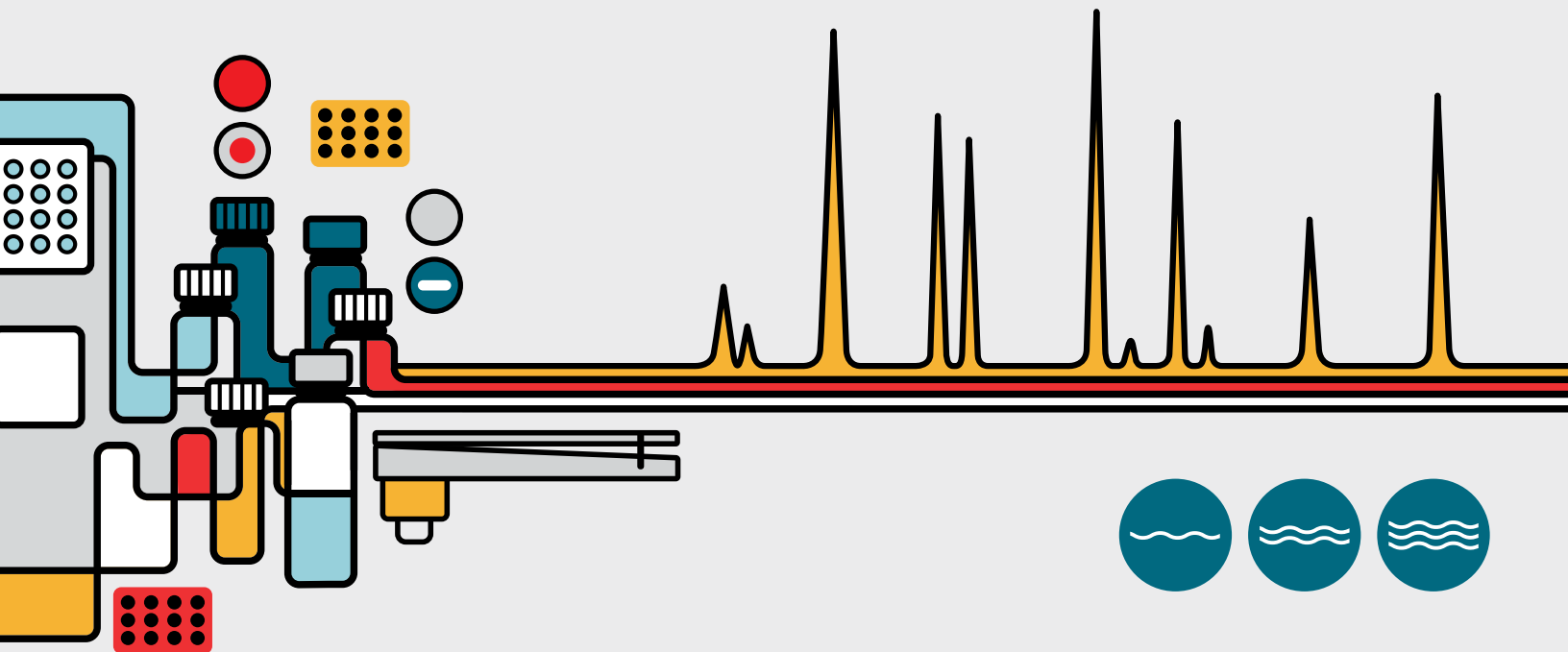


Vials and well plates



SureSTART collection

Choosing the right vials and well plates


Vial and well plate products are an essential part of every chromatographic workflow—from sample storage and containment to analysis—and the products you choose can have an impact on the performance, reproducibility and accuracy of your results, as well as your profit margins.

For analytical chemists who perform chromatographic analysis, the Thermo Scientific™ SureSTART™ collection of vials, caps, inserts, well plates and mats provide a wide selection of products that are compatible with all your lab instruments, and provide sample security to ensure you can consistently deliver accurate and reproducible results right from the start of your sample journey.

With a broad selection of market leading products, including our innovative, patented products, such as Thermo Scientific™ SureStop™ vials, Thermo Scientific™ AVCS™ (Advanced Vial Closure System) caps and Thermo Scientific™ Webseal Plate+ solutions, you can be sure there's a product to meet your application and regulatory requirements.

In this flyer you will learn about how to select the most appropriate products for your need.

What best describes your purchasing situation today?

Currently purchasing products from Fisher Scientific	I need more advice
<p>How can I find the Thermo Scientific SureSTART equivalent?</p> <ul style="list-style-type: none"> Visit fishersci.com/SureSTART or fishersci.ca/SureSTART to request the LC/GC Vial Selector Wheel to make selection simple. Contact your local Fisher Scientific representative who can help you with your selection. 	<p>How do I find whether I'm using the right product?</p> <p>This will provide you with the right cap and vial for your experimental needs, visit  Septa selection tool</p> <p>These tools will provide you with the right well plate and mat for your experimental needs, visit</p> <ul style="list-style-type: none"> Well plate selection guide Mat selection guide

Choosing your vials and inserts

Performance			Sample volume		
Non-MS Compound levels not challenging	MS Compound levels at relatively low levels	MS Compound levels near method detection limit or for research analysis	Not sample limited	Volumes vary	Limited
↓	↓	↓	↓	↓	↓
<p>SureSTART Performance level 1</p> <p>General purpose: chromatography approved</p>	<p>SureSTART Performance level 2 high-throughput: for applications requiring robust and reproducible results</p> <p>High-throughput: for applications requiring robust and reproducible results</p>	<p>SureSTART Performance level 3</p> <p>High performance: for applications requiring high selectivity and sensitivity</p>	<p>2 mL vial</p> <p>SureSTART Performance level 1, 2 and 3</p>	<p>High recovery vial Total recovery vial</p> <p>SureSTART Performance level 3</p>	<p>Polyspring (self-aligning) Pulled (economical choice)</p> <p>Fused insert vial 2 mL vial with separate inserts</p> <p>SureSTART Performance level 2 and 3</p>

Compound polarity			Compound volatility		Compound stability	
Non-polar Mid-polar	Polar	Highly polar	Volatile	Non-volatile	Light-stable	Light-sensitive
↓	↓	↓	↓	↓	↓	↓
<p>Glass vials</p> <p>SureSTART Performance level 1, 2 and 3</p>	<p>*GOLD-grade glass</p> <p>SureSTART Performance level 3</p>	<p>*Silanised glass vials **Polypropylene (PP) vials GOLD-grade glass vials and inserts</p> <p>When low levels of inorganic are required and for solvent stability SureSTART Performance level 1 (PP), 2 and 3 (silanised)</p>	<p>Crimp top vial *SureStop vial Screw thread vial Headspace vials</p>	<p>Screw thread vial Snap-It vial Crimp top vial</p>	<p>Clear vials</p>	<p>Amber vials</p>

*These products can be found in SureSTART Performance level 3




**Not recommended for GC applications

There are several factors to consider when choosing a vial or well plate for your application: the instrument, the sample and the compounds. The section will help guide you through this process to determine which combination is most suitable for your application requirements.





Factor 1: Instrument

Consider the analytical performance you require, sample availability, compound characteristics (volatility, polarity and stability) and autosampler type. Within the Thermo Scientific SureSTART collection, you can choose from three levels:

Analytical performance requirements

Products	Detector type	Comments
 SureSTART Performance level 1	Non-MS	Suitable for QA/QC applications using core detectors, e.g., UV, FID. Compound concentrations are at easily detectable levels.
 SureSTART Performance level 2	MS	Suitable for routine QA/QC applications using MS technology. Compound concentrations are at easily detectable or low levels of detection.
 SureSTART Performance level 1	MS	Suitable for challenging applications, and research-focused applications, using MS technology. Compound concentrations are at/near the method detection limit.

Vial neck style for LC and GC experiments

Vial neck style	Comments
 Screw	Popular choice, and suitable for LC and GC
 SureStop screw	Convenient and reproducible option, and suitable for LC and GC
 Crimp	Frequently used for GC when using highly volatile compounds and solvents
 Snap	Ergonomically convenient when working with a large number of samples (for LC or GC)

Factor 2: Sample type and availability

Sample volume

Not sample limited

2 mL vials

Most popular choice and are suitable for standard GC and HPLC/UHPLC applications

Sample limited

Total recovery vials

Ultimate solution for labs dealing with varying sample volumes, as they can handle sample volumes from 1.5 mL down to 15 μ L in the same vial. The reproducible recovery of even a few μ L is their major key feature. Compatible with GC and LC autosamplers.

High recovery vials

These vials allow very good sample extraction without need for separate inserts. These are the solution for labs dealing with varying sample volumes, as they can handle sample volumes from 1.5 mL down to 25 μ L in the same vial. Compatible with GC and LC autosamplers.

Inner V-Bottom vase

Fused insert vials

For small sample volumes only, and where the need for minimal wall contact and interactions.

Polyspring inserts

Self-aligning and provide a cushion against needle contact.

- Minimizes residual sample loss
- Prevents needle bending while allowing excellent recovery



Watch this short video

Separate inserts

Conical insert

An economical choice for noncritical applications

Flat bottom inserts

- For samples, where the volume is between 300 μ L down to 35 μ L but still the need is for minimal wall contact and interactions

Gaseous samples

Headspace vials are the most popular vials for the analysis of gases and are suitable for headspace and SPME experiments. These products are suitable for GC systems.

Sample storage

Our 4, 8, 10, 16, 20 and 40 mL vials can be used for sample collection and sample storage. We have added a patch to these large vials, making it easy for you to write the sample details.

Factor 3: Compound characteristics

Sample volume

- **Volatile compounds**—Choose crimp top vials and SureStop technology vials (in Performance Level 3) to prevent evaporation of highly volatile compounds in GC applications.
- **Non-volatile compounds**—Screw thread and snap vials are the most popular choice for non-volatile compounds in LC applications.
 - **When sample security is key**—Try our vials with SureStop and AVCS closure technology to ensure a complete seal is made every time.



Vial material options for non-polar (glass) and polar (plastic) and non-polar analytes



Vial color options for normal (clear) and light-sensitive (amber) analytes

Compound polarity

- **Glass vials**—Glass vials are the most popular choice for analytical labs. (Not recommended for use with very polar compounds)
- **GOLD-grade glass vials (Performance level 3)**—We recommend these for trace level analyses and polar compounds, as the vials are made from a low expansion high purity glass with an extremely low concentration of active sites.
- **Polypropylene Plastic (PP) vials**—When inorganic ion levels need to be kept to an absolute minimum, non-reactive plastic vials are a great choice. Recommended for polar analytes.
- **Deactivated/silanized glass vials**—These vials provide optimal recovery of critical polar labile or OH-interacting compounds. Application areas include biopharma and pharma, natural products, pesticides and herbicides.

Compound light stability

- **Clear vials**—Ideal for many chromatographic applications when compounds are not light sensitive.
- **Amber vials**—Amber vials are recommended for light-sensitive compounds. They prevent compound breakdown/degradation due to certain wavelengths of light. Application areas include clinical, drug, vitamins and dyes.

? Why is sample volume important?

Autosamplers include different injector needle designs, such as bottom or side draw, and are programmed to have the needle stop before the bottom of the vial, preventing needle damage and vial breakage. The needle design and final placement above the vial bottom leaves a residual volume of sample that is not accessible for injection. Some vials are designed for limited sample volume applications that give access to more of the sample.

? Why is light sensitivity important?

Compounds that are light sensitive will break down or degrade in the presence of certain wavelengths of light. Amber glass filters out more of the low wavelengths of light and is an appropriate choice for light sensitive compounds.

Vials for specific needs

? Analyzing highly polar compounds?

Try our ultra-low bleed plastic vials

- Offers extended chemical compatibility
- Recommended for HPLC and IC applications where glass cannot be used
- Available in Polypropylene Plastic (PP) for solvent stability
- Microsampling from 10 μL to 600 μL
- Ideal for: peptides, proteins and amino acids
- Not recommended for GC applications

? Need a chromatography vial that works well with your autosampler?

Try our 2 mL screw vials with SureStop technology in combination with our AVCS caps

- Seals effectively every time independent of operator, and reduces sample loss (as a result of evaporation).
- Designed for all HPLC/UHPLC and GC compatible autosamplers
- Great option for nearly all applications and instruments.



? Need to see your sample in the vial? Try our Polymethylpentene TPX® vials with a glass insert

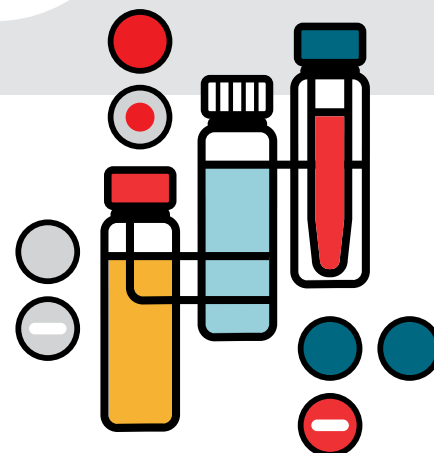
- TPX is the preferred plastic option if you need visibility into the vial
- Offers great solvent stability



? Performing high-throughput analysis?

Try our 2 mL snap cap vials

- Quick and easy solution for analyzing large volumes of samples
- Suitable for UHPLC/HPLC applications
- Can be used with metal crimp seals or plastic snap caps
- Easy to attach and remove without tools
- Compatible with robotic autosamplers



WebSeal: One plate and mat portfolio

With Thermo Fisher Scientific, you gain the benefits of a single plate and mat portfolio that's tailored for chromatography—and one that offers three different quality and price levels to meet all your needs.

Is it time you adopted well plates in your autosampler?

- Are you running more than 500 samples per day?
- Are you running analyses overnight?
- Do you want to make your lab more efficient?

If you answered yes to one of these questions above then learn more about how to choose the right well plate for your instrument and application.

Choosing the right well plate

Selecting the perfect Thermo Scientific WebSeal well plates and mats for your chromatography requirements is easy using our selector tools and resources.

Performance requirements			Compound polarity		Sample availability		
Compound levels not challenging	Compound levels not challenging/relatively low levels	Compound levels at/near method detection limit	Water and polar	Hydrophobic (e.g., proteins and peptides)	Unlimited	Limited	Very limited
↓	↓	↓	↓	↓	↓	↓	↓
WebSeal Plastic, chromatography tested	WebSeal certified products Plastic, MS tested	WebSeal Plate+ Glass-coated plates Plate with glass inserts	WebSeal plastic and certified	WebSeal Plate+ Glass-coated plates Plate with glass inserts	Flat bottom Where sample volume is high	U-Bottom Where sample volume is low	V-Bottom Where sample volume is very low

Microtitre: 14-16 mm (also referred to as microwell and standard well plate)
Mid well plate: 20-41 mm
Deep well plate: >44 mm

Autosampler compatibility					
Agilent	CTC (PAL)	Thermo Scientific™ TriPlus RSH*	Shimadzu	Thermo Scientific™ Vanquish™***	Waters ACQUITY
↓	↓	↓	↓	↓	↓
Microtitre plate Mid well plate Deep well plate					Mid well plate

*TriPlus RSH with 6-drawer stack can accommodate 24 microtitre 15.5 mm plates microtitre well plate

**Barcoded plates for complete orientation



Examples of microtitre, mid well and deep well plates shown above

Key benefits of WebSeal well plates compared vials

Increase throughput

- Double your autosampler capacity and handle more samples in less time. With analysis runtime getting shorter, well plates are a good solution to help increase your throughput without investing in more instrumentation – saving you money and space.
- Our well-plates are designed to be used in combination with multi-pipettes or robotics, making it even easier and faster (compared to vials) to prepare your samples ready for analysis
- Thermo Scientific WebSeal well-plates are compatible as part of a SPE/SLE protein precipitation workflow and can be integrated into automated sample preparation protocols.

Key benefits of WebSeal well plates

Reduce manual handling errors

Our well-plates are set up ready for the autosampler, without the hassle of adding each vial to the vial tray.

Comprehensive portfolio available

Choose from either glass inserts, glass-coated or plastic well-plates. We have numerous well volumes, and high recovery cavities to suit your analytical requirements - with a variety of mat options to choose from.

High quality

- Chromatography tested for solvent compatibility and inertness to ensure data quality is not compromised.
- Chemically and thermally resistant plates from the highest quality material.

Compliant to industry standards

Our autosampler well-plates all conform to ANSI/SLAS standards.

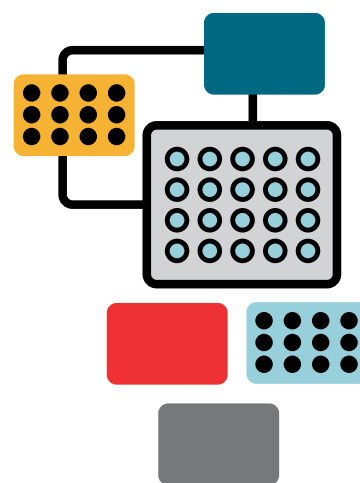
Find more information on SureStart products at fishersci.com/surestart and fishersci.ca/surestart



Spotlight on: How does the glass used in the WebSeal Plate+ well plates compare to the glass quality found in autosampler vials?

Pure silicon dioxide is deposited in a thin nanolayer on the WebSeal Plate+ products – a chemically pure-sol gel derived coating with a high proportion of siloxane bridge structures.

Since it's derived from an organic silane, the deposited layer is free from any inorganic species or additives found in the structure of all formed glass products. **That means it's an anion and cation-free glass surface.** The homogenous layer has minimal hydrolytic extraction and conforms to any limits for a Type 1 hydrolytic extraction glass surface. So, whilst it's different from the borosilicate glass used for vials, you'll get the same performance from the WebSeal Plate+ glass surface as you would from our Performance level 3 vials.



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