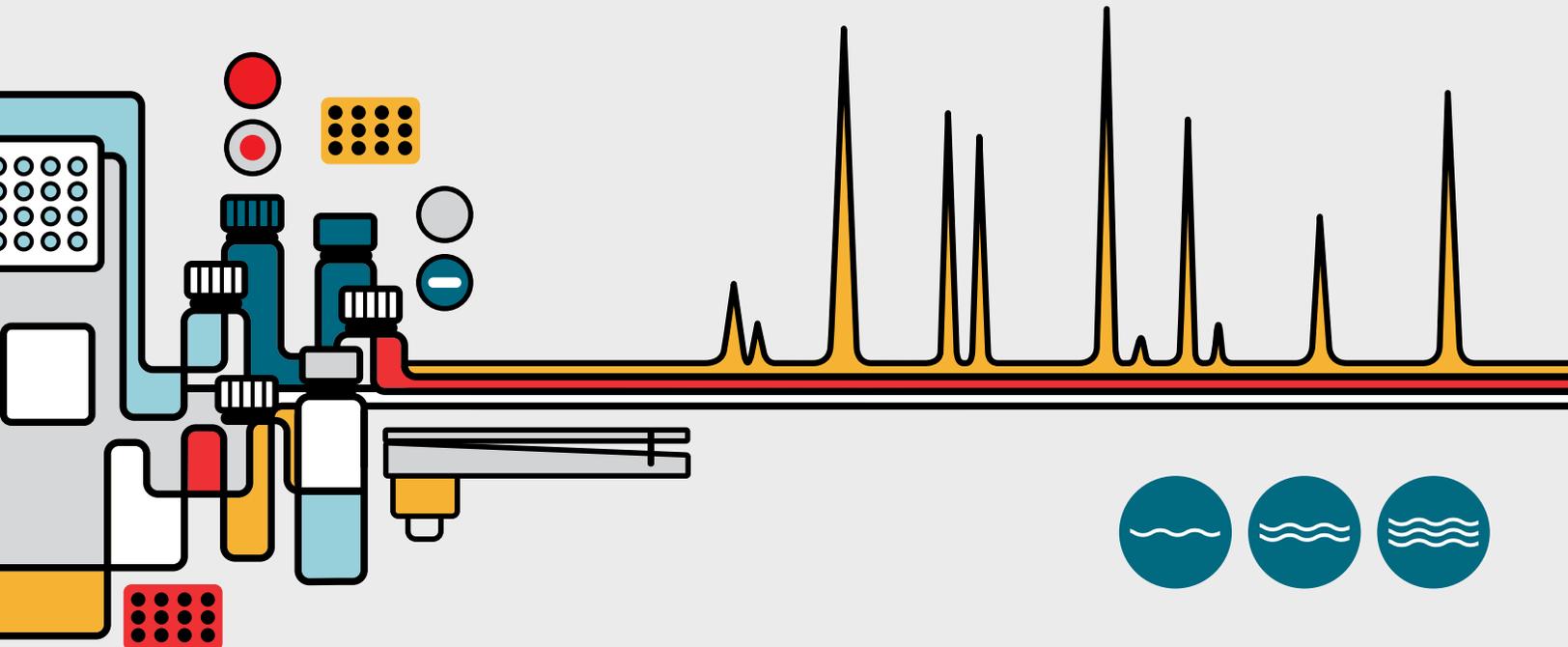


Innovation



SureSTART collection

Unique vial, cap, well plate and mat technologies

Patented products such as the Thermo Scientific™ SureStop™ 2 mL/9 mm vials with the Thermo Scientific™ AVCS™ (Advanced Vial Closure System) cap combination and Thermo Scientific™ WebSeal™ Plate+ (autosampler well plates) among many others within our product range, are used throughout the various industries and markets we serve, helping to support our global network of customers every day, with their routine and breakthrough applications.

At Thermo Fisher Scientific we focus on developing new innovations in autosampler vials and well plates, to enable you to deliver the most accurate results possible. Our collection contains a broad selection of market leading products, including patented SureStop vials, AVCS closures, WebSeal Plate+ solutions and Thermo Scientific™ GOLD-grade glass and inserts.

- **SureStop and AVCS technologies**—seals effectively every time to help improve sample throughput
- **GOLD-grade glass vials and inserts**—ensure more compound coverage and protect sample integrity
- **WebSeal Plate+ well plates**—delivers improved recovery compared to standard plastic well plates

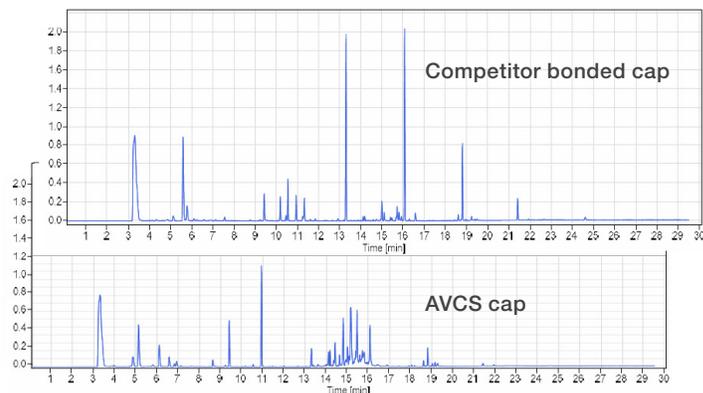
SureStop vials and Advanced Vial Closure System (AVCS) caps

Seals effectively every time

The patented SureStop and AVCS technology is designed to remove subjectivity around achieving the optimal seal compression when closing a vial. As an integral component of AVCS technology, SureStop vials offer the versatility and convenience of a screw thread vial and the sealing and performance characteristics of a crimp top vial. This is achieved by incorporating a definite stop point into the design of the vial finish, preventing over tightening of the closure.

Compatible with all LC and GC autosamplers, our SureStop vials with our AVCS caps:

- 1. Effectively seals every time**—our unique SureStop vial neck design in combination with our innovative AVCS caps ensures that there is a definitive point in which to provide an optimal seal which eliminates under- and over-sealing, and user-to-user variance.
- 2. Obtain cleaner spectra**—AVCS caps not only have the most effective seal but they also contain significantly less leachables than bonded caps. You'll see a noticeably cleaner spectra when you use SureStop and AVCS as an alternative to bonded caps.
- 3. More consistent data for GC and LC applications**—the neck design with optimal seal significantly reduces solvent evaporation. This provides more consistent, reproducible data for every sample. The evaporation rate observed is less than other technologies on the marketplace, including crimp top vials.
- 4. Reduce instrument downtime and ensure sample throughput**—the levelling feature of AVCS designed caps gives more autosampler compatibility with less autosampler interruptions, as a result of misaligned cap tilting, dislodged septa or septa push through.
- 5. Standardize your stockroom**—suitable for all add-on and integrated autosamplers used for both GC and LC applications, the SureStop vial and AVCS cap is available in preslit and non-slit versions making them the perfect solution for any of your application instrument requirements.



Chromatograms show the background peaks for two different cap technologies (shown in the same scale). Less background peaks result from the AVCS cap compared to the competitor bonded cap.



The patented design of an AVCS cap (shown on the right) ensures that the cap does not suffer from tilting (as shown on the left hand side).



Want to learn more?



Watch this short video to learn how these two products can support you with improving your results.

GOLD-grade glass vials and inserts



Ensure more compound coverage

There's a lot more that goes into our SureSTART GOLD-grade glass vials and inserts than just samples.

Our innovative glass technology contributes to unmatched analytical performance—specifically designed for trace level analyses and critical polar analytes that are prone to glass adsorption. Suitable for all LC and GC autosamplers, this inert vial provides the lowest adsorption surface on the market. This helps achieve high recovery rates for critical compounds, and analytes at ultra-trace level concentrations.

Our GOLD-grade glass vials and inserts (in SureSTART Performance Level 3) deliver:

- 1. Low compound adsorption for biomolecules and polar compounds**—ultra-low adsorption glass surface enables trace-level analysis for strongly adsorbing analytes and polar compounds. It delivers the highest recovery rates with trisubstituted N-atoms and tertiary amines, as well as the lowest levels of alkaline materials for less glass-wall interactions.
- 2. Get out what you put in when working at trace levels**—sample security and data integrity are key criteria for trace level analysis. Our SureSTART GOLD-grade glass vials and inserts are made from the highest performing glass quality, to ensure that analytes can be detected—even at the lowest detection levels
- 3. Better chromatographic reproducibility due to reduced peak shifting and adduct formation**—these highly reliable vials and inserts consistently deliver the ultimate purity grade and the lowest possible surface activity. You'll have the lowest alkaline content, for less glass-wall interactions.
- 4. Reduced cost of analysis**—avoid sample failure and costly re-analysis using these vials and inserts, as they increase the security and integrity of your analytical results.
- 5. Vials that meet current USPs and pharmacopoeias standards**—made of the first hydrolytic higher-grade class, GOLD-grade glass vials meet current USPs and pharmacopoeias.



WebSeal Plate+ Glass Coated Plastic Well Plates (2nd generation)

Get ready for unmatched performance. Benefits of glass within a well plate format at a price you can afford

Samples that require glass vials can now benefit from high-throughput analysis using these glass-coated well plates. Thermo Scientific™ WebSeal™ Plate+ products are coated with state-of-the-art glass technology (thickness of 200Å), to provide improved solvent stability and better reproducibility, especially for biomolecules that adsorb onto plastic walls.

All the benefits of a plastic plate, plus features of a glass plate—for a lot less cost.

- 1. Remove issues observed with plastic plates**—our 2nd-generation WebSeal Plate+ are the solution to pure plastic plates that cause poor solvent stability or analyte loss due to adsorption onto plastic well walls. The technology used on our Plate+ well plate delivers the benefits of glass within a well plate format for today's busy laboratories.
- 2. Better detection and reproducibility of analytes**—WebSeal Plate+ well plates offer an ultra-low adsorption surface for critical analytes; enabling ultra-trace-level analysis for strongly adsorbing analytes and biomolecules.
- 3. Same performance, lower price**—WebSeal Plate+ glass-coated plastic well plates provide all the performance benefits of a glass well plate, but for a lot less cost.



Well plates decision tree

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	WebSeal plastic and certified	WebSeal Plate+ WebSeal	Flat bottom Where sample volume is not low	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 headspace autosampler*	Shimadzu	Thermo Scientific™ Vanquish™ UHPLC/HPLC systems**	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

**Vanquish system requires barcoded plates for complete automatic orientation



Spotlight on: glass used in our WebSeal Plate+ well plates

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.

Learn more at thermofisher.com/surestart

thermo scientific