

Outstanding Analytical Performance Begins with the Best Sample Preparation

Agilent sample preparation portfolio





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Did You Know That Unexpected Instrument Downtime and Time Spent on Reruns Often Result from the First Part of Your Workflow?

Build outstanding analytical performance on a strong foundation of sample preparation.

Agilent can help you increase your lab productivity with sample preparation solutions, and simplify your sample preparation methods. From particulate removal all the way to the most selective solid phase extraction techniques, the Agilent sample preparation portfolio offers the right solution for your application.

1 Sample preparation and containment

Agilent offers ways to simplify your sample preparation and containment for increased lab productivity.



2 Sample analysis

Inadequate sample preparation can impact the accuracy of your results and clog your instrument, increasing downtime and the need for maintenance.



3 Results reporting

Thorough sample preparation is the only way to achieve outstanding analytical sensitivity and result reproducibility.



Did You Know That Even Small Amounts of Particulates Can Ruin Your Column and Your Results?

Even small amounts of particulates can cause high backpressure, retention-time shift, resolution loss, and shorter column life. Agilent Captiva Premium syringe filters remove damaging particulates and are the ideal choice for simple mechanical filtration. Our Captiva Premium syringe filters are designed to give you:

- **Greater productivity.** The unique design produces the industry's fastest flow rates.
- **High loading capacity.** Handle more particulates and greater volumes than other manufacturers' products.
- **The industry's lowest protein binding.** PES filters are ideal for challenging biological applications where proteins must be analyzed.
- **The lowest extractable levels.** Free of extractables under conditions specified by the certificate.

All Captiva Premium syringe filters are certified for LC, and what's more, the PES and GF filters are certified for LC/MS.



Agilent Captiva premium syringe filters.

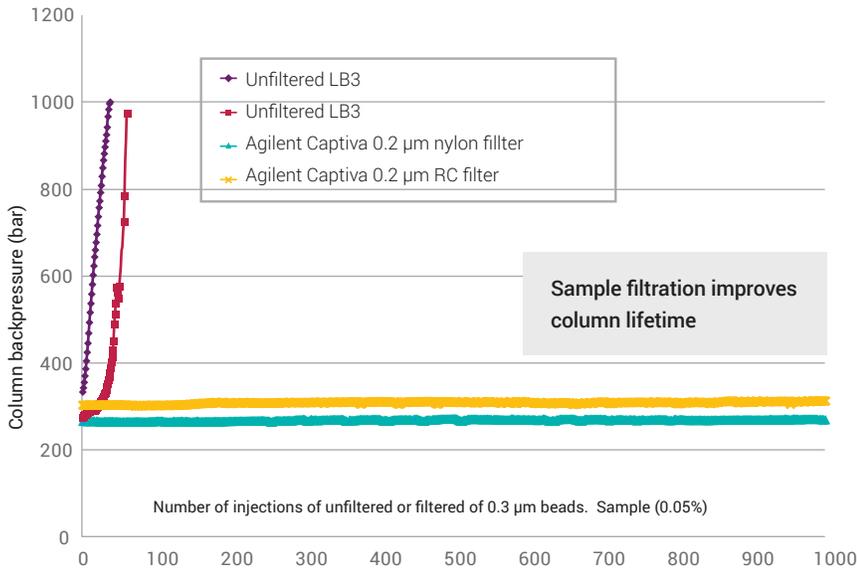
Syringe Filter Selection Guide

Our online selection guide makes it easy and fast to choose the best syringe filter for your application.

Try it now at www.agilent.com/chem/selectfilters

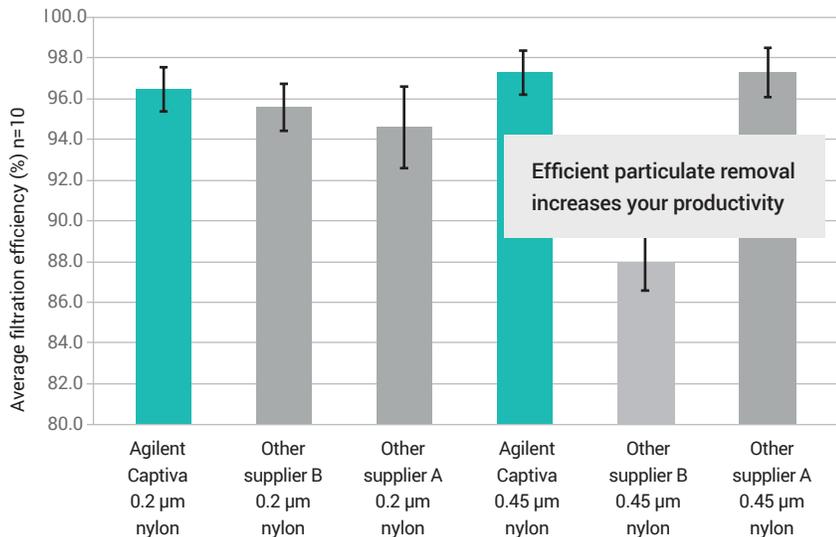


Still Not Filtering Your Samples? This Is Why You Should Be...



To test column lifetime, we used a 0.002 % Triton X-100 surfactant solution to prepare a 0.05 % latex-bead suspension (0.3 μm). We then performed HPLC analysis on both filtered and unfiltered samples of the 0.3 μm suspension. Without filtering, the small-sized beads were not excluded and caught in the column frit—increasing backpressure and reducing column life.

Impact of filtering a 0.3 μm latex-bead suspension on lifetime of a sub-2 μm column.



To test filtration efficiency of Agilent and other suppliers' filters, we used a 0.1 % Triton X-100 surfactant solution to prepare a 0.01 % latex-bead suspension (0.3 μm). This challenging suspension was passed through each individual syringe filter, and a 1 mL filtrate was collected in a 2 mL vial for HPLC analysis.

Average filtration efficiency of Agilent Captiva syringe filters compared to other suppliers. Note: Different latex-bead solutions were used for different membrane qualification tests.

Did You Know That You Can Streamline Your Protein Precipitation Workflows and Increase Productivity?

Streamline your workflow while maximizing matrix removal

Agilent Captiva sample preparation products for protein precipitation workflow reduce steps from traditional centrifugation protein precipitation, saving you time. With Captiva EMR–Lipid, you can achieve phospholipid removal without adding extra time to your workflow.

	Standard PPT on 96-well collection plate	Duration (minutes)	PPT on Agilent Captiva ND 96-well plate	Duration (minutes)	PPT on Agilent Captiva EMR–Lipid 96-well plate	Duration (minutes)
Protocol	Centrifugation based PPT protocol		Precipitate removal based PPT protocol		Functional filtration based PPT protocol	
Steps and duration	Biological sample addition	30	Crash solvent addition	5	Biological sample addition	30
	Crash solvent addition	5	Sample addition	30	Crash solvent addition	5
	Sample mixing	5	Sample mixing	5	Sample mixing	5
	Centrifugation	10	Elution and sample collection	15	Elution and sample collection	10
	Supernatant transfer	30				
	Total time before post-treatment	80		55		50
Post-treatment			Same with different protocols			
Matrix removal	Proteins		Proteins		Proteins and phospholipids	

Comparison is based on processing 96 biological samples on 96-well plate.

Streamline your workflow

Streamline PLUS lipid removal

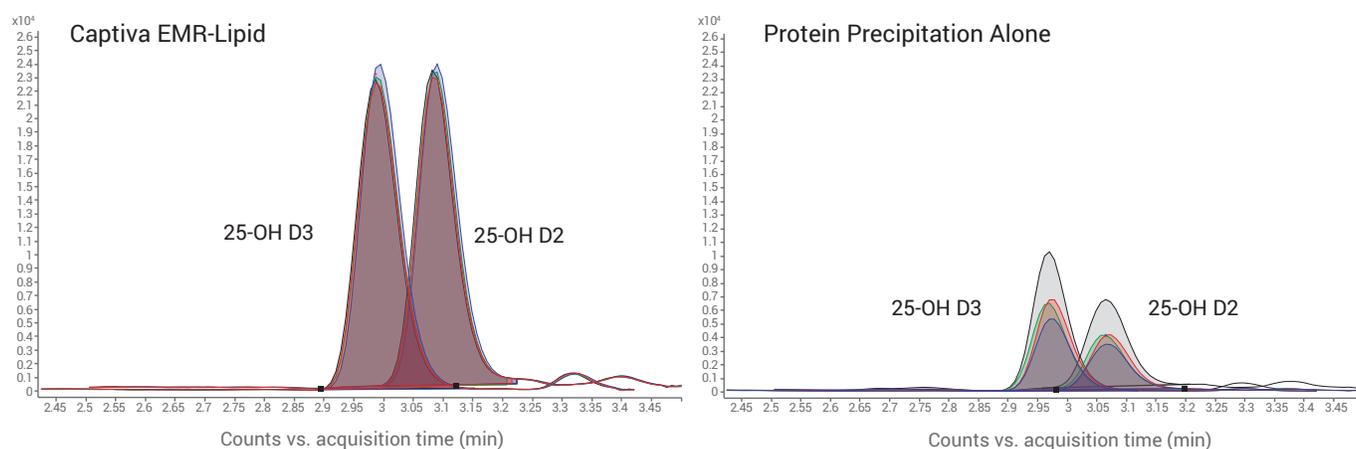


Agilent Captiva EMR–Lipid. Winner of an Analytical Scientist Innovation Award (TASIA) for 2017.

Enhanced matrix removal boosts your productivity by preventing reruns

Reduce reruns with improved sensitivity and smaller RSD

Reducing matrix interference is a must for maintaining analytical sensitivity standards—especially for biological matrices such as plasma, and high-fat food matrices from animal or plant origin. The innovative sorbent in Captiva EMR–Lipid cartridges and plates captures ion-suppressing lipids, while allowing analytes of interest to pass through. Captiva EMR–Lipid provides excellent cleanup for fat-containing samples, improving data quality and decreasing RSD.



Captiva EMR–Lipid is an innovative material that efficiently removes major lipid classes from sample matrices without analyte loss. It works through a unique combination of size exclusion and hydrophobic interaction.

Captiva EMR–Lipid comes in multiple formats for both food and biological samples. The 96-well plate and 1 mL cartridge formats contain a solvent retention frit, enabling in-well protein precipitation, which streamlines sample preparation. The improved filter design gives easy elution with vacuum or positive pressure. The 3 mL and 6 mL cartridge formats provide for gravity flow with the absence of solvent retention frits and are easy to use.

Did You Know That You Can Simplify Liquid-Liquid Extraction and Achieve More Reproducible Results?

Increase reproducibility

Agilent Solid Supported Liquid Extraction (SLE) products offer advantages over standard liquid-liquid extraction (LLE) methods, including support for automation of high throughput, and better recoveries and precision by removing issues with emulsions that are often formed when performing LLE.

Agilent Chem Elut cartridges and plates use a broad-performance inert diatomaceous earth sorbent for rapid, general sample preparation. Clean, inert diatomaceous earth sorbent material provides a surface for the aqueous sample. An immiscible solvent is used to perform the extraction, resulting in a clean extract. Chem Elut Plus uses a diatomaceous earth sorbent that is specially prepared for trace-level analysis.



Agilent Chem Elut cartridges and plates.



Did You Know That Not All QuEChERS Kits Are Created Equal?

The Agilent advantage—quality

You can speed up your workflow, improve target analyte detection, and prevent instrument contamination with Agilent Bond Elut QuEChERS kits. These easy-to-use kits remove interfering matrix compounds, allowing you to analyze samples for a broad range of pesticides, veterinary drugs, and other analytes of interest.

With Agilent Bond Elut QuEChERS kits, you get the advantages of:

- **Improved reproducibility.** Our multistep QA and QC processes deliver uniformity, reliability, and robustness. Agilent Bond Elut QuEChERS products are tested for PAH and pesticides to ensure the highest levels of cleanliness.
- **Optimal sample cleanup.** Choose from a variety of kits ideally suited for your method and sample matrix.
- **Time-saving convenience and accuracy.** Prewighed and convenient extraction kits with easy-tear anhydrous salt packets ensure accurate transfer of exact salt amounts into tubes.
- **More efficiency.** Ceramic homogenizers break up the sample to ensure extraction consistency.

What's more, you'll get trusted Agilent insights. These kits are made by a company with years of QuEChERS experience and over 50 application notes to demonstrate various analytes, sample times, and workflows.



Agilent Bond Elut EMR-Lipid dSPE kits.



MAKE QuEChERS AS EASY AS 1-2-3 WITH AGILENT BOND ELUT QuEChERS KITS

Step 1 EXTRACT
Choose your matrix:

- ADAC Method** (2012-21): Fruits, Veggies, Herbs, Spices, etc.
- EN Method** (2012-21): Fruits, Veggies, Herbs, Spices, etc.
- Original QuEChERS** (2002-04): Fruits, Veggies, Herbs, Spices, etc.

Step 2 CLEAN
Choose a dispersive SPE kit specific to your matrix:

- ADAC**: ADAC 1000 (100 mg PSA, 100 mg PSA, 100 mg PSA), ADAC 2000 (200 mg PSA, 200 mg PSA, 200 mg PSA), ADAC 3000 (300 mg PSA, 300 mg PSA, 300 mg PSA), ADAC 4000 (400 mg PSA, 400 mg PSA, 400 mg PSA), ADAC 5000 (500 mg PSA, 500 mg PSA, 500 mg PSA).
- EN**: EN 1000 (100 mg PSA, 100 mg PSA, 100 mg PSA), EN 2000 (200 mg PSA, 200 mg PSA, 200 mg PSA), EN 3000 (300 mg PSA, 300 mg PSA, 300 mg PSA), EN 4000 (400 mg PSA, 400 mg PSA, 400 mg PSA), EN 5000 (500 mg PSA, 500 mg PSA, 500 mg PSA).

Step 3 ANALYZE
with Poraguard LC Columns or Ultra Inert GC Columns using the 600 Series Split QuEChERS LC MS or 7000 Series QuEChERS GC MS System for liquid sampling or the 800 Series Agilent Mass Quadrupole Mass of Page 2019 or 2008 GC MS for non-liquid sampling.

Agilent UNIVERSITY

Agilent Technologies

Make QuEChERS as easy as 1-2-3

Get your free QuEChERS selection poster at:
www.agilent.com/chem/quetchersposter



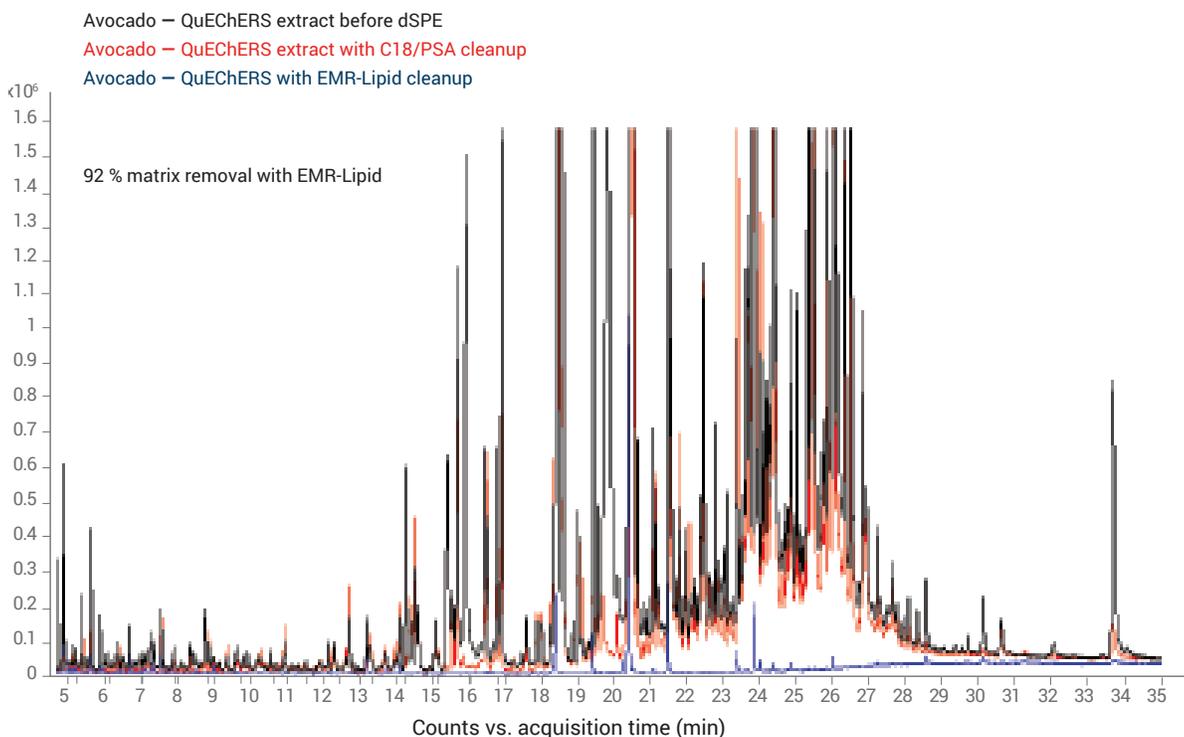
Find expert guidance on QuEChERS techniques

Request our Food Testing Applications Notebook, Volume 2:
www.agilent.com/chem/quetchersbook

Did You Know Your QuEChERS Workflow Can Now Include Efficient Lipid Removal?

For complex samples that include large amounts of fats/lipids, existing QuEChERS dispersive SPE (dSPE) can be insufficient for cleanup, leading to inaccurate and irreproducible analyses and increased instrument maintenance.

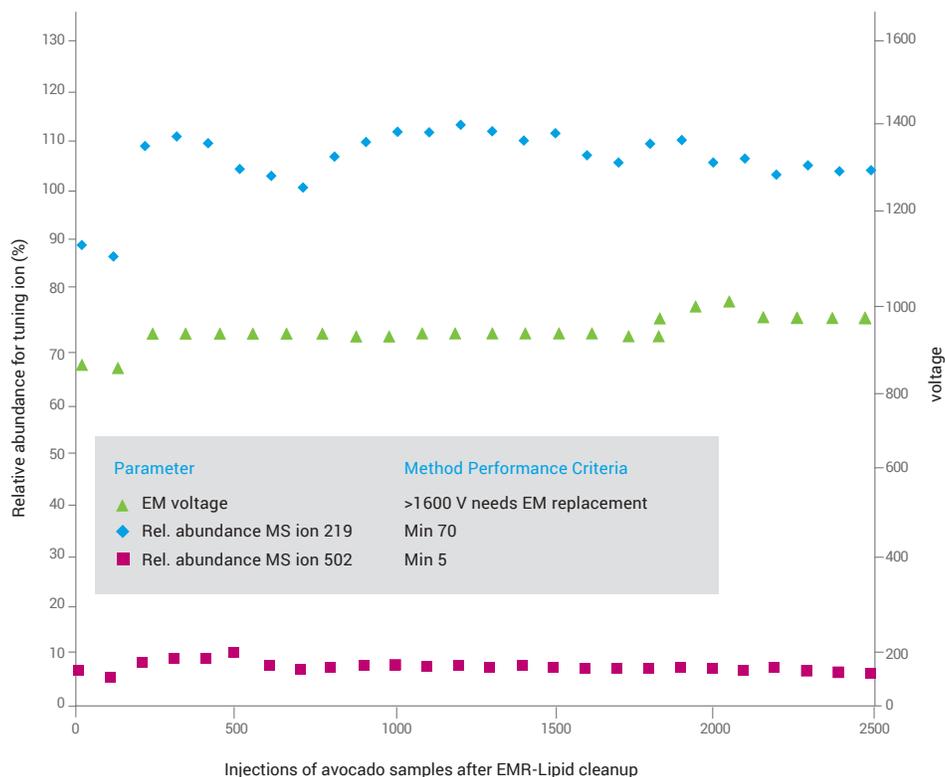
Bond Elut EMR-Lipid dSPE streamlines the QuEChERS workflow for fatty samples. EMR-Lipid is an innovative material that efficiently removes major lipid classes from sample matrices without analyte loss. It works through a unique combination of size exclusion and hydrophobic interaction.



GC/MS full-scan chromatogram overlay of an untreated QuEChERS avocado extract (black), compared to traditional C18/PSA cleanup (red) and an extract treated with Agilent EMR-Lipid (blue).

Minimize instrument maintenance

Lipids build up on the source of your mass spectrometer, causing increased instrument maintenance. They also clog your column, increasing the need for column flushing and reducing your column lifetime. Now you can efficiently remove lipids to reduce instrument maintenance as part of your QuEChERS workflows.



GC/MS source conditions during 2500 injections of avocado samples, demonstrating significantly reduced frequency of MS source maintenance (cleaning or replacement) when using Agilent EMR-Lipid.



Did You Know You Can Choose from Over 40 Sorbents to Find the Best SPE Product for Your Analysis?

Start your application development with quality products

Agilent SPE products are available in many cartridge formats, including straight barrel, large reservoir capacity (LRC), and Bond Elut Junior (Jr). 96-well plate configurations support automated workflows, with flexibility for method development and scale-up. Bulk packaging of popular products provides a cost-effective solution for high-throughput workflows.

Selection of Agilent Bond Elut SPE mode and phase

Analyte MW < 3,000 Da						
Analyte solubility (matrix)	Water-soluble				Organic solvent-soluble (water immiscible)	
Molecular character	Ionic		Non-ionic		Polar	Moderately polar
	Cation	Anion				
Stationary phase	Cation exchange	Anion exchange	Polar	Non-polar	Polar	Polar
Phases: Polymeric	Plexa PCX	Plexa PAX		Plexa PPL ENV LMS		
Phases: Silica-based	SCX CBA PRS Certify	SAX DEA PSA NH2 Certify II	CN-E Diol NH2	C18 C18 OH C8 PH C2 C1 CH	Diol NH2 DEA PSA CN-U	Si NH2 Diol
Phases: Specialty				Carbon	Fl Alumina A, B, or N	Fl Alumina A, B, or N
Phases: Dual phase or mixed mode	Certify & Certify II*: Mixed mode (silica) Plexa PCX: Mixed mode cation exchange (polymeric) Plexa PAX: Mixed mode anion exchange (polymeric) Carbon/NH2: Interference removal for food/pesticide analysis Carbon/PBA: Interference removal for food/pesticide analysis					

*For Forensic Use

This table helps you select the correct Bond Elut polymer, silica, or other sorbent cartridges for applications that call for consistent results and lower detection limits.

For over 30 years, Bond Elut has been one of the most trusted names in solid phase extraction

The Bond Elut difference

- Heritage of reliability. With years of use in some of the most demanding analytical laboratories in the world, Bond Elut products have a proven track record resulting in a strong publication pedigree.
- Options for your needs. Bond Elut offers extraction solutions for the widest range of analytes and matrices, bonded silica phases for high specificity methods, and polymeric phases for rapid method development.

Bond Elut has the largest choice of formats and sorbents in the market today

- Innovative products designed for lab efficiency. Whether it be fast flow polymeric particles or our patented 96-well plate design, all Bond Elut products are created for ease-of-use, reliability, and flexibility to meet both manual and automated requirements.
- Technical support at every step. For your specific applications, or to help solve occasional technical issues, a global team of analytical scientists is on hand to assist.
- World-class manufacturing and quality. Unrivaled manufacturing control, plus exacting ISO 9001:2000 compliant inspections guarantee the consistent quality of Bond Elut.

Achieve more consistent sample processing

Positive pressure processing of cartridges and 96-well plates, such as solid phase extraction (SPE), supported liquid extraction (SLE), and filtration (protein precipitation), offers many advantages over traditional vacuum processing.

- Uniform flow. Restricted-flow ports ensure consistent processing across the manifold, regardless of cartridge or well contents.
- Greater flexibility. Forced gas supplies a wide range of pressures for processing diverse samples, including viscous samples.

Agilent positive pressure manifolds are available in 48 and 96 formats. Watch the video series to learn more: www.agilent.com/chem/ppm-videos



Agilent 48 and 96 positive pressure manifolds.

Did You Know SPME Fibers Are an Excellent Way to Perform Headspace Analysis?

SPME kits and fibers

Agilent also offers standard SPME kits and fibers.

- SPME fibers can be used multiple times when treated with the proper care and caution.
- Each fiber has a color-coded or notched hub, indicating the type of coating on the fiber.
- Fiber kits contain only the fibers. For a first-time order, you will also need to order the appropriate fiber holder for your needs.



Agilent offers SPME fibers in a range of chemistries and formats.

The Agilent Difference: Support at Each Step in Your Workflow

Agilent sample preparation products support the first part of your workflow. The true value of Agilent comes from the complete workflow solution.



Consistent sample preparation

From SPE, to QuEChERS, to filtration, Agilent sample preparation products let you quickly produce aliquots that are representative, reproducible, and homogenous.



High-performing Agilent columns

Agilent J&W Ultra Inert GC columns deliver consistent column inertness and exceptionally low column bleed for lower LODs and more accurate data. For the most efficient LC separations and reproducible results, choose InfinityLab Poroshell 120 LC columns.



Innovative instrumentation from LC, GC, to MS

Agilent instrumentation innovations help you to drive better business outcomes by enhancing usability, productivity, and your return on investment.



MassHunter Workstation

Produce high-quality MS data—and use that data to identify and quantify targets and unknowns.

Agilent OpenLab

Maximize the business value of scientific data across its entire life cycle.

Agilent
CrossLab

From Insight to Outcome

Agilent CrossLab services

CrossLab is an Agilent capability that integrates services, consumables and lab-wide resource management to help laboratories improve efficiency, optimize operations, increase instrument uptime, develop user skill and more. Learn more about Agilent CrossLab, and see examples of insight that leads to great outcomes:

www.agilent.com/crosslab



Agilent InfinityLab can enhance your sample preparation workflow solutions

You can maximize efficiency at each step in your workflow and make every day more productive. Talk to us about combining workflow solutions like sample prep with the power of InfinityLab products, Agilent OpenLab software, and Agilent CrossLab services.

Agilent provides the systems, software, services, and supplies to give you complete confidence in the data you generate—and to meet the deadlines of a rapidly moving marketplace.

For more information go to: www.agilent.com/chem/infinitylab

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This information is subject to change without notice.