Agilent

Trusted Answers

Resolve Your Search For Reliability

Agilent 7890B Gas Chromatograph

Resolve Your Search For The Next Evolution In Gas Chromatography

At Agilent, we believe that building the world's most trusted GC system is an ongoing process. With every step, we increase speed, improve functionality, and incorporate new analytical capabilities—all while never losing sight of the most important objective: RESULTS.

The flagship Agilent 7890B GC system has everything you need to boost productivity, protect our environment through better resource management, and generate data with confidence. In addition, its seamless communication with the Agilent 5977 Series GC/MSD provides 40% faster vent times and system protections when using hydrogen carrier gas.

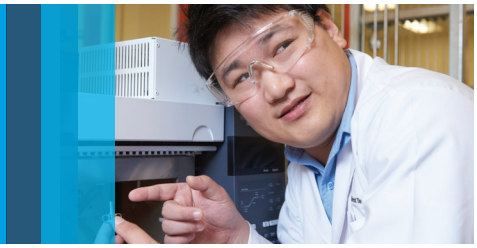
The Agilent 7890B GC adds integrated "smart" functionality and improved performance to the industry-leading GC platform.

A new level of GC performance and GC/MSD system integration

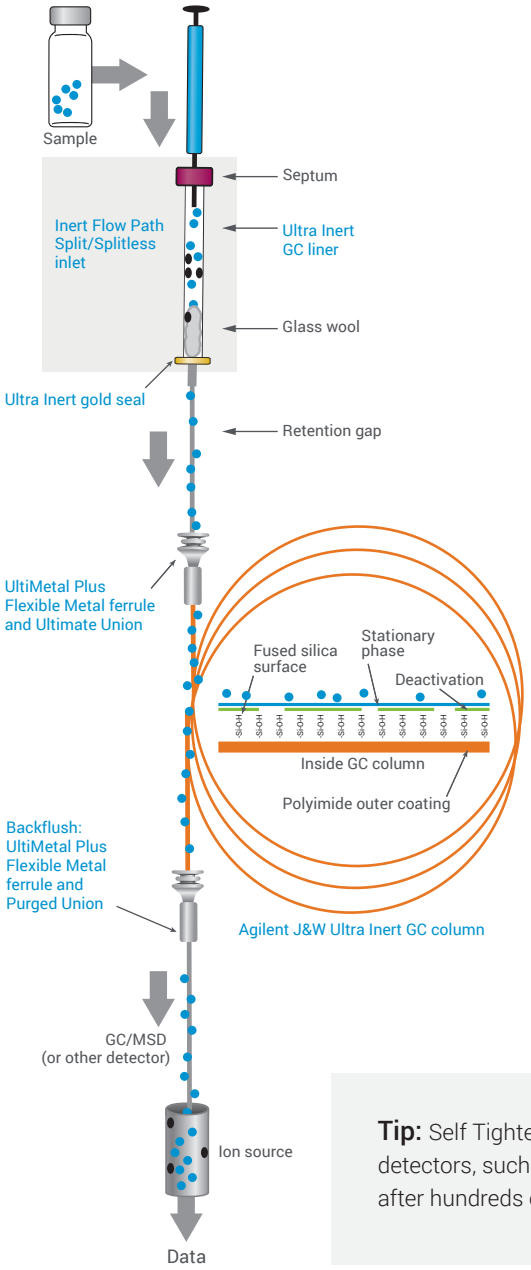
- **Proven reliability and high performance:** Agilent's 5th-generation electronic pneumatics control (EPC) and digital electronics complement improved detector specifications, making the 7890B our most dependable—and highest-performing—GC ever.
- **Increased sample throughput:** Fast oven cool-down, new backflush capabilities, and advanced automation features help you get more done in less time, at the lowest possible cost-per-sample. All without losing your existing method.
- **Integrated system intelligence:** Early Maintenance Feedback (EMF) allows you to replace parts quickly, and address small problems before they lead to costly downtime. Integrated calculators and a method translator are also included to simplify method setup and system operation. In addition, improved GC ↔ MSD communication cuts venting time by up to 40% and protects the system from damage by stopping the flow of carrier gas during shutdown events.
- **Expanded chromatographic capabilities:** Backflush, flow splitters, GC x GC, Deans switches, and purged unions are all provided by Agilent Capillary Flow Technology (CFT).

Agilent inert flowpath

Ensure Reliable, Consistent Inertness



The Agilent Inert Flowpath ensures reliable, consistent inertness from injector to detector—decreasing analyte adsorption for lower Limits of Detection (LODs) and better signal-to-noise response.



An integrated approach to inertness

Achieve the parts-per-billion—or parts-per trillion—detection levels that today's analyses demand with a totally inert flowpath.

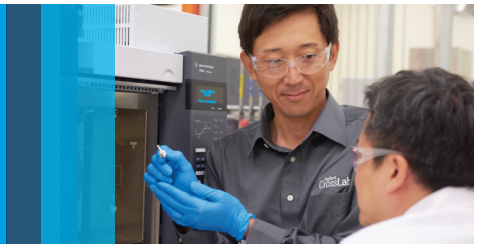
- **Agilent J&W Ultra Inert GC columns** ensure consistent column inertness and exceptionally low column bleed.
- **Ultra Inert inlet liners** deliver a robust, reproducible, and reliable inert flowpath.
- **Inert Flowpath split/splitless inlet options** provide an extra measure of inertness.
- **Ultra Inert gold seals** feature deactivation chemistry for the most inert surface and highest-quality seal.
- **UltiMetal Plus Flexible Metal ferrules** promote a leak-free seal that requires less torque and reduces the risk of column breakage.
- **Self Tightening column nuts** maintain a leak-free seal and reduce background noise for reliable results.
- **Gas Clean filter systems** reduce column damage, sensitivity loss, and downtime.
- **GC detectors** allow the selectivity or sensitivity that your application requires to handle your data with a unified platform.

For more information about creating an inert GC flowpath, visit **www.agilent.com/chem/inert**

Tip: Self Tightening column nuts are especially well suited for oxygen-sensitive detectors, such as MS and ECD. Their tight connection remains leak-free even after hundreds of injections. Learn more: **www.agilent.com/chem/STnut**

Carrier gas options

Use Resources Efficiently



Run	Peak 1*	Peak 2*
1	9.0839 min	11.8492 min
2	9.0835	11.8492
3	9.0841	11.8494
4	9.0846	11.8496
5	9.0851	11.8507
6	9.0849	11.8502
7	9.0845	11.8504
8	9.0849	11.8500
9	9.0847	11.8504
10	9.0853	11.8502
11	9.0852	11.8502
12	9.0851	11.8508
13	9.0847	11.8503
14	9.0848	11.8507
15	9.0853	11.8506
Average	9.0847 min	11.8501 min
Standard Deviation	0.000527	0.000535

*Heart-cut from column 1. Demonstrating retention time reproducibility.

Alternate carrier gases decrease costs and protect our environment

Many labs are switching to alternate carrier gases, such as nitrogen and hydrogen. Nitrogen is a good choice when there is sufficient chromatographic resolution.

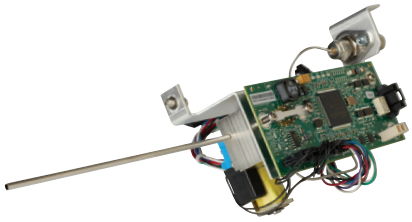
Hydrogen has excellent chromatographic qualities and can increase throughput. The Agilent Hydrogen Sensor can detect potential leaks early to bring your system to a safe stand-by if necessary.

Helium conservation for validated methods

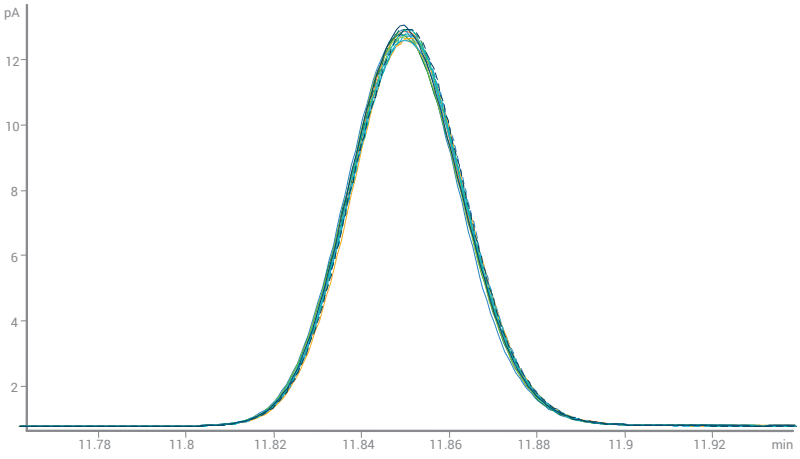
The Agilent helium conservation module, helium switch, and other tools allow you to use helium for your GC runs, and switch to an alternate gas (such as nitrogen) when your GC is idle.

Precise retention time locking (RTL) software

RTL reproduces retention times from one Agilent GC system to another for confident method transfer worldwide.



Agilent Hydrogen Sensor



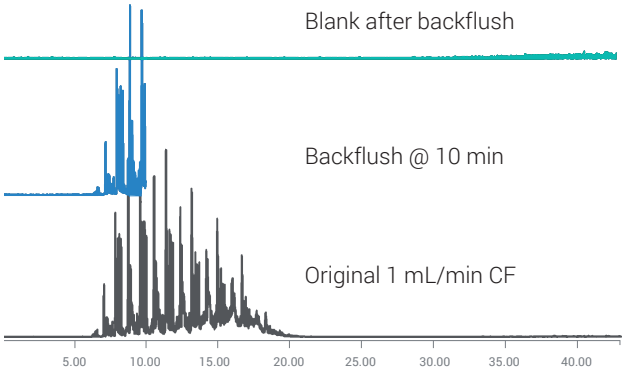
Achieve unsurpassed retention time reproducibility in standard applications—even with multi-dimensional applications, such as the heart-cutting example shown here.

Capillary flow technology

Increase Flexibility And Throughput

Proprietary Agilent Capillary Flow Technology (CFT) creates leak-free capillary connections that withstand the temperature extremes of a modern GC oven.

CFT devices are inert and help you make secure connections and precisely divert gas flow pneumatically. This opens the door to techniques that expand analytical capabilities, improve your results, and conserve both time and resources.

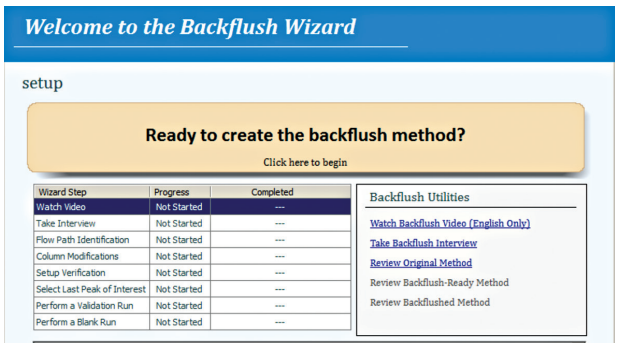


5989-9804EN: Capillary Flow Technology: Backflush—Reduce Run Time and Increase Laboratory Throughput

CFT backflush saves time with every run

Backflushing works by reversing the column flow immediately after the last compound of interest has eluted.

This simple technique extends column life and eliminates long bake-out times for highly retained sample components. It also prevents problems such as carryover, retention time shifts, and MSD source contamination.



Backflush Wizard simplifies method development and setup.

Backflush Assistant Software Wizard simplifies method setup

The Backflush Assistant Software Wizard collects information about your method and CFT device and provides a step-by step procedure for configuring the backflush hardware and column plumbing.

Expert training: just a phone call away

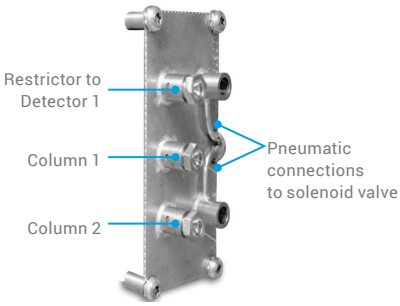
Backflush and Backflush Assistant Software Wizard training from Agilent Workflow Services can help you set up your CFT backflush method quickly and efficiently.

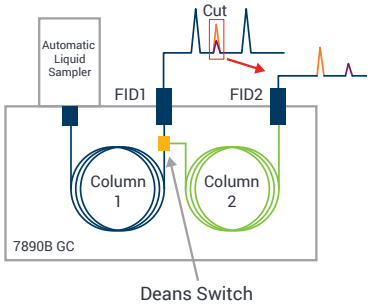
Deans switch and flow splitters

Enhance Chromatographic Capabilities

A Capillary Flow Technology (CFT) Deans Switch, using fluidic switching, allows precise, 2-dimensional GC heart-cutting analysis of trace compounds in complex matrices.

Peaks of interest from one column are "cut" onto a second column with a different stationary phase. Compounds that might coelute with analyte on the first column are separated from analyte on the second column.

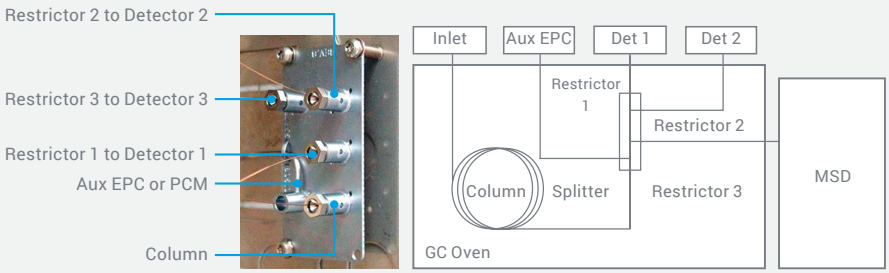




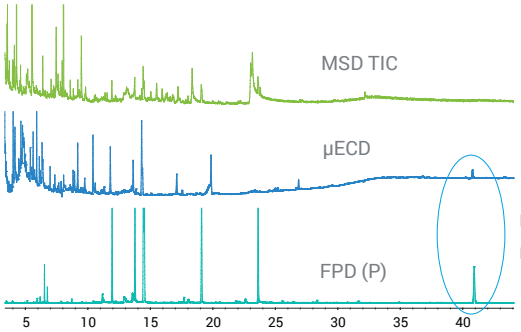
In this example, the CFT Deans Switch enabled unresolved trace components to be heart-cut onto a second column with a different stationary phase. 5989-9384EN: Capillary Flow Technology: Deans Switch—Increase the Resolving Power of Your GC

Flow splitting delivers more information per injection

Flow splitting—sending the sample to multiple detectors—maximizes the data collected in a single run, and is useful for analyzing compounds in complex matrices. This can help you identify peaks of interest quickly, improve peak integration, and identify unknowns.



Agilent CFT devices provide easy-to-make, reliable, connections for better chromatography. 5989-9667EN: Capillary Flow Technology: Splitters—Get more Information in Less Time

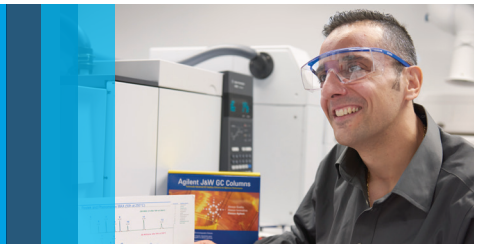


Strawberry extract highlighting unknowns

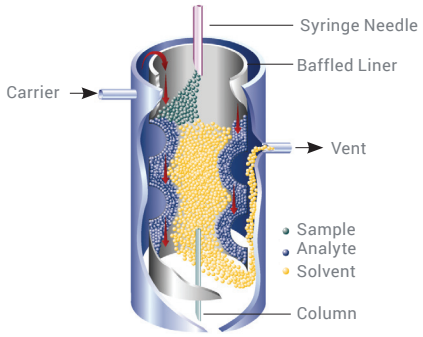
Flow splitting allows for a combination of universal and elemental selective detectors in one analytical run. 5989-6007EN: Using RTL and 3-Way Splitters to Identify Unknowns in Strawberry Extract

Inlets, detectors, and LTM technology

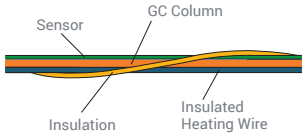
Keep Your Lab Running At Peak Performance



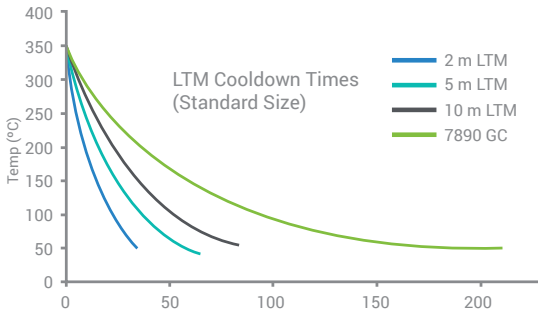
The modular Agilent 7890B GC system lets you choose and change the inlet, detector, column, and automated sample introduction techniques in minutes. Injector and detector components can be swapped independently of pneumatics and electronics—saving time and money.



5990-3954EN: Agilent Multimode Inlet for Gas Chromatography



The key to LTM technology: Direct heating and temperature-sensing components wrapped around a fused silica column. 5990-7688EN: Agilent Low Thermal Mass (LTM) Series II System for Gas Chromatography



Typical cooling times for standard (5-inch) LTM column modules are significantly faster than a conventional GC oven. 5990-3237EN: Dual Channel Simulated Distillation of Carbon and Sulfur with the Agilent 7890A GC and 355 Sulfur Chemiluminescence Detector

Multimode inlet (MMI) for flexibility and sensitivity

The Agilent MMI combines spit/splitless operation, temperature programming, and large-volume injection with a solvent vent for higher sensitivity and the ability to analyze thermally labile compounds.

Full dynamic range Flame Ionization Detector (FID)

Our state-of-the-art digital electrometer delivers a linear dynamic range of 10^7 seamlessly integrated into a single run.

Sensitive and selective element detection

The Agilent Flame Photometric Detector (FPD) is highly sensitive, with a temperature range of up to 400 °C. Sulfur Chemiluminescence Detectors (SCD) and Nitrogen Chemiluminescence Detectors (NCD) provide the highest sensitivity and selectivity.

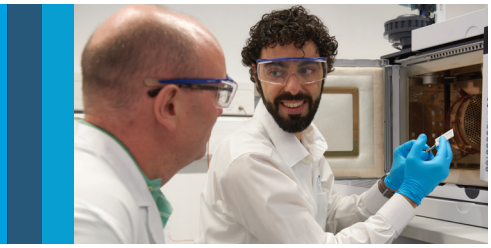
Low Thermal Mass (LTM) technology for more injections per hour

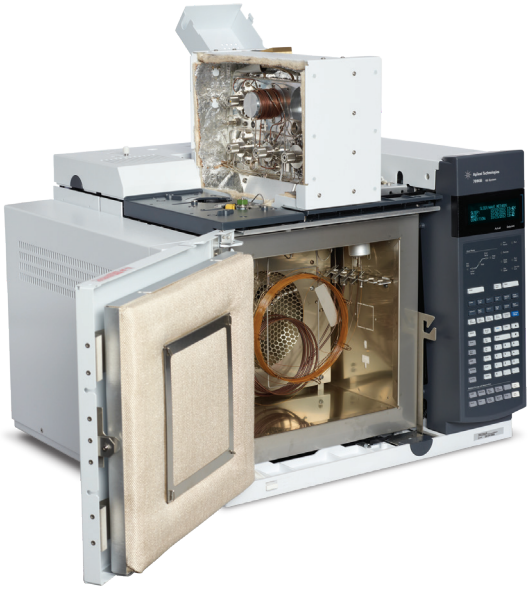
LTM technology promotes rapid heating and cooling for faster GC analyses, higher throughput, and less power consumption. LTM technology also enables multidimensional GC and integration with Capillary Flow Technology for reduced column maintenance.

Tip: The ADM Flow Meter measures gas streams with composite gas composition and is ideal for troubleshooting detector problems. **www.agilent.com/chem/admflowmeter**

External valve oven

Expand Your Gas Sampling Options



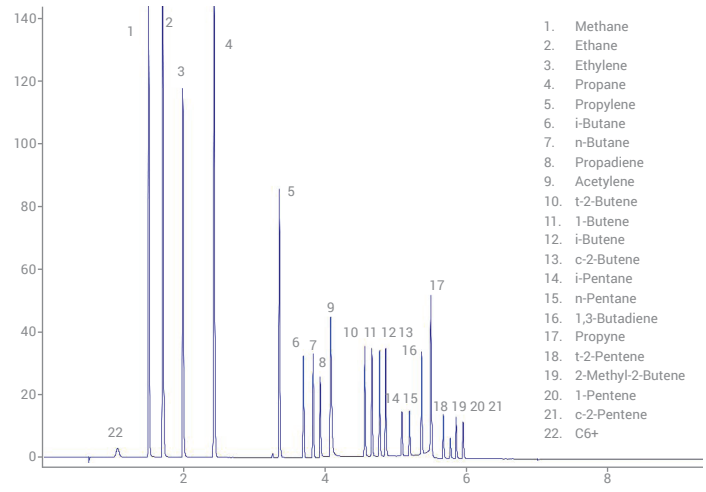


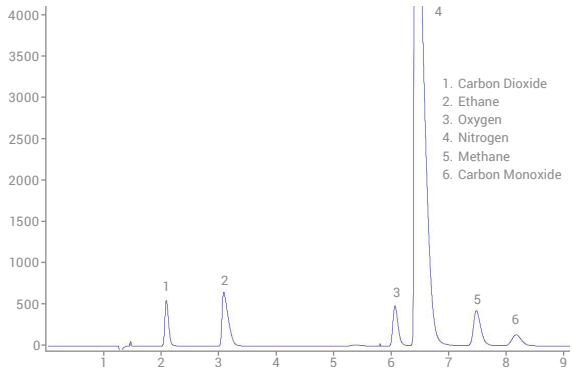
The Agilent Large Valve Oven (LVO) for GC is a versatile, high-capacity external oven that can be configured to support complex, multivalve GC applications. The LVO supports several standard Agilent multivalve analyzers and is also available as a highly customizable option on the 7890B GC.

The LVO provides a homogeneous isothermal environment for up to six valves and convenient open access for maintenance, adjustment, or customization. Accessibility, capacity, and thermal uniformity make the Agilent LVO especially suited for combining multiple complex analyses on a single GC platform.

Other advantages:

- Easy maintenance and servicing
- Configurable analyzers
- Six valve positions, with a maximum 14-port valve configure the system to meet your application requirement.
- One heated GC zone with optional valve configurations





Results of the fast analysis time possible with the RGA method. In this example, the new Large Valve Oven is setup and running as the RGA analyzer, which is preconfigured and provides guaranteed chromatographic performance.

MassHunter and OpenLab software

Simplify Operations And Boost Productivity

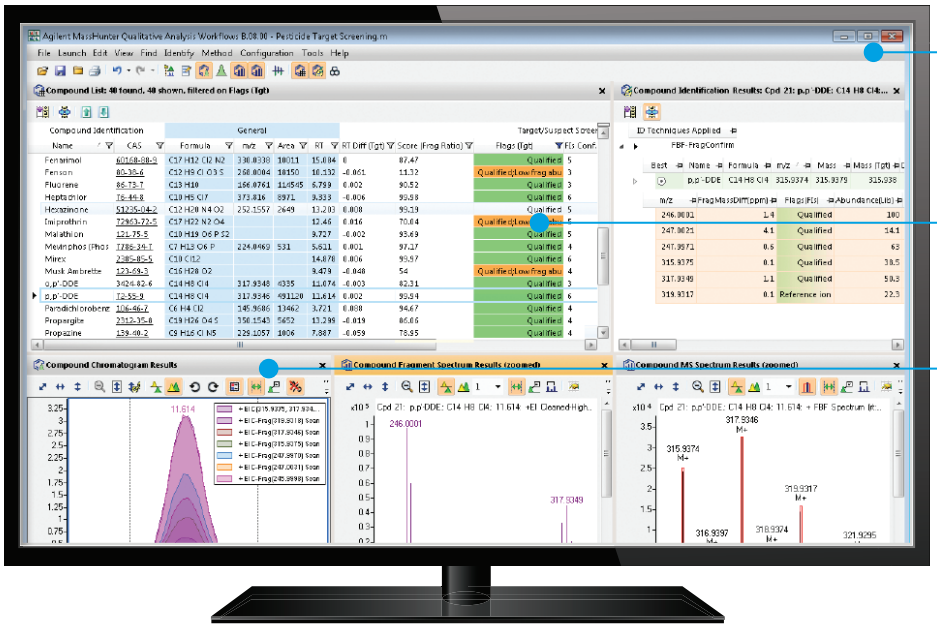
Integrated method development tools and calculators guide you in changing carrier gas, selecting the right liner, or changing to a column of different dimensions.

Interactive graphical consumables and Parts Finder Tool can locate key part numbers and descriptions for easy ordering.

Consumables database simplifies method development by minimizing tracking errors and automatically populating analytical methods with key configuration information.

Resource conservation tools, such as automatic sleep and wake modes, reduce gas and power consumption.

A faster route to insight: GC/MS MassHunter



Make data reporting fast and flexible with preconfigured reports that simplify basic analyses, or customized reports courtesy of Microsoft® Excel and XML.

Simplify data analysis with powerful application-specific software, such as personal compounds, databases, and libraries.

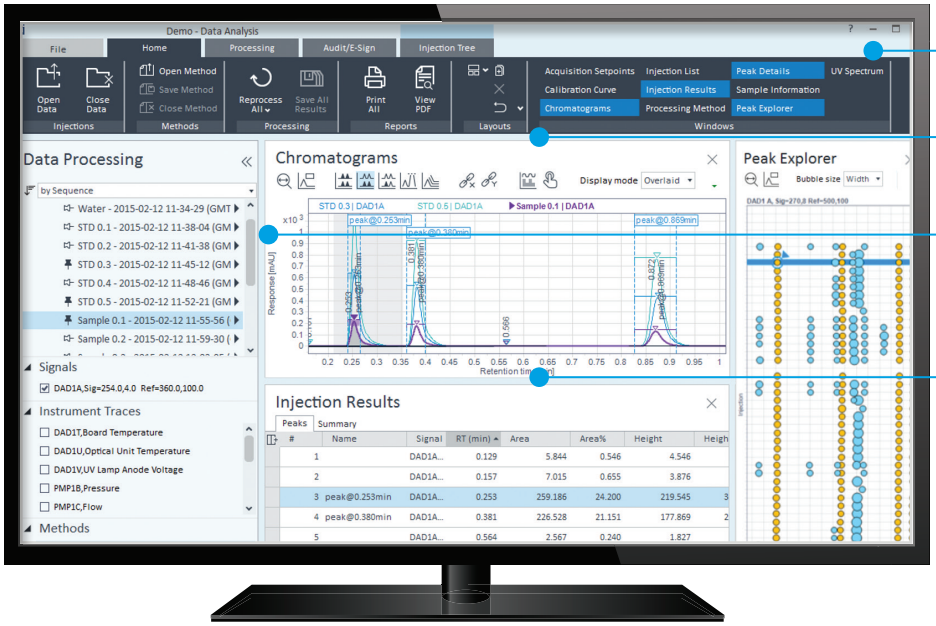
Reduce staff training time with one software platform for all Agilent mass spectrometry systems—including LC/MS, GC/MS, and ICP-MS.

The Agilent Bar Code Printing Bundle (G9201AA) has everything you need to print labels for the 7693 ALS and 7697A Headspace Samplers.

Capture, analyze, and share data: OpenLab CDS

OpenLab CDS software makes your lab more efficient by reducing the time spent on data processing, review, and reporting. This innovative software enables you to:

- Eliminate manual data processing and ensure accurate reports.
- Process large data sets up to 40 times faster and review results quickly with powerful data analysis tools.
- Save time with specialty software controls, including Parts Finder, sleep/wake, and retention time locking.
- Streamline the management of user privileges and password protection.
- Secure centralized data storage, which integrates seamlessly with OpenLAB CDS, is also available.

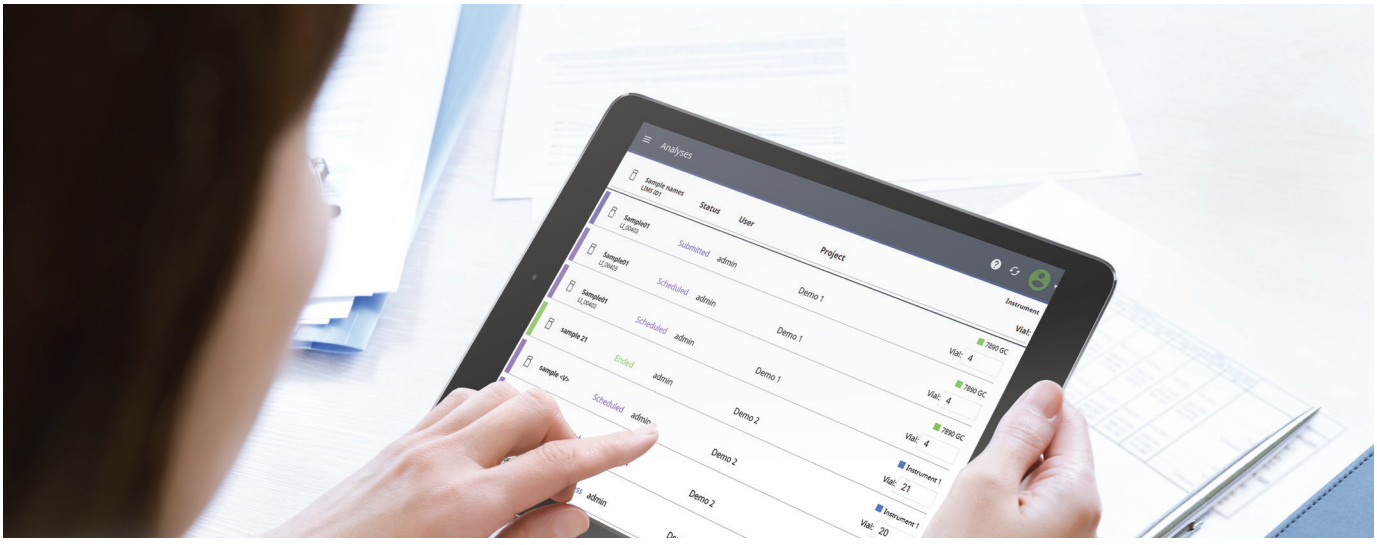


Scalable architecture expands from a single instrument to lab-wide implementation.

A trusted upgrade path preserves your investment in workflows, data, and methods.

Networked OpenLAB CDS allows you to get your work done from anywhere in the lab—and simplifies the administration of methods, user roles, and permissions.

Advanced data analysis and reporting drives greater throughput and productivity.



Resolve Your Search For Integration

Smart features take supportability, performance, and safety to new heights

Integrated GC ↔ MSD communication and safety controls

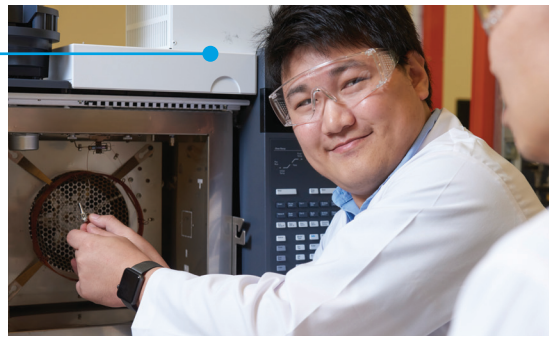
Direct communication between the 7890B GC and 5977 Series GC/MSD enhances and protects your investment:

- If the MSD vents, the system increases the flow of carrier gas, shortening vent times by up to 40%.
- If the pump fails, the system shuts off the carrier gas, saving expensive helium or avoiding hydrogen build-up.
- If communication is lost, the system shuts down the GC thermal zones.

Eco-friendly

- Hydrogen or nitrogen carrier gas capability lowers operating costs.
- Sleep/wake modes reduce gas and energy consumption.

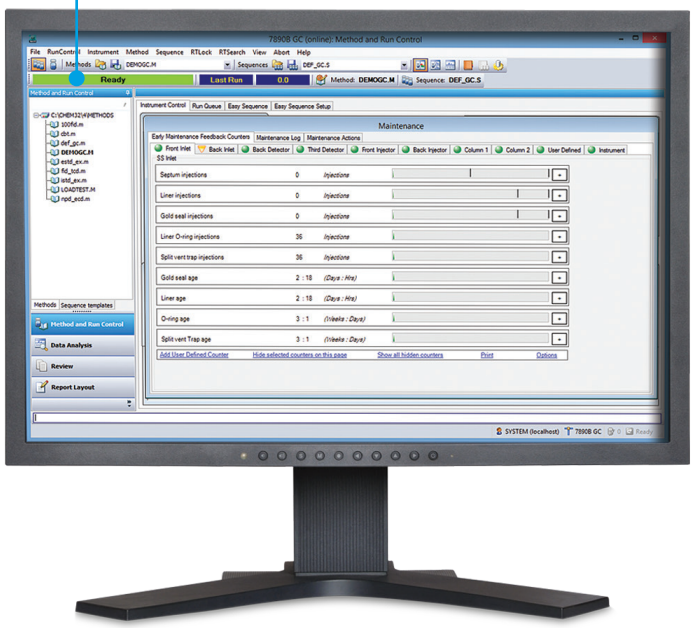
Optimize productivity



- Early Maintenance Feedback (EMF) allows planning of routine maintenance tasks to reduce unnecessary downtime.
- Agilent Data Systems easily develop and optimize methods through:
  - Integrated GC Calculators, including method translator and vapor volume calculator.
  - Auto transfer of calculated values to the method take-out editor.
  - Set-up and status of maintenance tracking counters.

Parts information at your fingertips

- Easily locate part numbers for consumables and supplies with Parts Finder, an interactive 3D graphical tool.
- Instantly see parts and consumables specific to your instrument configuration. Print or e-mail purchase orders, or import directly into your Agilent.com cart.
- Track columns and supplies with an optional bar code reader, and auto-import accurate configuration information into your GC and analytical method.
- Parts ID tool quickly identifies parts and part numbers for easy re-ordering.



Agilent autosamplers

The Perfect Partners For Your 7890B GC

The Agilent 7693 Series Automatic Liquid Sampler (ALS) delivers the fastest injection times of any GC autosampler. Our 7693A platform offers a 16- or 150-vial capacity for reproducibility with small sample loads and high sample throughput, if needed. Enhanced capabilities—such as automated dilution, internal standard addition, heating, mixing, and solvent addition—help eliminate variability and rework.

If your lab processes fewer than 50 samples per day, the Agilent 7650A ALS is a robust, lower-cost option for optimizing workflows and maximizing sample throughput.

Agilent 7693 Series ALS

Boost output with advanced sample preparation capabilities

The Agilent PAL Autosampler is ideal for liquid injection, headspace, and solid-phase microextraction (SPME) applications. This versatile platform is easily configured solely for liquid injection, and offers capabilities that include large-volume injection (LVI), multiple vial sizes, and extended sample vial capacity.

Agilent PAL Autosampler

Automatically introduce volatile compounds from virtually any sample matrix

The Agilent 7697A Headspace Sampler ensures an inert sample pathway for superior GC system performance without analyte degradation or loss. Electronic Pneumatics Control (EPC), a 111-vial capacity, and three exchangeable 36-vial racks make the 7697A an ideal choice for high-throughput labs. In addition, the Agilent 7697A Headspace Sampler is the industry's only dedicated headspace unit that supports the use of hydrogen as a carrier gas.

7697A Headspace Sampler

Protect your instrument—and the integrity of your samples—with Agilent industry-leading vials, caps, and syringes. View the Agilent Sample Introduction brochure at **www.agilent.com/chem/vialsresources** and search for 5991-1287EN

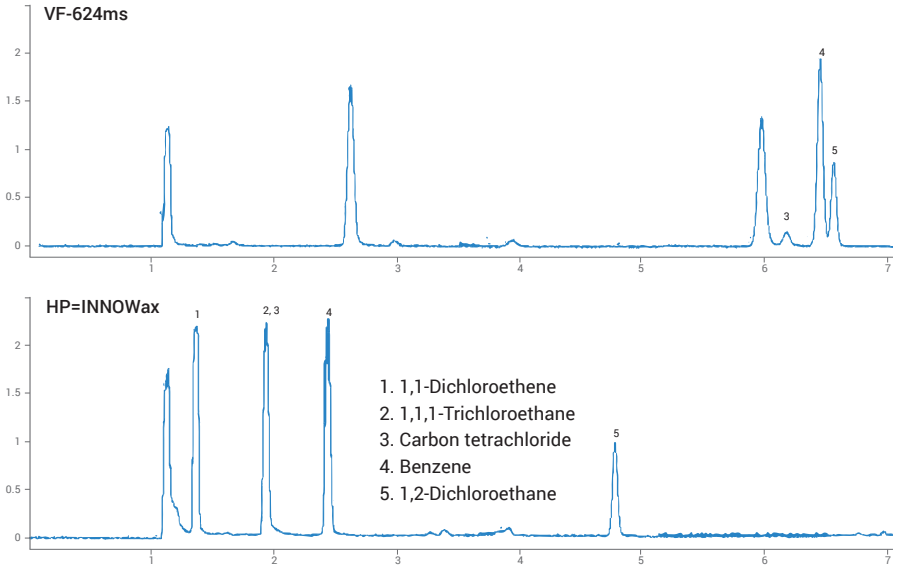
Confidently Detect Pharmaceutical Impurities At Very Low Levels

GC, coupled with static headspace sampling, is an easy-to-use, high-throughput tool for determining residual solvent impurities in pharmaceutical products. Sample preparation is relatively simple, and the method is easily validated. Headspace sampling also allows you to avoid matrix injections that can cause column degradation and coelution.

Residual solvent analysis using an Agilent 7697A Headspace Sampler

Excellent chromatographic performance was achieved for residual solvents at USP <467> specified limits, as shown in this example for Procedure A - Class 1 Solvents.

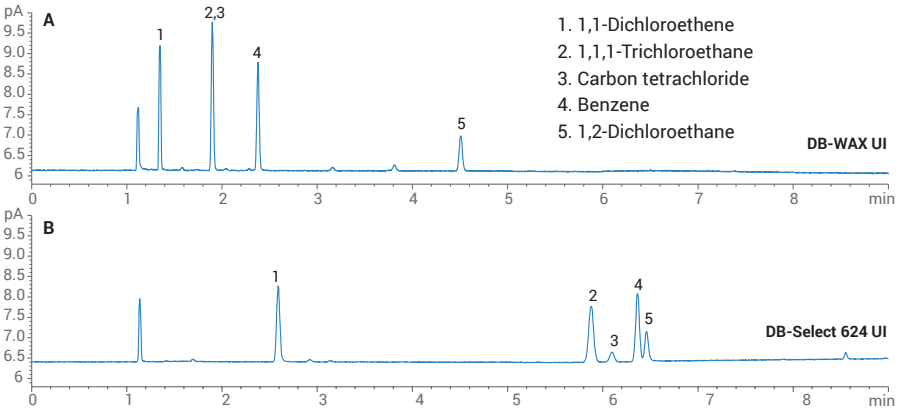
This instrument configuration is available as an analyzer with guaranteed chromatographic performance.



5991-1834EN: Analysis of USP <467> Residual Solvents using the 7697A Headspace Sampler with the 7890B Gas Chromatograph

USP <467> procedures A and B can be performed in one run with the 7890B

Using the dual-channel GC/FID configuration, static headspace analysis with an Agilent J&W DB-Select 624 UI column at 85 °C for 40 minutes improved repeatability and reduced analysis time and cycle time. An Agilent DB-WAX UI GC column was used as a confirmation column in this system.



Class 1 standard solution analyzed using an Agilent J&W DB-WAX UI and an Agilent DB-Select 624 UI GC column.

Take Your Energy/Chemicals Lab To A Higher Level Of Reliability And Productivity

Is your lab still using an "old workhorse" GC just because it gives you "acceptable results"? Perhaps it's time to consider the transformative advantages of the Agilent 7890B GC. It goes beyond "acceptable results" to give you increased productivity, safety, cost effectiveness, and environmental friendliness—all with greater precision and reliability than instruments past their prime. Application-specific analyzers provide methods and guaranteed chromatographic performance.

Expand your range of analyses:

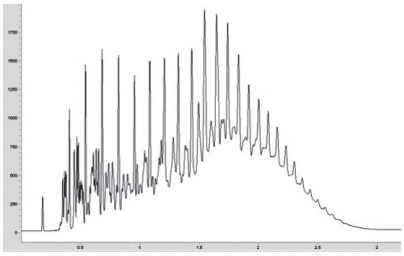
- LTM technology reduces cycle time for Simulated Distillation.
- External Valve Oven enables rapid RGA with H_2S and O_2 separation.
- Preconfigured hardware and method-specific separation tools let you focus on calibration and validation per your lab's SOPs.

Factory-configured analyzers let you start your analysis immediately after installation

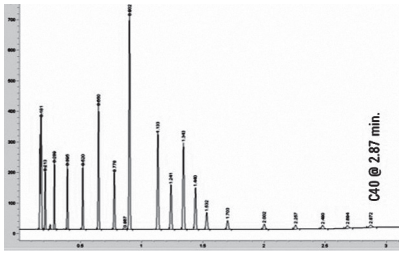
All preconfigured analyzers facilitate system installation and validation. Factory-proven methods eliminate time-consuming method development, greatly reducing the time from installation to running samples.

Fast simulated distillation using Low Thermal Mass module (LTM)

ASTM D2887 Reference Oil



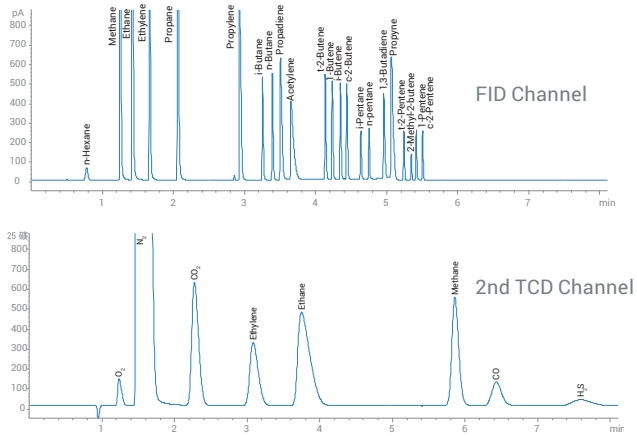
Calibration sample C5-C40



The simulated distillation results for ASTM D2887 RGO agree with the RGO specification of ASTM D2887, with RSDs of 0.12 to 0.47 percent across the reported range.

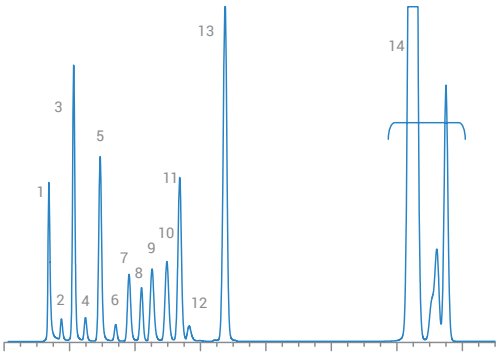
5990-3174EN: Fast Hydrocarbon and Sulfur Simulated Distillation Using the Agilent Low Thermal Mass (LTM) System on the 7890 GC and 355 Sulfur Chemiluminescence Detector

Fast RGA analysis



Oxygenates in finished gasoline per ASTM D4815

1. Methanol
2. Ethanol
3. Isopropanol
4. tert-Butanol
5. n-Propanol
6. MTBE
7. sec -Butanol
8. DIPE
9. Isobutanol
10. tert -Pentanol
11. DME
12. n-Butanol
13. TAME
14. Heavier hydrocarbon



5991-1561EN: Analyzer Solution Guide for Energy & Chemicals Industry

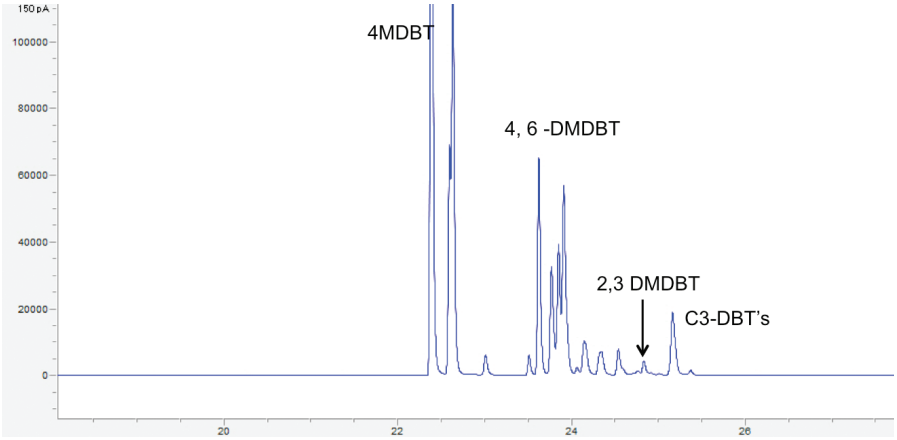
Reliable trace sulfur analysis.

Excellent reproducibility was achieved by coupling the Agilent 7890B GC with our sensitive, high-temperature FPD.

Conform to industry requirements for sulfur levels

Sulfur distribution in feedstocks is critical to the refining industry as it adjusts to meet clean fuel requirements. The Agilent Flame Photometric Detector (FPD), with its high temperature capability and improved sensitivity, is an ideal tool for determining sulfur in blending stocks, such as light cycle oil (LCO). Profiling dibenzothiophenes is important for achieving the lowest sulfur levels in the final products.

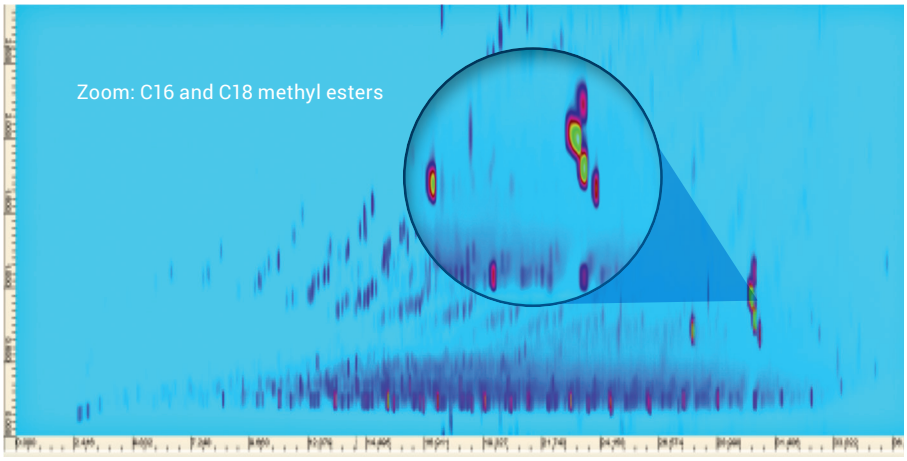
Analysis of substituted dibenzothiophenes in light cycle oil (LCO) using a CFT Deans Switch system with an Agilent 7890B FPD. This enhanced separation reduces the possibility for quenching caused by coelution with hydrocarbons.



5991-1752EN: An Improved Flame Photometric Detector for the Analysis of Alkyl Dibenzothiophenes in Light Cycle Oil, and Gas Oil Feedstocks using the 7890B

Flow modulation for comprehensive GC (GC x GC)

The Agilent 7890B GC uses Capillary Flow Technology to enable flow modulation without the need for complicated—and costly—cryo-focusing techniques. This analysis of diesel fuel shows the normal boiling point distribution in the first dimension, and functional group clusters in the second dimension.



GC x GC of a B20 biodiesel showing separation of C16 and C18 methyl esters. Modulation period: 2800 seconds. Column 1: 20 m x 0.18 mm, 0.18 µm DB1, Column 2: 4 m x 0.24 mm, 0.25 µm HP-INNOWax. 5989-9889EN: Capillary Flow Technology: GC x GC Flow Modulator: Get a Second Dimension of Information on Complex Mixtures

Accelerate Screening Methods For Environmental Applications

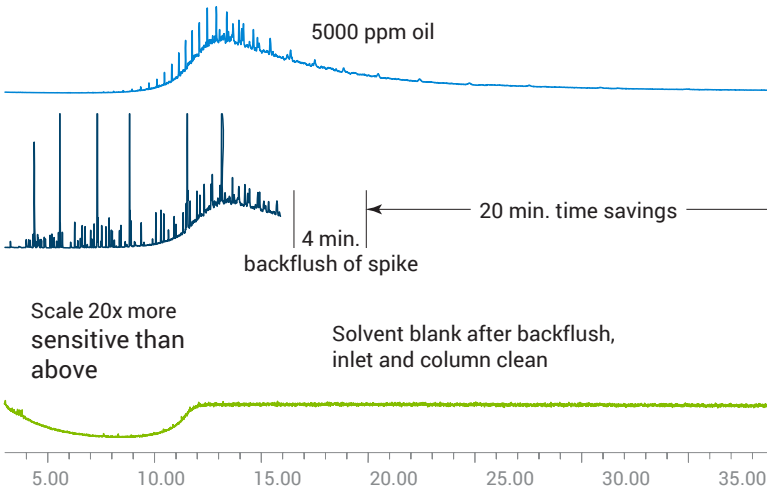
US EPA Method 8270 is widely used to determine the concentration of semivolatile organic compounds in environmental matrices—many of which contain a mix of acids, bases, and neutrals.

This method can be challenging without an Agilent Inert Flowpath due to interactions between analytes and flowpath surfaces.

Backflush improves cycle time for semivolatiles analysis

Here, a 5 ppm EPA 8270 standard run was spiked into 5000 ppm of heavy oil to simulate interference from hazardous waste.

During the first run, peaks of interest eluted in less than 16 minutes. Components with high boiling points were eluted after an extra 24-minute bake-out at 320 °C. The sample was rerun with a 4-minute backflush, cutting the cycle time by 20 minutes per run—a 50% total cycle time savings. Autosampler overlap functionality and faster cool down saved an additional 4 minutes per cycle. That's an extra 15 samples that can be run every 12 hours.

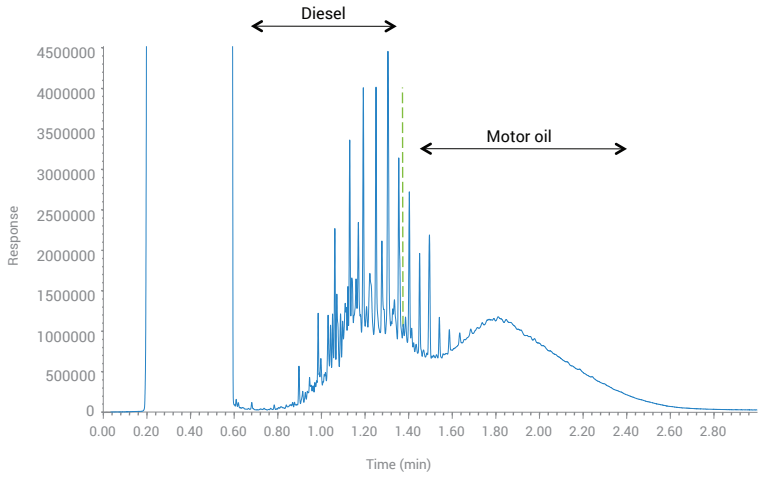


5989-6026EN: Significant Cycle Time Reduction Using the Agilent 7890A/5975 GC/MSD for EPA Method 8270

LTM technology accelerates analysis of TPH (mineral oil)

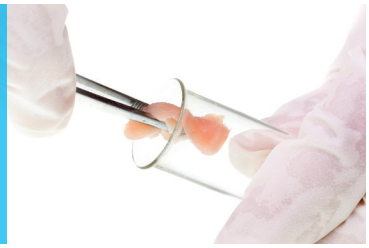
Fast oven temperature programming using a low-thermal-mass system reduces cycle time and increases sensitivity for GC-FID analysis of mineral oil in environmental samples.

This technique meets regulated method requirements for analyzing the C10-C40 hydrocarbon fraction in soil and water extracts using splitless injection. The total analytical cycle time was less than five minutes.



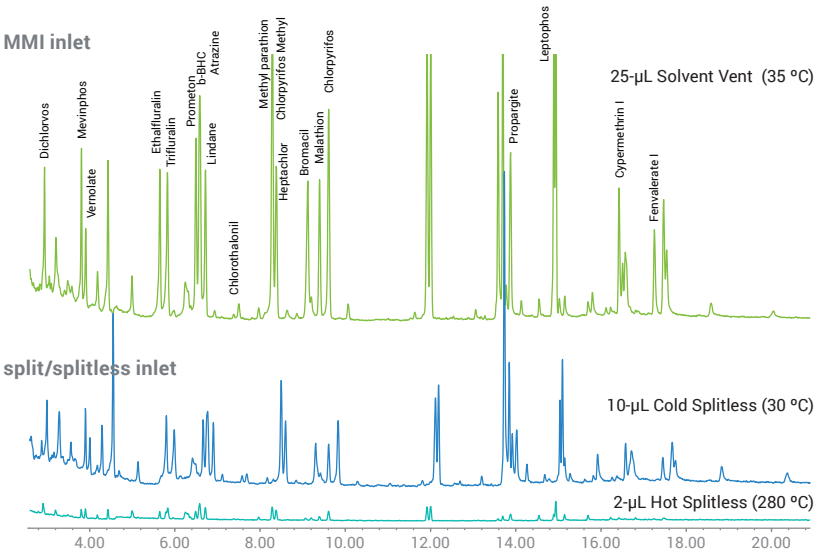
5990-9104EN: High Throughput Mineral Oil Analysis (Hydrocarbon Oil Index) by GC-FID using the Agilent Low Thermal Mass (LTM II) System

Confidently Perform Specialized Food Testing



Lower detection limits with the Agilent Multimode Inlet (MMI)

The Agilent MMI has the same form factor and uses the same consumables as our split/splitless inlet to accommodate existing hot splitless methods. Temperature programmability lets you perform both cold splitless and large-volume injection (LVI) methods for improved detection limits. An integrated Solvent Elimination Calculator provides a complete set of initial conditions for easy LVI method development.

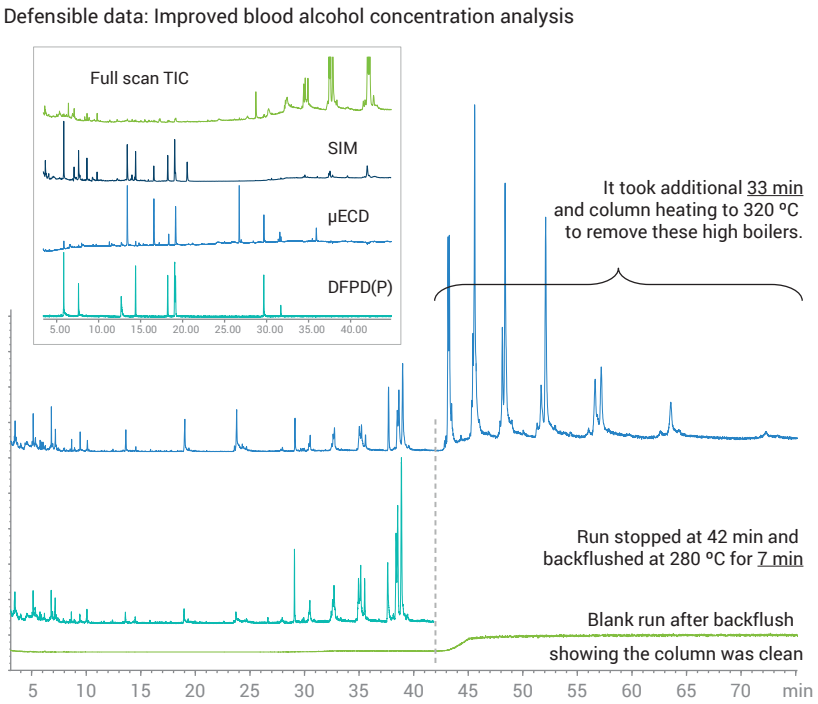


Total ion chromatogram comparing a 25-µL solvent vent injection with a 2-µL hot splitless injection for 40-ppb pesticides. Note the significant signal-to-noise improvement (lower detection limits). 5990-4169EN: Achieving Lower Detection Limits Easily with the Agilent Multimode Inlet (MMI)

Flow splitting enables multiple detectors—increasing productivity

The Agilent flow splitting device proportionally splits column effluent to multiple detectors. Full-scan TIC from the MSD provides quantitation and confirmation, while element-specific GC signals highlight trace-level compounds for MSD identification.

The splitter provides backflush capabilities to shorten cycle time and increase column life. Backflushing reduces ion source contamination by preventing column bleed and stopping heavy residues from being introduced into the MSD. It also eliminates carryover from any sample that accumulates at the column head, improving data integrity.



Four chromatograms collected simultaneously from a single injection of milk extract. 5989-6018EN: Improving Productivity and Extending Column Life with Backflush

Screen And Quantitate Target Forensic/ Toxicology Compounds In Complex Matrices

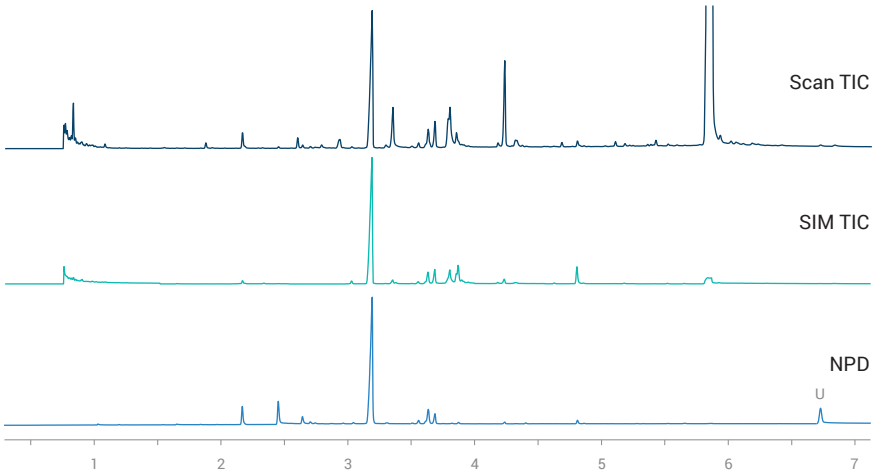
Obtain more drug screening information in less time

An Agilent Capillary Flow device splits column eluent, allowing the simultaneous acquisition of NPD and MSD data, and eliminating the need for multiple runs on different GCs. CFT Backflush further reduces cycle time and stabilizes retention times.

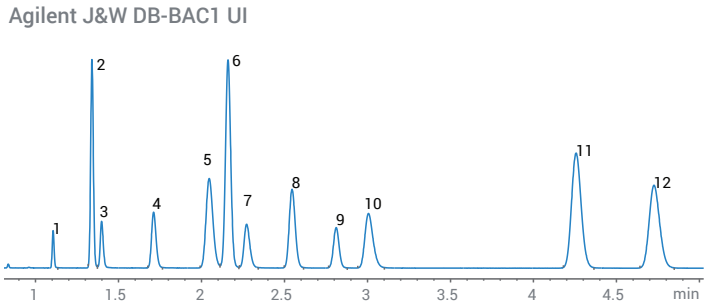
GC/NPD/MSD with simultaneous SIM/Scan offers advantages such as broad-range screening for unlimited targets, full-spectrum identity confirmation, and nontarget identification through Deconvolution Reporting Software (DRS) library searches.

This system collects Scan, SIM, and NPD data simultaneously. Scan is used to screen for 725 toxic compounds. SIM is used for selecting low-level targets. NPD is used for confirmation aid and highlighting suspicious nontargets.

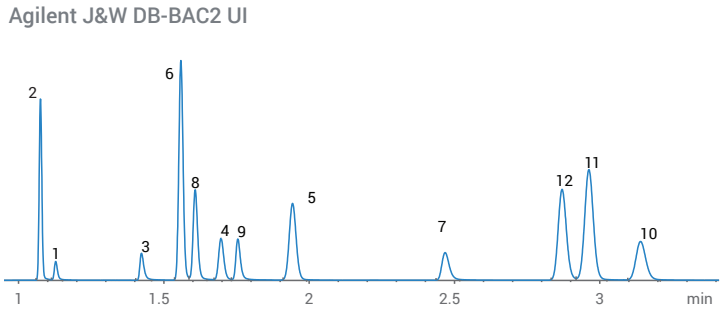
Toxicology Analyzer checkout mix with helium and hydrogen carrier gas.



Defensible data: Improved blood alcohol concentration analysis



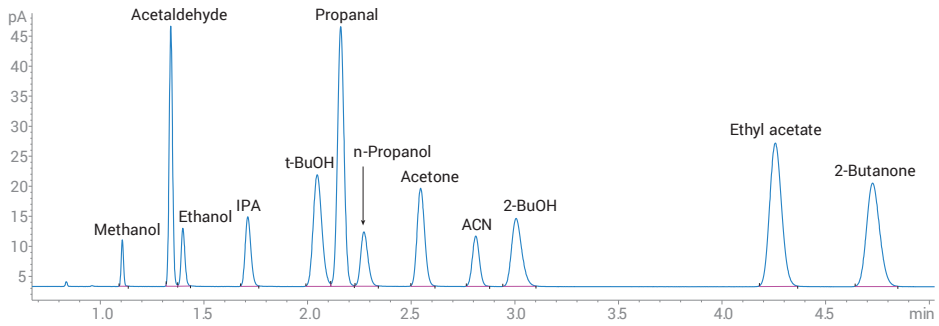
Compounds
1. Methanol
2. Acetaldehyde
3. Ethanol
4. Isopropanol
5. t-Butanol
6. Propanal
7. n-Propanol
8. Acetone
9. Acetonitrile
10. 2-Butanol
11. Ethyl Acetate
12. 2-Butanone

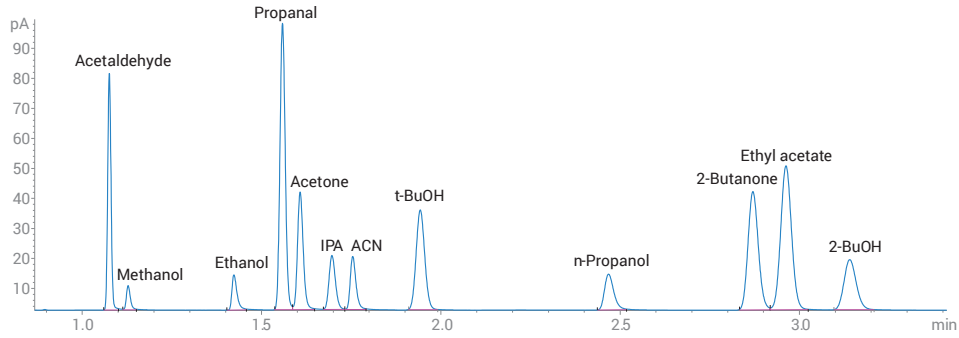


Ethanol and mixed volatile calibrator at 0.01% per component. N-propanol ISTD. The compounds elute at different retention times due to different column selectivities; therefore, two-channel analysis provides extra confirmation of accuracy.

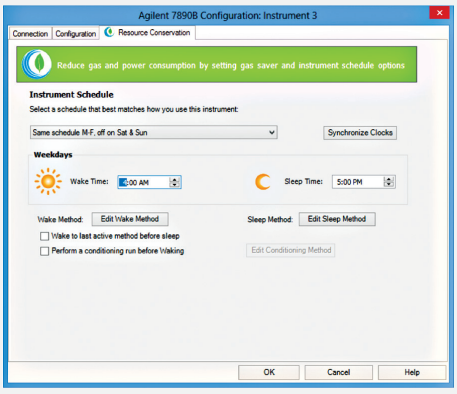
This analysis was performed using an Agilent 7890B GC/ dual FID equipped with a split/ splitless inlet, an Agilent 7697A headspace sampler, and Agilent J&W DB-BAC1 Ultra Inert and DB-BAC2 UI columns. It shows improved resolution for more compounds encountered in the analysis of both ante- and post-mortem blood alcohol concentration.

Agilent ethanol calibration standards resulted in lower percent errors, compared to methods using external standards.

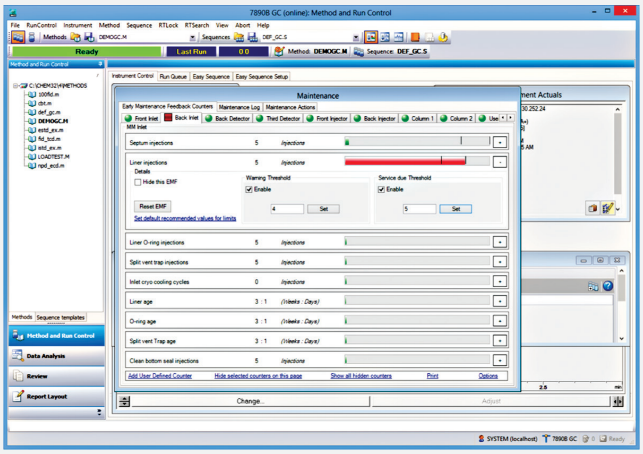




Save energy, simplify maintenance, and conserve resources



Sleep/wake mode lets you put your system to sleep when not in use and awake exactly when you need it.



Early maintenance feedback (EMF) keeps track of injections and consumable usage, so you can establish maintenance SOPs.

Inlets, Detectors, And Accessories Expand The Possibilities Of System Configuration

Get on the fast track to producing quality data and processing sample backlogs

More than just instruments, Agilent GC and GC/MS Analyzers are complete workflow solutions that incorporate advanced technologies—such as Capillary Flow Technology and target compound databases that optimize your system for your unique application.

Each Analyzer arrives ready to perform with preset chromatography and checkout samples to verify separation capabilities. Your team can work toward system validation when installation is complete—and significantly reduce your method development costs. And as always, our support team is available, should any problems arise.

A wide inlet selection lets you optimize your system for your analysis

- Split/splitless (SSL) capillary
- Inert Flowpath split/splitless (ISSL) capillary
- Multimode inlet (MMI)
- Packed purged injection port (PPIP)
- Cool on-column (COC)
- Cool on-column with solvent vapor exit (COC-SVE)
- Programmable temperature vaporizing (PTV)
- Volatiles interface (VI)
- High-pressure gas sample injection
- Gas sampling valve (GSV)
- Liquid sampling valve (LSV)

High-sensitivity detectors accommodate every sample type

- Mass selective detector (MSD)
- Triple Quadrupole MS
- Q-TOF MS
- ICP-MS
- Flame ionization detector (FID)
- Thermal conductivity detector (TCD)
- Micro-electron capture detector (Micro-ECD)
- Flame photometric, single- or dual-wavelength detector (FPD)
- Nitrogen-phosphorus detector (NPD)
- Sulfur chemiluminescence detector (SCD)
- Nitrogen chemiluminescence detector (NCD)
- Atomic emission detector (AED)*
- Pulsed flame photometric detector (PFPD)*
- Photoionization detector (PID)*
- Electrolytic conductivity detector (ELCD)*
- Halogen specific detector (XSD)*
- Oxygenate flame ionization detector (O-FID)*
- Pulsed discharge helium ionization detector (PDHID)*

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Reliably Extract And Concentrate Samples From Complex Matrices

Simplify sample preparation with prepackaged Agilent Bond Elut QuEChERS Kits

- Extraction kits with preweighed salts in anhydrous packets allow the addition of salts after organic solvent—avoiding exothermic reactions.
- Dispersive kits accommodate the aliquot volumes specified by current AOAC and EN methodologies.
- Ceramic homogenizers break up salt agglomerates, promoting consistent sample extraction and increasing recovery.

Produce cleaner extracts using Agilent Bond Elut SPE

- A selection of polymer, silica, and other sorbents in formats ranging from multiple cartridge sizes to 96-well plates.
- Consistent particle size ensures superior flow-through and performances.
- Vacuum manifolds and accessories help you meet all your SPE challenges.

Make sample preparation consistent, accurate, and safe with the Agilent 7696A Sample Prep WorkBench

The Agilent 7696A Sample Preparation WorkBench combines precise automation with an intuitive software interface to eliminate variability in dilution, extraction, standards addition, and other key steps. It also significantly reduces exposure to hazardous solvents for long-term peace of mind.

All prepared samples are finished in 2 mL vials that are compatible with most GC and LC autosamplers for direct analysis without transferring to other sample containers.

To learn more, visit **www.agilent.com/chem/sampleprep**

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