of touchscreen tablets make this user interface easy to use, and it simplifies the software-controlled GC workflow no matter the expertise of the user.

Figure 1: The HS 2400 Headspace Sampler integrated into the GC 2400 Platform.

PerkinElmer®
For the Better

Proven Technology For Improved Method Development and Routine Analysis

Ultra-stable, Uniform Thermostatting

The HS 2400 Headspace Sampler features a 12-position oven that delivers the ultimate in precision thermostatting. Built with a circulating air bath instead of directly heating the oven vial block, the oven distributes heated air hitting target temperatures fast with the highest stability and uniformity. This circulating air eliminates temperature variation providing a highly consistent vapor equilibration that ultimately ensures reliable, repeatable results, as demonstrated in Figure 2.

PerkinElmer's unique pressure balance sampling technology has been proven to provide unmatched repeatability, day in, day out. No matter if the user selects a specific time for sampling or defines a volume of sample to inject, the system delivers accurate and precise sampling, overall improving analytical workflow efficiency.

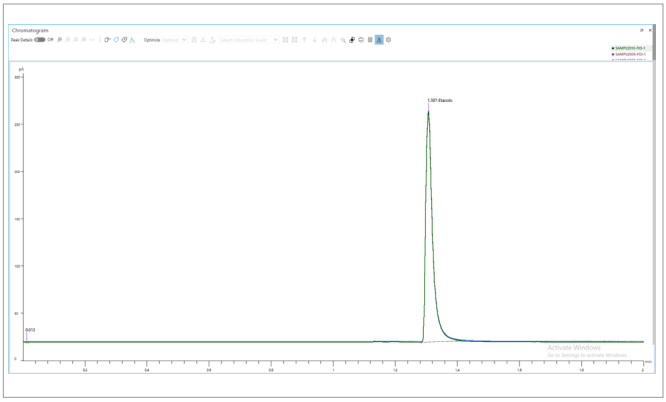


Figure 2. Typical repeatability of Ethanol, 10 injections: 0.55% Area RSD, and 0.0026% Retention Time RSD.

In addition, pressure balanced sampling technology allows customers to change the volume of injection for each sample within a sequence, a very useful feature to optimize and reduce method development.

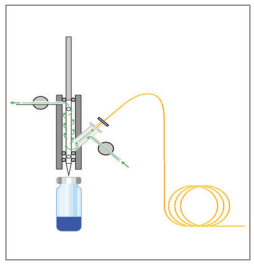
MHE (Multiple Headspace Extraction)

Multiple Headspace Extractions (MHE) is also available for specific applications. Up to 100 extraction steps with intermediate automated venting allow maximum operational flexibility when dealing with difficult samples like polymers.

A Closer Look at Pressure-Balanced Technology

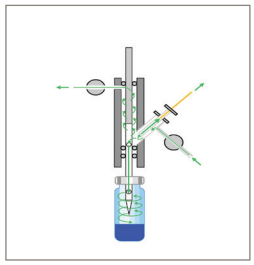
This technology allows samples to be introduced into the column without using a gas syringe, a fixed volume loop or multiport valves. Instead, carrier gas pressures are precisely regulated to manage transfer, eliminating many of the sources of variability and contamination found in other systems.

STANDBY



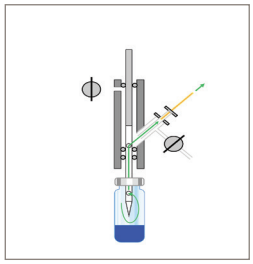
The heated needle area is constantly flushed with carrier gas to remove contamination. Because the column or transfer line is inserted all the way to the needle, maximum inertness and minimal dead volume are maintained.

PRESSURIZATION



All vials are pressurized to the exact same degree. Optimal reproducibility and precision are achieved regardless of equilibration pressure in the vial.

SAMPLING



A solenoid valve interrupts the carrier gas flow and the vial acts as a reservoir of carrier gas. During injection, as the pressure decays, sample volume is transferred to the column. This prevents carrier gas from diluting the sample and avoids expansion of the sample before injection.

Overlapping Thermostatting

The vial oven accommodates 12 samples simultaneously, allowing the next sample to be analyzed as soon as the previous one is complete, substantially decreasing overall run time while boosting productivity.

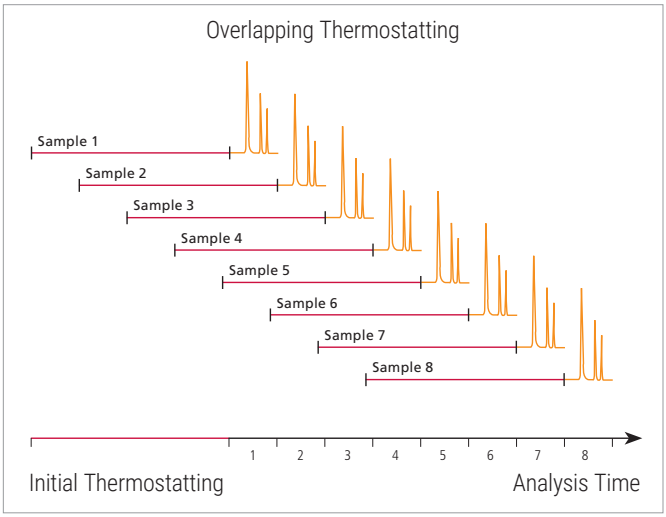


Figure 3. Overlapping Thermostatting.

Vial Shaking

The HS 2400 Headspace Sampler comes with a vial shaker with 10 different intensity settings, where all the samples in the oven can be agitated. This allows samples to reach equilibrium faster, thus reducing thermostatting times and significantly increasing laboratories sample throughput.

Injection to Injection (PII) Optimization

The time between injections is automatically calculated for ideal sample throughput, keeping the analyses flowing smoothly and efficiently.

Hydrogen Carrier Gas

The hydrogen carrier gas option not only reduces operational costs, but also addresses safety concerns without compromising performance. Safety comes first, and the HS 2400 Headspace Sampler includes a built-in hydrogen sensor in the oven which communicates with the control software to put the system in safety mode if needed.

Single Row Vial Tray

The HS 2400 Headspace Sampler mid-capacity has a single row vial tray making each vial easy to see at all times. This makes sample placement, tracking and removal easy.

Headspace Technology Applied

The HS 2400 Headspace Sampler supports the most challenging headspace analysis enabling improved method development, also allowing an enhanced user experience with simplified operations.

Pharmaceuticals – Optimize Residual Solvent GC Workflow

Static headspace is the ideal sample-preparation instrument for the determination of residual solvents in pharmaceuticals as prescribed by U.S. Pharmacopeia Chapter 467, Method IV.

- Static Headspace sampler provides outstanding performance for Class I, II, and III solvents
- Pressure balanced technology meets the requirements for USP 467 while achieving outstanding precision and virtually no carryover across the analyte range
- Compatible with all commonly used sample diluents

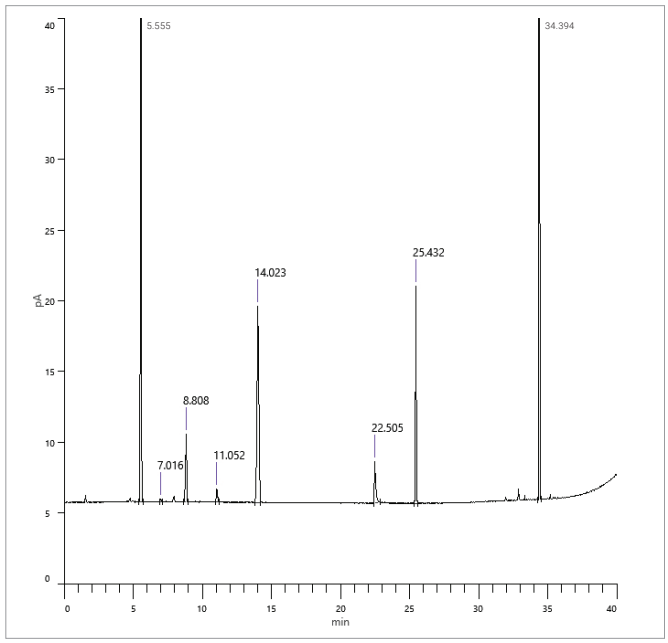


Figure 4. Determination of residual solvents in pharmaceuticals according to USP Method 467.

Environmental – Streamline Volatile Organic Compounds Method Development

For environmental analysis the HS 2400 Headspace Autosampler yields outstanding results when determining contamination in complex samples.

- Quick and easy method for screening challenging environmental samples
- Ideal for identifying petroleum contaminants like benzene, toluene, ethyl benzene, xylenes (BTEX) and methyl tertiary-butyl ether (MTBE)

Food and Beverage – Automated Sampling Benefitting QA/QC Analysis

For laboratories analyzing the quality, safety and purity of food and beverage products and raw materials, the HS 2400 Headspace Sampler delivers uncompromising accuracy, repeatability and robustness, minimizing the need for sample re-run and downtime.

- Assess fermentation characteristics of samples such as beer and wine
- Detect residual solvents and preservatives
- Characterize aroma and flavors

Industrial – Benefit from Automated Sampling

Aiming at supporting manufacturers for better quality products, headspace analysis is used for industrial QA/QC for a variety of samples. From the determination of solvents in paints to food packaging analysis, the HS 2400 Headspace Sampler provides labs with automated and accurate headspace analysis.

- Detect residual solvents
- Enhanced reproducibility
- Improves productivity for food packaging analysis

HS 2400 M Headspace Sampler - PerkinElmer's Mid-Capacity Option

The HS 2400 M Headspace Sampler was designed for laboratories processing a smaller number of samples, or want to conserve bench space, but still need the features of an advanced headspace system such as an autosampler, overlapping thermostatting and vial shaking. The HS 2400 M Headspace Sampler accommodates up to 40 sample vials with a removable sample tray. The unique circular, single tier tray allows users to easily see every vial, every label and every position for easy sample loading and visualization to minimize human error.

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