

Agilent 7820A GC and Agilent 5977E Series GC/MSD

# YOUR BEST VALUE FOR ROUTINE GC AND GC/MS ANALYSIS

The Measure of Confidence



**Agilent Technologies**

## AGILENT 5977E SERIES JOINS THE 7820A

### Introducing greater performance through high sensitivity

**Reliability and value, day after day.** If you're searching for a system that gives you maximum uptime, minimal maintenance, and reproducible results for all your standard GC analyses, then look no further than Agilent's GC and GC/MS instrument portfolio.

The **Agilent 7820A GC** is ideal for small- and medium-sized labs that are primarily concerned with routine analyses using standard GC methods. It was designed to provide a high return on your investment with features such as:

- Electronic pneumatics control and digital electronics
- Support for MSD ChemStation and a wide choice of Agilent OpenLAB GC software
- Fast access to sequence information, instrument conditions, and run status

The **Agilent 5977E Series GC/MSD** takes routine analyses to the next level, delivering consistent and dependable results. This bundled system includes the following components – saving you time and money:

- Pre-loaded software including both MSD ChemStation and MassHunter data analysis
- Split/splitless GC inlet
- Essential MS supplies, including an Agilent J&W low-bleed GC column



## Consistent, dependable results

The Agilent 7820A GC and 5977E Series GC/MSD both offer uncompromising GC performance for all your routine applications – including those that must comply with regulatory requirements. Agilent's proven electronic pneumatic control (EPC) and digital electronics ensure excellent reproducibility, as well as reliable accuracy and precision.

## Easy to learn and use – for all users

With their intuitive user interface, Agilent's 7820A GC and 5977E Series GC/MSD are both easy to operate, even for inexperienced or infrequent users. Because there are no gauges or manual gas knobs, errors are minimized. And with convenient, real-world design features and built-in self-diagnostics, the Agilent 7820A GC and 5977E Series GC/MSD are also easy to maintain.

## Lab-proven quality and long-life Agilent reliability

Why settle for "good enough," when you can invest in quality? With a heritage of more than 40 years of GC leadership, Agilent has earned a worldwide reputation for reliability and uptime under the most demanding operating conditions.

## A robust choice from a GC industry leader

The Agilent 7820A GC and 5977E Series GC/MSD are both designed to optimize routine performance while minimizing complexity. That means any lab can take advantage of Agilent's unmatched combination of reliable instrumentation, versatile software, and application-matched columns and supplies.

## Innovative technologies put speed, sensitivity, and powerful data mining tools within your lab's reach



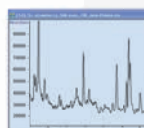
### Intuitive, user-friendly keypad

Promotes easy, stand-alone operation and diagnostics



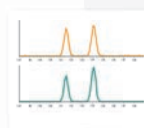
### Proprietary gold quartz quadrupole with 1050 u mass range

Delivers optimal resolution and sensitivity across the mass range; ensures low mass deviation for longer-lasting tuning and calibration



### High S/N triple-axis detector

This next generation off-axis detector minimizes noise and maximizes signal for the lowest detection limits



### Synchronous SIM/Scan mode

Allows you to selectively monitor for ions of interest at high sensitivity, while simultaneously acquiring spectra at scan rates up to 12,500 u/s



### OpenLAB software platform

A wide choice of flexible and scalable OpenLAB GC software, based on previous ChemStation and EzChrom platform, enables you to generate reports that conform to strict regulatory requirements



### MSD ChemStation and MassHunter

5977E files are supported by both Classic ChemStation and MassHunter data analysis. Your choice – At any time

To learn more about the Agilent GC and GC/MS portfolio, visit [agilent.com/chem/7820\\_GC](http://agilent.com/chem/7820_GC) and [agilent.com/chem/5977E\\_GCMSD](http://agilent.com/chem/5977E_GCMSD)

# AGILENT 7820A GC

## Simplified operation and extra versatility help you get more done, every day

For maximum reliability and trouble-free operation under all conditions, the 7820A GC takes advantage of many of the engineering features and technology incorporated in Agilent's industry-leading GC portfolio.

For example, full electronic pneumatics control (EPC) – on all inlets and the detectors – ensures better repeatability of retention times and peak areas. By setting gas flows via the software, you can now save all of the important parameters of your method.

Digital electronics keep your set points constant from run to run, and operator to operator. So you get better retention time repeatability, more consistent results, and less rework.

## Standard high precision inlets

- Split/splitless (SSL) for all large bore and all capillary columns
- Packed Purged Injection Port (PPIP) for packed columns

## Automatic valve control

For chemical and hydrocarbon processing applications, the 7820A GC system can automatically control up to two heated valves.

## High-sensitivity Agilent detectors for every sample type

**Flame Ionization Detector (FID)** – Wide dynamic response range enhances accuracy and minimizes sample prep requirements for samples that contain very high or very low compound concentrations.

**Nitrogen-Phosphorus Detectors (NPD)** – Offers superior sensitivity and selectivity for nitrogen- or phosphorus-containing compounds, such as pesticide residues in food and environmental samples.

**Thermal Conductivity Detector (TCD)** – Single-filament design provides lower noise and higher sensitivity for general purpose applications.

**Electron Capture Detector (micro-ECD)\*** – Combines unprecedented sensitivity and linearity with ruggedness and reliability – an ideal choice if your lab is analyzing halogenated organic compounds such as pesticides, PCBs and chlorinated solvents.

**Single Wavelength Flame Photometric Detector (FPD)** – High sensitivity detector specifically for sulphur or phosphorus-containing compounds in food, environmental, or petrochemical samples.

\*Not available in Japan.



Compound	Retention Time (min.)		Peak Area (pA)	
	24 °C	30 °C	24 °C	30 °C
<b>C13</b>	3.7843	3.7820	45.2143	44.5105
<b>C14</b>	4.4213	4.4190	45.5790	44.8429
<b>C15</b>	5.0369	5.0344	457.8670	449.3625
<b>C16</b>	5.6238	5.6211	456.6820	449.5554

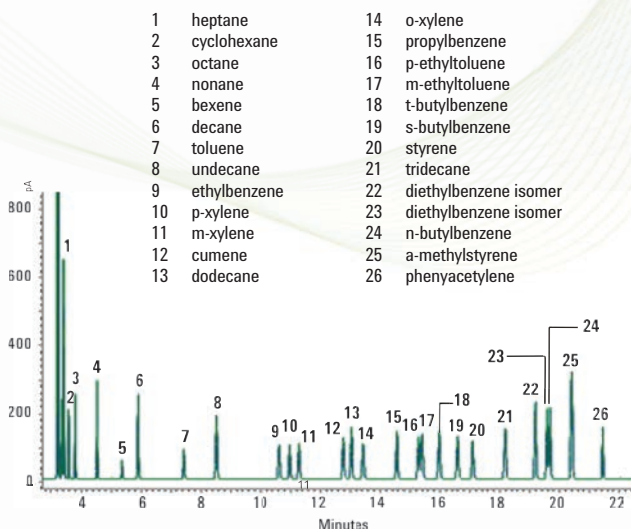
*Retention time and area count changes are minimal – even as lab temperatures change throughout the day.*

## The uncompromising performance you expect from an industry leader

The 7820A GC offers performance you can depend on for all your routine analyses: outstanding sensitivity, reproducibility, accuracy, and precision. Exactly what you look for – and what you know you'll find – in every Agilent analytical solution.

### FID analysis for aromatic solvent.

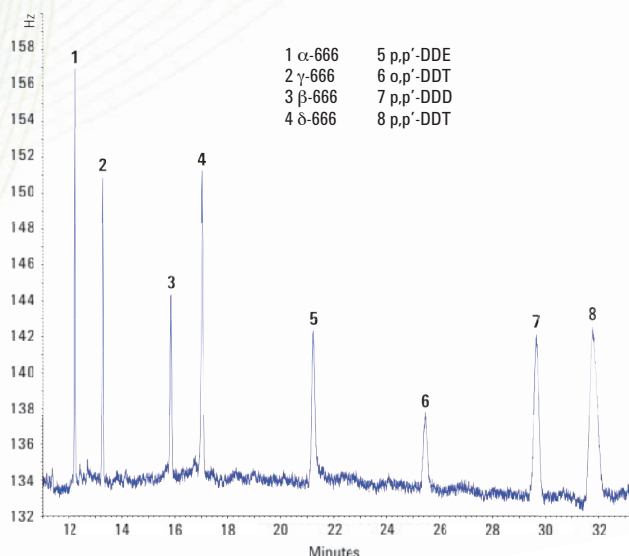
An easy-to-use, single-column, method for aromatic solvent purity analysis meets the requirements of ten separate ASTM methods. EPC control and automatic injection ensures excellent repeatability for both retention time and peak area. In a single run, the wide dynamic response range of the flame ionization detector (FID) enables quantitative analysis of samples containing both very high and very low concentrations.



Overlay of 10 runs demonstrates the 7820A system's outstanding repeatability using an Agilent J&W HP-INNOWax column. [5990-3548EN Analysis of Trace Hydrocarbon Impurities in Benzene by Agilent 7820A.]

### Trace pesticides in drinking water.

The high sensitivity of the micro-ECD ensures confident detection, easily meeting stringent requirements of international regulatory agencies. The micro-ECD's reduced susceptibility to contamination allows analyses in a variety of complex matrices. In this example, using nitrogen in place of helium as the carrier gas dramatically reduces cost per sample.



Chromatogram of 500 ppt organochlorine pesticides run on Agilent 7820A GC with ECD using an Agilent J&W DB-1701 GC column. [5990-3473EN Analysis of Organochlorine Pesticides in Drinking Water by Agilent 7820 Gas Chromatograph/Micro Electron Capture Detector.]

To learn more about the Agilent GC and GC/MS portfolio, visit [agilent.com/chem/7820\\_GC](http://agilent.com/chem/7820_GC) and [agilent.com/chem/5977E\\_GCMSD](http://agilent.com/chem/5977E_GCMSD)

# AGILENT 5977E SERIES GC/MSD

## Everyday reliability and performance made simple

Whether you're performing routine environmental analysis or teaching analytical courses, Agilent's 5977E Series GC/MSD has the performance and quality you need to meet the challenge.

## Start your analysis in a fraction of the time

This leading-edge GC/MSD includes an intuitive user interface and built-in diagnostics. The system arrives ready to perform with a split/splitless inlet, splitless liner, and preconditioned Agilent J&W low-bleed GC column.

## Dependability and value for your day-to-day applications

Agilent's 5977E Series GC/MSD increases your uptime so you spend more time running your samples and less time maintaining the system. It also delivers all the consistent, dependable results, and robustness you expect from Agilent at a truly exceptional value.

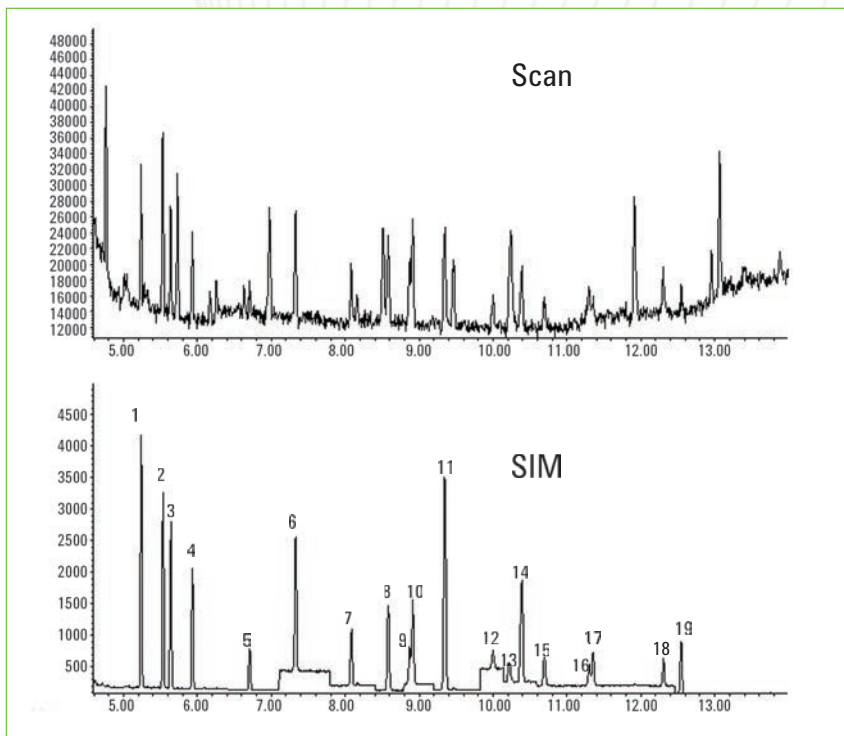


### All-in-one versatility helps you get more done every day

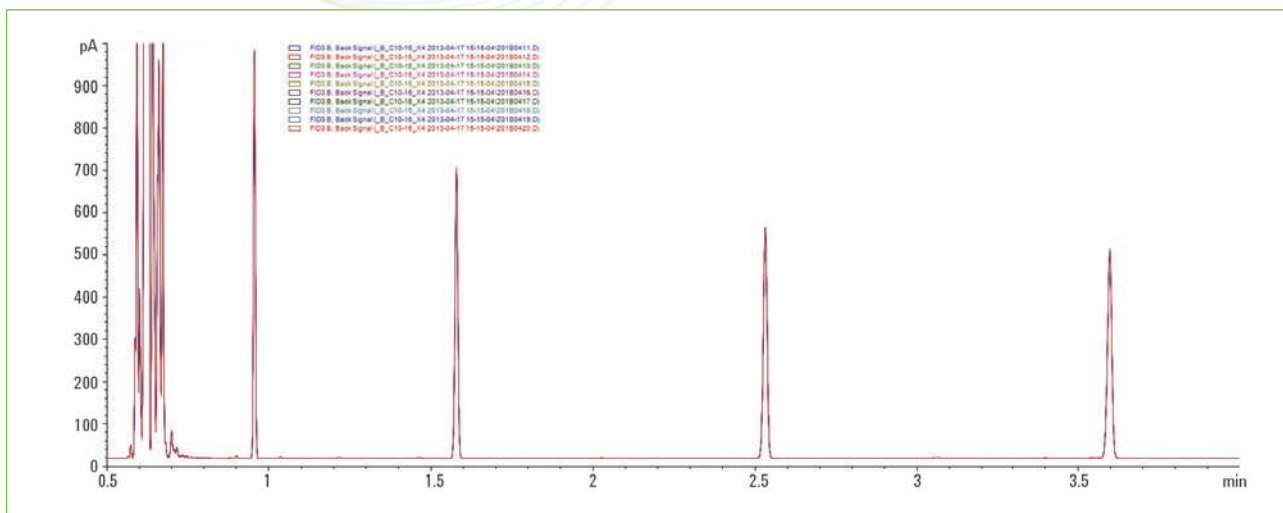
- **Bundled system** comes complete with GC, MSD, and pre-loaded software
- **Essential supplies included:** low-bleed septa, split/splitless liner, and conditioned Agilent J&W low-bleed GC column
- **Split/splitless inlet** for megabore and capillary columns
- **Supports** optional 16-vial automatic liquid sampler and 150-vial tray or new 50-vial automatic liquid sampler
- **MassHunter** provides a unified platform for all Agilent MS products

## Repeatable results you come to expect from Agilent

**SIM/Scan Method.** With the 5977E Series GC/MSD it is possible to obtain SIM data quality and scan data in the same analysis with virtually no sacrifice in sensitivity in each mode.



Note that both the scan and SIM chromatograms were obtained in a single synchronous SIM/scan run.



**Outstanding Precision.** Ten injection overlay of  $C_{10}$ - $C_{16}$  hydrocarbon mix. Results typical of Agilent 7650 Automatic Liquid Sampler performance.

To learn more about the Agilent GC and GC/MS portfolio, visit  
[agilent.com/chem/7820\\_GC](http://agilent.com/chem/7820_GC) and [agilent.com/chem/5977E\\_GCMSD](http://agilent.com/chem/5977E_GCMSD)

# FLEXIBLE SOFTWARE CHOICES

Made to fit your application, workflow, and budget – *perfectly*

Choose between user-friendly OpenLAB CDS ChemStation Edition and OpenLAB CDS EZChrom Edition with multi-vendor control. Everything is designed to help you make the most of every run, and every workday.

## Agilent OpenLAB CDS EZChrom Compact: Your most economical choice for routine analysis and report

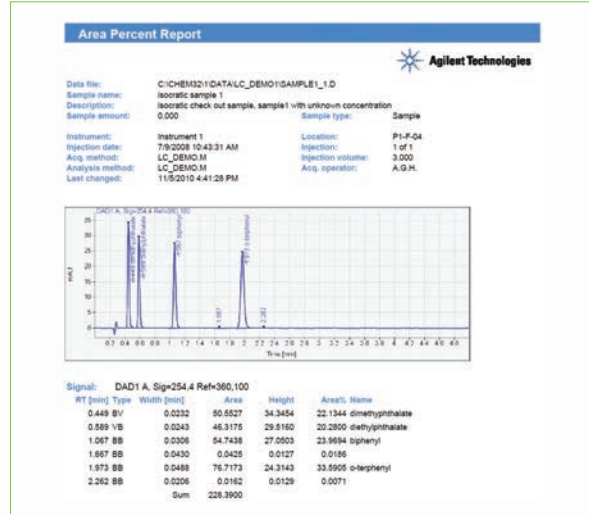
OpenLAB CDS EZChrom Compact gives you:

- Total control of a maximum of two instruments – including 7820A GC, 6820 GC, 490 MicroGC, and Agilent 1220 Infinity LC, from one PC.
- Quick access to your most common tasks
- Pre-defined reports and built-in templates for customized report layouts
- The ability to upgrade to OpenLAB CDS EZChrom when your needs change

OpenLAB CDS EZChrom Compact lets you view instrument status, current data, and run queue on a single screen.

## Agilent OpenLAB CDS VL: Your choice for value

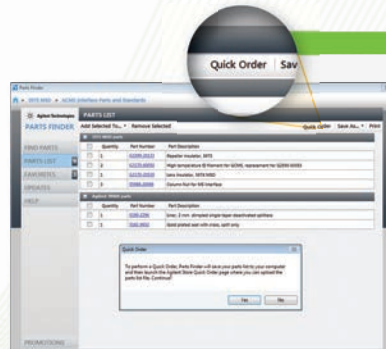
OpenLAB CDS VL gives you the choice between the ChemStation Edition and the EZChrom Edition. Both provide a fully functional OpenLAB CDS workstation for the control of your 7820A GC.



## Agilent OpenLAB CDS Full Version: Your comprehensive choice for instrument control

OpenLAB CDS ChemStation Edition provides full control of a whole range of Agilent instruments (LC, GC, CE, LC/MS, and CE/MS). OpenLAB CDS EZChrom Edition provides multi-vendor instrument control. In addition to the workstation configuration, networked and distributed systems are also available for remote monitoring and remote access of your instruments.

In contrast to OpenLAB CDS VL, OpenLAB CDS ChemStation and EZChrom Editions provide control of the Agilent Headspace Sampler(s). They also provide the option to integrate with OpenLAB ECM for central data storage, GLP, and compliance features.



## Quickly find and order the Agilent parts you need

Our new integrated Parts Finder helps you locate key parts for your 5977E Series GC/MSD. You can even build shopping lists that let you order directly from the Agilent website.



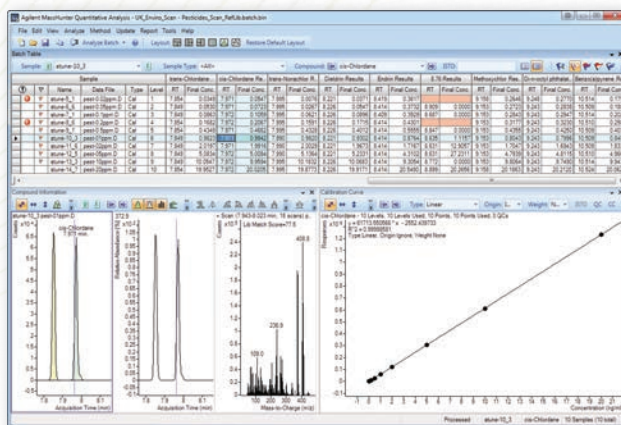
## MassHunter and MSD ChemStation: Choose the data analysis option that suits the needs of your lab

With the addition of the 5977E Series to our portfolio, you have greater flexibility in meeting your specific data analysis needs. We call it "integrated intelligence"—software interaction capability that creates a smarter GC system.



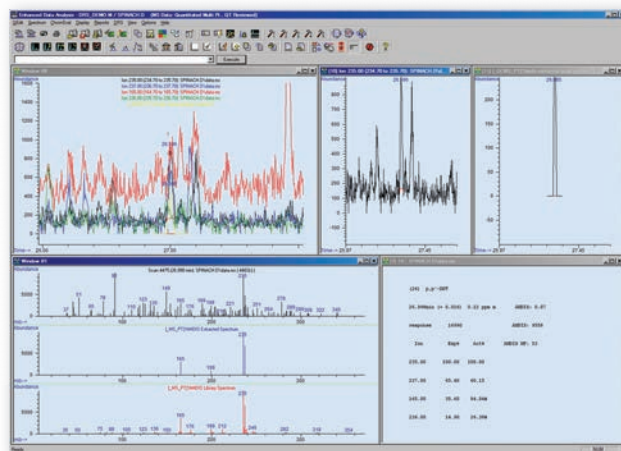
**MassHunter** provides Unified Report Data Analysis for Agilent MS systems:

- Improve the quality and speed of your data review
- Import information directly from the acquisition method
- Batch results window allows you to review and operate on an entire batch of data at the same time



**ChemStation** continues a 20-year tradition of helping labs develop, distribute, and share sensitive GC/MS methods and reports:

- Easy, intuitive operation for expert and non-expert operators
- Convenient configuration as part of the 5977E GC/MSD system
- The ability to quickly review and edit results, update expected retention times and ion ratios, and tentatively identify and estimate the concentration of unknowns



To learn more about the Agilent GC and GC/MS portfolio, visit  
[agilent.com/chem/7820\\_GC](http://agilent.com/chem/7820_GC) and [agilent.com/chem/5977E\\_GCMSD](http://agilent.com/chem/5977E_GCMSD)

# AUTOMATIC LIQUID SAMPLERS

Choose the right ALS solution to support your volume and level of productivity

## Agilent Injectors

### Boost your productivity and eliminate the uncertainty of manual injection

The 7693A Injector option automates your analyses of up to sixteen samples, while accommodating two solvent bottles and one waste bottle.

For increased capacity needs, the new 7650A Injector option expands sample throughput to 50, while accommodating four solvent bottles and four waste bottles.

For either model, the fast-injection technology minimizes needle discrimination and sample degradation, and allows fully unattended operation – from injection through final reporting.

Best of all, these self-aligning “plug and play” injectors are both portable and user friendly. They mount in seconds without tools and transfer quickly between GCs.

Whether you're detecting emerging contaminants in drinking water or testing drugs for purity, your results have to be correct, precise, and irrefutable. And the Agilent sample injectors help to ensure your best chromatography with advanced injection features:

- **Multiple wash solvent capability** for pre- and post-injection needle rinsing reduces sample carryover. Agilent's new premium syringes further help to eliminate the possibility of carryover.
- **Pre-injection sample pumps and pre-injection washes** further reduce the possibility of carryover.
- **Single stroke injection volume** as small as 0.01  $\mu\text{L}$  and as large as 250  $\mu\text{L}$  let you precisely match injections to the exact needs of your analyses.
- **New line of Agilent syringes** offers longer plunger lifetime, lower carryover and greater accuracy over a wider range of injection volumes.

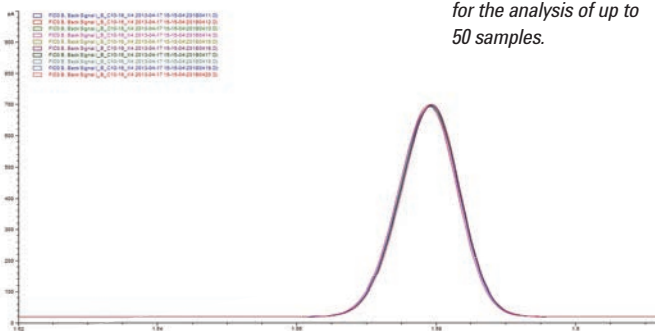
### Best-in-class precision

Carbon #	Split Area % RSD	Splitless Area % RSD
10	0.20	0.26
12	0.20	0.27
14	0.20	0.27
16	0.21	0.30
18	0.23	0.28
20	0.25	0.28
22	0.28	0.28
24	0.30	0.28
32	0.39	0.30
36	0.29	0.35
40	0.34	0.27
44	0.27	0.33

Table refers to results of ten 1  $\mu\text{L}$  injections. The data is characteristic of 7650A and 7693A performance.



The 7650A Injector allows for the analysis of up to 50 samples.



Overlay of 10 runs demonstrates Agilent Auto Liquid Sampler's outstanding repeatability.

## SAMPLE INTRODUCTION

### Regardless of your needs, we have the right Sample Introduction product to meet today's challenging lab requirements

Our portfolio of Sample Introduction products continues to grow – giving you more options for achieving a high level of precision in an increasingly demanding lab environment. To support your lab's productivity, we have a solution that's suited to the specific types of samples and analyses you perform.

#### 7697A Head Space – A genuinely better solution for volatiles analysis, with best-in-class technology and powerful software



- **A robust workhorse** that maximizes sample throughput with maximum 111-vial capacity, and minimizes operator error
- **Standard electronic pneumatic control (EPC)** with barometric pressure compensation sets a new benchmark for headspace sampling precision, as shown below
- **Comprehensive software** goes beyond sample handling to guide you through tasks such as method development and resource conservation

#### 7667A Mini Thermal Desorber performs a fast, confident gas sample introduction in the lab

With its small bench space and intuitive software, Agilent's 7667A Mini TD is designed for true ease-of-use – making it ideal for entry level VOCs test applications.



Additional benefits include:

- **Reduced cycle time** and completion of C3~C16 VOC tasks in less than 10 minutes with on-tube heating rates up to 500 °C per minute
- Ensures performance with **automatic self-leaking test** – even in rough environments
- **Easy operation** with OpenLAB ChemStation or EzChrom platform and MassHunter
- Optional **electronic pneumatic control (EPC)** ensures lab-quality results with unrivaled precision
- Optional **plug and play** embedded transfer line, available in enhanced version, lets you configure with any GC or GC/MSD system without worrying about connection change

### Agilent Sample Prep, GC Columns, and Supplies

#### A lifetime of performance for your instrument... maximum productivity for your lab

As the world's GC leader, Agilent is uniquely positioned to help you meet your toughest analytical challenges with innovative sample prep products, columns, and supplies.

#### Bond Elut SPE products: Accurate, reliable results with fewer repeated samples

- Choose from traditional silica and advanced polymeric materials; selectively remove interferences
- More than 40 phase functionalities in more than 30 formats

Agilent's GC portfolio also includes a complete line of sample introduction and GC supplies to ensure optimum productivity.

Learn more at [agilent.com/chem/inert](http://agilent.com/chem/inert)



*Agilent Bond Elut products simplify sample prep while selectively removing interferences and/or analytes. Agilent J&W columns deliver a leak-free, inert flow path that ensures the lowest bleed and best signal-to-noise performance for your Agilent 5977E GC/MSD system.*

To learn more about the Agilent GC and GC/MS portfolio, visit [agilent.com/chem/7820\\_GC](http://agilent.com/chem/7820_GC) and [agilent.com/chem/5977E\\_GCMSD](http://agilent.com/chem/5977E_GCMSD)

## Our catalog of new applications is ever growing.

To learn more about the Agilent 7697A GC Headspace Sampler, visit us online at

**agilent.com/chem/7820\_GC**  
**agilent.com/chem/5977E\_GCMSD**

To learn about the latest, contact your local Agilent Representative or visit us at:

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## The Agilent Value Promise – 10 years of guaranteed value

In addition to continually evolving products, we offer something else unique to the industry – our 10-year value guarantee. The Agilent Value Promise guarantees you at least 10 years of instrument use from your date of purchase, or we will credit you with the residual value of that system toward an upgraded model. Not only does Agilent ensure a safe purchase now, we help ensure your investment is as valuable to you in the long run.

## Agilent services let you focus on what you do best

Should your Agilent instrument require service while covered by an Agilent service agreement, we guarantee repair or we will replace your instrument for free. No other manufacturer or service provider offers this level of commitment – keeping your laboratory running at maximum productivity.



## Maximize your uptime with Agilent's customer-enabled service and support features

The 5977E GC/MSD system's integrated hardware and software design features provide a completely new level of operational simplicity. There's a guided system set-up so that you can get your new system up and running without having to schedule a visit by an Agilent service representative.

Of course, Agilent's world-class customer service engineers and certified support partners are available to provide a full range of Agilent services, including installation, familiarization, training, maintenance, contractual repair and regulatory compliance support.

## Enterprise Edition Compliance Services

Agilent's Enterprise Edition compliance service is designed to provide a fully integrated qualification approach that's robust enough for your entire enterprise. It's a single comprehensive qualification protocol built on a fully automated software program – the patent-pending Agilent Compliance Engine – that provides consistently configured electronic reports, records and signatures to help speed compliance reviews and minimize your regulatory risk.



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© Agilent Technologies, Inc. 2013  
Printed in the USA July 16, 2013  
5990-3326EN



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