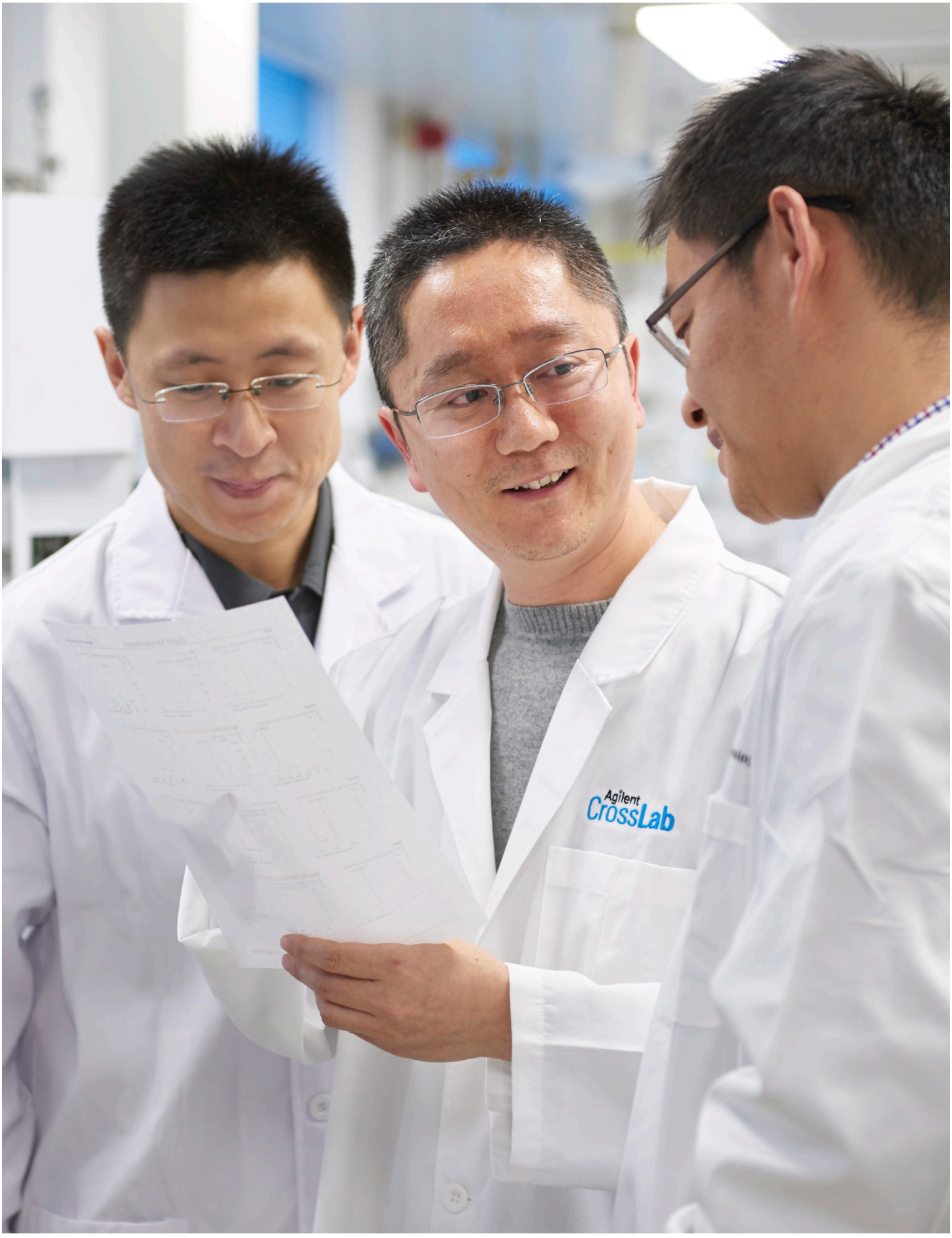
Agilent

Trusted Answers

Your Genuinely Better Solution for Volatiles Analysis

Agilent 7697A GC headspace sampler


Agilent
CrossLab

A High-Performance System Powered by Intuitive Software

Now there is genuinely better headspace technology backed by four decades of Agilent expertise.

Based on Agilent's industry-leading GC and 7693A automatic liquid sampler (ALS) architecture, the 7697A headspace sampler ensures an inert sample pathway for superior GC performance without analyte degradation or loss.

It is also packed with the latest productivity-boosting features, and powered by Agilent's rugged sampling technology to ensure the integrity of your every injection.

With its revolutionary sample tray design, the Agilent 7697A headspace sampler provides unparalleled throughput.

Proven technologies combined with the very latest advances in headspace sampling

When every second counts—and when everything from court cases to the safety of our drinking water is riding on your results—you need the best, most current headspace sampling technology at your disposal.

That is why we designed the 7697A headspace sampler with time-tested hardware features, such as advanced pneumatic controls and valve-based sampling, which deliver extraordinary precision, versatility, and performance.

But advanced design and hardware features are only part of the story. We engineered our headspace control software to be a fundamental part of the 7697A system—one that simplifies method setup while minimizing training time.

A Reliable and Robust Workhorse that Maximizes Throughput and Minimizes Error

Agilent's 7697A headspace sampler delivers first-class precision, reliability, and ease-of-use with these leading-edge features:

- **111-vial capacity** accommodates high-volume sequences, and includes three priority positions that allow you to run urgent samples at any time.
- **Infinite throughput** enabled by three 36-vial racks that can be exchanged while the headspace sampler is operating.
- **Hardware optimized multiple sample overlap** factors in specific method parameters to maximize throughput, while maintaining constant heating time for each sample.
- **Superior sampling flexibility** because the 7697A headspace sampler supports 10 mL, 20 mL, or 22 mL vials of virtually any style.

Sampling

- manages 1 vial
- pressurizes
- punctures
- injects
- depressurizes

Handling

- manages up to 111 vials
- moves vials
- tracks positions
- reads barcodes

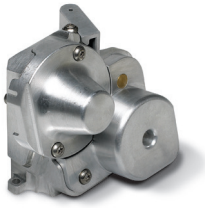
Preparing

- manages up to 12 vials
- heats
- mixes

Logistics

- controls
- calculates
- coordinates
- schedules

No Other Headspace Technology Delivers the Performance, Simplicity, and Reliability of Agilent's Innovative Design



The 7697A HS unique sampling system maintains maximum thermal control to ensure optimal performance.

Integrated pneumatics and advanced mechanical design provide for superior reliability.

Engineered from the ground up, Agilent's cutting-edge headspace (HS) technology combines advanced electronic pneumatic control with proven valve-based sampling. These innovations offer several advantages over traditional pressure-controlled systems, including:

- Compatibility with hydrogen carrier gas lowers operating costs and decreases your analysis time. The system also reduces the risks associated with pressurizing sample vials.
- Controlled venting allows vial pressure to be released gradually while the sample is being analyzed. Samples are depressurized by the time they return to the tray.
- No O-rings to replace saves you hours of unnecessary downtime—especially if your lab runs more than 100 samples per day.
- Agilent's fully automatic vial leak test checks each vial during pressurization—without time-consuming calibration. So you can be confident that every sample is properly capped.

Agilent 8890 with 7697A

Agilent 8890 with 7697A and 7693A ALS

Agilent 8860 with 12-vial 7697A

Generate Data to Meet a Wide Range of Critical Application Needs

Keeping the chain of custody intact, Agilent's unique headspace sampler barcode reader with data transfer capabilities allows you to track samples before they enter the oven. This is essential for labs that perform blood alcohol analysis, or other applications that require maximum confirmation.

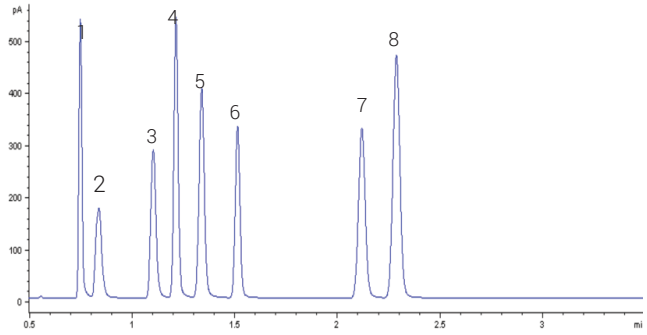
Reliably determine ethanol levels in blood and other biological matrices

Blood and biological fluids are not the cleanest of matrices, and are therefore well suited for headspace sampling. Other advantages of headspace sampling include reduced inlet and column maintenance, better quantitation, limited sample preparation, and increased throughput.

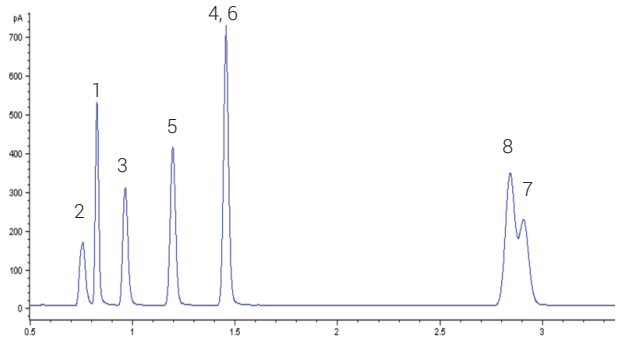
Agilent's 7697A headspace sampler also gives you an added benefit: Shorter cycle times for blood alcohols without sacrificing resolution.

The sampler's proven architecture, together with Agilent's exclusive sampling design, delivers industry-leading precision while reliably separating ethanol from common interferences, as you can see in the following example.

DB-ALC1



DB-ALC2



Oven:	35 °C isothermal
Inlet:	Split/splitless, 5:1 split at 200 °C
	CFT splitter used to connect both columns to same inlet using 16 cm of a 530 µm guard column
Column I:	DB-ALC1 (30 m x 0.32 mm x 1.8 µm)
Column II:	DB-ALC2 (30 m x 0.32 mm x 1.2 µm)
Headspace:	Oven: 85 °C
Vial equilibration:	15 min at shaking of 1
G1888 Headspace:	Oven: 85 °C
Vial equilibration:	15 min at low shaking
Sample:	200 µL of 0.01% resolution control standard in 20 mL vial

1. Acetaldehyde
2. Methanol
3. Ethanol
4. Acetone
5. Isopropanol
6. Acetonitrile
7. Ethyl acetate
8. Methyl ethyl ketone

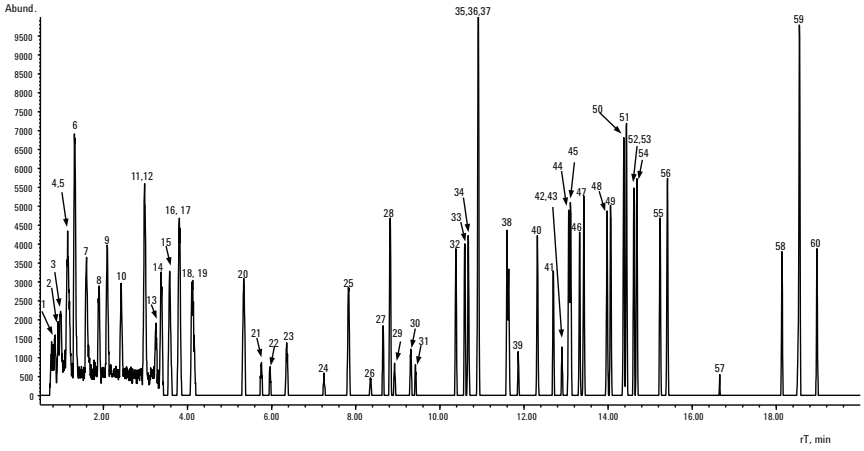
Easy method transfer makes your upgrade easier. Here we transferred a blood alcohol analysis method from the Agilent G1888A headspace sampler to the 7697A headspace sampler.

Meet stringent safety standards and ensure regulatory compliance for environmental applications

Analysis of 60 VOCs in water using the Agilent 7697A headspace sampler

Recent hardware advances have increased GC/MSD sensitivity while lowering detection limits, thereby allowing headspace sampling to be used for drinking and surface water analysis.

The productivity advantages include fewer problems related to carryover, cross-contamination, and foam formation (which are typical with purge-and-trap techniques).



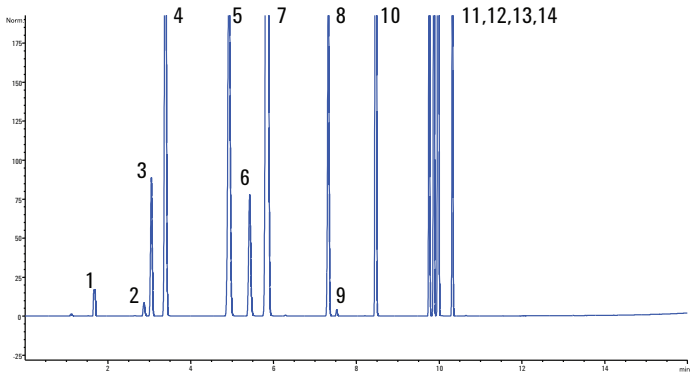
Confidently detect pharmaceutical impurities at very low levels

Gas chromatography, coupled with static headspace sampling, is an easy-to-use high-throughput tool for determining residual solvent impurities in drugs.

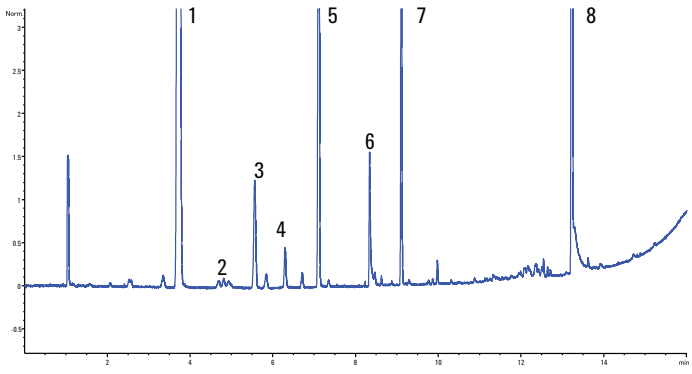
Sample preparation is relatively simple, and the method is easily validated. In addition, headspace sampling allows you to avoid large water injections that can cause column degradation and coelution.

Headspace equilibration time is normally set at 60 minutes as specified in USP 467; however, 30 minutes is usually sufficient when operating at 85 °C equilibration.

Class 2A residual solvents



Class 2B residual solvents



No Other Headspace Software Can Match the Flexibility and Method Development Power of the 7697A Platform

Agilent's headspace control software lets you tap into the full power of the system's sample handling capabilities. Using an intuitive, menu-driven interface, you can quickly create customized routines for virtually any application—and access productivity enhancements that are simply not available with other headspace software packages.

Method development and conversion tools eliminate the hassles of trial and error

The software guides you step-by-step through the method development process, and can be used successfully even by analysts with no specialized headspace knowledge. In addition, it's the only software that lets you:

- Create headspace methods based on your specific application.
- Convert an existing pressure-controlled headspace method to an Agilent method without tedious reworking. Simply input your existing method parameters, and the software will develop a working method that is ready to be optimized.

Seamlessly integrate the 7697A platform with other Agilent systems

Agilent's headspace control software gives you an unprecedented level of customization, because it is compatible with most Agilent GC and GC/MS systems. This reduces costly training time by allowing every headspace model in your lab to run on the same interface.

User-friendly interface and intelligent problem-solving features streamline the sampling process

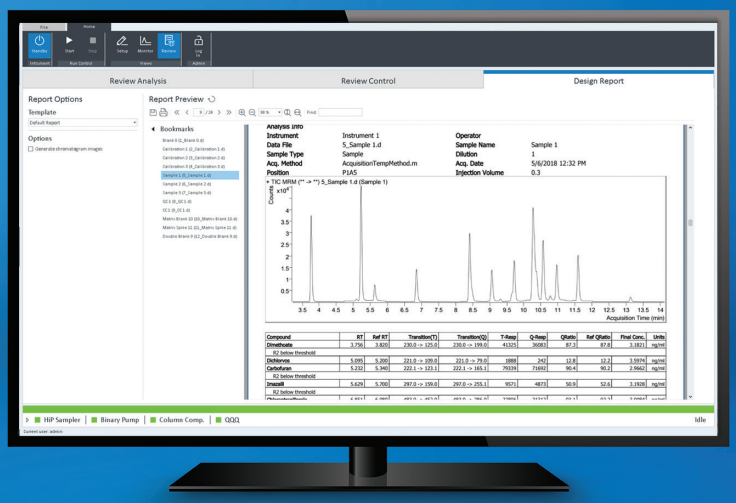
Agilent headspace control software harnesses the very latest design architecture, including:

- Comprehensive user interface delivers real-time system status—including sample-by-sample progress indicators.
- Color-coded tray graphics tell you at-a-glance which samples are complete, and which are waiting to be run.
- Integrated help takes you directly to topics that are relevant to the screen you are using at that moment. No more wasting time searching long lists or indices!
- Programmable sequence actions prevent system malfunctions caused by missing vials, data errors, or other problems.
- Barcode reader lets you track samples before they enter the oven, so you can verify sample identity prior to analysis.

Exclusive "green" features conserve resources and protect our planet

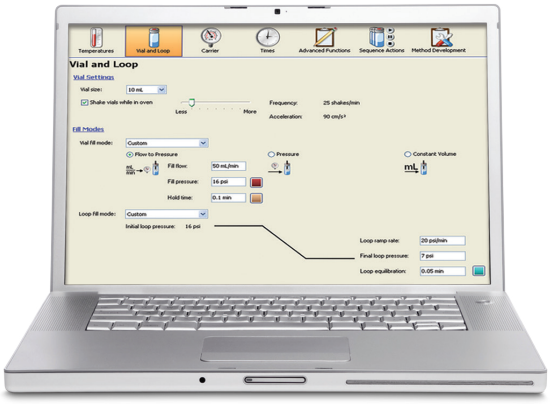
The 7697A headspace sampler is designed to conserve electricity, gas, and other valuable resources with features such as automatic shutdown and wake-up.

What's more, the headspace control software simplifies the process of reducing gas flow, so you can more efficiently manage your supply of essential gas.



Resource conservation protocols save time and gas—and can even help save the environment

With many headspace systems, turning the gas on and off is a tedious, complex procedure that makes it difficult to manage resources wisely. Headspace control software lets you instruct the system to shut itself down when the run is complete (similar to a programmable thermostat). So you can use less gas and electricity and help conserve our natural resources.



By using the Agilent headspace control software's method editor, you get unprecedented control of the pneumatic processes associated with sampling of a headspace vial, all in an intuitive interface.

The sequence action screen lets you specify courses of action for situations such as missing vials, unreadable barcode labels, or incorrect vial size. This allows you to adjust the 7697A headspace sampler to meet your workflow requirements.

Put Proven Precision Behind Every Injection

Headspace analysis is the best alternative to direct injection for samples containing components that might negatively affect the inlet, column, or detector.

The Agilent 7697A headspace sampler combines the trusted reliability of our GC and 7693A automatic liquid sampler architecture with advancements that minimize analyst-to-analyst variability, accelerate sample preparation, and reduce rework.

- Standard electronic pneumatic control (EPC) with barometric pressure compensation sets a new benchmark for headspace sampling precision, as shown below.
- Multiple headspace extraction minimizes matrix effects and maximizes sensitivity for low-concentration analysis.
- Ergonomic crimper with easy-adjustment feature promotes proper vial capping, while decreasing hand fatigue.

Class 2A and Class 2B solvents at limit concentrations n=20, USP <467> Procedure A (aqueous)

Solvent	%RSD	Solvent	%RSD
Methanol	1.69	Ethylbenzene	2.25
Acetonitrile	1.12	*m*- and *p*-Xylene	2.33
Dichloromethane	1.78	*o*-Xylene	2.46
trans-1,2-Dichloroethene	2.22	Hexane	2.54
cis-1,2-Dichloroethene	2.11	Nitromethane	4.32
Tetrahydrofuran	0.80	Chloroform	1.92
Cyclohexane	2.85	1,2-Dimethoxyethane	6.28
Methylcyclohexane	5.21	Trichloroethene	2.66
1,2-Dioxane	1.55	Pyridine	2.80
Toluene	2.26	2-Hexanone	1.58
Chlorobenzene	2.33	Tetralin	1.66

The Agilent 7697A GC headspace sampler outperforms pressure-controlled systems

- Shorten retention times with a unique sampling technology that enables the safe use of hydrogen as a carrier gas
- Vent safely while your sample is running with an isolated carrier path
- Maximize productivity with the 111-vial capacity
- Ensure consistent results every time with automatic calibration, alignment and vial leak checking
- Provide reliable sample confirmation with the integrated barcode reader
- Develop method using readily available, application-specific parameters
- Convert Agilent and non-Agilent methods quickly and easily

Analyzing fewer samples? Get headspace precision and performance with a system that is perfectly sized for your needs

The Agilent 12-vial 7697A headspace sampler gives you the exact same hardware and software advantages of its 111-vial counterpart with the exception of removable vial trays, priority vial positioning, and 12-sample oven. It is ideal for academic institutions and labs with lower throughput needs—and can be upgraded to our 111-vial 7697A headspace sampler if your needs change.

Save time and money with a single set of compliance protocols for all your chromatography systems

Even if your lab is filled with instruments from diverse manufacturers, Agilent's Enterprise Edition can give you all the advantages of a harmonized qualification approach.

Enterprise Edition compliance protocols—tested and validated by Agilent—are compatible with Agilent, Waters, Thermo, Shimadzu, PerkinElmer, Gilson, and other lab instruments. You can count on Enterprise Edition to:

- Keep all your instruments current with regulatory and enforcement requirements.
- Reduce OQ reviews from days to minutes with secure, single-signature PDF electronic records.
- Comply with the FDA's "GMP for the 21st Century" initiative.
- Lower compliance costs through automation, standardization, and user-friendly reporting.

The Agilent Value Promise—10 years of guaranteed value

The promise guarantees you at least ten years' use of your headspace sampler from the date of purchase, or Agilent will credit you with the residual value of the system when you upgrade to an Agilent replacement system.

Learn more:
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