



Agilent 490 Micro GC

**MEASURE  
ANYWHERE**

Remote gas analysis in seconds

The Measure of Confidence



**Agilent Technologies**

# Introducing the Agilent 490 Micro GC

The information you need, wherever you need it

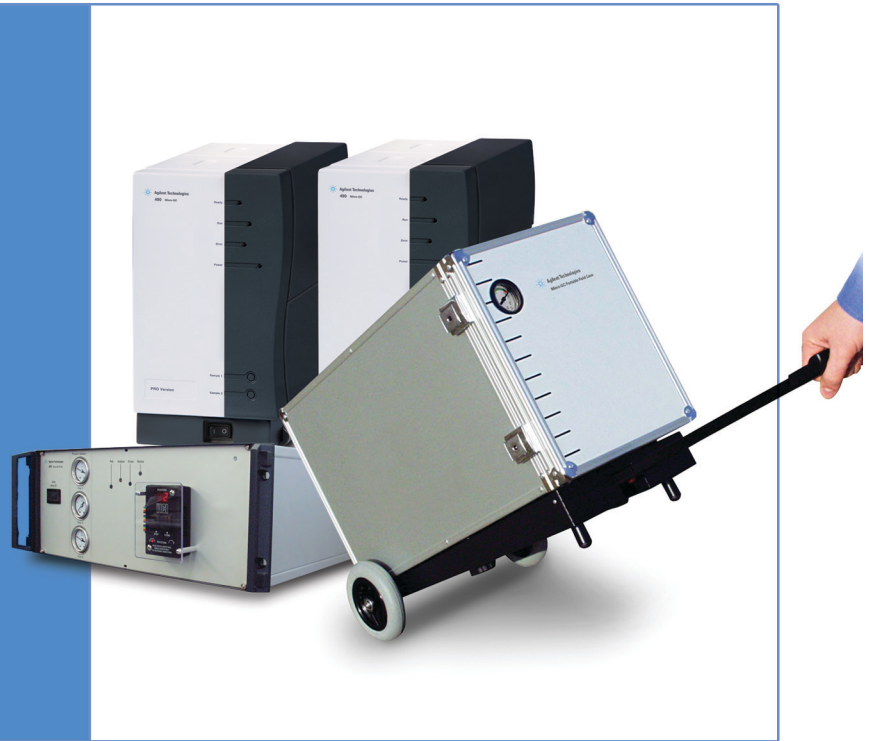
If you want the ability to measure anywhere and get the results you need in seconds, the Agilent 490 Micro GC is the ideal solution. With its rugged, compact, laboratory quality gas analysis platform, the 490 Micro GC generates more data in less time for faster, and better, business decisions. When the composition of gas mixtures is critical, count on this fifth generation micro gas chromatograph instrument to deliver every time.

**Agilent's Micro GC technology has been developed over decades giving you greater confidence in your analysis results and decision-making.**

## Options to suit your needs

The 490 Micro GC is available in optional sizes and configurations for greater flexibility in meeting a variety of applications.

- A 19-inch rack mounted chassis is available for process control applications. (Rack mounting of hardware may be required.)
- A self-contained, portable version can be used at measurement locations where no carrier gas or power is available. Built-in gas cylinders and rechargeable battery provide up to eight hours of productive field time.



Quick and easy start-up lets you achieve results in minutes, even if you change measurement locations frequently.



## Designed for flexibility and ease-of-use

The Agilent 490 Micro GC is designed to provide maximum flexibility and customization. You are able to utilize a full palette of options – including optimized sample conditioning, up to two sample inlets and up to two carrier gases – to achieve greater sensitivity, performance, and practicality.

What's more, the Agilent 490 Micro GC is easy to use. With available autonomous operation, engineers and analysts in a variety of industries can generate measurement results without special training or skills.

## Modular and "ready-to-go"

The Agilent 490 Micro GC is preconfigured and tested at the factory for your specific analysis needs, and arrives ready to be put to use. Modular construction means the system can be quickly reconfigured in the field for new applications, with user-installable plug-and-play GC channels. Two bench-top cabinets are available – the DUAL version for 1 to 2 channels and the QUAD for 1 to 4 channels. Every channel is a complete, miniaturized GC with electronic gas control, injector, narrow-bore column and detector, for fast, high efficiency separations. Each is independently controlled, including injection volume, column oven temperature, and carrier gas.

With micro-electronic gas control and time-programmable backflush, you can analyze sample components of interest while eliminating those that are not. Backflush capability prevents less volatile components and other undesired contaminants such as moisture from reaching the column.

## Accurate analysis and measurement without limits



### An array of cabinets and housing types.

Includes 1 or 2 channel, 3 or 4 channel "bench", a 19-inch rack mount, and is fully self-contained for portability and flexibility. Page 2



### Unparalleled performance in any application.

From calorific value determination... to biogas... to air monitoring, the 490 Micro GC delivers immediate gas analysis. Page 5



### Narrow-bore capillary GC columns.

Answers achieved in seconds, through the use of narrow-bore capillary, PLOT, and micro-packed columns. Page 7



**Agilent OpenLab CDS.** The 490 Micro GC works with Agilent OpenLab CDS for comprehensive system control. Page 8



### Extensive remote control and I/O capability.

Facilitates seamless integration and utilization within existing enterprise operations. Page 9



**PROstation set-up tool.** Assign IP address, read instrument configuration, check instrument status, set analytical method and calibration, and more. Page 9



**Portable and flexible.** Compact dimensions and portability open up an array of measurement possibilities. Page 10



**Accessories enhance performance and functionality.** Expand range of samples, improve flexibility, and ensure reliable particle removal. Page 10



**Eco-friendly.** With a footprint smaller than the area of this page, the 490 Micro GC minimizes gas and energy consumption.



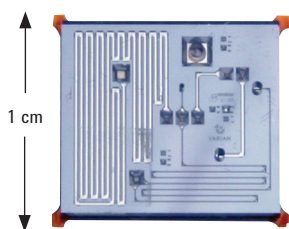
**Micro GC Analyzers.** Application-specific analyzers provide a complete workflow solution, saving time and cost on method development.

To learn how the Agilent 490 Micro GC can help you make better business decisions, visit [www.agilent.com/chem/microgc](http://www.agilent.com/chem/microgc)

# Engineered for the **fastest possible results**

The Agilent 490 Micro GC was designed to deliver actionable and defensible results as quickly as possible. Fast results are achieved by using state-of-the-art technology such as narrow-bore capillary GC columns, micro-machined injectors, and micro-machined thermal conductivity detectors ( $\mu$ TCD). Together, these technologies deliver separation gases in a matter of seconds.

## Micro-machined injector



Micro-machined injector

- **Higher dependability.** Silicon micro-machined injector has no moving parts
- **More functionality.** Software-selectable injection volumes from 1  $\mu$ L to 10  $\mu$ L cover a wide range of application requirements

- **Eliminate wear and tear.** Available backflush capability keeps the analytical column well protected
- **Improved performance.** Injector can be heated to 110° C, which eliminates discrimination of higher hydrocarbons



## Improved characteristics and ease of use

### Inert sample flow path

Gas analysis get more demanding every day. “Difficult” components and lower detection limits ask for a system that provides maximum inertness to get your sample find its way to the detector. That is why we Ultimet<sup>TM</sup> treat the critical parts of our Micro GC. This results in a superior inert sample flow path ensuring the best possible detection limits and long term stability of the instrument.

### Fixed sample IN at the rear of the instrument

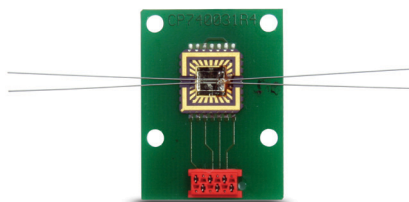
For enhanced ease of use, the Sample IN connection was relocated from within the Micro GC to the rear panel of the instrument.

Together with the front inlet for manual injections using a gas tight syringe the instrument provides maximum flexibility to analyze your gas samples.

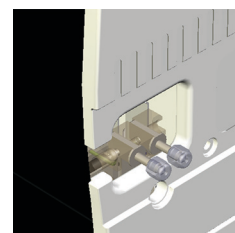
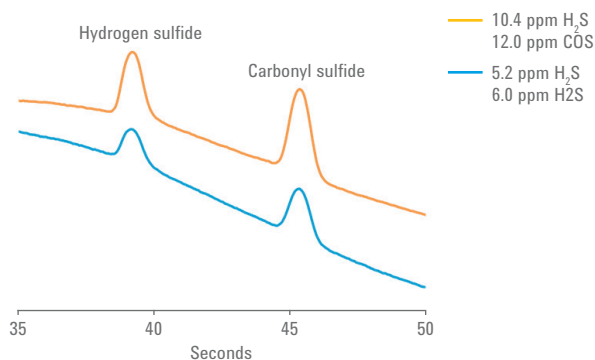
## Micro-machined Thermal Conductivity Detector ( $\mu$ TCD)

- **Better data quality.** 200 nL internal volume eliminates peak broadening
- **Greater sensitivity.** Detection limit\* is:
  - 0.5 ppm for WCOT capillary columns (CP-Sil 5 CB, CP-Sil 13 CB, CP-Sil 19CB and CP-WAX 52 CB) in 4–10 m length.
  - 2 ppm for PLOT columns (Molsieve 5A, PoraPLOT Q, PoraPLOT U, Aluminumoxide, SilicaPLOT)
  - 2 ppm for Micropacked columns (Hayesep, MES)
  - 10 ppm for Micropacked columns (Carboxene)

\*Detection limits are typical for selected components provided that the proper column length and chromatographic conditions are used.



Micro-machined thermal conductivity detector



# Analyze and measure with confidence

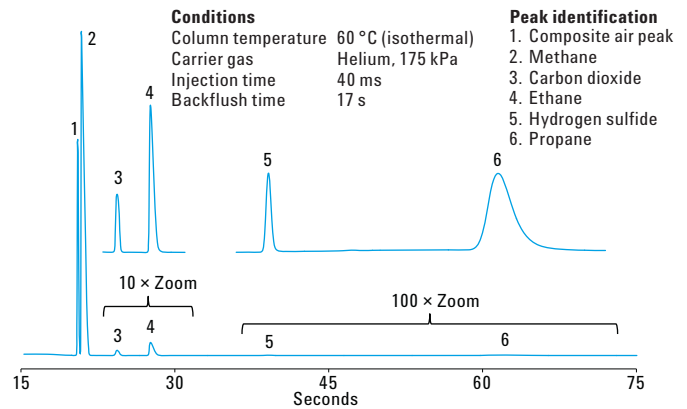
## Key applications

For production and research, the Agilent 490 Micro GC provides gas analysis in a matter of seconds. It delivers unparalleled performance in any application where precise gas analysis saves money and adds value.

Examples include:

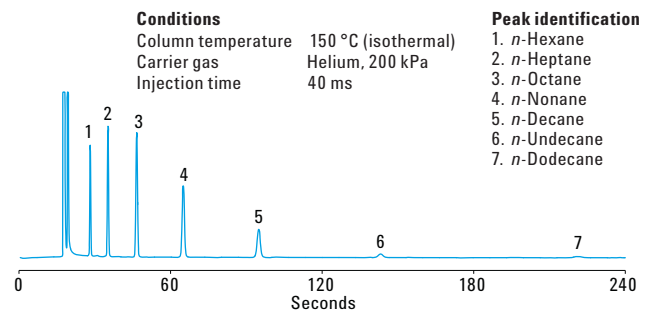
- Natural gas composition/calorific value determination
- Natural gas odorants
- Liquefied natural gas (LNG)
- Coal seam gas
- Analysis of simple to complex refinery gases
- Liquefied petroleum gas (LPG)
- Stack emissions monitoring
- Oil/gas exploration, mud logging
- Assessing efficiency of catalysts
- Syngas
- Biogas/biomethane
- Landfill gas
- Mine safety analysis
- Fuel cell
- Dissolved gas analysis (DGA)
- Analysis and quality control of specialty gases
- Impurities in industrial gas
- Air monitoring
- Fixed gas

## Natural Gas



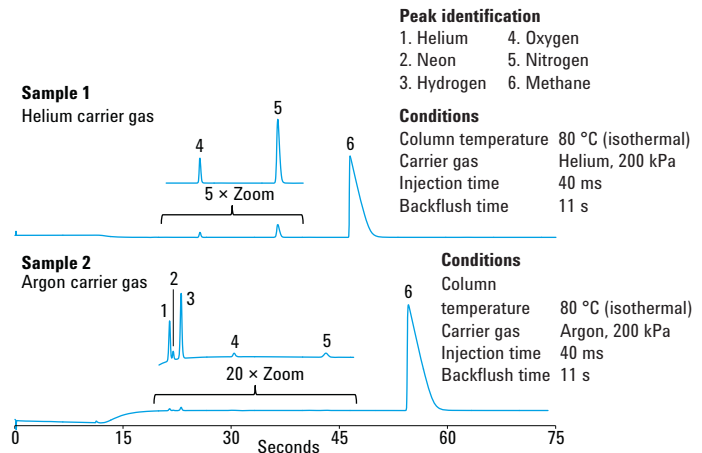
Chromatogram for natural gas on the PoraPLOT U column channel.

## Hydrocarbons



Analysis C7–C12 hydrocarbon mix on an 8-meter CP-Sil 5 CB.

## Permanent Gases



Analysis of permanent gases on a 10 m Molesieve 5A column.

To see how the Agilent 490 Micro GC delivers results in seconds, visit [www.agilent.com/chem/microgc](http://www.agilent.com/chem/microgc)



### OUT-OF-LAB

The 490 Micro GC, in combination with the field case, is designed for out-of-lab use. Bringing the analyzer to the sample with “lab quality” results ensures maximum flexibility in your daily analysis needs. Analyzing anywhere and anytime made easy.

### PROCESS ANALYSIS

- 490-PRO version
- On-board data handling and result calculations
- Unattended operation
- Extended industry standard communication protocols

### APPLICATIONS

The 490 can be customized with up to four unique columns that can be run in parallel. Each column allows its own calibration, temperature setting, injection volume, and flow rate. These features make the 490 the most versatile uGC available.



### INERT SAMPLE FLOW PATH

Latest technology is implemented to deactivate the complete sample path



## COLUMN CHEMISTRIES

A full range of Agilent-made column chemistries are available to serve even the most demanding separations and applications:

- CP-Sil 5 CB
- CP-Sil 5 CB for NGA
- CP-Sil 13 CB for TBM
- CP-Sil 19CB
- CP-Sil 19 CB for THT
- CP-WAX 52 CB
- Molesieve 5A
- Aluminumoxide
- PoraPLOT Q
- PoraPLOT U
- Hayesep A
- Carboxene 1000
- SilicaPLOT
- MES in NGA

## SAMPLE INLET

- Rear - Standard 1/16" connections
- Front - Manual injection via a septum or luer lock connection



## ECO-FRIENDLY

- Low carrier gas consumption (approximately 10% compared to a bench GC)
- Low energy consumption
- Compact design, very small footprint



## PRECONFIGURED ANALYZERS

Instruments for turn-key performance.

Analyzers Offered:

- Biogas
- Natural Gas
- Customized to get you on the fast track
- Factory configured, tuned & tested
- Ready to go upon installation

## MEMS TECHNOLOGY

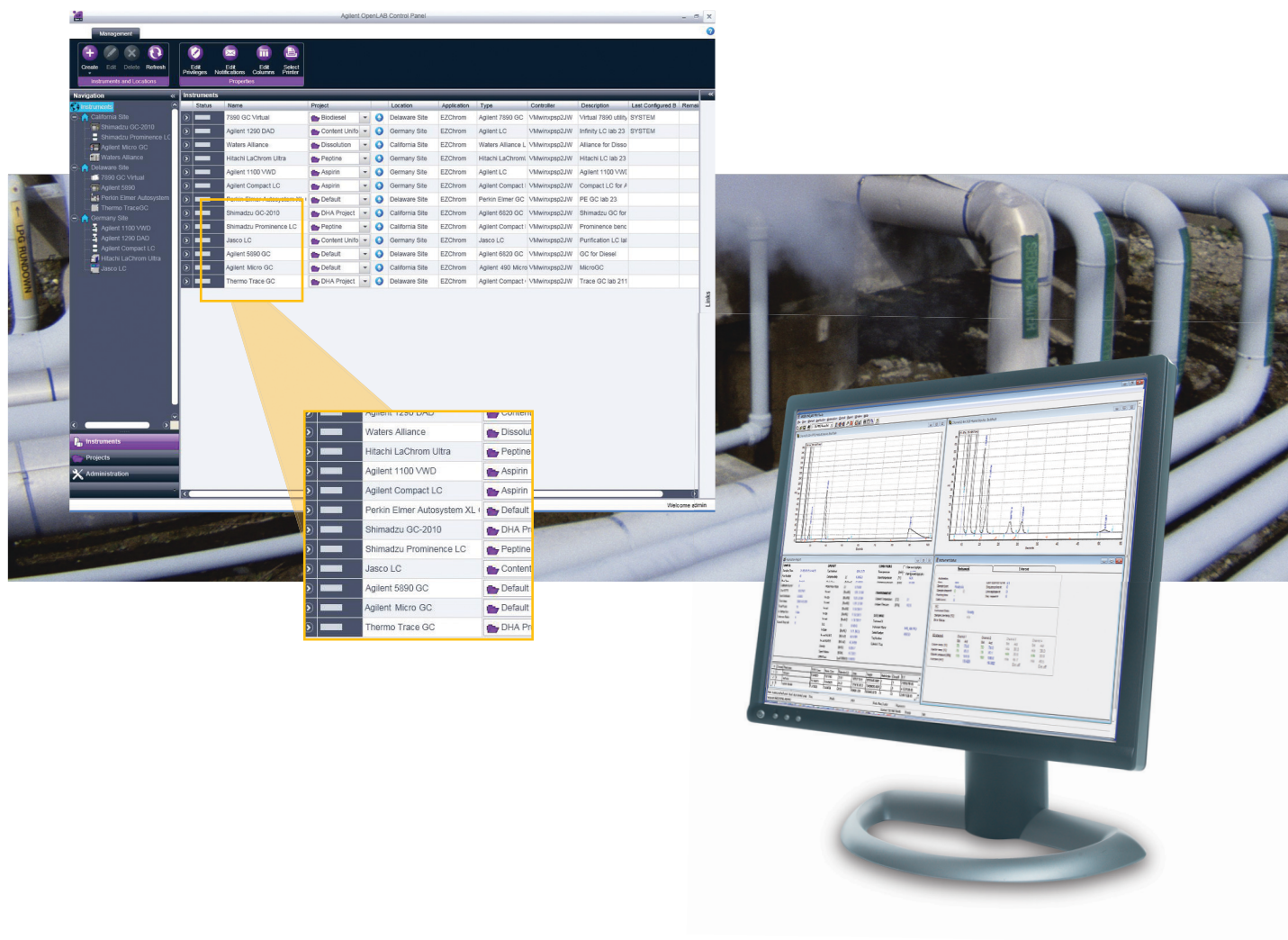
Ultra low internal volume Micro machined injector and detector

To learn more about the Agilent 490 Micro GC, visit [www.agilent.com/chem/microgc](http://www.agilent.com/chem/microgc)

# Agilent OpenLab CDS: the software of choice for comprehensive system control

The Agilent 490 Micro GC is designed to work with Agilent OpenLab CDS, for optimal results. OpenLab CDS supports instrument control and digital data acquisition from a vast number of chromatographic systems and related hardware manufacturers around the world.

- **Single platform for all instruments.** There is no need for costly deployment of multiple software packages from different vendors.
- **Scalable and easy to use.** All versions share a common user interface and common formats for data and method files. Regardless of initial deployment size, OpenLab CDS can seamlessly grow with your lab – without the need for costly user retraining and method revalidation.





# Agilent PROstation: software to easily set up the 490-PRO

## PROstation for the 490-PRO Micro GC

Designed to be a “system” component, the 490-PRO Micro GC does not require an external computer to generate data and results. Instead, it features on-board data collection and integration, and result generation. User-defined information is then automatically passed on to an external system (for instance, process control) in a completely unattended manner.

For added convenience of on-line/at-line analysis, the 490-PRO Micro GC is also available in a 19-inch rack mounted chassis. Sampling and sample conditioning devices, such as stream selection valves and Genie membrane filters, can be mounted within the housing. The 490-PRO Micro GC does not use flammable gases, and requires only small quantities of sample gas for analysis and monitoring, making it the preferred choice for use in environments where operational safety is of paramount importance.

Powerful PROstation software allows you to quickly set up the initial analysis method and validate the application. The on-board data handling system takes over complete operation of the 490-PRO Micro GC.

- **Wide range of applications.** For bulk and trace analysis, including complex sample compositions.
- **Standalone functionality.** Does not require an external computer.
- **Safe to operate.** The instrument does not require flammable gases to operate and uses a small quantity of sample gas.



Agilent 490-PRO Micro GC in a 19 inch housing

Agilent 490-PRO Micro GC



# Optimize performance with these accessories



## Micro-Gasifier

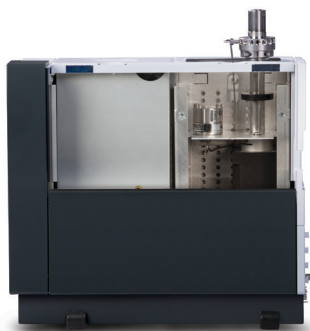
### Expand the range of samples you can analyze

The Micro-Gasifier provides controlled Liquid Petroleum Gas (LPG) and Liquefied Natural Gas (LNG) sample evaporation before the sample is introduced into the gas chromatographic injector for analysis. In addition, high-pressure gas samples can be reduced without creating cold spots, which prevents discrimination in the sample.

## Accessory bracket

### Use accessories more conveniently

The Micro GC accessory bracket is an on-board universal mounting platform for accessories, which occupies one channel position in the 490 Micro GC. With the accessory bracket, stream selection valves, Micro-Gasifier, Genie membrane filters, pressure regulator, sample pressure sensors, and sample relief valves can be integrated.



## Syringe Injection

### Improve flexibility in sample handling

With the syringe injection, ad hoc samples can be analyzed more easily. Gas samples can be injected with a syringe in the 490 Micro GC via the optional inlet on the front of the instrument. The sample can be introduced via a septum cap or by using a Luer-lok connection.



## Genie Membrane Filter

### Ensure reliable particle removal

The Genie membrane filter will remove particles and liquids from your gas sample. This helps ensure proper functioning of the micro-machined injector – for a longer lifetime of reliable results. The filter is suitable for ppb up to percentage level analysis, is fully inert, and is compliant for calorific value determination methods.

## Field case provides on-the-go measurement convenience

With the 490 Micro GC, gas analysis in the field is made easy. Compact in size and weight, the instrument can be easily transported in this fully self-contained field case. That makes it the ideal solution for perimeter monitoring, multiple drilling locations, and transporting to natural gas pipelines and metering stations. Analysis and testing can be conducted on-site or remotely via the Internet.



Want superior performance in any application? Visit [www.agilent.com/chem/microgc](http://www.agilent.com/chem/microgc) to learn more about the Agilent 490 Micro GC.

# The Agilent portfolio: solutions and service

## A comprehensive portfolio from the leader in gas chromatography



Agilent provides the broadest selection of gas chromatography (GC) and gas chromatography/mass spectrometry (GC/MS) systems, support, and supplies in the industry. So whether you need flexible, reliable hardware and software for complex research; simple, robust systems for routine production environments; or fast, rugged portable solutions for real-time measurements in the plant or in the field, we have a GC or GC/MS to meet your analytical and business challenges.



Agilent GC columns are designed and manufactured to offer excellent, reproducible performance for the benign to the most difficult types of samples. With the lowest bleed levels, the best inertness for acids, bases, or mixed functional compounds, and the tightest column-to-column reproducibility – Agilent GC columns are of higher quality and perform better than any other columns on the market.



Ensuring clean gas delivery is essential for accurate gas chromatography. Agilent Gas Clean Filters provide leak-free filter replacement that reduces downtime. They are very economical, with immediate payback, and the highly sensitive filter indicators provide maximum instrument protection.



## Agilent CrossLab

Solve complex challenges with help from a true business partner. Agilent CrossLab services and supplies support your organization's unique goals. You also have access to expert insights for improving economic, operational, and scientific outcomes.

# The Agilent 490 Micro GC – fast gas analysis where and when you need it

## The Agilent 490 Micro GC features:

- More data generation in less time for faster, better business decisions
- Compact dimensions making it easily transportable
- Modular and flexible; easily reconfigured for a variety of applications
- Easy to operate, without special training or skills
- Industry leading sensitivity and accuracy
- Minimized power and carrier gas consumption giving it a small carbon footprint
- Out of lab solution with “lab quality” results



### Learn more:

[www.agilent.com/chem/microGC](http://www.agilent.com/chem/microGC)

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