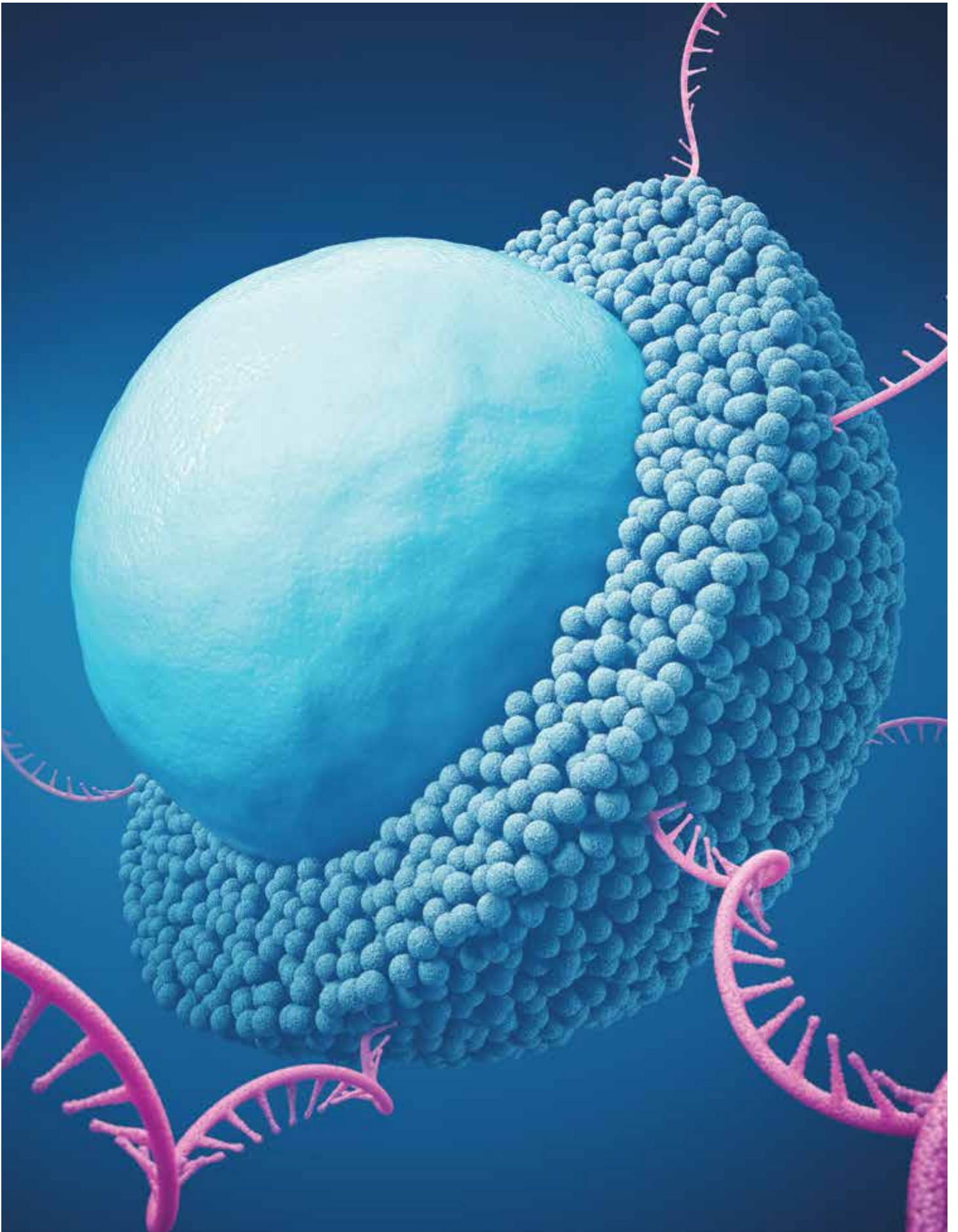


AdvanceBio Your Oligonucleotide Workflow

From analytical to preparative scale, Agilent AdvanceBio Oligonucleotide columns, software, and instrumentation pair seamlessly to minimize method optimization and downtime.





Advance Your Separations with Agilent AdvanceBio Oligonucleotide Workflow Separations

Whether you are using LC/MS or UV analysis, the AdvanceBio Oligonucleotide family of scalable chemistries and accompanying instrumentation and software platforms will advance your oligonucleotide analysis workflow into the future for characterization and purification.

Let your technology work for you

In recent years, synthetic oligonucleotides such as aptamers, guide RNA, small interfering RNA, and antisense oligos have moved into the focus of life science and diagnostics research with many showing promise in disease treatment from viral infections, cancers, and a variety of alternate therapeutic applications. However, impurities arising from incomplete capping of coupling reactions, product-related impurities, impurities in the starting materials, and impurities from post-synthesis processing must be monitored, identified, and removed. Key challenges in the development and manufacture of nucleic acid based therapeutics are the need for analytical methods to separate and identify impurities, and purification methods that result in high quality and high yield target sequences.

These molecules typically exhibit chain lengths of fewer than 100 nucleotides and can thus be analyzed using ion pair-reversed phase (IP-RP) HPLC. This technique has been successfully applied for the characterization and purification of oligonucleotides. Scaling up methods to preparative conditions, however, requires large amounts of costly hexafluoroisopropanol (HFIP), which can be a limiting factor. While mass directed purification can be accomplished using DBA and TRIS as a less costly alternative, AdvanceBio Oligonucleotide analytical and preparative columns are suitable for both LC/MS and UV analysis, exceptionally well suited to RP-IP analysis and purification, and benefit from the manufacturing optimization of the superficially porous particle technology.



AdvanceBio Oligonucleotide column specifications

Particle sizes	2.7 μm and 4 μm
pH stability	3-11
Temperature stability	65 $^{\circ}\text{C}$
Pore size	120 \AA
Internal diameters available	2.1, 4.6 and 21.2 mm
Pressure Stability	600 bar

Simplified Oligonucleotide Analysis and Characterization

Easy-to-use full workflow solution



Agilent MassHunter BioConfirm 12.0 enables sequence confirmation for precise characterization

Advanced analytical methods, such as LC/MS analysis, are indispensable for the characterization of target oligonucleotides and their impurities, which are often numerous, present at very low abundances, and found in combination with one another. As such, software that supports and automates these profiling efforts can be of great value.

When seamlessly paired with MassHunter BioConfirm 12.0 software and the 1290 Infinity II UHPLC System, AdvanceBio Oligonucleotide analytical columns provide a solution to these challenges for RNA or DNA based targets and their impurities. AdvanceBio Oligonucleotide columns also benefit from the advances of superficially porous particle technology, allowing for sub-two micron efficiencies at less than half the backpressure of a sub-two micron fully porous particle.

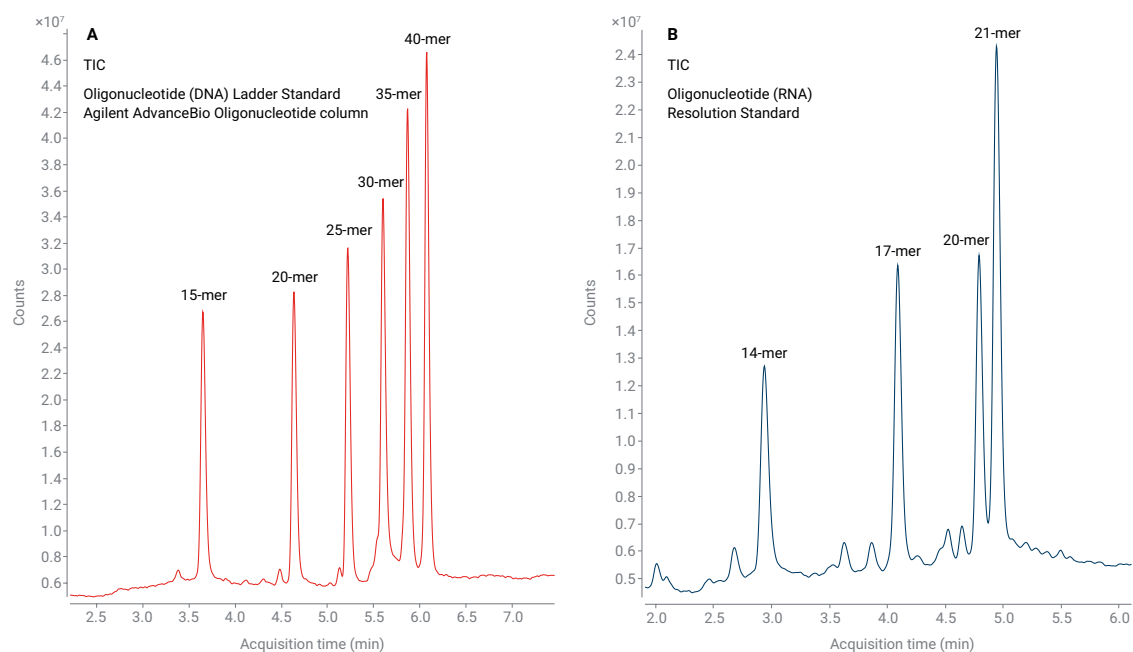


Figure 1. DNA ladder and RNA resolution standards on an AdvanceBio Oligonucleotide analytical column



Agilent MassHunter BioConfirm 12.0 software

Novel, automated and integrated data analysis for the characterization of oligonucleotides and their impurities demonstrate high accuracy and reproducibility. **MassHunter BioConfirm 12.0** enables automated TPI data processing in a high-throughput manner and significantly reduce data analysis time.

Optimize resolution with AdvanceBio Oligonucleotide columns

The AdvanceBio Oligonucleotide stationary phase chemistry easily separates closely eluting similar species, and each batch is qualified with a fit for purpose standard to ensure it meets the highest quality specifications. The wide pH and temperature stability gives maximum flexibility whether for analytical characterization or purification.

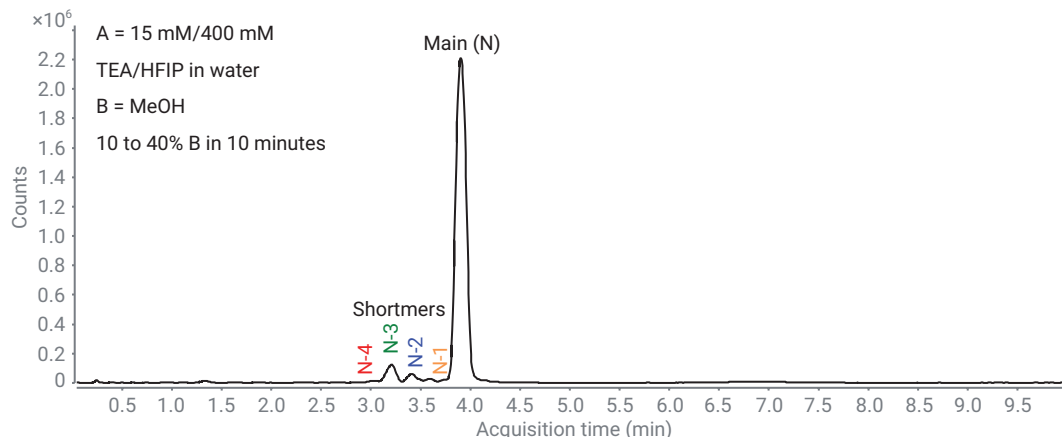


Figure 2. LC/MS results for sample A analyzed with 15 mM TEA/400 mM HFIP reference condition.

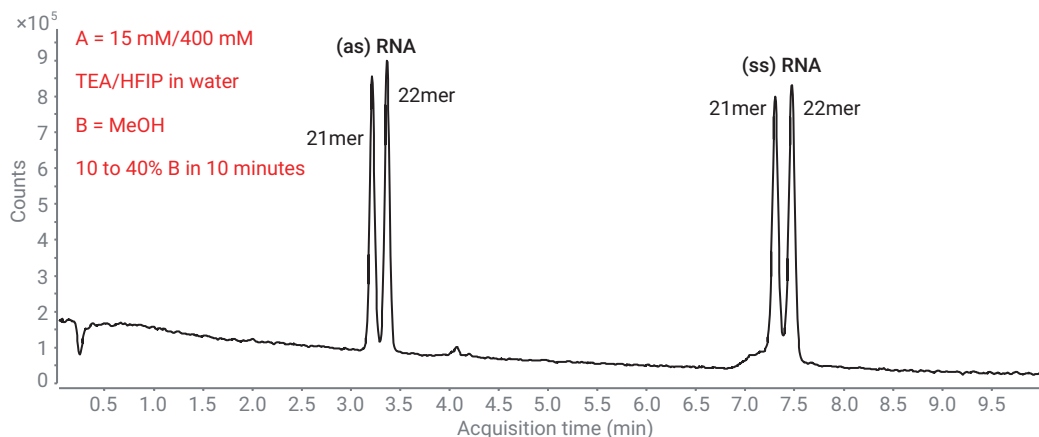
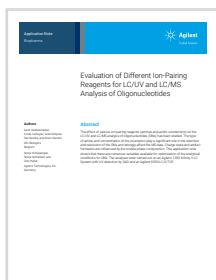


Figure 3. LC/MS results for sample B analyzed with 15 mM TEA/400 mM HFIP reference condition.



Evaluation of Ion-Pairing Reagents

For more information about optimizing IP Reagents check out this app note:

[Evaluation of Different Ion Pairing Reagents for LC/UV and LC/MS Analysis of Oligonucleotides](#)

Simplified method scale up for optimum purity and yield

AdvanceBio Oligonucleotide 21.2 mm i.d. preparative and analytical scalar columns allow for no fuss method transfer while using the same trusted stationary phase for your analytical characterization, and a new 4 μm particle with the same bonded chemistry across the AdvanceBio Oligonucleotide family of products, creating the best balance between loading capacity and resolution. This combination of superficially porous particle technology and n(n-1) batch qualified HPH-C18 in the 21.2 mm i.d. is particularly well suited to purification, whether UV or mass selected detections, or mass directed prep.

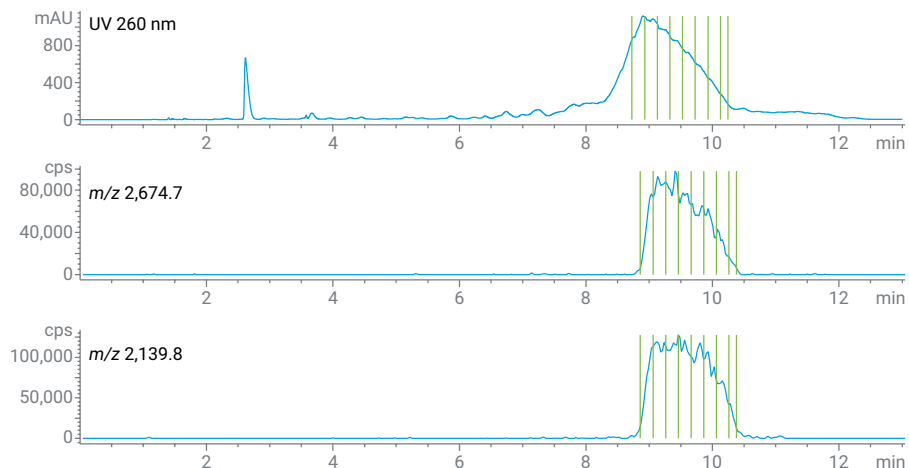


Figure 4. Preparative purification run of the short ON, using DBA/TRIS and a focused gradient. Green bars represent time slices of fraction collection.

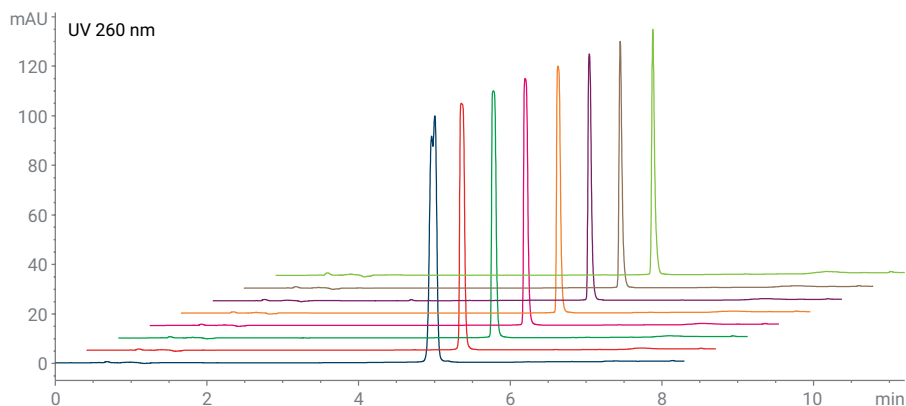


Figure 5. Chromatogram overlay of analyses of the eight fractions collected in the short ON purification run.



Purification of Oligonucleotides

To learn more about reducing IP-RP preparative costs using TRIS and DBA instead of HFIP and TEA check out this app note:

[Fast and Selective Purification of Oligonucleotides Using Preparative HPLC/MS and Software Support](#)

Ordering Information

One-click ordering



You can always count on Agilent to support your entire workflow—including sample preparation, columns, supplies, standards, and instruments. To add items to your shopping cart at the Agilent online store, simply click the part number links. Then, enter the quantities for the products you need.

Agilent columns

Description	Part Number
Analytical	
AdvanceBio Oligonucleotide, 2.1 x 100 mm, 2.7 μ m	655750-702
AdvanceBio Oligonucleotide, 2.1 x 150 mm, 2.7 μ m	653750-702
AdvanceBio Oligonucleotide, 2.1 x 50 mm, 2.7 μ m	659750-702
AdvanceBio Oligonucleotide, 4.6 x 100 mm, 2.7 μ m	655950-702
AdvanceBio Oligonucleotide, 4.6 x 150 mm, 2.7 μ m	653950-702
AdvanceBio Oligonucleotide, 4.6 x 50 mm, 2.7 μ m	659950-702
Scalar	
AdvanceBio Oligonucleotide, 4.6 mm, guard, 4 μ m	820750-941
AdvanceBio Oligonucleotide, 4.6 x 100 mm, 4 μ m	695971-702
AdvanceBio Oligonucleotide, 4.6 x 150 mm, 4 μ m	693971-702
AdvanceBio Oligonucleotide, 4.6 x 50 mm, 4 μ m	699971-702
Preparative	
AdvanceBio Oligonucleotide, 21.2 x 150 mm, 4 μ m	671150-702
AdvanceBio Oligonucleotide, 21.2 x 50 mm, 4 μ m	671050-702
Fast Guard	
AdvanceBio Oligonucleotide, 2.1 mm, fast guard	821725-921
AdvanceBio Oligonucleotide, 4.6 mm, fast guard	820750-921



AdvanceBio Oligonucleotide analytical column
p/n: 659750-702

Oligonucleotide standards

Description	Part Number
DNA ladder standard, oligos at 15, 20, 25, 30, 35, and 40 mer, 1 mL	5190-9029
RNA resolution standard, oligos at 14, 17, 20, and 21 mer, 1 mL	5190-9028



AdvanceBio Oligonucleotide standards
p/n: 5190-9029 / 5190-9028

InfinityLab LC supplies

A perfect fit for your biomolecule analysis

Agilent InfinityLab supplies are innovative consumables designed to work seamlessly together with Agilent LC instruments and columns for maximum efficiency and performance for your bio HPLC analysis..

Protect your column against particles

Particulates can lead to column clogging, poor chromatographic results and increased downtime. To safeguard against these issues, employing effective filtration techniques is vital. LC filtration assemblies can be used to filter mobile phases, especially when using water-based buffer solutions, to remove residue of undissolved salt crystals and microbes.

Inline filters can be installed to capture any particles in the flow path that come from solvents, samples or worn system parts. InfinityLab Quick Change inline filter offer tool-free replacement of filter discs and “click and seal” feedback to ensure ultimate ease of use.

Perfect connection for your bio application

Within the InfinityLab family, Agilent offers HPLC capillaries in a variety of materials to meet your needs. Capillaries made of MP35N, PEEK-lined stainless steel and titanium are inert and corrosion resistant and are particularly suitable for bio-applications. In combination with InfinityLab Quick Connect fittings, you can create a perfect finger-tight connection up to 1300 bar. For the best analytical performance.

Reduce chemical vapor in the lab

Acetonitrile and methanol are just two of the many toxic compounds you may be exposed to every day. The InfinityLab Stay Safe caps stop solvents from leaching into the air. Combined with the innovative InfinityLab Stay Safe purging bottle the purging of an HPLC with up to four solvent lines becomes a safe task.

Your sample's journey starts in a vial – make it the right one!

Agilent offers a comprehensive line of vials, caps and inserts; whether a standard borosilicate glass vial will suffice, a surface-deactivated glass vial or polypropylene vial we have the containment solution for you. Beyond vial composition we offer vials in various designs reflecting the nature and sample volume available.



Tips and tools

Download our vials catalog (5994-4803EN) to help guide you in making the final decision on vials, supported by our [vial selection tool](#).

Agilent CrossLab services

CrossLab is an Agilent capability that integrates services and consumables to support workflow success and important outcomes like improved productivity and operational efficiency. Through CrossLab, Agilent strives to provide insight in every interaction to help you achieve your goals. CrossLab offers method optimization, flexible service plans, and training for all skill levels. We have many other products and services to help you manage your instruments and your lab for best performance.

Learn more about Agilent CrossLab, and see examples of insight that leads to great outcomes, at www.agilent.com/crosslab



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inquiry_lsca@agilent.com

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© Agilent Technologies, Inc. 2023
Published in the USA, October 26, 2023
5994-6077EN

