

Chromatography consumables

# Connected chromatography solutions

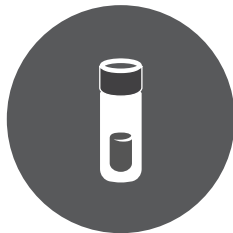
Chromatography consumables catalog

# Comprehensive products to support your chromatography workflows

## Sample preparation solutions



## Sample handling solutions



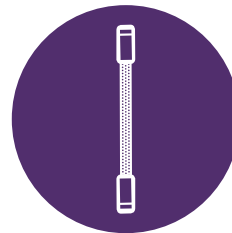
## Low-flow LC columns and accessories



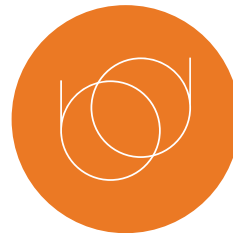
## BioLC columns and accessories



## LC columns and accessories



## GC columns and accessories

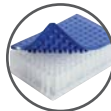


Thermo Scientific™ products:

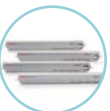
- SMART Digest™ kits
- SOLA™ SPE products
- HyperSep™ SPE products
- TurboFlow™ and online sample preparation products
- QuEChERS products
- Automated micro solid-phase extraction (μSPE) products
- Syringes and syringe filters



- SureSTART™ AVCS™ closures and SureStop vials
- SureSTART™ Gold grade purity glass vials and vial kits
- SureSTART™ low residual microsampling vials and vial kits
- MS certified vials
- Polyspring vial inserts
- Electronic crimping and decrimping tools
- WebSeal™ well-plates and sealing mats for chromatography



- EASY-Spray™ HPLC columns for top-down and bottom-up proteomics
- Double nanoViper PepMap™ Neo HPLC columns for top-down and bottom-up proteomics
- μPAC™ HPLC columns for bottom-up proteomics



- MAbPac™ size exclusion chromatography
- MAbPac™ and ProPac™ charged variant profiling
- MAbPac™ intact and subunit analysis
- HILIC and mixed-mode glycan analysis
- DNAPac™ oligonucleotide and gene therapy analysis
- Vanquish™ UHPLC peptide analysis



- Accucore™ U/HPLC columns
- Acclaim™ U/HPLC columns
- Hypersil GOLD™ U/HPLC columns
- Hypercarb™ HPLC columns
- Application specific HPLC columns
- Hypersil™ BDS and Hypersil™ classical HPLC columns
- LC accessories
- Preparative HPLC columns



- TracePLOT™ GC columns
- TraceGOLD™ packed GC columns
- GuardGOLD™ capillary GC columns
- LinerGOLD™ liners
- Super Clean™ gas cartridge filters
- GC consumables
- Gas management
- GC equipment
- GC reagents



# Our portfolio

## Sample preparation solutions

Save time, improve reproducibility, and extend the lifetime of your High/Ultra High Performance Liquid Chromatography (HPLC/UHPLC) and gas chromatography (GC) columns with our comprehensive range of sample preparation products. Achieve high sensitivity, selectivity, and recovery with advanced solid-phase extraction (SPE) consumables.



## Sample handling solutions

We provide a broad selection of sample handling and containment solutions from all your chromatography requirements. Our vials, closures and well plates, come with the lowest levels of extractables and leachables, are made from glass that has low compound adsorption, and the highest level of standards and certification available in the marketplace. Whether you have routine and robust samples, or you need to ensure the highest level of confidence and compliance, our market leading portfolio of storage and autosampler vials and closure, well plates and sample handling accessories has everything you'll need.



## Low-flow LC columns and accessories

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.



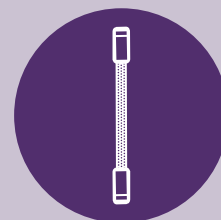
## BioLC columns and accessories

Achieve ultrahigh resolution and high efficiency separations of proteins, peptides, monoclonal antibodies, biosimilars, carbohydrates, oligonucleotides and more. Our unique column chemistries for biological samples have a long-standing reputation for providing excellent reproducibility and durability under a broad range of pH, temperature, and mobile phase compositions.



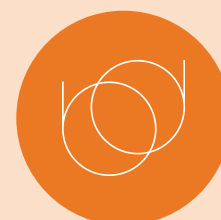
## LC columns and accessories

As a leader in LC column technology including silica, polymer and porous graphitic carbon manufacturing, bonded phase production and column packing for 40 years, you can rely on the quality of Thermo Scientific high performance liquid chromatography (HPLC) products: a comprehensive range of innovative columns, accessories and equipment for fast and reproducible analytical and prep HPLC and ultra-high performance liquid chromatography (UHPLC) analysis.



## GC columns and accessories

We offer a broad portfolio of GC columns and accessories designed to give optimal system performance for today's challenging analyses. Our range of GC accessories include all the tools needed by today's gas chromatographers.



# Product selection tools and additional resources

## Sample handling selection guide

### ? **Need a quick answer?**

Why not use our online product selector guide that includes our entire SureSTART Collection of vials, caps, well plates and mats.



SureSTART™ Selection Guide

Selecting your vial and well plate has never been easier.

**About this guide**

Have you ever struggled with finding the right sample handling solution for your application? You will struggle no longer! This simple guide will find the perfect solution product for you in just a few clicks.

[Get started](#)

- Application specific vials**  
Ensure what goes into the lab comes out... and that the vial you choose is fit for purpose for your application set up. This guide will take you right to your vial.
- Plates for high-throughput**  
If you use a high-throughput lab, you may be interested in finding a plate rather than a vial to speed up your throughput. As plate compatibility is dependent on your instrument this guide will find the plate that works with your instrument type.
- Low cost vials at your fingertips**  
Find the correct vial for your application - and budget. If cost is a key purchasing criteria for you then we've got you covered as this guide takes all your lab requirements into consideration.

## Sample handling cross reference tool

### ? **Already purchasing an existing product from us or someone else?**

Let our cross-reference tool find the equivalent SureSTART product/catalog number for you.



SureSTART Cross Reference Tool

Designed for cross referencing chromatography vials, caps and inserts, finding an equivalent product is easy. Using this cross-reference tool, there are 2 easy options for you to find an equivalent Thermo Scientific SureSTART™ product. All you need to know is your current catalog number part number.

**Option 1: Input SKUs Directly**

Either type or copy/paste a list of SKUs into the text field below.

**Option 2: Upload CSV**

File to upload:  [Choose file](#) [Don't have a data file? Download a sample .csv file](#)

[Search](#)

# Product selection tools and additional resources

## Septa selection tool



### Choosing the right septa can be complex!

There are a number of factors that should be considered including: needle type, vial type, solvents and temperature that the septa will be exposed to. Let us help you find the right septa with this easy-to-use tool.



The screenshot shows the 'Septa Selection Tool' webpage. The header is red with the title 'Septa Selection Tool' and a subtitle 'An easy-to-use tool that ensures you find the right septa for your experimental requirements.' Below this is a white box titled 'About this tool' with a 'Get Started' button. The main content area is white and features three columns of text under the heading 'Why use the Septa Selection Guide?'. Each column has a red circular icon with a white symbol: a needle for 'Needle / autosampler issues', a septum for 'Septa compatibility with solvents', and a list for 'New experimental parameters'.

## LC columns selection guide



### Find your columns with ease!

Finding the correct column can be a challenge, so we have made it easy for you. This guide will take you directly to the right product for you, so that you can start your method today.



The screenshot shows the 'LC Column Selection Guide' webpage. The header is grey with the title 'LC Column Selection Guide' and a subtitle 'An easy-to-use tool that ensures you find the right LC column for your experimental requirements.' Below this is a white box titled 'Find your column with ease!' with a 'Get started' button. The main content area is white and features three columns of text under the heading 'Find your column with ease!'. Each column has a red circular icon with a white symbol: a column for 'Need an equivalent column?', a list for 'Setting up a USP method?', and a plus sign for 'Brand new method?'. The background of the page features a molecular structure graphic on the right side.

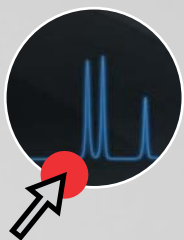
# More information



## Chromatography columns and consumables

For more information on our range of chromatography columns and consumables, including the latest applications, educational resources, selection guides and product literature, please visit

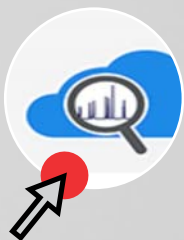
[thermofisher.com/chromatographyconsumables](https://thermofisher.com/chromatographyconsumables)



## Instrumentation and key applications

For more information on our instrumentation and key applications, please visit

[thermofisher.com/chromatography](https://thermofisher.com/chromatography)



## AppsLab

Gain access to our applications expertise on cloud-based Thermo Scientific™ AppsLab library of analytical applications for a comprehensive fully searchable method repository

[appslab.thermofisher.com](https://appslab.thermofisher.com)



## Webinars

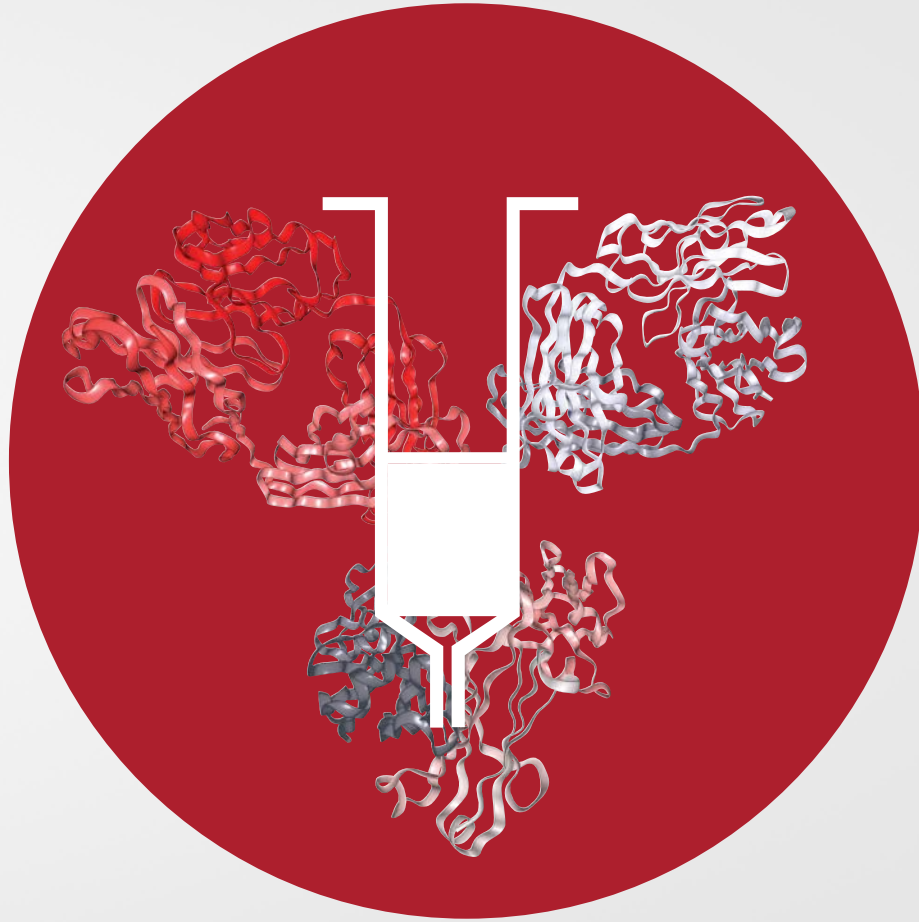
Analytical and life science webinars live and on-demand



## NIBRT collaboration information

A collaboration built for Biopharma between the National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific

[thermofisher.com/nibrt](https://thermofisher.com/nibrt)



# Connected chromatography solutions

Sample preparation solutions

# Introduction

## Sample preparation solutions

Save time, improve reproducibility, and extend the lifetime of your High/Ultra High Performance Liquid Chromatography (HPLC/UHPLC) and gas chromatography (GC) columns with our comprehensive range of sample preparation products. Achieve high sensitivity, selectivity, and recovery with advanced solid-phase extraction (SPE) consumables.



### SMART Digest kits

Thermo Scientific™ SMART Digest™ Kits are designed for biopharmaceutical applications that require highly reproducible, sensitive and fast analyses of proteins often in high throughput workflows.



### SOLA SPE products

The fritless SPE product range which has been specifically designed for bioanalysis provides greater reproducibility with cleaner, more consistent extracts. Thermo Scientific™ SOLA™ SPE products provide unparalleled performance characteristics compared to conventional SPE, phospholipid removal and protein precipitation methods.



### QuEChERS products

QuEChERS methods offer a convenient and effective approach for extraction and clean-up of pesticide residues in food and other complex matrices. Thermo Scientific™ HyperSep™ Dispersive SPE Clean-Up products contain the proper sorbents for optimum clean-up of analytes extracted using QuEChERS methods.



### Syringes and syringe filters

Provide cleaner sample extracts by removing interfering materials and fine particles.



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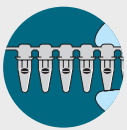
# SMART Digest kits

## Facilitating perfect digestion

**SMART Digest** and **SMART Digest ImmunoAffinity (IA)** kits are designed for biomarker and bio-therapeutic characterization and quantitation.

The kits provide options for the sample preparation of proteins that are:

- Fast
- Simple
- Highly reproducible
- Sensitive
- Compatible with automation

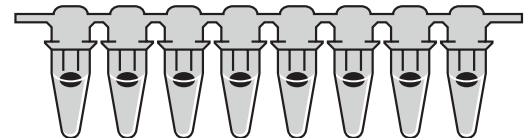


## SMART Digest kits



### Additional reading

Learn more at [thermofisher.com/smartdigest](https://thermofisher.com/smartdigest)

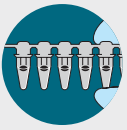


**Compendium:**  
SMART Digest  
peptide mapping  
and quantitation



### SMART Digest webinar series

In this webinar series, four new technologies will be demonstrated that dramatically improve upon established mapping workflows and help increase confidence in biopharma peptide mapping.



# SMART Digest kits

Continued



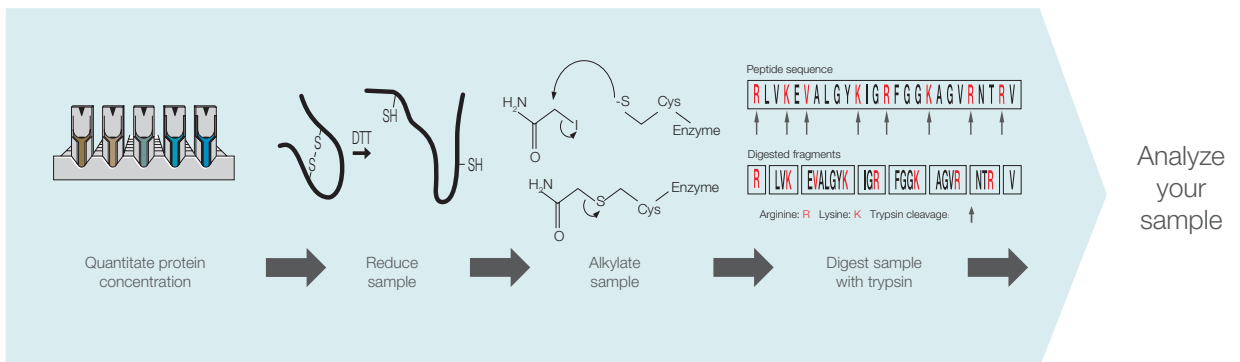
SMART Digest kits improve workflows by quickly and efficiently digesting proteins for characterization and quantitation applications, due to the heat-stable immobilized trypsin design.

## Simplicity of use

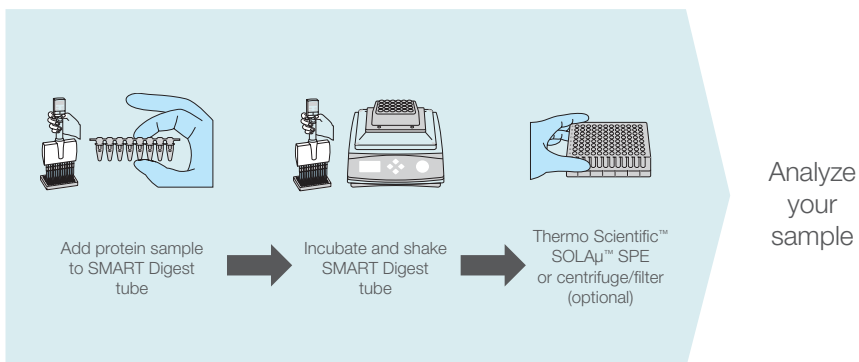
Current sample preparation protocols for the digestion of proteins are multifaceted and laborious. Due to this, errors are far more likely to occur. Therefore, the overall protocol is subject to irreproducibility and significant sample processing time.

The SMART Digest kit overcomes these barriers by providing a simple to implement, integrated process (see the diagram below), which provides high data confidence and significantly increased reproducibility. The entire protocol can be easily automated for high throughput processing.

## Standard digest kit



## SMART Digest kit





# SMART Digest kits

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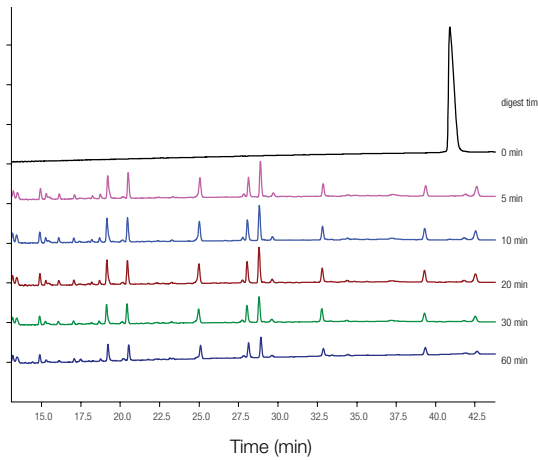


## Fast digestion

The SMART Digest process is not only simple, but significantly reduces the time from sample preparation to analysis. Typically it takes less than 60 minutes, dependent on sample complexity, to achieve full digestion. In the example below, we can see that carbonic anhydrase undergoes complete digestion

### Carbonic anhydrase, 29 KDa

#### Time course experiment for digestion optimization



in less than 5 minutes, as the intact protein peak at around 41 minutes is no longer present, whilst in later chromatograms, no further peaks appear following longer digestion times. The optimized digestion times of some common proteins are shown in the table adjacent.

### Typical digestion times

Protein	Digest time (min)
Insulin	4
BSA	< 5
Carbonic anhydrase	< 5
Lysozyme	< 5
Apo-B	30
IgG	45
IgG in 50 $\mu$ L plasma*	75
Ribonuclease A	150
Thyroglobulin	240
C-reactive protein	240

200  $\mu$ L protein solution (100  $\mu$ g/mL) at 70  $^{\circ}$ C  
\*IgG in plasma (17.5 mg/mL total protein) at 70  $^{\circ}$ C

## Automation

Due to their simple workflow, SMART Digest and SMART Digest IA kits are easy to automate with platforms such as the Thermo Scientific™ KingFisher™ Duo Prime Purification System.



KingFisher Duo Prime purification system



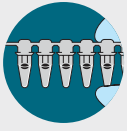
### Brochure:

Your samples, powered by KingFisher instruments. Automated sample preparation for DNA, RNA, protein, or cells.



### Application note:

High-precision, automated peptide mapping of proteins



# SMART Digest kits

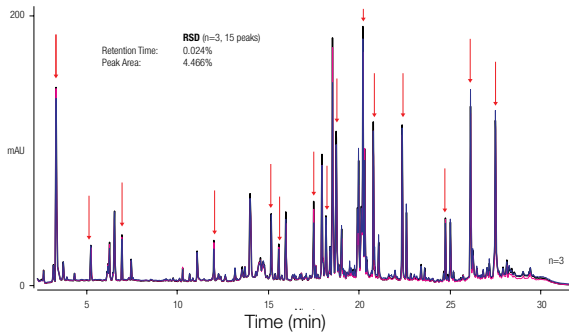
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## Reproducibility of digestion

The SMART Digest kit provides significant improvements in reproducibility over existing protocols, which results in fewer sample failures, higher throughput and the ability to more easily interrogate data.

This allows for reproducible results user-to-user, day-to-day and lab-to-lab. The ultra-violet (UV) chromatogram on the right shows overlays from three separate SMART digestions from the same monoclonal antibody (mAb), conducted by three individual operators, with retention time RSD of 0.024%.

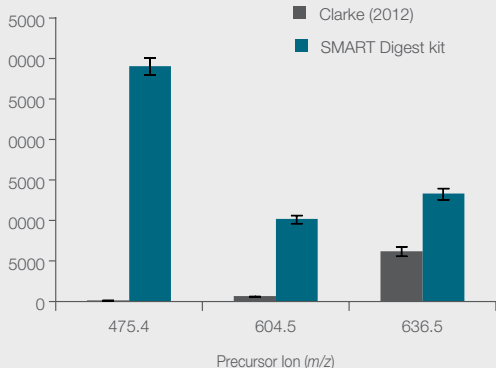
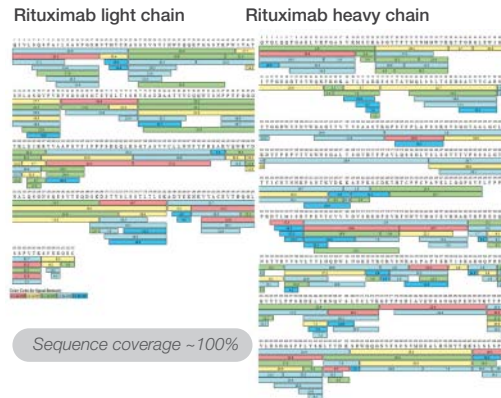


## Mass spectrometry

Thermo Scientific™ Orbitrap Exploris™ 240 and 480 Mass Spectrometers add superior denatured and native mass spectrometry (MS) intact analysis and subunit top/middle-down analysis capabilities to one of the most powerful benchtop peptide mapping instruments available. When combined with Thermo Scientific™ BioPharma Finder™ Software it provides a complete integrated hardware and software solution for biotherapeutic characterization.

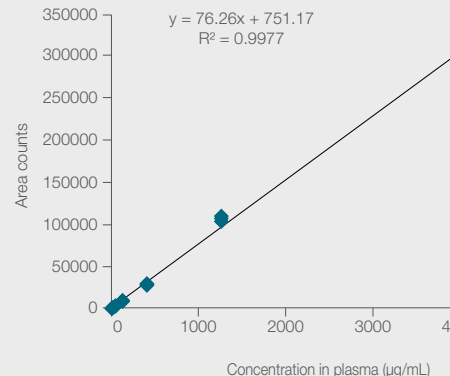
## Quantitation

The SMART Digest kit allows confident detection of biomarkers with high sensitivity within a wide dynamic range, as can be seen below with the example of thyroglobulin. Greater sensitivity is achieved in 3.5 hours compared to an in-solution digest protocol taking 20 hours to complete.



Measurement of serum thyroglobulin after tryptic digestion of serum samples.

- SMART Digest kit: 25% plasma, 3.5 h digestion
  - In-solution digest: 20% plasma, R/A, 4 + 16 h digestion
- Clarke et al. (2012), J. Investigative Medicine, 60(8)



Calibration curve for thyroglobulin signature peptide in murine plasma (4–4000 µg/mL).



# SMART Digest kits

Continued

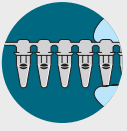


## SMART Digest kits for peptide mapping

Description	Part number
SMART Digest Trypsin Kit with collection plate	<a href="#">60109-101</a>
SMART Digest Trypsin Kit, bulk resin option	<a href="#">60109-101-B</a>
SMART Digest Trypsin Kit, magnetic bulk resin option	<a href="#">60109-101-MB</a>
SMART Digest Trypsin Kit with filter/collection plate	<a href="#">60109-102</a>
SMART Digest Trypsin Kit, bulk resin option with filter/collection plate	<a href="#">60109-102-B</a>
SMART Digest Trypsin Kit, magnetic bulk resin option with filter/collection plate	<a href="#">60109-102-MB</a>
SMART Digest Trypsin Kit with SOLA $\mu$ /collection plate	<a href="#">60109-103</a>
SMART Digest Trypsin Kit, bulk resin option with SOLA $\mu$ /collection plate	<a href="#">60109-103-B</a>
SMART Digest Trypsin Kit, magnetic bulk resin option with SOLA $\mu$ /collection plate	<a href="#">60109-103-MB</a>
SMART Digest Soluble Trypsin Kit	<a href="#">60113-101</a>
SMART Digest Chymotrypsin Kit with collection plate	<a href="#">60109-104</a>
SMART Digest Chymotrypsin Kit, bulk resin option	<a href="#">60109-104-B</a>
SMART Digest Chymotrypsin Kit, magnetic bulk resin option	<a href="#">60109-104-MB</a>
SMART Digest Chymotrypsin Kit with filter/collection plate	<a href="#">60109-105</a>
SMART Digest Chymotrypsin Kit, bulk resin option with filter/collection plate	<a href="#">60109-105-B</a>
SMART Digest Chymotrypsin Kit, magnetic bulk resin option with filter/collection plate	<a href="#">60109-105-MB</a>
SMART Digest Chymotrypsin Kit with SOLA $\mu$ /collection plate	<a href="#">60109-106</a>
SMART Digest Chymotrypsin Kit, bulk resin option with SOLA $\mu$ /collection plate	<a href="#">60109-106-B</a>
SMART Digest Chymotrypsin Kit, magnetic bulk resin option with SOLA $\mu$ /collection plate	<a href="#">60109-106-MB</a>
SMART Digest Proteinase K Kit with collection plate	<a href="#">60109-107</a>
SMART Digest Proteinase K Kit, bulk resin option	<a href="#">60109-107-B</a>
SMART Digest Proteinase K Kit, magnetic bulk resin option	<a href="#">60109-107-MB</a>
SMART Digest Proteinase K Kit with filter/collection plate	<a href="#">60109-108</a>
SMART Digest Proteinase K Kit, bulk resin option with filter/collection plate	<a href="#">60109-108-B</a>
SMART Digest Proteinase K Kit, magnetic bulk resin option with filter/collection plate	<a href="#">60109-108-MB</a>
SMART Digest Proteinase K Kit with SOLA $\mu$ /collection plate	<a href="#">60109-109</a>
SMART Digest Proteinase K Kit, bulk resin option with SOLA $\mu$ /collection plate	<a href="#">60109-109-B</a>
SMART Digest Proteinase K Kit, magnetic bulk resin option with SOLA $\mu$ /collection plate	<a href="#">60109-109-MB</a>
SMART Digest Pepsin Kit with collection plate	<a href="#">60109-110</a>
SMART Digest Pepsin Kit, bulk resin (no collection plate)	<a href="#">60109-110-B</a>
SMART Digest Pepsin Kit with magnetic bead, bulk option (no collection plate)	<a href="#">60109-110-MB</a>
SMART Digest Pepsin Kit with filter and collection plate	<a href="#">60109-111</a>
SMART Digest Pepsin Kit with SOLA $\mu$ collection plate	<a href="#">60109-112</a>

## SMART Digest low pH kits for MAM

Description	Part number
SMART Digest low pH Kit Trypsin	<a href="#">60109-101-LPH</a>
SMART Digest low pH Kit Trypsin magnetic beads	<a href="#">60109-101-MB-LPH</a>
SMART Digest KIT Chymotrypsin magnetic bulk low pH buffer	<a href="#">60109-104-MB-LPH</a>
SMART Digest low pH Kit Trypsin magnetic beads	<a href="#">60109-101-MB-LPH</a>
SMART Digest Kit Chymotrypsin magnetic bulk low pH buffer	<a href="#">60109-104-MB-LPH</a>



# SMART Digest ImmunoAffinity kits



## Additional reading

Learn more at [thermofisher.com/smartdigest](https://thermofisher.com/smartdigest)



## A step change in protein affinity capture and digestion

SMART Digest and SMART Digest IA Kits provide a significant change in protein sample preparation, by delivering workflows that are:

- Significantly faster
- Easier to use
- Highly reproducible
- Sensitive
- Compatible with automation

SMART Digest IA kits have all the advantages previously outlined for fast, easy and reproducible protein digestion for quantitation and characterization applications with the added advantage of combining an immunocapture and digestion process into a single well.

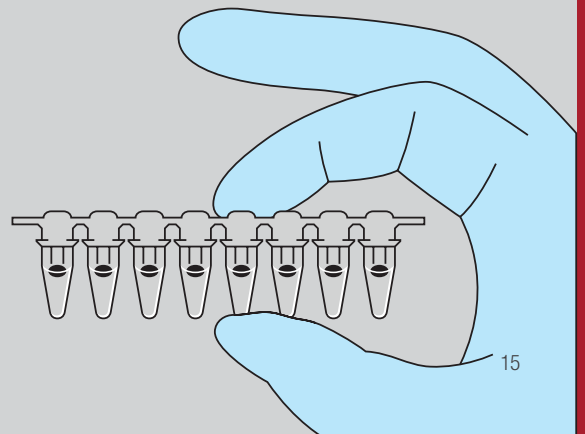
This has significant benefits for quantitation studies where immunoaffinity capture is typically employed to increase sensitivity by purifying low-level proteins from complex biological matrices. This step is then followed by protein digestion.

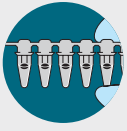
SMART Digest IA kits achieve this due to their unique design where the immunoaffinity moiety (either streptavidin, protein A or protein G) and heat activated thermally stable trypsin are co-immobilized onto a single bead. Following the binding of a capture reagent to the bead, and enrichment of the target, the enzyme is activated at elevated temperatures for accelerated digestion under protein denaturing conditions. The resulting workflow is as easy as enrich, wash and digest. Magnetic and non-magnetic versions of the beads are available.



### Brochure:

Protein digestion for peptide mapping and quantitation





# SMART Digest ImmunoAffinity kits

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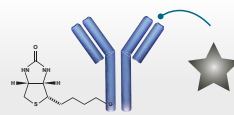


## How does the SMART Digest IA kit work?

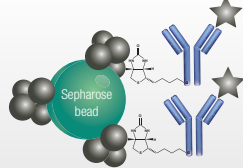
Conventional protein enrichment and digestion

Protein enrichment and digestion using the SMART Digest IA kit

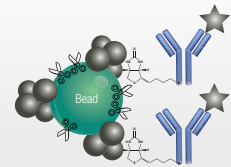
Expose biotinylated capture antibody to biological sample



Incubate with affinity capture resin

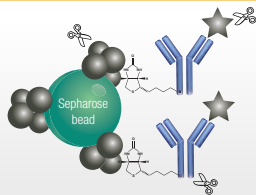


Use SMART Digest IA resin for affinity capture. Incubate at room temperature.

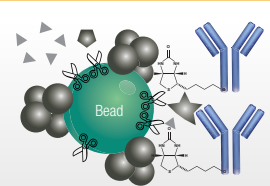


Conventional tryptic digest  
Reduction, TCEP: 60 °C, 30–60 min  
Alkylation, IAA: RT, 30 min  
Quenching, ACC: RT, 15 min  
Digestion: 37 °C, 12–16 h

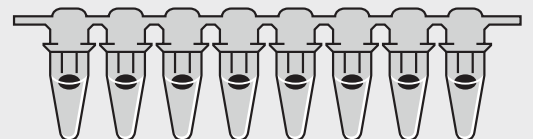
Digestion with SMART Digest IA resin  
70 °C, 1 h



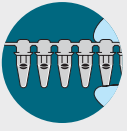
Total time  
15–24 hours



Total time  
3–4 hours







# SMART Digest ImmunoAffinity kits

Continued



## SMART Digest IA and bulk fractionation kits for peptide quantitation

Description	Part number
SMART Digest IA Kit, Streptavidin non-magnetic	<a href="#">60110-101</a>
SMART Digest IA Kit, Streptavidin non-magnetic with SOLA $\mu$ SPE and collection plate	<a href="#">60110-102</a>
SMART Digest IA Kit, Streptavidin magnetic with SOLA $\mu$ SPE and collection plate	<a href="#">60110-103</a>
SMART Digest IA Kit, Streptavidin magnetic	<a href="#">60110-104</a>
SMART Digest IA Kit, Protein A non-magnetic	<a href="#">60111-101</a>
SMART Digest IA Kit, Protein A non-magnetic with SOLA $\mu$ SPE and collection plate	<a href="#">60111-102</a>
SMART Digest IA Kit, Protein A magnetic with SOLA $\mu$ SPE and collection plate	<a href="#">60111-103</a>
SMART Digest IA Kit, Protein A magnetic	<a href="#">60111-104</a>
SMART Digest IA Kit, Protein G non-magnetic	<a href="#">60112-101</a>
SMART Digest IA Kit, Protein G non-magnetic with SOLA $\mu$ SPE and collection plate	<a href="#">60112-102</a>
SMART Digest IA Kit, Protein G magnetic with SOLA $\mu$ SPE and collection plate	<a href="#">60112-103</a>
SMART Digest IA Kit, Protein G magnetic	<a href="#">60112-104</a>
SMART Digest Bulk Protein A Fractionation Kit, non-magnetic, soluble Trypsin	<a href="#">60114-101</a>
SMART Digest Bulk Protein A Fractionation Kit, non-magnetic, with SOLA $\mu$ collection plate, soluble Trypsin	<a href="#">60114-102</a>
SMART Digest Bulk Protein A Fractionation Kit, magnetic, with SOLA $\mu$ collection plate, soluble Trypsin	<a href="#">60114-103</a>
SMART Digest Bulk Protein A Fractionation Kit, magnetic, soluble Trypsin	<a href="#">60114-104</a>
SMART Digest Bulk Protein A Fractionation Kit, magnetic, standalone	<a href="#">60116-101</a>
SMART Digest Bulk Fractionation Kit, Protein G, non-magnetic, soluble Trypsin	<a href="#">60115-101</a>
SMART Digest Bulk Fractionation Kit, Protein G, non-magnetic, with SOLA $\mu$ collection plate, soluble Trypsin	<a href="#">60115-102</a>
SMART Digest Bulk Fractionation Kit, Protein G, magnetic, with SOLA $\mu$ collection plate, soluble Trypsin	<a href="#">60115-103</a>
SMART Digest Bulk Fractionation Kit, Protein G, magnetic, soluble Trypsin	<a href="#">60115-104</a>
SMART Digest Bulk Fractionation Kit, Protein G, magnetic, standalone	<a href="#">60117-101</a>
SMART Digest Bulk Fractionation Kit, Streptavidin, magnetic, without soluble Trypsin	<a href="#">60118-101</a>
SMART Digest Bulk Fractionation Kit, Streptavidin, magnetic, SOLA $\mu$ collection plate, with soluble Trypsin	<a href="#">60119-103</a>
SMART Digest Bulk Fractionation Kit, Streptavidin, magnetic, with soluble Trypsin	<a href="#">60119-104</a>

## Complimentary products

Description	Part number
Thermo Scientific™ HyperSep™ Vacuum Manifold for HyperSep 96-Well Plates	<a href="#">60103-351</a>
Thermo Scientific™ HyperSep™ Glass Block Vacuum Manifold Pump, North American version	<a href="#">60104-243</a>
Thermo Scientific™ HyperSep™ Glass Block Vacuum Manifold Pump, European version	<a href="#">60104-241</a>
Thermo Scientific™ SOLA $\mu$ ™ HRP SPE Plate	<a href="#">60209-001</a>
KingFisher Duo Prime Purification System	<a href="#">5400110</a>
Thermo Scientific™ KingFisher™ Flex Purification System	<a href="#">5400630</a>

# SOLA SPE products

## Delivering consistent excellence for bioanalysis

**SOLA SPE products** are designed for bioanalytical and clinical research analysts who are tasked with providing high quality analytical results from complex biological samples in a high throughput environment, while complying with strict legislation. These demands are compounded by the continued push to higher efficacy drugs and long acting formulations which continue to drive sensitivity requirements to lower levels to enable accurate quantification.

In order to meet these demands, bioanalytical methods must provide:

- Robustness – low analytical failure rates
- Ability to process low sample volumes
- High sensitivity
- High reproducibility
- Ease-of-use
- High throughput processing
- Efficient and fast processes

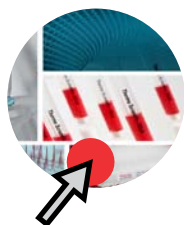
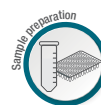


### SOLA SPE products



#### Additional reading

Learn more at [thermofisher.com/solaspe](https://thermofisher.com/solaspe)



#### Compendium:

SOLA Solid-Phase Extraction (SPE) application note compendium. Prevent sample failures in bioanalytical workflows



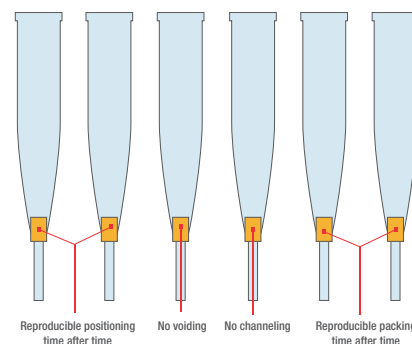
#### Flyers and posters:

SOLA SPE method development flyers and posters



#### Brochure:

Consistent excellence for bioanalysis. SOLA Solid-Phase Extraction products



**SOLA and SOLA $\mu$  SPE fritless design – limiting issues associated with conventional SPE formats**



# SOLA SPE products

Continued

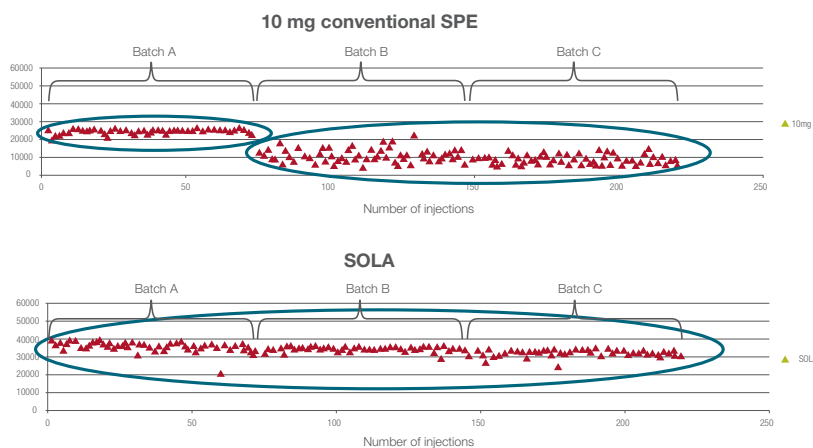


## Unique and innovative technology

The SOLA SPE range is designed to meet these demands with the unique and innovative fritless SPE technology, which eliminates the issues with traditional loose-packed SPE formats. The combination of the support material and active media components into a solid, uniform sorbent bed delivers stable and controllable flow-through characteristics and provides an added advantage

when dealing with viscous biological samples – it reduces blocking and enables high throughput processing.

The manufacturing process also allows for high levels of reproducibility, not only from cartridge-to-cartridge or well-to-well but also batch-to-batch.

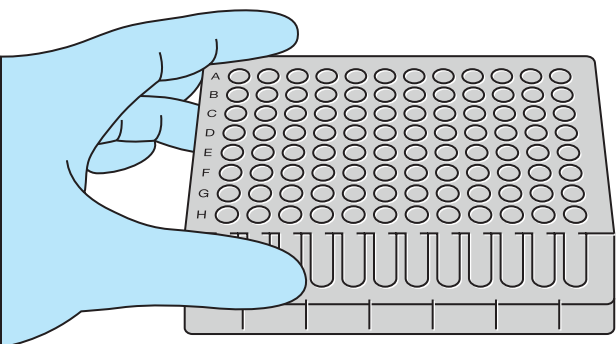


## Batch-to-batch reproducibility of SOLA product compared to a conventional SPE product

SOLA 10 mg SPE products are the flexible, go-to option for many applications, while SOLA 30 mg has increased loading capacities to handle large volumes of sample at low concentrations.

The SOLA $\mu$  SPE range has the added benefit of being able to provide:

- Up to a 20 fold increase in sensitivity
- Ability to process samples restricted in volume
- Increased workflow efficiency and sample integrity





# SOLA SPE products

Continued



## Increase your MS sensitivity

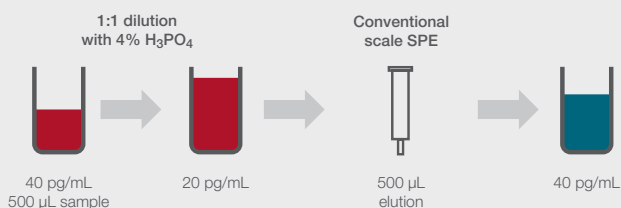
Sensitivity can be increased by loading a large volume of sample and eluting in a low volume.

In the following example, 500  $\mu\text{L}$  of human plasma was loaded onto the SOLA $\mu$  plate for the analysis of

niflumic acid. The compound was eluted in 25  $\mu\text{L}$ , delivering up to 20 times increase in concentration whilst maintaining excellent precision.

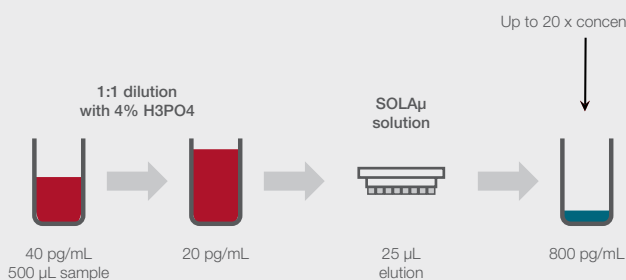
### The problem:

Improvement in assay sensitivity required

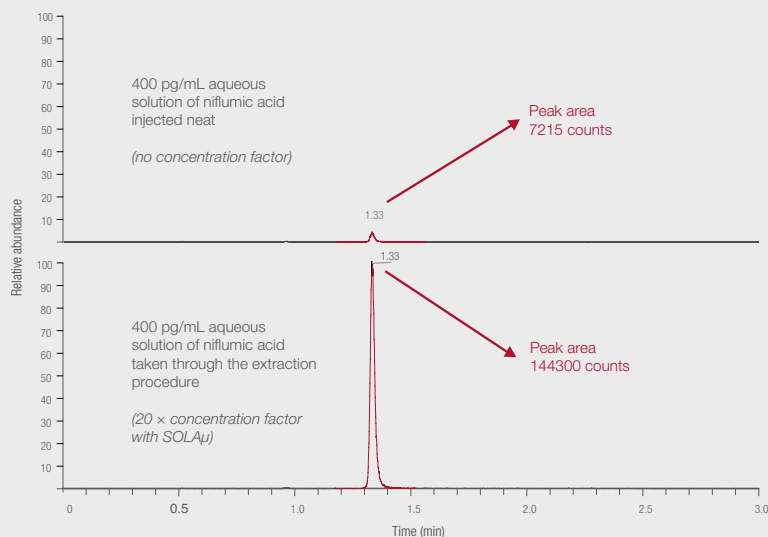


### The SOLA $\mu$ product solution:

Delivers up to 20 times increase in concentration of sample without changes to workflow



	Precision data for niflumic acid peak area ratio (%RSD) n = 18	Recovery of niflumic acid (%)	Matrix effects (%)
QC low (0.4 ng/mL)	1.31	89.9	8.63
QC high (30 ng/mL)	1.06	94.0	3.21



Batch to batch reproducibility of SOLA compared to a conventional SPE product



# SOLA SPE products

Continued

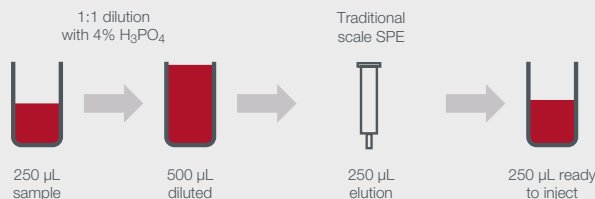


## Sample limited assays

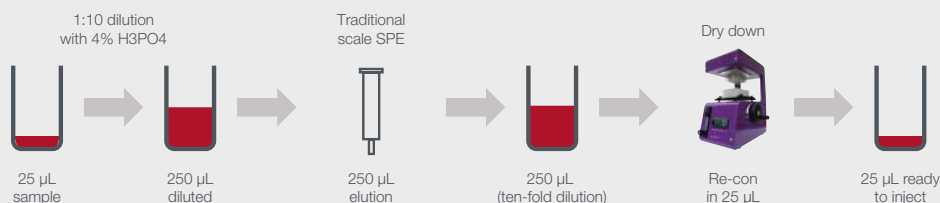
SOLA $\mu$  allows you to directly scale down the volumes used in analytical methods, allowing for a reduction in sample usage and eliminating issues caused by evaporation, without compromising the sensitivity of your assay. This is also an important consideration when sample volumes are limited.

The following example shows that by loading 25  $\mu$ L of niflumic acid sample onto the SOLA $\mu$  plate and eluting in a total volume of 25  $\mu$ L, a ten-fold decrease in sample volume was achieved when compared to a traditional scale higher bed weight product. Equivalent method performance and high levels of reproducibility provided by SOLA technology were still maintained.

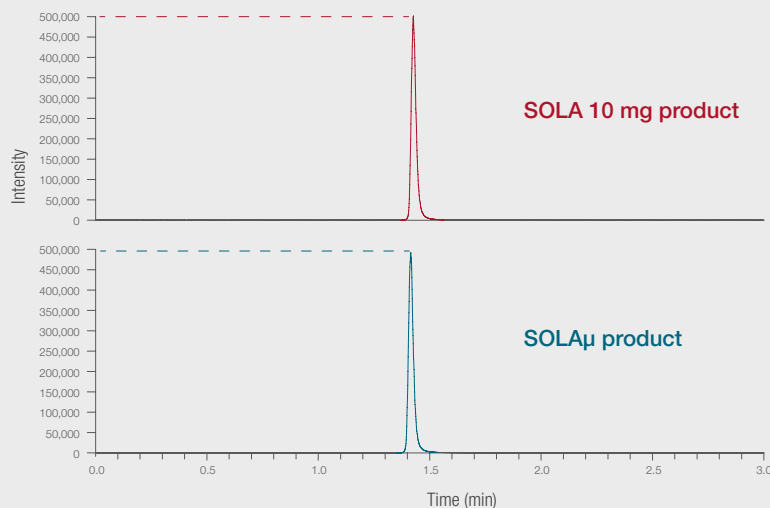
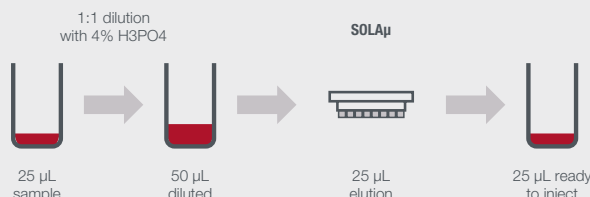
**The problem:**  
Large sample volume requires reduction



**The solution:**  
Introduce additional steps with associated issues



**The SOLA $\mu$  product solution:**  
Scale volume directly with no other method changes



Precision data for niflumic acid		
	Analyte peak area (%RSD)	Peak area ratio (%RSD)
Low QC	7.32	0.356
High QC	5.33	0.195

Equivalent peak response achieved for niflumic acid with SOLA $\mu$  using 25  $\mu$ L of sample compared with 250  $\mu$ L of sample with a 10 mg SOLA SPE product



# SOLA SPE products

Continued



## Increased workflow efficiency

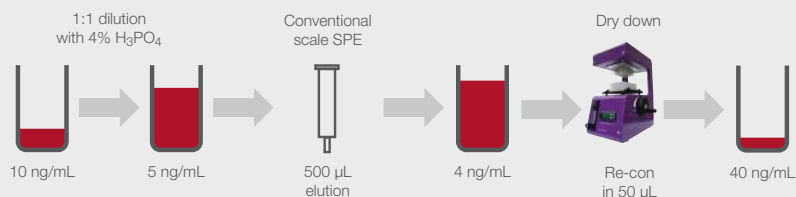
With traditional SPE the eluted sample is typically dried down to increase the concentration of the sample and thus improve the sensitivity. This can cause an issue for certain compound types which can be lost during this step, resulting in reduced sensitivity.

SOLA $\mu$  products allow the sample to be extracted without the need for dry down and reconstitution. Not only does this maximize recovery of the analytes,

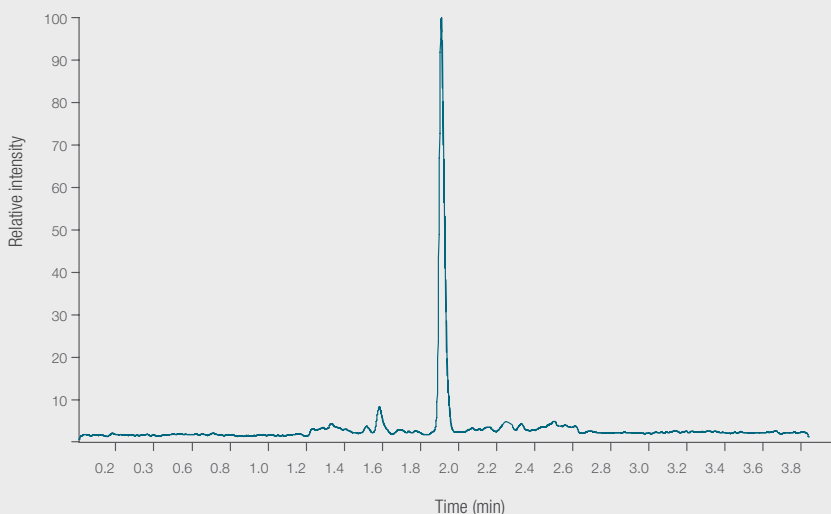
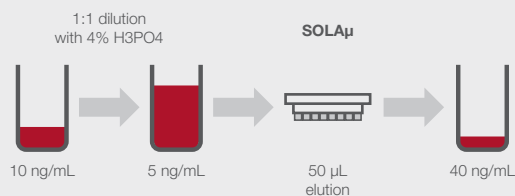
it also improves workflow efficiency and increases productivity.

In the case of extraction of ibuprofen, a four-fold pre-concentration was achieved without the need for dry down by loading 200  $\mu$ L of sample onto the SOLA $\mu$  plate and eluting in a total of 50  $\mu$ L. The results demonstrate that even with this low elution volume, excellent reproducibility was achieved.

**The problem:**  
Workflow requires dry down to achieve sensitivity



**The SOLA $\mu$  product solution:**  
Low elution volume allows removal of dry down



	Ibuprofen (%RSD) n=18	Ibuprofen recovery (%)
Low QC (25 ng/mL)	4.00	90
High QC (750 ng/mL)	1.70	95



# SOLA SPE products

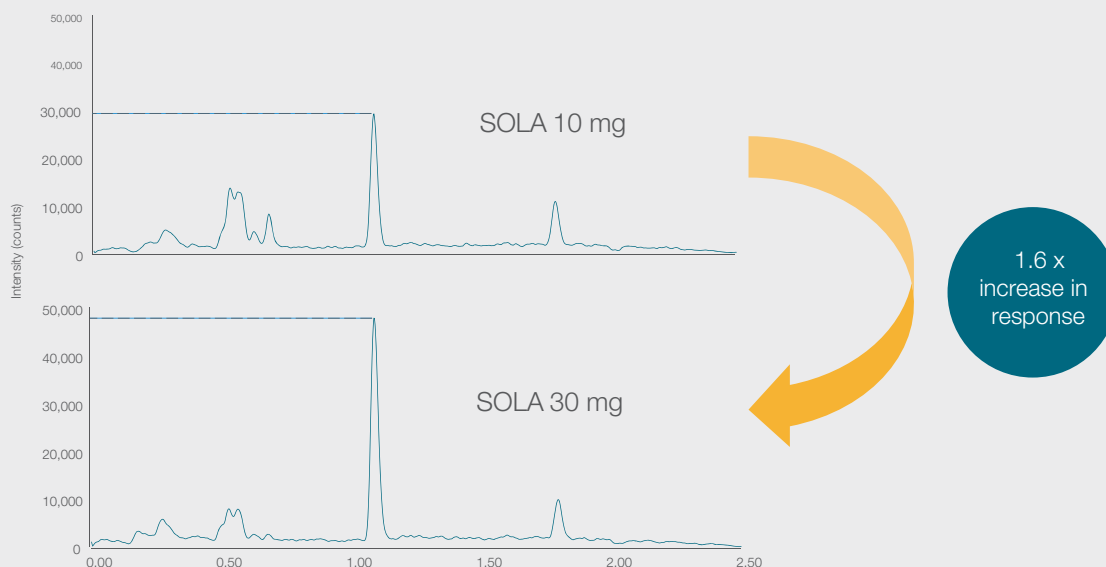
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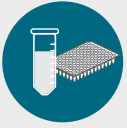
## Method scaling for SOLA 30 mg: concentrating large sample volumes to achieve low quantitation limits

Another simple way to increase the sensitivity of your assay from the very beginning of the workflow is to increase your sample loading volumes during SPE. Using larger sample volumes means more analyte is available to be retained by the SPE sorbent, and this in turn can boost the analyte signal response during later analysis. Boosts in signal response are particularly useful when trying to quantify low concentrations, and by combining large sample volumes with lower elution volumes, the final sample can be even more concentrated.

In order to increase loading volumes, an SPE bed weight with a high loading capacity should be used. SOLA 30 mg products are ideal for this purpose, as they have higher loading capacities than the equivalently sized silica-based products. They can be used for large sample volumes with low concentrations of analytes, as is often the case with many urine analyses. Additionally, high bed weight, polymeric SPE devices such as SOLA 30 mg are ideal compounds that are difficult to retain with smaller bed weights or when experiencing analyte breakthrough.



**The high loading capacity of SOLA HRP 30 mg improves signal response when compared to smaller bed weights.** The chromatograms above show an improved signal response of OH-Vit D<sub>3</sub> (150 ng/mL) when using SOLA HRP 30 mg to load 1 mL spiked human plasma compared to a 10 mg sorbent.



# SOLA SPE products

Continued



## SOLA SPE cartridges

Description	HRP	SCX	SAX	WCX	WAX
10 mg/1 mL (100/pk)	<a href="#">60109-001</a>	<a href="#">60109-002</a>	<a href="#">60109-003</a>	<a href="#">60109-004</a>	<a href="#">60109-005</a>
30 mg/3 mL (50/pk)	<a href="#">60409-001</a>	<a href="#">60409-002</a>	<a href="#">60409-003</a>	<a href="#">60409-004</a>	<a href="#">60409-005</a>

## SOLA SPE 96-well plates

Description	HRP	SCX	SAX	WCX	WAX
2 mg/1 mL (SOLA $\mu$ format) (1/pk)	<a href="#">60209-001</a>	<a href="#">60209-002</a>	<a href="#">60209-003</a>	<a href="#">60209-004</a>	<a href="#">60209-005</a>
10 mg/2 mL (1/pk)	<a href="#">60309-001</a>	<a href="#">60309-002</a>	<a href="#">60309-003</a>	<a href="#">60309-004</a>	<a href="#">60309-005</a>
30 mg/2 mL (1/pk)	<a href="#">60509-001</a>	<a href="#">60509-002</a>	<a href="#">60509-003</a>	<a href="#">60509-004</a>	<a href="#">60509-005</a>

## Complementary products

Description	Part number
HyperSep Vacuum Manifold for HyperSep 96-Well Plates	<a href="#">60103-351</a>
HyperSep Glass Block Vacuum Manifold Pump, North American version	<a href="#">60104-243</a>
HyperSep Glass Block Vacuum Manifold Pump, European version	<a href="#">60104-241</a>





# HyperSep SPE products

Removing uncertainty by applying science to SPE

A diverse range of polymer- and silica-based SPE phases with a large variety of chemistries to suit any application area.



## HyperSep SLE cartridges and plates



### Compendium:

Removing uncertainty by applying science to SPE

## HyperSep SLE cartridges and plates



### Comments

Solid supported liquid/liquid extraction (SLE) is a fast and effective sample preparation technique that provides considerable benefits over liquid-liquid extraction (LLE) protocols for removal of phospholipids from biological samples. SLE offers the following advantages:

Greater reproducibility and recoveries compared to LLE techniques

- Prevents emulsification often associated with LLE
- Reduces solvent requirements compared to LLE
- Can be completely automated unlike LLE
- Improves cleanliness of sample extract compared to protein precipitation techniques
- Improves sensitivity compared to protein precipitation techniques

Learn more at [thermofisher.com/hypersep](https://thermofisher.com/hypersep)





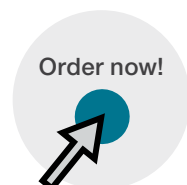
# HyperSep SLE cartridges and plates

Continued



## HyperSep SLE cartridges

Special treated diatomite SLE	Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
pH 7	200	3	50	<a href="#">60109-200-3-7</a>
	500			<a href="#">60109-500-3-7</a>
	1,000	6	30	<a href="#">60109-500-6-7</a>
	2,000			<a href="#">60109-1000-6-7</a>
	4,000	12	20	<a href="#">60109-2000-12-7</a>
	20,000	25	15	<a href="#">60109-4000-25-7</a>
	20,000	60	10	<a href="#">60109-20000-60-7</a>
pH 9	200	3	50	<a href="#">60109-200-3-9</a>
	500			<a href="#">60109-500-3-9</a>
	1,000	6	30	<a href="#">60109-500-6-9</a>
	2,000			<a href="#">60109-1000-6-9</a>
	4,000	12	20	<a href="#">60109-2000-12-9</a>
	20,000	25	15	<a href="#">60109-4000-25-9</a>
	20,000	60	10	<a href="#">60109-20000-60-9</a>
HyperSep SLE 96-well plates				
pH 7	200	2	1	<a href="#">60109-200-2-7W</a>
	300			<a href="#">60109-300-2-7W</a>
	400			<a href="#">60109-400-2-7W</a>
	500			<a href="#">60109-500-2-7W</a>
pH 9	200	2	1	<a href="#">60109-200-2-9W</a>
	400			<a href="#">60109-400-2-9W</a>
	500			<a href="#">60109-500-2-9W</a>





# HyperSep SLE cartridges and plates

Continued

## HyperSep protein precipitation plates



### Comments

Provides a quick and effective approach for removal of proteins from biological compounds using the protein crash technique. In combination with SPE and SLE, the protein precipitation plate offers a comprehensive range of options for sample preparation of biological based compounds. The 96-well plate format provides a high throughput functionality which lends itself to full automation.

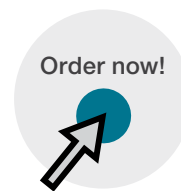
- Dual frit design
- Hydrophobic/oleophobic frits to enable only precipitation of proteins
- Pore size optimized for ideal flow rate
- Specially selected polypropylene for low extractables

Learn more at [thermofisher.com/hypersep](https://thermofisher.com/hypersep)



### HyperSep protein precipitation plates

Description	Quantity	Part number
Protein precipitation plate	1 each	60304-201



### Compendium:

Removing uncertainty by applying science to SPE



# Microscale SPE plates and tips

## HyperSep lab plates



### Comments

For the purification and sample preparation of proteins, DNA, RNA, and other biomolecules

- Sample concentration of small-scale samples
- Available in a range of chromatographic materials
- 96-well plate format with media embedded at the bottom of the plate
- Can be processed manually or by using a liquid-handling robot
- Not suitable for use with a vacuum

### Applications

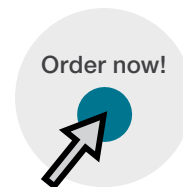
- Tissue culture and separation of products
- Sample concentration
- Sample clean-up
- Collection of sample after chromatography

Learn more at [thermofisher.com/hypersep](https://thermofisher.com/hypersep)



### HyperSep lab plates

Description	Quantity (pack)	Polystyrene	Polypropylene
C18	5	<a href="#">60110-201</a>	<a href="#">60110-301</a>
Zirconium Dioxide		<a href="#">60110-206</a>	—
Titanium Dioxide		<a href="#">60110-207</a>	<a href="#">60110-307</a>
SAX		<a href="#">60110-209</a>	—





# Microscale SPE plates and tips

Continued

## HyperSep filter plates



### Comments

For effective clean-up of small-scale samples

- 96-well plate for the purification and separation of proteins, peptides, DNA, RNA, and other biomolecules
- Clean up of microgram-level samples
- Available in a range of chromatographic materials
- Can be used under vacuum

Learn more at [thermofisher.com/hypersep](https://thermofisher.com/hypersep)



### HyperSep filter plates

Description	Quantity (pack)	5-7 $\mu$ L bed volume	40 $\mu$ L bed volume
C18		<a href="#">60110-401</a>	<a href="#">60110-501</a>
C8		—	<a href="#">60110-502</a>
C4		—	<a href="#">60110-503</a>
Hypercarb		—	<a href="#">60110-504</a>
Hypercarb and C18 (mixed-mode)	1	—	<a href="#">60110-505</a>
Zirconium Dioxide		<a href="#">60110-406</a>	—
Titanium Dioxide		<a href="#">60110-407</a>	—
SCX		—	<a href="#">60110-508</a>
SAX		—	<a href="#">60110-509</a>

Order now!





# Microscale SPE plates and tips

Continued

## HyperSep Tip Microscale SPE Extraction Tips



### Comments

Revolutionary micropipette tip for sample preparation

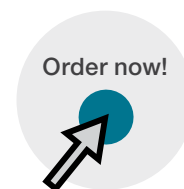
- Faster sample preparation with minimal sample loss
- Patented micropipette tip in which the chromatographic material is directly attached to its inner surface
- No contamination from the supporting matrix
- Separation in volumes as low as 100 nL
- Applications include mass spectrometry, desalting, protein purification, and electrophoresis

Learn more at [thermofisher.com/hypersep](https://thermofisher.com/hypersep)



### HyperSep Tip Microscale SPE Extraction Tips

Description	Quantity (pack)	1-10 $\mu$ L capacity	10-200 $\mu$ L capacity
BioBasic 18		<a href="#">60109-201</a>	<a href="#">60109-209</a>
BioBasic 8		<a href="#">60109-202</a>	<a href="#">60109-210</a>
BioBasic 4		<a href="#">60109-203</a>	<a href="#">60109-211</a>
Hypercarb		<a href="#">60109-204</a>	<a href="#">60109-212</a>
Hypercarb and C18 (mixed-mode)	96	<a href="#">60109-205</a>	<a href="#">60109-213</a>
HILIC		<a href="#">60109-206</a>	<a href="#">60109-214</a>
Trypsin		<a href="#">60109-207</a>	<a href="#">60109-215</a>
Titanium Dioxide		<a href="#">60109-208</a>	<a href="#">60109-216</a>
Zirconium Dioxide		<a href="#">60109-217</a>	<a href="#">60109-218</a>





# Microscale SPE plates and tips

Continued

## HyperSep SpinTip Microscale SPE Extraction Tips



### Comments

Revolutionary micropipette tip for sample preparation

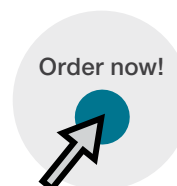
- Pipette tips with a 1 to 2  $\mu\text{m}$  wide slit at the bottom that permits the liquid to pass through but retains the chromatographic material (20 to 30  $\mu\text{m}$ )
- Faster sample preparation with minimal sample loss
- No contamination from the supporting matrix
- Separation in volumes as low as 100 nL

Learn more at [thermofisher.com/hypersep](https://thermofisher.com/hypersep)



### HyperSep SpinTip Microscale SPE Extraction Tips

Description	Quantity (pack)	1-10 $\mu\text{L}$ capacity	10-200 $\mu\text{L}$ capacity
C18	96	<a href="#">60109-401</a>	<a href="#">60109-412</a>
C8		<a href="#">60109-402</a>	<a href="#">60109-413</a>
C4		<a href="#">60109-403</a>	<a href="#">60109-414</a>
Hypercarb		<a href="#">60109-404</a>	<a href="#">60109-415</a>
Hypercarb and C18 (mixed-mode)		<a href="#">60109-405</a>	<a href="#">60109-416</a>
HILIC		<a href="#">60109-406</a>	<a href="#">60109-417</a>
Trypsin		<a href="#">60109-407</a>	<a href="#">60109-418</a>
POROS Weak Anion Exchanger		<a href="#">60109-408</a>	<a href="#">60109-419</a>
POROS Strong Anion Exchanger		<a href="#">60109-409</a>	<a href="#">60109-420</a>
POROS Strong Cation Exchanger		<a href="#">60109-410</a>	<a href="#">60109-421</a>
Titanium Dioxide		<a href="#">60109-411</a>	<a href="#">60109-422</a>
Zirconium Dioxide		<a href="#">60109-424</a>	<a href="#">60109-425</a>





# HyperSep SPE cartridges and plates

## HyperSep Retain SPE cartridges and plates



### Comments

Versatile polymeric materials for retention of polar, non-polar, basic, and acidic drugs

- Exceptional recoveries for polar and non-polar analytes
- High and consistent recoveries
- High capacity, high purity, highly porous polystyrene DVB material modified with functional groups
  - PEP (Urea for polar and non-polar analytes)
  - CX (Mixed-mode sulfonic acid for basic analytes)
  - AX (Mixed-mode quaternary amine for acidic analytes)
- Fast and easy sample preparation and method development
- pH stable 0 to 14

### Retain PEP applications

- Drugs and metabolites in biological fluids
- Peptides in serum, plasma or biological fluids
- Environmental samples

### Retain CX applications

- Analysis of a wide range of drugs of abuse including basic and neutral drugs

### Retain AX applications

- Analysis of THC and its metabolites

Learn more at [thermofisher.com/hypersep](https://thermofisher.com/hypersep)



### Compendium:

Removing uncertainty by applying science to SPE





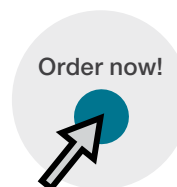
# HyperSep SPE cartridges and plates

Continued



## HyperSep Retain PEP/CX/AX SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Retain PEP	Retain CX	Retain AX
30	1	100	<a href="#">60107-201</a>	<a href="#">60107-301</a>	<a href="#">60107-401</a>
			<a href="#">60107-202</a>	<a href="#">60107-302</a>	<a href="#">60107-402</a>
60	3	50	<a href="#">60107-203</a>	<a href="#">60107-303</a>	<a href="#">60107-403</a>
			<a href="#">60107-208</a>	<a href="#">60107-308</a>	<a href="#">60107-408</a>
100	3	50	<a href="#">60107-217</a>	—	<a href="#">60107-417</a>
150	6	30	<a href="#">60107-211</a>	<a href="#">60107-311</a>	<a href="#">60107-411</a>
200	3	50	<a href="#">60107-204</a>	<a href="#">60107-304</a>	<a href="#">60107-404</a>
			<a href="#">60107-212</a>	<a href="#">60107-314</a>	<a href="#">60107-412</a>
500	3	50	<a href="#">60107-205</a>	<a href="#">60107-305</a>	<a href="#">60107-405</a>
			<a href="#">60107-206</a>	<a href="#">60107-306</a>	<a href="#">60107-406</a>
1,000	15	20	—	—	<a href="#">60107-419</a>
			<a href="#">60107-215</a>	<a href="#">60107-315</a>	<a href="#">60107-415</a>
2,000	6	30	<a href="#">60107-218</a>	—	—
			<a href="#">60107-214</a>	<a href="#">60107-312</a>	<a href="#">60107-414</a>
<b>HyperSep Retain PEP/CX/AX 96 fixed well plates</b>					
30	1	1	<a href="#">60306-207</a>	<a href="#">60306-303</a>	<a href="#">60306-403</a>
60			<a href="#">60306-208</a>	<a href="#">60306-304</a>	<a href="#">60306-404</a>
<b>HyperSep Retain PEP/CX/AX 96 removable well plate</b>					
30	1	1	<a href="#">60303-207</a>	<a href="#">60303-307</a>	<a href="#">60303-407</a>





# HyperSep SPE cartridges and plates

Continued

## HyperSep Hypercarb SPE cartridges and plates



### Comments

Unique material for retention of highly polar compounds

- HyperSep and Hypercarb™ SPE contains flat, 100% porous graphitic carbon (PGC) with selectivity for structurally similar compounds, offering separation of compounds with simple solvents
- pH stable 0 to 14
- High batch-to-batch reproducibility
- Strong retention properties allow use of low bed weights for concentrated extracts
- Interaction mechanism with polar molecules

### Applications

- Provides total pH stability retention and separation of highly polar species especially in environmental samples
- Ideal for problem analytes in SPE applications

Learn more at [thermofisher.com/hypersep](http://thermofisher.com/hypersep)



### HyperSep Hypercarb SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
25	1	50	<a href="#">60106-304</a>
50			<a href="#">60106-303</a>
100			<a href="#">60106-302</a>
200	3	30	<a href="#">60106-301</a>
500			<a href="#">60106-402</a>
1,000	6	20	<a href="#">60106-403</a>
2,000			<a href="#">60106-404</a>

### HyperSep Hypercarb 96 removable well plates

10	1	1	<a href="#">60302-606</a>
25			<a href="#">60302-607</a>
50			<a href="#">60302-608</a>



# HyperSep SPE cartridges and plates

Continued

## HyperSep C18 SPE cartridges and plates



Comments
Features a highly retentive alkyl-bonded phase for extraction of non-polar to moderately polar compounds
Applications
<ul style="list-style-type: none"> <li>Retentive for non-polar compounds</li> <li>Retains most organic analytes from aqueous matrices</li> </ul>
Learn more at <a href="http://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep C18 SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
25			<a href="#">60108-376</a>
50	1	100	<a href="#">60108-390</a>
100			<a href="#">60108-302</a>
200	3	50	<a href="#">60108-303</a>
500	6	30	<a href="#">60108-305</a>
	10	50	<a href="#">60108-786</a>
1,000	6	30	<a href="#">60108-301</a>
	15		<a href="#">60108-776</a>
2,000	15	20	<a href="#">60108-701</a>
5,000	25		<a href="#">60108-780</a>
10,000	75	10	<a href="#">60108-702</a>
			<a href="#">60108-703</a>
HyperSep C18 96 fixed/removable well plates			
10			<a href="#">60300-425</a>
25			<a href="#">60300-426</a>
50	1	1	<a href="#">60300-427</a>
100			<a href="#">60300-428</a>



# HyperSep SPE cartridges and plates

Continued

## HyperSep C8 SPE cartridges and plates



### Comments

Less retentive alternative to C18 for polar and non-polar compounds

### Applications

- Drugs and their metabolites in biological samples
- Peptides in biological samples

Learn more at [thermofisher.com/hypersep](https://thermofisher.com/hypersep)

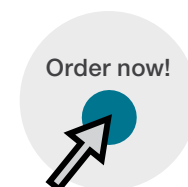


### HyperSep C8 SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	<a href="#">60108-391</a>
100			<a href="#">60108-392</a>
200	3	50	<a href="#">60108-393</a>
500			<a href="#">60108-309</a>
1,000			<a href="#">60108-394</a>
2,000	6	30	<a href="#">60108-427</a>
5,000			<a href="#">60108-705</a>
10,000	75	10	<a href="#">60108-706</a>

### HyperSep C8 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Fixed part number	Removable part number
10	1	<a href="#">60307-211</a>	<a href="#">60300-445</a>
25		<a href="#">60307-212</a>	<a href="#">60300-446</a>
50		<a href="#">60307-213</a>	<a href="#">60300-447</a>
100		—	<a href="#">60300-448</a>





# HyperSep SPE cartridges and plates

Continued

## HyperSep Silica SPE cartridges and plates



Comments
A polar sorbent primarily used to retain analytes in non-polar matrices
Applications
<ul style="list-style-type: none"> <li>Extraction of polar compounds including aldehydes, amines, drugs, pesticides and herbicides</li> <li>Extraction of carotenoids, fat-soluble vitamins, aflatoxins in food matrices</li> <li>Extraction of fatty acids and phospholipids</li> </ul>
Learn more at <a href="https://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep Silica SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity	Part number
50	1	100 pack	<a href="#">60108-409</a>
100			<a href="#">60108-317</a>
200	3	50 pack	<a href="#">60108-410</a>
500			<a href="#">60108-315</a>
500	6	30 pack	<a href="#">60108-411</a>
	10	50 pack	<a href="#">60108-793</a>
1,000	6	30 pack	<a href="#">60108-426</a>
2,000	15	20 pack	<a href="#">60108-710</a>
5,000	25		<a href="#">60108-711</a>
10,000	75	10 pack	<a href="#">60108-853</a>
	150		<a href="#">60108-712</a>
50,000	75	10 pack	<a href="#">60108-850</a>
20,000	150		<a href="#">60108-851</a>
70,000	150	10 pack	<a href="#">60108-852</a>

### HyperSep Silica 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	<a href="#">60307-231</a>	<a href="#">60300-485</a>
25			<a href="#">60307-232</a>	<a href="#">60300-486</a>
50			<a href="#">60307-233</a>	<a href="#">60300-487</a>
100			<a href="#">60307-234</a>	<a href="#">60300-488</a>



# HyperSep SPE cartridges and plates

Continued

## HyperSep Acid Wash Silica SPE cartridges and plates



Comments
A hydrophilic sorbent for extraction of polar compounds
Applications
<ul style="list-style-type: none"> <li>• Extraction of polar compounds from ground, waste and drinking water</li> <li>• Extraction of polar compounds from food and beverages</li> </ul>
Learn more at <a href="https://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep Acid Wash Silica SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-901
100			60108-902
200	10	50	60108-903
	3		60108-904
500	10	30	60108-905
	3		60108-906
	6		60108-907
1,000	10	50	60108-908
	6	30	60108-909
2,000	15	20	60108-910
5,000	25	20	60108-911
10,000	75	10	60108-912

### HyperSep Acid Wash Silica 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	60307-321	60300-831
25			60307-322	60300-832
50			60307-323	60300-833
100			60307-324	60300-834



# HyperSep SPE cartridges and plates

Continued

## HyperSep Phenyl SPE cartridges and plates

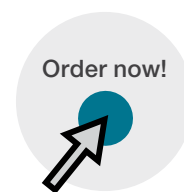


Comments
Offers alternative selectivity for retention of basic compounds
Applications
<ul style="list-style-type: none"> <li>Extraction of aromatic compounds</li> <li>Extraction of basic analytes</li> </ul>
Learn more at <a href="http://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep Phenyl SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	<a href="#">60108-516</a>
100			<a href="#">60108-386</a>
200	3	50	<a href="#">60108-387</a>
500			<a href="#">60108-388</a>
1,000	6	30	<a href="#">60108-389</a>
2,000			<a href="#">60108-517</a>
5,000	25	20	<a href="#">60108-707</a>
10,000			<a href="#">60108-708</a>
	75	10	<a href="#">60108-709</a>





# HyperSep SPE cartridges and plates

Continued

## HyperSep Diol SPE cartridges and plates



Comments
Ideal for the extraction of polar compounds
Applications
<ul style="list-style-type: none"> <li>• Normal phase extraction of polar compounds</li> <li>• Purification of polar compounds</li> </ul>
Learn more at <a href="https://thermofisher.com/hypersep">thermofisher.com/hypersep</a>

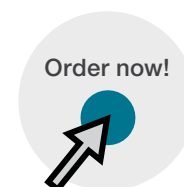


### HyperSep Diol SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	<a href="#">60108-571</a>
100			<a href="#">60108-572</a>
200	3	50	<a href="#">60108-573</a>
500			<a href="#">60108-574</a>
1,000			<a href="#">60108-575</a>
2,000	6	30	<a href="#">60108-576</a>
5,000			<a href="#">60108-576</a>
10,000	75	10	<a href="#">60108-757</a>

### HyperSep Diol 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	<a href="#">60307-311</a>	<a href="#">60300-630</a>
25			<a href="#">60307-312</a>	<a href="#">60300-631</a>
50			—	<a href="#">60300-632</a>
100			—	<a href="#">60300-633</a>







# HyperSep SPE cartridges and plates

Continued

## HyperSep Verify CX SPE cartridges and plates



Comments
Mixed-mode SPE features non-polar and ionic characteristics for improved analysis of drugs of abuse
Applications
<ul style="list-style-type: none"> <li>Analysis of a wide range of drugs of abuse from biological matrices, including basic and neutral drugs</li> </ul>
Learn more at <a href="http://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep Verify CX SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	<a href="#">60108-741</a>
130	10		<a href="#">60108-719</a>
	3		<a href="#">60108-777</a>
200	6	50	<a href="#">60108-722</a>
	10		<a href="#">60108-742</a>
300	3		<a href="#">60108-720</a>
500			<a href="#">60108-721</a>
	6	30	<a href="#">60108-723</a>
1,000			<a href="#">60108-724</a>

### HyperSep Verify CX 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number
25			<a href="#">60307-262</a>
50	1	1 each	<a href="#">60307-263</a>
100			<a href="#">60307-264</a>



# HyperSep SPE cartridges and plates

Continued

## HyperSep Verify AX SPE cartridges and plates



### Comments

Mixed-mode SPE features non-polar and ionic characteristics for improved analysis of acidic drugs and metabolites

### Applications

- Analysis of acidic and neutral drug e.g. THC and its metabolites

Learn more at [thermofisher.com/hypersep](https://thermofisher.com/hypersep)

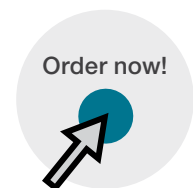


### HyperSep Verify AX SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
130	1	100	<a href="#">60108-727</a>
	10	50	<a href="#">60108-767</a>
200	3	30	<a href="#">60108-768</a>
	6		<a href="#">60108-730</a>
	10		<a href="#">60108-764</a>
300		50	<a href="#">60108-728</a>
	3		<a href="#">60108-729</a>
500			<a href="#">60108-731</a>
1,000	6	30	<a href="#">60108-732</a>

### HyperSep Verify AX 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number
25	1	1 each	<a href="#">60307-272</a>
50			<a href="#">60307-273</a>





# HyperSep SPE cartridges and plates

Continued

## HyperSep Strong Cation Exchanger (SCX) SPE cartridges and plates



Comments
A strong cation exchange sorbent for extraction of charged basic compounds
Applications
<ul style="list-style-type: none"> <li>Isolation of cationic compounds from complex samples</li> <li>Removal of basic drugs</li> <li>Organic bases</li> <li>Nucleic acid bases, nucleotides and surfactants</li> </ul>
Learn more at <a href="https://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep Strong Cation Exchanger (SCX) SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	<a href="#">60108-420</a>
100			<a href="#">60108-421</a>
200	3	50	<a href="#">60108-422</a>
500			<a href="#">60108-423</a>
1,000	6	30	<a href="#">60108-520</a>
2,000			<a href="#">60108-433</a>
5,000	15	20	<a href="#">60108-716</a>
10,000			<a href="#">60108-717</a>
20,000	75	10 pack	<a href="#">60108-718</a>
50,000			<a href="#">60108-857</a>
	150		<a href="#">60108-858</a>

### HyperSep Strong Cation Exchanger (SCX) 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	—	<a href="#">60300-585</a>
25			<a href="#">60307-252</a>	—
50			<a href="#">60307-253</a>	<a href="#">60300-587</a>
100			—	<a href="#">60300-588</a>



# HyperSep SPE cartridges and plates

Continued

## HyperSep Strong Anion Exchanger (SAX) SPE



Comments
Strong anion exchange sorbent for extraction of weak acids
Applications
<ul style="list-style-type: none"> <li>• Isolation of anionic compounds from complex samples</li> <li>• Removal of acidic food pigments</li> <li>• Isolation of phenolic compounds</li> <li>• Nucleic acids, nucleotides and surfactants</li> </ul>
Learn more at <a href="https://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep Strong Anion Exchanger (SAX) SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	<a href="#">60108-417</a>
100		100	<a href="#">60108-418</a>
200	3	50	<a href="#">60108-419</a>
500		50	<a href="#">60108-521</a>
1,000	6	30	<a href="#">60108-360</a>
2,000		20	<a href="#">60108-713</a>
5,000	25	20	<a href="#">60108-714</a>
10,000	75	10	<a href="#">60108-715</a>

### HyperSep Strong Anion Exchanger (SAX) 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	—	<a href="#">60300-565</a>
25			<a href="#">60307-242</a>	60300-566
50			<a href="#">60307-243</a>	<a href="#">60300-567</a>
100			—	<a href="#">60300-568</a>



# HyperSep SPE cartridges and plates

Continued

## HyperSep Carboxylic Acid (WCX) SPE cartridges and plates



Comments
Weak cation exchange sorbent for extraction of strong bases
Applications
<ul style="list-style-type: none"> <li>• Drugs and metabolites in biological fluids</li> <li>• Peptides in serum, plasma or biological fluids</li> <li>• Pesticides in water, food and beverages</li> <li>• Nucleic acids, nucleotides and surfactants</li> </ul>
Learn more at <a href="https://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep Carboxylic Acid (WCX) SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-201
100	1	100	60108-202
200	3	50	60108-203
	10	50	60108-207
500	3	50	60108-204
	6	30	60108-205
1,000	6	30	60108-206
2,000	15	20	60108-208
5,000	25	20 pack	60108-209

### HyperSep Carboxylic Acid (WCX) 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	60307-331	60300-841
25			60307-332	60300-842
50			60307-333	60300-843
100			60307-334	60300-844



# HyperSep SPE cartridges and plates

Continued

## HyperSep Aminopropyl (WAX) SPE cartridges and plates



Comments
Weak anion exchange sorbent for extraction of strong acids
Applications
<ul style="list-style-type: none"> <li>• Separation of structural isomers</li> <li>• Drugs and metabolites in biological fluids</li> <li>• Separation of saccharides, phenols and petroleum products</li> </ul>
Learn more at <a href="https://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep Aminopropyl (WAX) SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	<a href="#">60108-424</a>
	3	50	<a href="#">60108-429</a>
100	1	100	<a href="#">60108-364</a>
	3	50	<a href="#">60108-425</a>
500	6	30	<a href="#">60108-518</a>
	15	20	<a href="#">60108-738</a>
1,000	25	10	<a href="#">60108-740</a>
2,000	75	10	<a href="#">60108-739</a>
5,000	250	5	<a href="#">60108-739</a>
10,000	750	2	<a href="#">60108-740</a>

### HyperSep Aminopropyl (WAX) 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	<a href="#">60307-291</a>	<a href="#">60300-505</a>
25			<a href="#">60307-292</a>	<a href="#">60300-506</a>
50			<a href="#">60307-293</a>	<a href="#">60300-507</a>
100			<a href="#">60307-294</a>	—



# HyperSep SPE cartridges and plates

Continued

## HyperSep Florisil SPE cartridges and plates



Comments
Ideal for the isolation of polar compounds from non-polar matrices
Applications
<ul style="list-style-type: none"> <li>Extraction of pesticides using official methods</li> <li>Polychlorinated biphenyls in transformer oil</li> <li>Alcohol, aldehydes, amines and drugs</li> </ul>
Learn more at <a href="http://thermofisher.com/hypersep">thermofisher.com/hypersep</a>



### HyperSep Florisil SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	<a href="#">60108-402</a>
100			<a href="#">60108-403</a>
200	3	50	<a href="#">60108-404</a>
500			<a href="#">60108-405</a>
1,000	6	30	<a href="#">60108-500</a>
2,000			<a href="#">60108-431</a>
5,000	25	20	<a href="#">60108-735</a>
10,000			<a href="#">60108-736</a>
	75	10	<a href="#">60108-737</a>



#### Compendium:

Removing uncertainty by applying science to SPE



# HyperSep SPE cartridges and plates

Continued

## HyperSep Cyano SPE cartridges and plates



### Comments

Optimized for the retention of moderately polar compounds from non-polar matrices

### Applications

- Retaining polar compounds from hexane and oils
- Reversed phase extraction of moderately polar compounds

Learn more at [thermofisher.com/hypersep](http://thermofisher.com/hypersep)



### HyperSep Cyano SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	<a href="#">60108-746</a>
100		100	<a href="#">60108-745</a>
200	3	50	<a href="#">60108-747</a>
500		50	<a href="#">60108-748</a>
1,000	6	30	<a href="#">60108-749</a>
2,000		30	<a href="#">60108-750</a>
5,000	15	20	<a href="#">60108-751</a>
10,000	25	20	<a href="#">60108-752</a>
	75	10	<a href="#">60108-753</a>

### HyperSep Cyano 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	—	<a href="#">60300-821</a>
25			—	<a href="#">60300-822</a>
50			—	<a href="#">60300-823</a>
100			<a href="#">60307-304</a>	<a href="#">60300-824</a>

Order now!





# SPE manifolds and accessories

Improving your sample preparation workflow with a comprehensive range of accessories



## HyperSep manifolds and accessories

### HyperSep Positive Pressure Manifold



#### Comments

Improve productivity of SPE sample preparation by simultaneously processing up to 48 samples. The Thermo Scientific™ HyperSep™ Positive Pressure Manifold can hold 48 SPE cartridges of various sizes: 1, 3, 6, 10 and 15 mL.

Learn more at [thermofisher.com/spemanifolds](https://thermofisher.com/spemanifolds)



Description	Part number
Positive Pressure Manifold with 13 mm collection rack	<a href="#">60104-236</a>
Positive Pressure Manifold with 16 mm collection rack	<a href="#">60104-274</a>
Adaptor Plate for 1 mL cartridges for PP Manifold	<a href="#">60104-265</a>
Adaptor Plate for 3 mL cartridges for PP Manifold	<a href="#">60104-266</a>
Adaptor Plate for 6 mL cartridges for PP Manifold	<a href="#">60104-267</a>
Adaptor Plate for 10 mL/15 mL cartridges for PP Manifold	<a href="#">60104-271</a>
Collection Rack for 13 mm tubes	<a href="#">60104-268</a>
Collection Rack for 16 mm tubes	<a href="#">60104-269</a>
Pre-Drilled Waste Container	<a href="#">60104-270</a>
Installation Kit	<a href="#">60104-272</a>
In Line Air Filter	<a href="#">60104-273</a>



# HyperSep manifolds and accessories

Continued

## HyperSep Universal Vacuum Manifold



### Comments

Process your samples in SPE cartridges or 96-Well plates by using the flexible Thermo Scientific™ HyperSep™ Universal Vacuum Manifold. The manifold is supplied with a base and vacuum gauge, flask and stopper tubing and spigots.

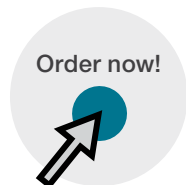
Learn more at [thermofisher.com/spemanifolds](https://thermofisher.com/spemanifolds)



Universal Vacuum Manifold Base/Gauge



Description	Part number
Universal Vacuum Manifold	<a href="#">60104-230</a>
Glass Block Vacuum Manifold Pump, European version	<a href="#">60104-241</a>
Glass Block Vacuum Manifold Pump, North American version	<a href="#">60104-243</a>
24 Well Extraction Plate	<a href="#">60104-284</a>
48 Well Extraction Plate	<a href="#">60104-289</a>
24-position Extraction Plate Plugs	<a href="#">60104-234</a>
48-position Extraction Plate Plugs	<a href="#">60104-235</a>





## HyperSep Vacuum Manifold for HyperSep 96-Well Plates

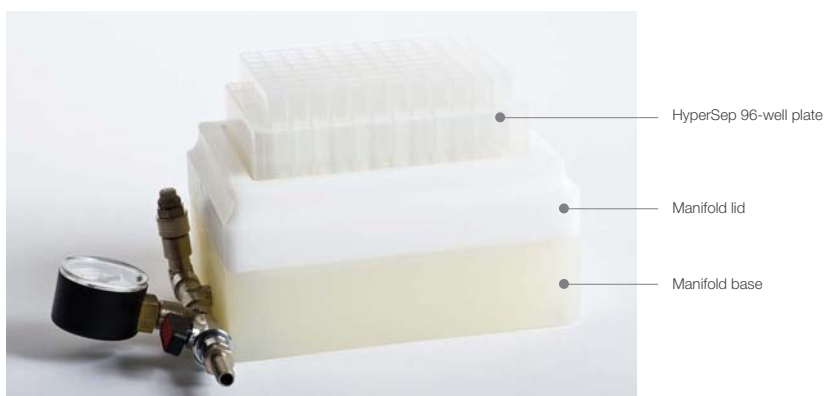


### Comments

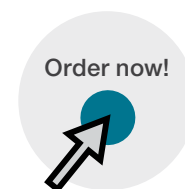
Thermo Scientific™ HyperSep™ Vacuum Manifolds are designed for use with HyperSep SPE columns and the HyperSep 96-Well plates. The HyperSep 96-well plate is not included and available for purchase separately. Included with system:

- Base
- Lid
- Waste collection tray

Learn more at [thermofisher.com/spemanifolds](https://thermofisher.com/spemanifolds)



Description	Part number
Vacuum Manifold for HyperSep 96-Well Plates	<a href="#">60103-351</a>
Glass Block Vacuum Manifold Pump, European version	<a href="#">60104-241</a>
Glass Block Vacuum Manifold Pump, North American version	<a href="#">60104-243</a>
Glass Block Vacuum Manifold Pump, UK version	60104-441





## HyperSep Glass Block Vacuum Manifold

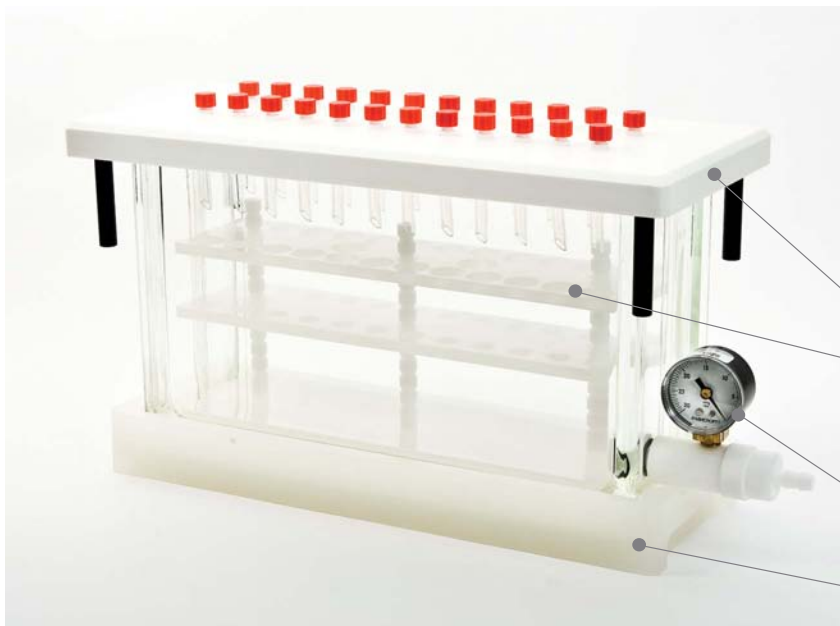


### Comments

Thermo Scientific™ HyperSep™ Glass Block Vacuum Manifolds offer a simple way to quickly process multiple samples. The manifold's rigid lid resists warping, and permits samples to elute directly into disposable test tubes. The design allows visible inspection of the extraction process and facilitates cleaning.

Glass block, manifold lid, cover gasket, vacuum gauge and valve assembly, 24 tips, adjustable collection rack, bulkhead luer fittings, 24 plugs and manifold safety tray.

Learn more at [thermofisher.com/spemanifolds](https://thermofisher.com/spemanifolds)



Manifold lid

Collection rack

Vacuum gauge and valve assembly

Manifold safety tray



Luer-Lock Plugs  
(60104-258)



Retaining Clips for  
collection rack  
(60104-255)



Bulkhead Luer Fittings  
(60104-256)



Collection Rack  
(60104-251 (16 port),  
60104-252 (24 port))



Vacuum Gauge  
(60104-240)



Valve Assembly  
(60104-261)



Tips  
(60104-245)



Manifold Lid Legs  
(60104-257)



# HyperSep manifolds and accessories

Continued



Description	Part number
16-port Vacuum Manifold	<a href="#">60104-232</a>
24-port Vacuum Manifold	<a href="#">60104-233</a>
Glass Block Vacuum Pump, European version	<a href="#">60104-241</a>
Glass Block Vacuum Pump, North American version	<a href="#">60104-243</a>
Replacement parts	
Vacuum gauge	<a href="#">60104-240</a>
Stopcocks for 16-port glass block vacuum manifold	<a href="#">60104-242</a>
Stopcocks for 24-port glass block vacuum manifold	<a href="#">60104-244</a>
Teflon tips for glass block vacuum manifold	<a href="#">60104-245</a>
Lid for 24-port glass block manifold	<a href="#">60104-248</a>
Gasket for 16-port glass block vacuum manifold	<a href="#">60104-249</a>
Gasket for 24-port glass block vacuum manifold	<a href="#">60104-250</a>
Collection Rack for 16-port glass block vacuum manifold	<a href="#">60104-251</a>
Collection Rack for 24-port glass block vacuum manifold	<a href="#">60104-252</a>
Glass Block for 16-port Vacuum Manifold	<a href="#">60104-253</a>
Glass Block for 24-port Vacuum Manifold	<a href="#">60104-254</a>
Retaining Clips for collection rack	<a href="#">60104-255</a>
Bulkhead Luer Fittings	<a href="#">60104-256</a>
Manifold Lid Legs	<a href="#">60104-257</a>
Luer Lock Plugs	<a href="#">60104-258</a>
Column Adaptors	<a href="#">60104-259</a>
Manifold Safety Tray	<a href="#">60104-260</a>
Vacuum Gauge and Valve Assembly	<a href="#">60104-261</a>
Collection Rack Posts	<a href="#">60104-264</a>

# TurboFlow and online SPE products

## Enabling your automated online sample preparation, and effectively removing large molecules

Thermo Scientific™ TurboFlow™ columns enable automated online sample preparation in conjunction with Thermo Scientific™ Aria™, Transcend™ TLX, and Prelude™ LC-MS systems. Turboflow columns allow users to inject complex matrices such as food, plasma, urine and (other biological matrices) directly into the mass spectrometer – without prior sample pre-treatment.

- Minimize sample preparation – simplifies complex sample preparation protocols
- Simplify method development – uses the same method for different matrices
- Save time – injects samples directly into the LC-MS system

Turboflow columns effectively remove large molecules, which are the primary interference in biological matrices. These columns are highly efficient at removing proteins based on their size, resulting in high quality data and can be used with Aria, Transcend TLX, and Prelude LC-MS systems.



## TURBOFLOW columns



### Comments

Learn more at [thermofisher.com/turboflow](https://thermofisher.com/turboflow)



### TurboFlow columns compatible with Aria, Transcend TLX, and Prelude LC-MS systems

Description	1.0 x 50 mm	0.5 x 50 mm
TURBOFLOW Cyclone Column	<a href="#">CH-952434</a>	<a href="#">CH-953288</a>
TURBOFLOW Cyclone-P Column	—	<a href="#">CH-953289</a>
TURBOFLOW Cyclone MAX Column	<a href="#">CH-952979</a>	<a href="#">CH-953286</a>
TURBOFLOW Cyclone MCX Column	<a href="#">CH-952813</a>	<a href="#">CH-953287</a>
TURBOFLOW Cyclone MCX-2 Column	<a href="#">CH-953456</a>	<a href="#">CH-953457</a>
TURBOFLOW Cyclone C18 Column	<a href="#">CH-953244</a>	<a href="#">CH-953280</a>
TURBOFLOW Cyclone C18-P Column	<a href="#">CH-953275</a>	<a href="#">CH-953281</a>
TURBOFLOW Cyclone C8 Column	<a href="#">CH-953276</a>	<a href="#">CH-953282</a>
TURBOFLOW Cyclone C2 Column	<a href="#">CH-953279</a>	<a href="#">CH-953285</a>
TURBOFLOW Cyclone Fluoro Column	<a href="#">CH-953277</a>	<a href="#">CH-953283</a>



# HyperSep online SPE products



## Comments

Retain specific analytes in a sample matrix when used with an appropriate HPLC column

- Effective removal of contaminants such as proteins from samples
- Compatible with conventional HPLC systems
- Fast and effective clean-up and concentration of target compounds

Learn more at [thermofisher.com/spemanifolds](http://thermofisher.com/spemanifolds)



## HyperSep Javelin Direct-Connect Online SPE columns

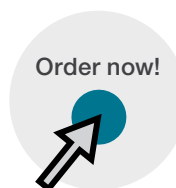
ID (mm)	Length (mm)	Retain PEP	Retain CX	Retain AX	Hypercarb
2.1	10	<a href="#">60310-201</a>	<a href="#">60310-301</a>	<a href="#">60310-401</a>	<a href="#">60310-501</a>
3.0		<a href="#">60310-202</a>	<a href="#">60310-302</a>	<a href="#">60310-402</a>	<a href="#">60310-502</a>

## HyperSep UniGuard Direct-Connect Online SPE cartridges

ID (mm)	Length (mm)	Retain PEP	Retain CX	Retain AX	Hypercarb
2.1	10	<a href="#">60311-201</a>	<a href="#">60311-301</a>	<a href="#">60311-401</a>	<a href="#">60311-501</a>
3.0		<a href="#">60311-202</a>	<a href="#">60311-302</a>	<a href="#">60311-402</a>	<a href="#">60311-502</a>

## HyperSep HPLC columns for Online SPE products

ID (mm)	Length (mm)	Retain PEP	Retain CX	Retain AX	Hypercarb
2.1	20	<a href="#">60312-201</a>	<a href="#">60312-301</a>	<a href="#">60312-401</a>	<a href="#">60312-501</a>
3.0		<a href="#">60312-202</a>	<a href="#">60312-302</a>	<a href="#">60312-402</a>	<a href="#">60312-502</a>



# QuEChERS products

## Simple, proven, sample extraction and clean-up

Fast, easy, and cost-effective, QuEChERS is a robust, reproducible approach for extracting and cleaning up pesticides and other low-level contaminants in complex matrices. It is often used as a sample preparation step prior to GC-MS or LC-MS analysis, and can be automated for higher throughput.



### QuEChERS products



**Originally developed in 2003 for the determination of multiple pesticide residues in food, QuEChERS applications have evolved to include:**

- Pesticide residues
- Veterinary drug residues
- Pharmaceutical residues
- Environmental contaminants
- Mycotoxins
- Drugs of abuse
- Traditional Chinese medicines
- Forensic analysis







# QuEChERS products

Continued



## Pre-packaged, ready-weighed kits make QuEChERS easier and more convenient

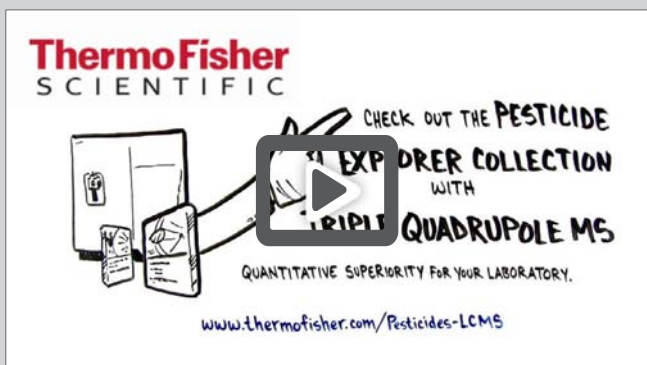
Thermo Scientific™ QuEChERS kits give you reproducible results and excellent recoveries for a wide variety of analytes, and save time and money, too. Pre-packaged, ready-weighed salts, solid-phase extraction (SPE) sorbents and buffers streamline your workflow, and minimize the potential for error.

Kits are available in several formats to meet all your application requirements. Depending on your analytes of interest, your sample matrix, and your preferred method—Original, AOAC, or EN—you can choose the appropriate volume option, and select the right combination of salts, sorbents, and consumables.



### Comments

Learn more at [thermofisher.com/quechers](http://thermofisher.com/quechers)



### Video:

An introduction to the pesticide explorer collection



### Brochure:

QuEChERS solutions in all your favorite flavors





# QuEChERS products

Continued



**Three flavors of QuEChERS  
Kits and products to support them all**

Whichever QuEChERS method you're using, we've got you covered

## Original

**(Anastassiades et al, 2003):**  
developed for non-base-sensitive compounds, using sodium chloride to reduce polar interferences and enhance extraction

## AOAC

**(AOAC 2007.01):**  
uses sodium acetate as a buffer instead of sodium chloride and is compatible with base-sensitive compounds

## European

**(EN 15662):**  
similar to the AOAC method, but uses sodium chloride to minimize polar interferences, and sodium citrate dihydrate and disodium citrate sesquihydrate instead of sodium acetate

### Thermo Scientific QuEChERS Extraction Pouch EN Method

4 g Magnesium Sulfate 1 g Sodium Chloride  
1 g Trisodium Citrate Dihydrate  
0.5 g Disodium Hydrogencitrate Sesquihydrate





# QuEChERS products

Continued



## QuEChERS workflow

Sample

### 1. HOMOGENIZE/GRIND

Grinding

10–15 g subsample



### 2. EXTRACT

- Spike with pesticides
- ▼
- Add solvent; mix/vortex for 30 seconds
- ▼
- Add salts
- ▼
- Shake
- ▼
- Add internal standard
- ▼
- Centrifuge
- ▼

Aliquot of supernatant



### 3. CLEAN-UP

- Add sorbents and salt
- ▼
- Shake
- ▼
- Centrifuge
- ▼

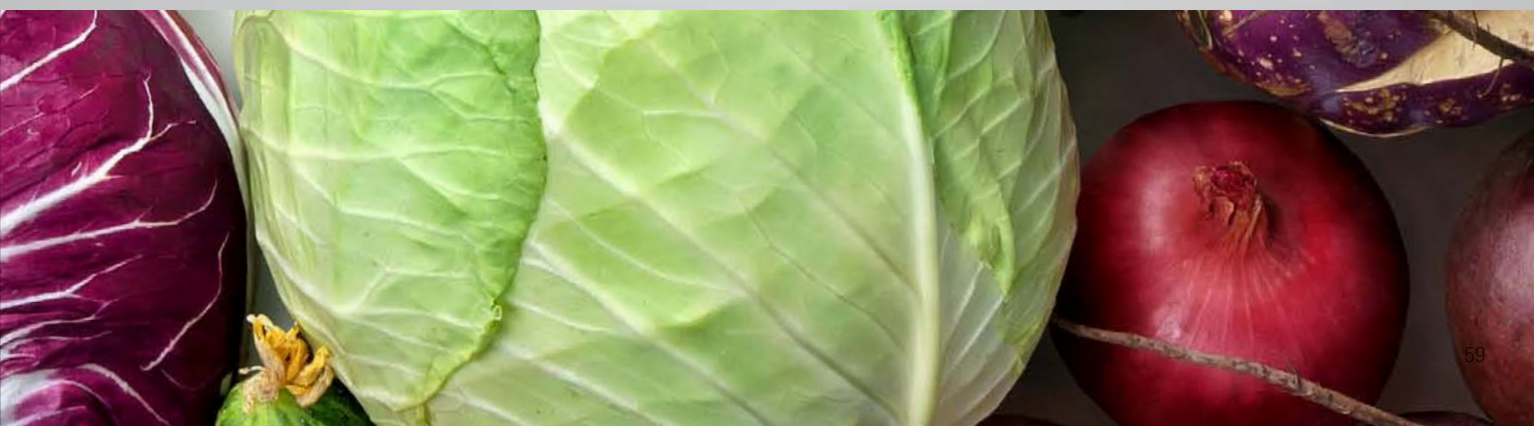
Aliquot of supernatant

### 4. ANALYZE

Injection  
(GC-MS or LC-MS)

Analytical report

The QuEChERS workflow is typically a four-step process: sample homogenization, extraction with salts, followed by SPE clean-up, and analysis by GC-MS or LC-MS. While the basic procedure is more or less standardized, there are an increasing number of chemistry variations to meet different application requirements.





## Original method kits



**Comments**

**Application note:** Validated method for the analysis of lipophilic marine biotoxins in bivalves by liquid chromatography

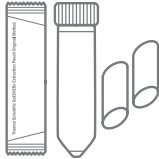
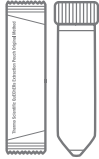

**Application note:** Rapid analysis of fipronil and fipronil sulfone in eggs by liquid chromatography and triple quadrupole mass spectrometry

**Application note:** Determination of multiple mycotoxins in grain using a QuEChERS sample preparation approach and LC-MS/MS detection

Learn more at [thermofisher.com/quechers](http://thermofisher.com/quechers)






### Original method extraction kits\*

	Description	Capacity	Quantity	Part number
Extract	 <p>Original extraction kit</p> <ul style="list-style-type: none"> <li>Extraction salts (in pouch): 4 g MgSO<sub>4</sub>, 1 g NaCl</li> <li>50 mL tubes (empty)</li> <li>Ceramic homogenizers</li> </ul>	10 g samples	50/PK	<a href="#">S1-10-ORIG-CH-KIT</a>
	 <p>Original extraction kit</p> <ul style="list-style-type: none"> <li>Extraction salts (in pouch): 4 g MgSO<sub>4</sub>, 1 g NaCl</li> <li>50 mL tubes (empty)</li> </ul>	10 g samples	50/PK	<a href="#">S1-10-ORIG-KIT</a>
	 <p>Original extraction kit</p> <ul style="list-style-type: none"> <li>Extraction salts (in pouch): 4 g MgSO<sub>4</sub>, 1 g NaCl</li> </ul>	10 g samples	50/PK	<a href="#">S1-10-ORIG-POT</a>

\*Original method extraction kits are also available in 15 g sample capacity.

### Bulk ceramic homogenizers — all methods

	Description	Quantity	Part number
Homogenize/Grind	 <p>Ceramic homogenizers for 2 mL tubes</p>	100/PK	<a href="#">60106-CH-2</a>
	 <p>Ceramic homogenizers for 15 mL tubes</p>	100/PK	<a href="#">60106-CH-15</a>
	 <p>Ceramic homogenizers for 50 mL tubes</p>	100/PK	<a href="#">60106-CH-50</a>



# QuEChERS products

Continued

## AOAC method kits



### Comments

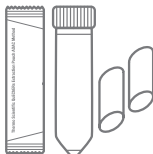


**Application note:** Trace-level quantitation of pesticide residues in red chili powder using LC-(HESI)-MS/MS

**Application note:** Trace level quantitation of pesticide residues in fresh fruits using LC-MS/MS

Learn more at [thermofisher.com/quenchers](http://thermofisher.com/quenchers)



### AOAC method extraction kits

	Description	Capacity	Quantity	Part number
Extract	 <p>AOAC extraction kit</p> <ul style="list-style-type: none"> <li>Extraction salts (in pouches): 6 g MgSO<sub>4</sub>, 1.5 g NaOAc</li> <li>50 mL tubes (empty)</li> <li>Ceramic homogenizers</li> </ul>	15 g samples	50/PK	<a href="#">S1-15-AOAC-CH-KIT</a>
	 <p>AOAC extraction kit</p> <ul style="list-style-type: none"> <li>Extraction salts (in pouches): 6 g MgSO<sub>4</sub>, 1.5 g NaOAc</li> <li>50 mL tubes (empty)</li> </ul>	15 g samples	50/PK	<a href="#">S1-15-AOAC-KIT</a>
	 <p>AOAC extraction kit</p> <ul style="list-style-type: none"> <li>Extraction salts (in pouches): 6 g MgSO<sub>4</sub>, 1.5 g NaOAc</li> </ul>	15 g samples	50/PK	<a href="#">S1-15-AOAC-POT</a>

Order now!





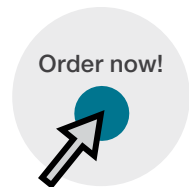
## AOAC method kits

Continued



### AOAC method clean-up kits

	Description	Quantity	Part number
Clean-up	<b>General fruits and vegetables</b>		
	AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 150 mg MgSO <sub>4</sub>	100/PK	<a href="#">S2-2-GFV-AOAC-KIT</a>
	AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 1200 mg MgSO <sub>4</sub>	50/PK	<a href="#">S2-15-GFV-AOAC-KIT</a>
	<b>Pigmented fruits and vegetables</b>		
	AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 50 mg GCB, 150 mg MgSO <sub>4</sub>	100/PK	<a href="#">S2-2-P-AOAC-KIT</a>
	AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 400 mg C18, 1200 mg MgSO <sub>4</sub>	50/PK	<a href="#">S2-15-P-AOAC-KIT</a>
	<b>Fruits and vegetables with fats and waxes</b>		
	AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 50 mg C18, 150 mg MgSO <sub>4</sub>	100/PK	<a href="#">S2-2-FW-AOAC-KIT</a>
	AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 400 mg C18, 1200 mg MgSO <sub>4</sub>	50/PK	<a href="#">S2-15-FW-AOAC-KIT</a>
	<b>Fruits and vegetables with pigments and fats</b>		
	AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 50 mg C18, 50 mg GCB, 150 mg MgSO <sub>4</sub>	100/PK	<a href="#">S2-2-PF-AOAC-KIT</a>
	AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 400 mg C18, 400 mg GCB, 1200 mg MgSO <sub>4</sub>	50/PK	<a href="#">S2-15-PF-AOAC-KIT</a>
	<b>All food types</b>		
	AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 50 mg C18, 7.5 mg GCB, 150 mg MgSO <sub>4</sub>	100/PK	<a href="#">S2-2-ALL-AOAC-KIT</a>
	AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 400 mg C18, 45 mg GCB, 1200 mg MgSO <sub>4</sub>	50/PK	<a href="#">S2-15-ALL-AOAC-KIT</a>
	<b>Other foods</b>		
AOAC clean-up kit, prefilled 2 mL tubes with 25 mg C18, 150 mg MgSO <sub>4</sub>	100/PK	<a href="#">S2-2-OTH-AOAC-KIT</a>	
AOAC clean-up kit, prefilled 15 mL tubes with 150 mg C18, 900 mg MgSO <sub>4</sub>	50/PK	<a href="#">S2-15-OTH-AOAC-KIT</a>	





# QuEChERS products

Continued

## EN method kits



### Comments


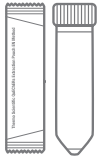

**Application note:** Simultaneous screening and quantification of pesticide residues in potatoe using GC-Orbitrap MS

**Application note:** Pesticide residues screening and quantitation analysis in olive oil using an Orbitrap Exploris 240 HRMS

**Application note:** Large-scale screening and quantitation of pesticide residues in milk using GC-(EI)-MS/MS

Learn more at [thermofisher.com/quechers](http://thermofisher.com/quechers)

### EN method extraction kits

	Description	Capacity	Quantity	Part number
Extract	 <p>EN extraction kit</p> <ul style="list-style-type: none"> <li>Extraction salts (in pouches): 4 g MgSO<sub>4</sub>, 1 g NaCl, 0.5 g disodium hydrogencitrate sesquihydrate, 1 g trisodium citrate dihydrate</li> <li>50 mL tubes (empty)</li> <li>Ceramic homogenizers</li> </ul>	10 g samples	50/PK	<a href="#">S1-10-EN-CH-KIT</a>
	 <p>EN extraction kit</p> <ul style="list-style-type: none"> <li>Extraction salts (in pouches): 4 g MgSO<sub>4</sub>, 1 g NaCl, 0.5 g disodium hydrogencitrate sesquihydrate, 1 g trisodium citrate dihydrate</li> <li>50 mL tubes (empty)</li> </ul>	10 g samples	50/PK	<a href="#">S1-10-EN-KIT</a>
	 <p>EN extraction kit</p> <ul style="list-style-type: none"> <li>Extraction salts (in pouches): 4 g MgSO<sub>4</sub>, 1 g NaCl, 0.5 g disodium hydrogencitrate sesquihydrate, 1 g trisodium citrate dihydrate</li> </ul>	10 g samples	50/PK	<a href="#">S1-10-EN-POT</a>





## EN method kits

Continued

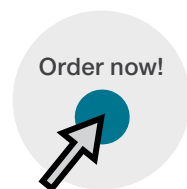


### EN method clean-up kits

	Description	Quantity	Part number
Clean-up	<b>General fruits and vegetables</b>		
	EN clean-up kit, prefilled 2 mL tubes with 150 mg MgSO <sub>4</sub> , 25 mg PSA	100/PK	<a href="#">S2-2-GFV-EN-KIT</a>
	EN clean-up kit, prefilled 15 mL tubes with 900 mg MgSO <sub>4</sub> , 150 mg PSA	50/PK	<a href="#">S2-15-GFV-EN-KIT</a>
	<b>Pigmented fruits and vegetables</b>		
	EN clean-up kit, prefilled 2 mL tubes with 150 mg MgSO <sub>4</sub> , 25 mg PSA, 2.5 mg GCB	100/PK	<a href="#">S2-2-P-EN-KIT</a>
	EN clean-up kit, prefilled 15 mL tubes with 900 mg MgSO <sub>4</sub> , 150 mg PSA, 15 mg GCB	50/PK	<a href="#">S2-15-P-EN-KIT</a>
	<b>Highly pigmented fruits and vegetables</b>		
	EN clean-up kit, prefilled 2 mL tubes with 150 mg MgSO <sub>4</sub> , 25 mg PSA, 7.5 mg GCB	100/PK	<a href="#">S2-2-HP-EN-KIT</a>
	EN clean-up kit, prefilled 15 mL tubes with 900 mg MgSO <sub>4</sub> , 150 mg PSA, 45 mg GCB	50/PK	<a href="#">S2-15-HP-EN-KIT</a>
	<b>Fruits and vegetables with fats and waxes</b>		
EN clean-up kit, prefilled 2 mL tubes with 150 mg MgSO <sub>4</sub> , 25 mg PSA, 25 mg C18	100/PK	<a href="#">S2-2-FW-EN-KIT</a>	
EN clean-up kit, prefilled 15 mL tubes with 900 mg MgSO <sub>4</sub> , 150 mg PSA, 150 mg C18	50/PK	<a href="#">S2-15-FW-EN-KIT</a>	

### What is the purpose of the chemicals?

- **MgSO<sub>4</sub>**: removes residual water, and induces phase separation between water content in sample and acetonitrile layer
- **NaCl**: removes residual water, and induces phase separation between water content in sample and acetonitrile layer
- **NaOAc**: buffers the sample to stabilize pH
- **Disodium hydrogentricrate sesquihydrate**: buffers the sample to stabilize pH
- **Trisodium citrate dihydrate**: buffers the sample to stabilize pH
- **PSA**: removes free fatty acids and other acidic co-extractives
- **C18**: removes fats, sterols, and other non-polar interferences from sample
- **GCB**: removes pigment (not recommended for use with planar pesticides)





# Automated micro Solid-Phase Extraction ( $\mu$ SPE) products

Achieve reliable and high-throughput analysis by automating cleanup of QuEChERS extracts using the cartridge based Thermo Scientific™ micro Solid-Phase Extraction ( $\mu$ SPE) products. The QuEChERS sample preparation method is used to extract pesticides and organic contaminants from

food matrices with subsequent analysis by GC or liquid chromatography-mass spectrometry (LC-MS). This  $\mu$ SPE capability, which is available for the Thermo Scientific™ TriPlus™ RSH Autosampler and LC systems.



## $\mu$ SPE QuEChERS blend



### Comments

- Replaces the manual dispersive SPE (dSPE) procedure
- Enables reliable and high-throughput extract cleanup
- Is suitable for a wide variety of food matrices, even those with high lipid contents
- Offers a unified method for GC or LC-MS analysis of hundreds of pesticides and organic contaminants
- Enables scale down of sample volume and solvent usage

**Application note:** Multi-pesticide residues analyses of QuEChERS extracts using an automated online  $\mu$ SPE clean-up coupled to LC-MS/MS

Learn more at [thermofisher.com/automatedspe](http://thermofisher.com/automatedspe)



### For GC and LC-MS analysis

Description	Material	Unit size	Part number
GC $\mu$ SPE Cartridge	$\mu$ SPE QuEChERS Blend for GC, 45 mg (MgSO <sub>4</sub> , PSA, C18EC, Carbon)	108	<a href="#">60101-45GC</a>
LC $\mu$ SPE Cartridge	$\mu$ SPE QuEChERS Blend for LC, 30 mg (C18, Z-Sep, CarbonX)		<a href="#">60101-30LC</a>



### Webinar:

Automated online  $\mu$ SPE cartridge clean-up of QuEChERS extracts before LC-MS/MS and GC-MS/MS analysis of pesticides in foods

# Syringes and syringe filters

## Providing high quality filtration solutions

Choose from a variety of syringe filter sizes, membranes and housings for a wide range of laboratory applications.

### High quality filtration

Low extractable membranes and solvent-resistant housing

### Titan3 color coded ring

For easy selection of correct membrane and pore size

### High burst pressures

For enhanced robustness in sample processing



## Syringes and syringe filters



## Thermo Scientific™ Titan3™ syringe filters



### Comments

High performance HPLC syringe filters

- Low extractable membranes and housing
- HPLC performance tested
- Color coding for easy selection of the correct membrane and pore size
- Enhanced Luer Lock inlet which prevents leakage
- Most 30 mm devices are provided with a 1mm boro-silicate glass pre-filter. This is of benefit for high solids samples with larger size particulates
- Integral ring provides greater strength to the housing preventing leakage and bursting
- 30 mm products pressure rated to 120 psi
- Packed in reusable rigid transparent color coded containers

Learn more at [thermofisher.com/syringefilters](https://thermofisher.com/syringefilters)





# Syringes and syringe filters

Continued

## Titan3 syringe filters

Continued



### Titan3 nylon syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2	No	100	<a href="#">42204-NN</a>	<ul style="list-style-type: none"> <li>HPLC and organic solvent sample preparation and clean up</li> <li>Dissolution sample analysis</li> <li>General sample preparation prior to analytical analysis</li> <li>Mixed sample matrix of aqueous or organic dissolved analytes</li> </ul>
	0.45			<a href="#">44504-NN</a>	
17	0.2	No	200	<a href="#">42213-NN</a>	
	0.45			<a href="#">44513-NN</a>	
30	0.2	Yes	100	<a href="#">42225-NN</a>	
	0.45			<a href="#">44525-NN</a>	
	1.5	No		<a href="#">44526-NN</a>	
	5			<a href="#">41225-NN</a>	
			<a href="#">45025-NN</a>		

### Titan3 PTFE (hydrophobic) syringe filters

4	0.2	No	100	<a href="#">42204-NP</a>	<ul style="list-style-type: none"> <li>Filtration of aggressive organic, highly basic or hot solutions, transducer protectors</li> <li>Filter aqueous solutions after prewetting with an alcohol</li> </ul> <p>Note: PTFE hydrophobic membranes require pre-treatment with alcohol before being suitable for aqueous or high aqueous/organic samples. Do not use directly with aqueous solutions.</p>
	0.45			<a href="#">44504-NP</a>	
17	0.2	No	200	<a href="#">42213-NP</a>	
	0.45			<a href="#">44513-NP</a>	
30	0.2	Yes	100	<a href="#">42225-NP</a>	
	0.45			<a href="#">44525-NP</a>	
	1.0	No		<a href="#">41025-NP</a>	

### Titan3 PTFE (hydrophilic) syringe filters

17	0.2	No	200	<a href="#">42213-NPL</a>	<ul style="list-style-type: none"> <li>Filtration of aggressive organic, highly basic or hot solutions, without the need pre-wet membrane</li> <li>Filter aqueous solutions without prewetting with an alcohol</li> </ul>
	0.45			<a href="#">44513-NPL</a>	
30	0.2	No	100	<a href="#">42225-NPL</a>	

### Titan3 PVDF syringe filters

4	0.2	No	100	<a href="#">42204-PV</a>	<ul style="list-style-type: none"> <li>General biological filtration</li> <li>Filtration of samples where high protein recovery is desired</li> </ul>
	0.45			<a href="#">44504-PV</a>	
17	0.2	Yes	200	<a href="#">42213-PV</a>	
	0.45	No		<a href="#">44513-PV</a>	
30	0.2	Yes	1000	<a href="#">42225-PV</a>	
	0.45	No		<a href="#">44525-PV</a>	



# Syringes and syringe filters

Continued

## Titan3 syringe filters

Continued



### Titan3 regenerated cellulose syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2	No	100	<a href="#">52204-RC</a>	<ul style="list-style-type: none"> <li>• Low non-specific binding applications</li> <li>• Tissue culture media filtration and general biological sample filtration</li> </ul>
	0.45			<a href="#">54504-RC</a>	
17	0.2	Yes	200	<a href="#">52213-RC</a>	
	0.45	No		<a href="#">54513-RC</a>	
30	0.2	Yes	100	<a href="#">52225-RC</a>	
	0.45	No		<a href="#">54525-RC</a>	

### Titan3 PES (polyethersulfone) syringe filters

17	0.2	No	200	<a href="#">42213-PS</a>	<ul style="list-style-type: none"> <li>• Ion chromatography</li> <li>• Tissue culture filtration, filtration of proteins and nucleic acids</li> <li>• High-temperature liquids</li> </ul>
	0.45			<a href="#">44513-PS</a>	
30	0.2	Yes	100	<a href="#">42225-PS</a>	
	0.45	No		<a href="#">44525-PS</a>	

### Titan3 GMF (Glass MicroFiber) syringe filters

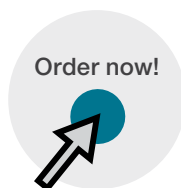
30	0.7	No	100	<a href="#">40725-GM</a>	<ul style="list-style-type: none"> <li>• Dissolution testing</li> <li>• General filtration</li> </ul>
	1.2			<a href="#">41225-GM</a>	
	3.1			<a href="#">42725-GM</a>	

### Titan3 polypropylene syringe filters

17	0.2	No	200	<a href="#">42213-PP</a>	<ul style="list-style-type: none"> <li>• Filtration of biological samples</li> <li>• Filtration of aggressive organic solutions</li> </ul>
	0.45			<a href="#">44513-PP</a>	
30	0.2	100	<a href="#">42225-PP</a>		
	0.45		<a href="#">44525-PP</a>		

### Titan3 cellulose acetate syringe filters

4	0.2	No	100	<a href="#">42204-CA</a>	<ul style="list-style-type: none"> <li>• Tissue culture media filtration, sensitive biological samples</li> </ul>
	0.2			<a href="#">42213-CA</a>	
17	0.45	100	<a href="#">44513-CA</a>		
	0.2		<a href="#">42225-CA</a>		
30	0.2	100	<a href="#">42225-CA</a>		
	0.45		<a href="#">44525-CA</a>		





# Syringes and syringe filters

Continued

## Thermo Scientific™ Titan2™ syringe filters



### Comments

HPLC perforce syringe filters

- Low extractable membranes and housing
- HPLC performance tested
- Plain polypropylene housing
- 30 mm products pressure rated to 100psi
- Enhanced Luer Lock inlet which prevents leakage

Learn more at [thermofisher.com/syringefilters](http://thermofisher.com/syringefilters)



### Target2 nylon syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2			<a href="#">F2504-2</a>	
	0.45			<a href="#">F2504-1</a>	
17	0.2	No		<a href="#">F2513-2</a>	
	0.45			<a href="#">F2513-1</a>	
30	0.2	No	100	<a href="#">F2500-2</a>	<ul style="list-style-type: none"> <li>• General laboratory filtration</li> <li>• Filtration for most HPLC samples</li> </ul>
		Yes		<a href="#">F2502-2</a>	
	No	<a href="#">F2500-1</a>			
	Yes	<a href="#">F2502-1</a>			
	1.5	No		<a href="#">F2500-12</a>	
	5.0	No		<a href="#">F2500-50</a>	

### Target2 PTFE (hydrophobic) syringe filters

4	0.2			<a href="#">F2504-4</a>	<ul style="list-style-type: none"> <li>• Filtration of aggressive organic, highly basic or hot solutions, transducer protectors</li> </ul>
	0.45			<a href="#">F2504-3</a>	
17	0.2	No	100	<a href="#">F2513-4</a>	<ul style="list-style-type: none"> <li>• Filter aqueous solutions after prewetting with an alcohol</li> </ul> <p>Note: PTFE hydrophobic membranes require pre-treatment with alcohol before being suitable for aqueous or high aqueous/organic samples. Do not use directly with aqueous solutions</p>
	0.45			<a href="#">F2513-3</a>	
30	0.2	No		<a href="#">F2500-4</a>	
		Yes		<a href="#">F2500-3</a>	
	1.0	No		<a href="#">F2502-3</a>	
		No		<a href="#">F2500-13</a>	

### Target2 PVDF syringe filters

4	0.2			<a href="#">F2504-6</a>	<ul style="list-style-type: none"> <li>• General biological filtration</li> <li>• Filtration of samples where high protein recovery is desired</li> </ul>
	0.45			<a href="#">F2504-5</a>	
17	0.2	No	100	<a href="#">F2513-6</a>	
	0.45			<a href="#">F2513-5</a>	
30	0.2			<a href="#">F2500-6</a>	
	0.45			<a href="#">F2500-5</a>	



# Syringes and syringe filters

Continued

## Titan2™ syringe filters

Continued



### Target2 regenerated cellulose syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2			<a href="#">F2504-8</a>	
	0.45			<a href="#">F2504-7</a>	
17	0.2	No	100 pack	<a href="#">F2513-8</a>	<ul style="list-style-type: none"> <li>• Low non-specific binding applications</li> <li>• Tissue culture media filtration and general biological sample filtration</li> </ul>
	0.45			<a href="#">F2513-7</a>	
30	0.2			<a href="#">F2500-8</a>	
	0.45			<a href="#">F2500-7</a>	

### Target2 PES (polyethersulfone) syringe filters

17	0.2	No	100 pack	<a href="#">F2513-17</a>	<ul style="list-style-type: none"> <li>• Ion chromatography</li> <li>• Tissue culture filtration, filtration of proteins and nucleic acids</li> <li>• High-temperature liquids</li> </ul>
	0.45			<a href="#">F2513-14</a>	
30	0.2			<a href="#">F2500-17</a>	
	0.45			<a href="#">F2500-14</a>	

### Target2 GMF (Glass MicroFiber) syringe filters

30	0.7	No	100 pack	<a href="#">F2500-18</a>	<ul style="list-style-type: none"> <li>• Dissolution testing</li> <li>• General filtration</li> </ul>
	1.2			<a href="#">F2500-19</a>	
	3.1			<a href="#">F2500-20</a>	

### Target2 polypropylene syringe filters

4	0.2			<a href="#">F2504-10</a>	
	0.45			<a href="#">F2504-9</a>	
17	0.2	No	100 pack	<a href="#">F2513-10</a>	<ul style="list-style-type: none"> <li>• Filtration of biological samples</li> <li>• Filtration of aggressive organic solutions</li> </ul>
	0.45			<a href="#">F2513-9</a>	
30	0.2			<a href="#">F2500-10</a>	
	0.45			<a href="#">F2500-9</a>	
		Yes		<a href="#">F2502-9</a>	

### Target2 cellulose acetate syringe filters

4	0.2			<a href="#">F2504-16</a>	
	0.45			<a href="#">F2504-15</a>	
17	0.2	No	100	<a href="#">F2513-16</a>	<ul style="list-style-type: none"> <li>• Tissue culture media filtration, sensitive biological samples</li> </ul>
	0.45			<a href="#">F2513-15</a>	
30	0.2			<a href="#">F2500-16</a>	
	0.45			<a href="#">F2500-15</a>	



# Syringes and syringe filters

Continued

## Thermo Scientific™ Choice Syringe filters



### Comments

Economic, high-quality filtration products

- Use to remove particles and microorganisms in the sample preparation process, enabling to provide consistent and reliable experimental results
- Available in a range of membrane types, pore sizes and dimensions to meet application requirements
- Use in combination with Thermo Scientific™ All-Plastic Disposable Syringes

### Applications

HPLC and organic solvent sample preparation and clean up

- Dissolution sample analysis
- General sample preparation prior to analytical analysis
- Mixed sample matrix of aqueous or organic dissolved analytes

Learn more at [thermofisher.com/syrefilters](https://thermofisher.com/syrefilters)



### Choice Nylon syringe filters

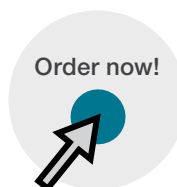
Diameter (mm)	Pore size (µm)	Pre-filter	Quantity	Part number
13	0.2	No	100 pack	<a href="#">CH2213-NN</a>
	0.45			<a href="#">CH2225-NN</a>
25	0.2			<a href="#">CH4513-NN</a>
	0.45			<a href="#">CH4525-NN</a>

### Choice PTFE (Hydrophilic) syringe filters

13	0.2	No	100 pack	<a href="#">CH2213-NPL</a>
	0.45			<a href="#">CH4513-NPL</a>
25	0.2			<a href="#">CH2225-NPL</a>
	0.45			<a href="#">CH4525-NPL</a>

### Choice PTFE (Hydrophobic) syringe filters

13	0.2	No	100 pack	<a href="#">CH2213-NP</a>
	0.45			<a href="#">CH4513-NP</a>
25	0.2			<a href="#">CH2225-NP</a>
	0.45			<a href="#">CH4525-NP</a>





# Syringes and syringe filters

Continued

## Choice Syringe filters

Continued



### Choice Regenerated Cellulose syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number
13	0.2	No	100	<a href="#">CH2213-RC</a>
	0.45			<a href="#">CH4513-RC</a>
25	0.2			<a href="#">CH2225-RC</a>
	0.45			<a href="#">CH4525-RC</a>

### Choice Polypropylene (PP) syringe filters

13	0.2	No	100	<a href="#">CH2213-PP</a>
	0.45			<a href="#">CH4513-PP</a>
25	0.2			<a href="#">CH2225-PP</a>
	0.45			<a href="#">CH4525-PP</a>

### Choice PVDF (Hydrophilic) syringe filters

13	0.2	No	100	<a href="#">CH2213-PV</a>
	0.45			<a href="#">CH4513-PV</a>
25	0.2			<a href="#">CH2225-PV</a>
	0.45			<a href="#">CH4525-PV</a>

### Choice PVDF (Hydrophobic) syringe filters

13	0.2	No	100	<a href="#">CH2213-PVH</a>
	0.45			<a href="#">CH4513-PVH</a>
25	0.2			<a href="#">CH2225-PVH</a>
	0.45			<a href="#">CH4525-PVH</a>

### Choice Cellulose Acetate (CA) syringe filters

13	0.2	No	100	<a href="#">CH2213-CA</a>
	0.45			<a href="#">CH4513-CA</a>
25	0.2			<a href="#">CH2225-CA</a>
	0.45			<a href="#">CH4525-CA</a>

### Choice PES (Polyethersulfone) syringe filters

13	0.2	No	100	<a href="#">CH2213-PES</a>
	0.45			<a href="#">CH4513-PES</a>
25	0.2			<a href="#">CH2225-PES</a>
	0.45			<a href="#">CH4525-PES</a>





# Syringes and syringe filters

Continued

## All-plastic disposable syringes



### Comments

Disposable syringes with polyethylene barrels and polypropylene plungers; use for all syringe filter applications

- Two-part, all-plastic construction eliminates the need for rubber or synthetic plunger gaskets
- No silicone or oil lubricant is required in the barrel
- Choose Luer-Slip or Luer Lock syringes, in capacities ranging from 1 to 50 mL

Learn more at [thermofisher.com/syringefilters](http://thermofisher.com/syringefilters)

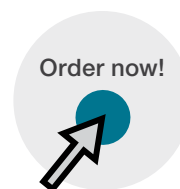


### Luer-slip syringes

Capacity (mL)	Quantity (pack)	Part number
1	100	<a href="#">S7510-1</a>
3		<a href="#">S7510-3</a>
5		<a href="#">S7510-5</a>
10		<a href="#">S7510-10</a>
20		<a href="#">S7510-20</a>

### Luer-lock syringes

3	100	<a href="#">S7515-3</a>
5		<a href="#">S7515-5</a>
10		<a href="#">S7515-10</a>
20		<a href="#">S7515-20</a>





# Syringes and syringe filters

Continued

## 750 µL micro-centrifugal filters, non-sterile



### Comments

- Filter volumes as low as 50 µL up to 750 µL with low hold-up volume
- Use with any laboratory microcentrifuge
- Virgin polypropylene filter housing with tapered 2 mL, capped receiver tube
- 10,000 x G maximum centrifugal force

Learn more at [thermofisher.com/syringefilters](https://thermofisher.com/syringefilters)



### 750 µL micro-centrifugal filters, non-sterile

Material	Pore size (µm)	Quantity (pack)	Part number
Cellulose acetate	0.2	100	<a href="#">F2517-1</a>
Cellulose acetate	0.45		<a href="#">F2517-2</a>
Nylon	0.2		<a href="#">F2517-3</a>
Nylon	0.45		<a href="#">F2517-4</a>
PVDF	0.2		<a href="#">F2517-5</a>
PVDF	0.45		<a href="#">F2517-6</a>
Regenerated cellulose	0.2		<a href="#">F2517-7</a>
Regenerated cellulose	0.45		<a href="#">F2517-8</a>
PTFE	0.2		<a href="#">F2517-9</a>
PTFE	0.45		<a href="#">F2517-10</a>

Order now!





# Syringes and syringe filters

Continued

## 2 mL centrifugal filters, non-sterile



### Comments

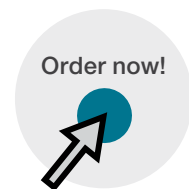
- Filter sample volumes up to 2 mL
- Virgin polypropylene filter housing with tapered 5 mL, capped receiver tube
- Use with benchtop or floor model centrifuges
- 5,000 x G maximum centrifugal force

Learn more at [thermofisher.com/syringefilters](https://thermofisher.com/syringefilters)



### 2 mL centrifugal filters, non-sterile

Material	Pore size (µm)	Quantity (pack)	Part number
Cellulose acetate	0.2	25	<a href="#">F2520-1</a>
Cellulose acetate	0.45		<a href="#">F2520-2</a>
Nylon	0.2		<a href="#">F2520-3</a>
Nylon	0.45		<a href="#">F2520-4</a>
PVDF	0.2		<a href="#">F2520-5</a>
PVDF	0.45		<a href="#">F2520-6</a>
PTFE	0.2		<a href="#">F2520-7</a>
PTFE	0.45		<a href="#">F2520-8</a>





# Syringes and syringe filters

Continued

## 25 mL centrifugal filters, non-sterile



### Comments

- Filter sample volumes up to 25 mL
- Virgin polypropylene filter housing with conical receiver
- Use with benchtop or floor model centrifuges
- 2,500 x G maximum centrifugal force

Learn more at [thermofisher.com/syringefilters](https://thermofisher.com/syringefilters)



### 25 mL centrifugal filters, non-sterile

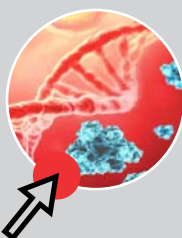
Material	Pore size (µm)	Quantity (pack)	Part number
Cellulose acetate	0.2	50	<a href="#">F2519-1</a>
Cellulose acetate	0.45		<a href="#">F2519-2</a>
Nylon	0.2		<a href="#">F2519-3</a>
Nylon	0.45		<a href="#">F2519-4</a>
PVDF	0.2		<a href="#">F2519-5</a>
PVDF	0.45		<a href="#">F2519-6</a>



**Compendium:**  
SMART Digest peptide mapping and quantitation



**SMART Digest webinar series**  
In this webinar series, four new technologies will be demonstrated that dramatically improve upon established mapping workflows and help increase confidence in biopharma peptide mapping.



**Brochure:**  
Your samples, powered by KingFisher instruments. Automated sample preparation for DNA, RNA, protein, or cells.



**Application note:**  
High-precision, automated peptide mapping of proteins



**Brochure:**  
Protein digestion for peptide mapping and quantitation



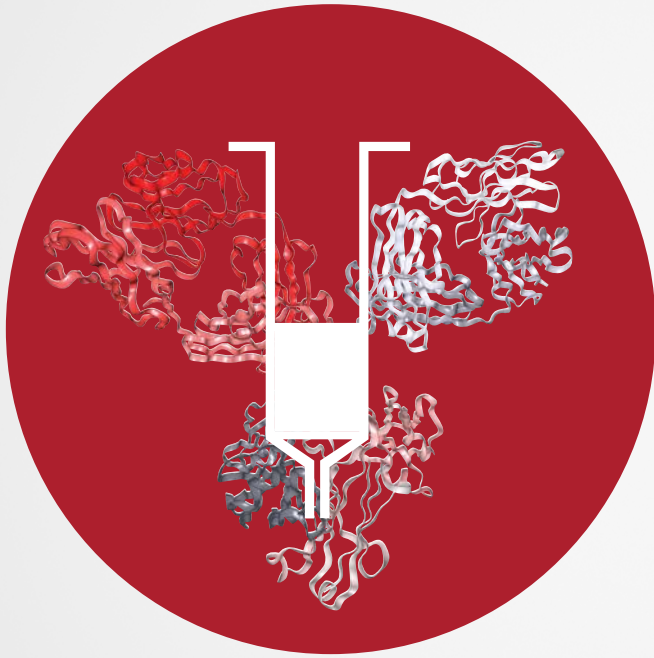
**Compendium:**  
Removing uncertainty by applying science to SPE



**Webinar:**  
Automated online  $\mu$ SPE cartridge clean-up of QuEChERS extracts before LC-MS/MS and GC-MS/MS analysis of pesticides in foods



**Brochure:**  
QuEChERS solutions in all your favorite flavors

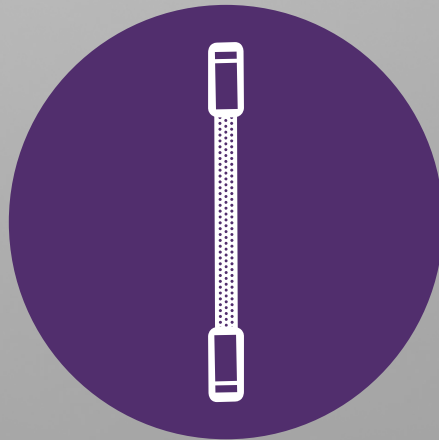
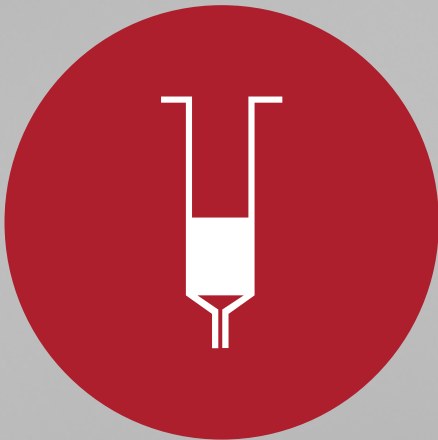


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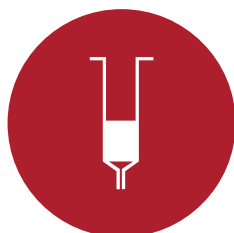
Chromatography consumables

# Connected chromatography solutions

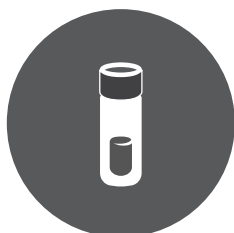
Chromatography consumables catalog

# Comprehensive products to support your chromatography workflows

## Sample preparation solutions



## Sample handling solutions



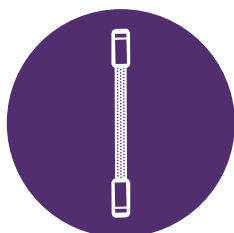
## Low-flow LC columns and accessories



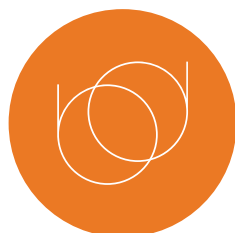
## BioLC columns and accessories



## LC columns and accessories



## GC columns and accessories

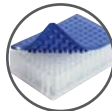


Thermo Scientific™ products:

- SMART Digest™ kits
- SOLA™ SPE products
- HyperSep™ SPE products
- TurboFlow™ and online sample preparation products
- QuEChERS products
- Automated micro solid-phase extraction (μSPE) products
- Syringes and syringe filters



- SureSTART™ AVCS™ closures and SureStop vials
- SureSTART™ Gold grade purity glass vials and vial kits
- SureSTART™ low residual microsampling vials and vial kits
- MS certified vials
- Polyspring vial inserts
- Electronic crimping and decrimping tools
- WebSeal™ well-plates and sealing mats for chromatography



- EASY-Spray™ HPLC columns for top-down and bottom-up proteomics
- Double nanoViper PepMap™ Neo HPLC columns for top-down and bottom-up proteomics
- μPAC™ HPLC columns for bottom-up proteomics



- MAbPac™ size exclusion chromatography
- MAbPac™ and ProPac™ charged variant profiling
- MAbPac™ intact and subunit analysis
- HILIC and mixed-mode glycan analysis
- DNAPac™ oligonucleotide and gene therapy analysis
- Vanquish™ UHPLC peptide analysis



- Accucore™ U/HPLC columns
- Acclaim™ U/HPLC columns
- Hypersil GOLD™ U/HPLC columns
- Hypercarb™ HPLC columns
- Application specific HPLC columns
- Hypersil™ BDS and Hypersil™ classical HPLC columns
- LC accessories
- Preparative HPLC columns



- TracePLOT™ GC columns
- TraceGOLD™ packed GC columns
- GuardGOLD™ capillary GC columns
- LinerGOLD™ liners
- Super Clean™ gas cartridge filters
- GC consumables
- Gas management
- GC equipment
- GC reagents





# Our portfolio

## Sample preparation solutions

Save time, improve reproducibility, and extend the lifetime of your High/Ultra High Performance Liquid Chromatography (HPLC/UHPLC) and gas chromatography (GC) columns with our comprehensive range of sample preparation products. Achieve high sensitivity, selectivity, and recovery with advanced solid-phase extraction (SPE) consumables.



## Sample handling solutions

We provide a broad selection of sample handling and containment solutions from all your chromatography requirements. Our vials, closures and well plates, come with the lowest levels of extractables and leachables, are made from glass that has low compound adsorption, and the highest level of standards and certification available in the marketplace. Whether you have routine and robust samples, or you need to ensure the highest level of confidence and compliance, our market leading portfolio of storage and autosampler vials and closure, well plates and sample handling accessories has everything you'll need.



## Low-flow LC columns and accessories

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.



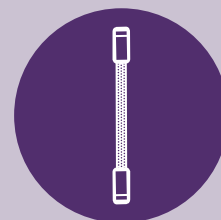
## BioLC columns and accessories

Achieve ultrahigh resolution and high efficiency separations of proteins, peptides, monoclonal antibodies, biosimilars, carbohydrates, oligonucleotides and more. Our unique column chemistries for biological samples have a long-standing reputation for providing excellent reproducibility and durability under a broad range of pH, temperature, and mobile phase compositions.



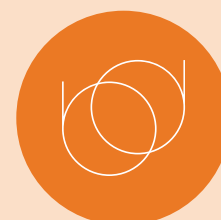
## LC columns and accessories

As a leader in LC column technology including silica, polymer and porous graphitic carbon manufacturing, bonded phase production and column packing for 40 years, you can rely on the quality of Thermo Scientific high performance liquid chromatography (HPLC) products: a comprehensive range of innovative columns, accessories and equipment for fast and reproducible analytical and prep HPLC and ultra-high performance liquid chromatography (UHPLC) analysis.



## GC columns and accessories

We offer a broad portfolio of GC columns and accessories designed to give optimal system performance for today's challenging analyses. Our range of GC accessories include all the tools needed by today's gas chromatographers.



# Product selection tools and additional resources

## Sample handling selection guide



### Need a quick answer?

Why not use our online product selector guide that includes our entire SureSTART Collection of vials, caps, well plates and mats.



SureSTART™ Selection Guide

Selecting your vial and well plate has never been easier.

**About this guide**

Have you ever struggled with finding the right sample handling solution for your application? You will struggle no longer! This simple guide will find the perfect solution product for you in just a few clicks.

[Get started](#)

- Application specific vials**  
Ensure what goes into the well comes out - and that the well you choose is fit for purpose for your application set-up. This guide will take you right to your vial.
- Plates for high throughput**  
If you are a high throughput lab you may be interested in finding a plate rather than a vial to speed up your throughput. As plate compatibility is dependent on your instrument this guide will find the plate that works with your instrument type.
- Low cost vials at your fingertips**  
Find the correct vial for your application - and budget. If cost is a key purchasing criteria for you then we've got you covered as this guide takes all your lab requirements into consideration.

## Sample handling cross reference tool



### Already purchasing an existing product from us or someone else?

Let our cross-reference tool find the equivalent SureSTART product/catalog number for you.



SureSTART Cross Reference Tool

Designed for cross referencing chromatography vials, caps and inserts, finding an equivalent product is easy. Using this cross-reference tool, there are 2 easy options for you to find an equivalent Thermo Scientific™ SureSTART™ product. All you need to know is your current catalogue number/ part number.

**Option 1: Input SKUs Directly**

Either type or copy/paste a list of SKUs into the text field below:

**Option 2: Upload CSV**

Upload the spreadsheet:  [Choose file](#) [Don't have a data file? Download a sample .csv file](#)

# Product selection tools and additional resources

## Septa selection tool



### Choosing the right septa can be complex!

There are a number of factors that should be considered including: needle type, vial type, solvents and temperature that the septa will be exposed to. Let us help you find the right septa with this easy-to-use tool.



The screenshot shows the 'Septa Selection Tool' interface. At the top, it says 'Septa Selection Tool' and 'An easy-to-use tool that ensures you find the right septa for your experimental requirements.' Below this is a section titled 'About this tool' which explains that choosing the right septa can be complex and lists factors like needle type, vial type, solvents, and temperature. A 'Get Started' button is present. The bottom section is titled 'Why use the Septa Selection Guide?' and features three columns: 'Needle / autosampler issues', 'Septa compatibility with solvents', and 'New experimental parameters', each with a brief description of the problem it addresses.

## LC columns selection guide



### Find your columns with ease!

Finding the correct column can be a challenge, so we have made it easy for you. This guide will take you directly to the right product for you, so that you can start your method today.



The screenshot shows the 'LC Column Selection Guide' interface. At the top, it says 'LC Column Selection Guide' and 'An easy-to-use tool that ensures you find the right LC column for your experimental requirements.' Below this is a section titled 'Find your column with ease!' which explains that finding the correct column can be a challenge and that the guide will take the user directly to the right product. A 'Get started' button is present. The bottom section is titled 'Need an equivalent column?', 'Setting up a USP method?', and 'Brand new method?', each with a brief description of the problem it addresses.

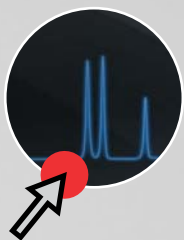
# More information



## Chromatography columns and consumables

For more information on our range of chromatography columns and consumables, including the latest applications, educational resources, selection guides and product literature, please visit

[thermofisher.com/chromatographyconsumables](https://thermofisher.com/chromatographyconsumables)



## Instrumentation and key applications

For more information on our instrumentation and key applications, please visit

[thermofisher.com/chromatography](https://thermofisher.com/chromatography)



## AppsLab

Gain access to our applications expertise on cloud-based Thermo Scientific™ AppsLab library of analytical applications for a comprehensive fully searchable method repository

[appslab.thermofisher.com](https://appslab.thermofisher.com)



## Webinars

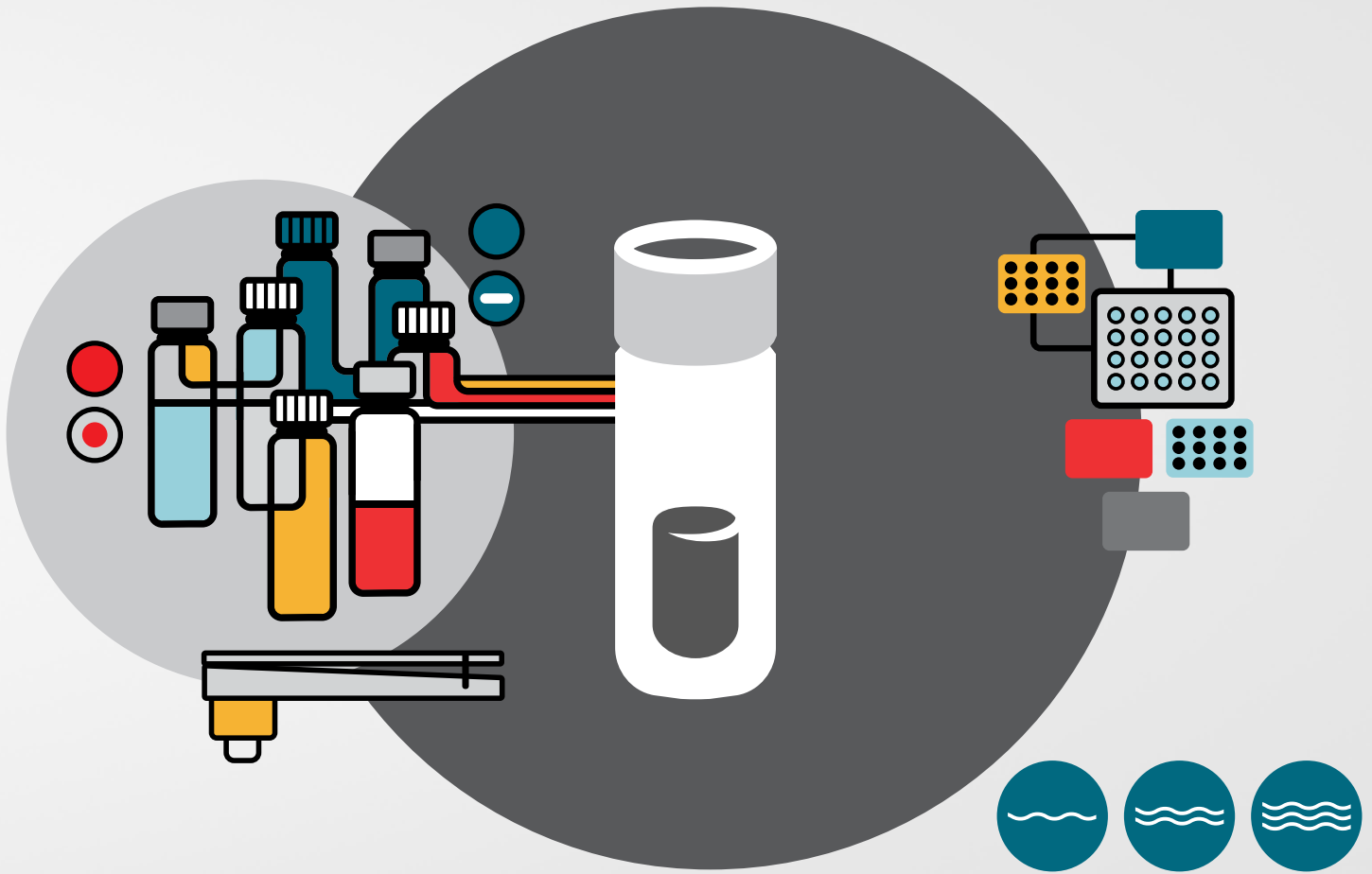
Analytical and life science webinars live and on-demand



## NIBRT collaboration information

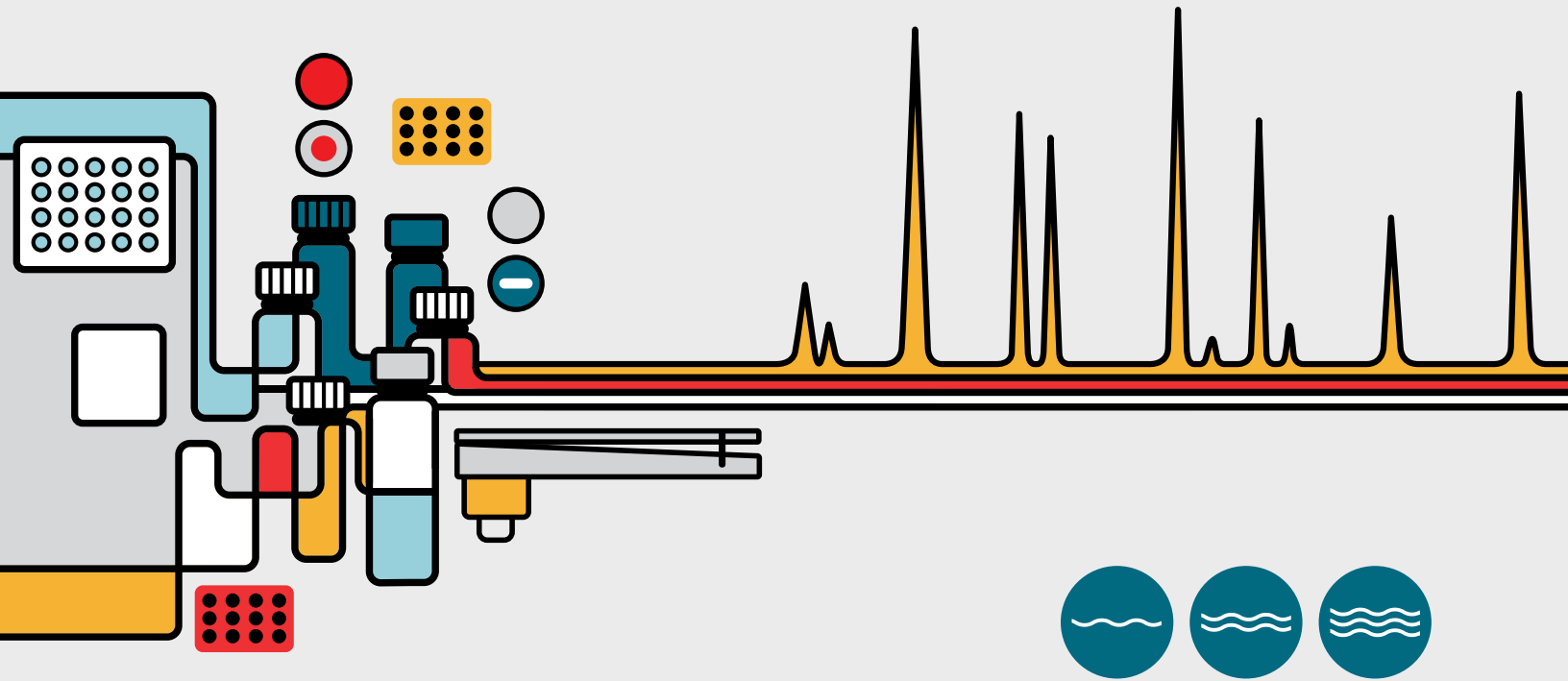
A collaboration built for Biopharma between the National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific

[thermofisher.com/nibrt](https://thermofisher.com/nibrt)



## SureSTART collection

Streamlined choice. Trusted quality



# Introduction

**Streamlined choice. Trusted quality SureSTART vials, caps, inserts, well plates, mats and accessories**

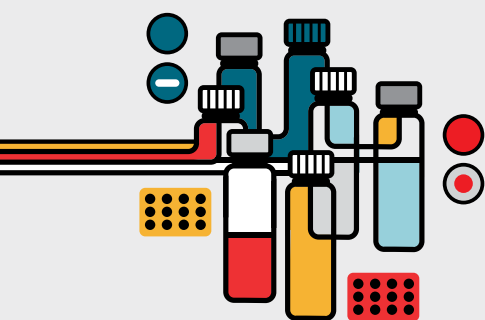
## Excellence from start to finish

The Thermo Scientific™ SureSTART™ sample handling collection includes a range of sample storage and analytical vials and well plates previously sold under Thermo Scientific™ National Scientific™, Thermo Scientific™ Chromacol™ and Thermo Scientific™ Sun-SRI™ product names.

All these products are absorbed into one collection so we can deliver a first-class product experience to our customers from the moment you start your purchasing journey, to provide you with performance, instrument compatibility, affordability and delivery that you need.

We understand that not every experiment or analyte is the same, and that you need products that can meet your performance and pricing requirements. You can find three different waves on each of our glass vials—and a write-on patch that comes as standard. Making it easier for analysts to select the right product and have it labelled correctly right from the start.

With the SureSTART collection, we ensure that no HPLC/UHPLC or GC system gets left behind. Our vials and well plates are suitable for standard instruments from all vendors, streamlining and simplifying your stockroom—and your budget.



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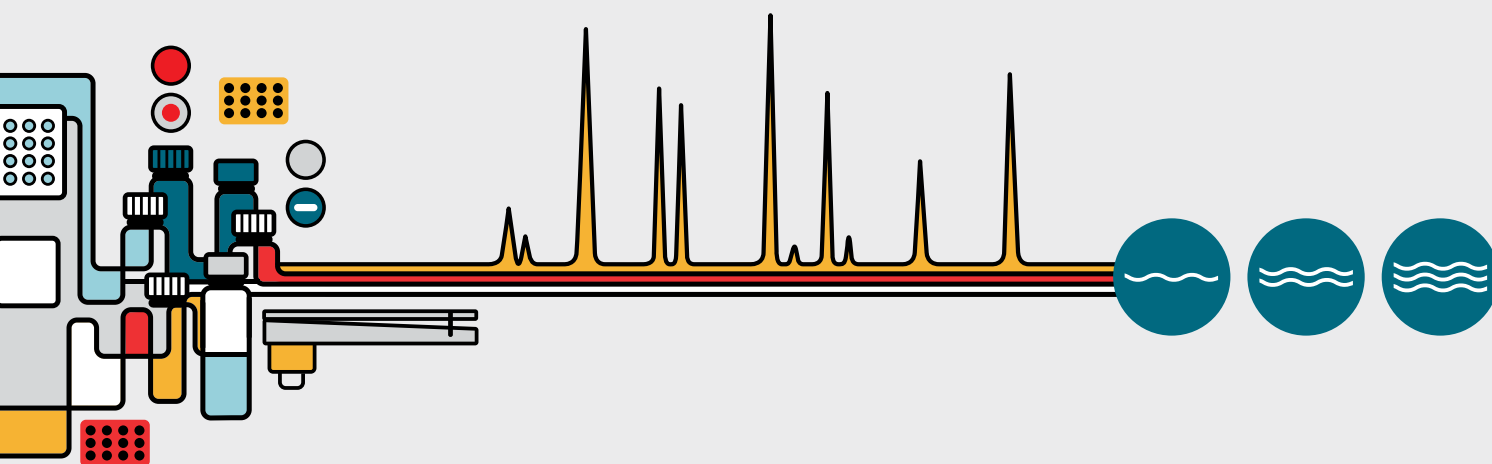
# Why Thermo Scientific SureSTART collection?

Five main benefits to you		More ways to master your testing
	<b>Assured quality and performance</b>	Need the highest standards of quality and performance? Our SureSTART collection has you covered with the most stringent standards in the marketplace—ensuring that you can meet every regulatory requirement.
	<b>Instrument compatibility</b>	Our collection contains a broad selection of products to provide complete compatibility for add-on and integrated chromatography autosamplers.
	<b>Sample security and low compound adsorption</b>	Protect your samples from being affected by pH shifting, adducting or contamination, and prevent analyte loss from either the cap top or analyte adsorption to the glass surface.
	<b>Better product experience</b>	Our SureSTART collection is segmented into three different performance levels, with visual waves on each glass vial to ensure you always select the right product for your experiment, every time.  
	<b>Power to extend your consumables budget</b>	We offer several ways to realize extra value and extend your budget, including built-in bulk discounts—the more you buy, the more you save.



# SureSTART performance levels

## Greater choice for what matters most



We are committed to providing a broad selection of solutions for all your chromatography and sample storage requirements.

Our vials and autosampler well plates are consistently manufactured with the lowest levels of extractables and leachables. They are also made from glass that has the lowest compound adsorption, and plastic that is tested and approved for analytical use.

We have the highest level of standards and certification available in the marketplace so that you can obtain highly reproducible data.

Whether you have routine samples, or you need to ensure the highest level of confidence and compliance, our market-leading collection of storage and autosampler vials, well plates and sample handling accessories has everything you will need

One collection. Three performance levels. All from one trusted source.




Want to learn more?



**Watch this short video**

to learn how two products can support you with improving your results.

## Analytical performance requirements

Products	Detector type	Comments
 <b>Thermo Scientific™ SureSTART™ Performance level 1 products</b>	Non-MS	Suitable for QA/QC applications using core detectors, e.g., UV/Vis, PDA, RI, ELSD, FLD, FID, NPD, ECD, TCD, or FPD. Compound concentrations are at easily detectable levels.
 <b>Thermo Scientific™ SureSTART™ Performance level 2 products</b>	MS	Suitable for routine QA/QC applications using MS technology. Compound concentrations are at easily detectable or low levels of detection.
 <b>Thermo Scientific™ SureSTART™ Performance level 3 products</b>	MS	Suitable for challenging applications, and research-focused applications, using MS technology. Compound concentrations are at/near the method detection limit.



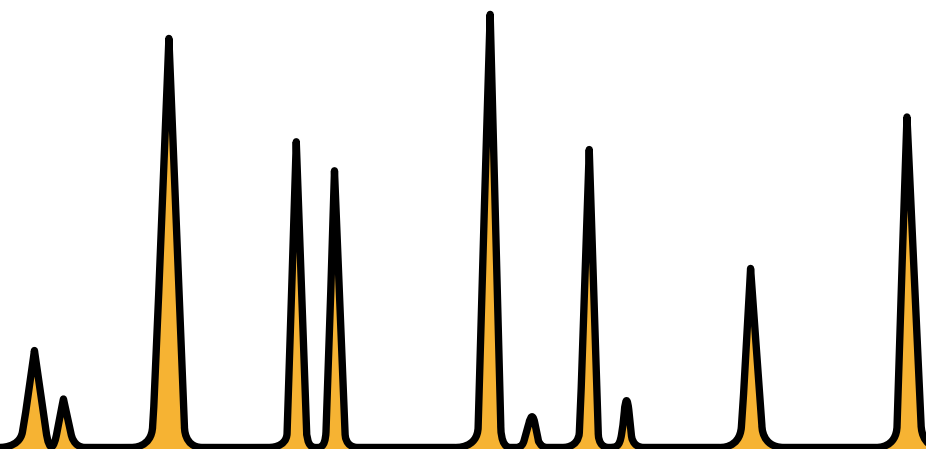
**Performance level 1**  
Everyday analysis:  
Chromatography approved



**Performance level 2**  
High throughput:  
Robust and reproducible



**Performance level 3**  
High performance:  
Selective and sensitive



# Selection guide for vials and well plates

## Which SureSTART product/performance level is right for you?

There are several factors to consider when choosing a vial or well plate for your application. This section will help guide you through this process to determine which combination is most suitable for your application requirements



### Need a quick answer?

Why not use our online product selector guide that includes our entire SureSTART Collection of vials, caps, well plates and mats.



**SureSTART™ Selection Guide**

Selecting your vial and well plate has never been easier.

**About this guide**

Have you ever struggled with finding the right sample handling solution for your application? You will struggle no longer! This simple guide will find the perfect solution product for you in just a few clicks.

[Get started](#)

- Application specific vials**  
Ensure what goes into the vial comes out – and that the vial you choose is fit for purpose for your application set up. This guide will take you right to your vial.
- Plates for high throughput**  
If you are a high throughput lab you may be interested in finding a plate rather than a vial to speed up your throughput. As plate compatibility is dependent on your instrument this guide will find the plate that work with your instrument type.
- Low cost vials at your fingertips**  
Find the correct vial for your application - and budget. If cost is a key purchasing criteria for you then we've got you covered as this guide takes all your lab requirements into consideration.



### Already purchasing a product?

Let our cross-reference tool find the equivalent SureSTART product/catalog number for you.



**SureSTART Cross Reference Tool**

Designed for cross referencing chromatography vials, caps and inserts, finding an equivalent product is easy. Using this cross-reference tool, there are 2 easy options for you to find an equivalent Thermo Scientific™ SureSTART™ product. All you need to know is your current catalogue number/ part number.

**Option 1: Input SKUs Directly**

Either type or copy/paste a list of SKUs into the text field below

**Option 2: Upload CSV**

[Choose file](#) [Don't have a data file? Download a sample .csv file](#)

# Choosing your vials and inserts

The chart below provides a quick guide to selecting the right vial/insert and material for your experimental and application requirements

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

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

\*These products can be found in SureSTART Performance level 3

\*\*Not recommended for GC applications

# Choosing your septa

The chart below provides a quick guide to selecting the right septa material type for your experimental and application requirements.

Multiple injection?	Temperature?			Thin, fragile needle?	Blunt, thick needle?	Critical analysis?	Low coring?
Good resealability required	-40°C to 120 °C	-40°C to 110 °C	-60°C to 200 °C	Soft and thin septa required	Pre-slit/pre-cut liner as penetration aid (HPLC)	Very clean liner required/ low-extractables	Double-sided PTFE laminated liners required
↓	↓	↓	↓	↓	↓	↓	↓
Silicone/PTFE Natural rubber/ TEF	Natural rubber/ TEF Butyl/PTFE	Red Rubber/ PTFE	Silicone/PTFE	Silicone/PTFE	Silicone/PTFE, pre-slit	Silicone/PTFE	PTFE/silicone/ PTFE



## Septa Selection Tool

An easy-to-use tool that ensures you find the right septa for your experimental requirements.

### About this tool

Choosing the right septa can be complex. There are a number of factors that should be considered including: needle type, vial type, and solvents and temperature that the septa will be exposed to. Let us help you find the right septa for your requirements with this easy-to-use tool.

[Get Started](#)

### Why use the Septa Selection Guide?

**Needle / autosampler issues**

If you are experiencing needle or autosampler issues (e.g. needle bending or blocking...) you may need to change the type of septa you are using.

You may need to consider a pre-slit septa or changing the hardness and / or thickness of your current septa.

**Septa compatibility with solvents.**

If you are having reproducibility issues it might be down to your septa. Some septa are better for non-polar solvents and others are more suitable for polar solvents.

**New experimental parameters**

Are you doing a new experiment and can't decide whether your current septa is suitable?

# Choosing your well plates and mats

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
↓	↓	↓	↓	↓	↓	↓	↓
<b>WebSeal</b> Plastic, chromatography tested	<b>WebSeal certified products</b> Plastic, MS tested	<b>WebSeal Plate+</b> Glass-coated plates <b>Plate with glass inserts</b>	<b>WebSeal plastic and certified</b>	<b>WebSeal Plate+</b> Glass-coated plates <b>Plate with glass inserts</b>	<b>Flat bottom</b> Where sample volume is high	<b>U-Bottom</b> Where sample volume is low	<b>V-Bottom</b> 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



## Learn more about the well plate terms:

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



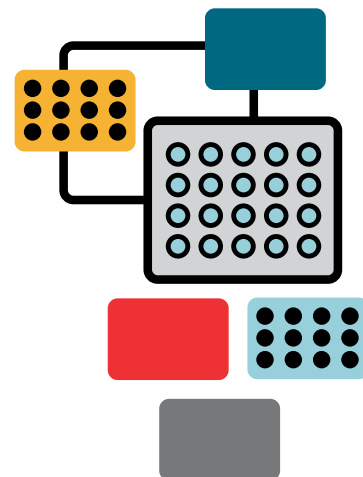
# Certified integrity and consistency



With over 40 years of experience supplying vial and well plates, Thermo Scientific SureSTART certified products are supplied to meet 'critical to quality' specifications, consistently. SureSTART products are produced in compliance with ISO 9001 requirements.

In addition, SureSTART certified products include:

- Glass vials made from First Hydrolytic Type 1 A borosilicate glass, which conforms to US FDA, USP, and EU Pharmacopeia standards
- Chemically and thermally resistant well plates are made of the highest quality materials.
- Our autosampler WebSeal well-plates all conform to ANSI SLAS 4-2004 standards.
- In-line opto-electronic testing inspects 100% of all key dimensions
- Our well plates are chromatography tested for solvent compatibility and inertness to ensure your data quality is not compromised
- Packaged in material that has been tested and selected for cleanliness
- Subjected to rigorous end-of-line sampling and quality control procedures to ensure all vials remain within specification
- Most glass vials come with a non-removable write-on patch convenience and ease-of-use
- Patented products, such as AVCS caps designed to minimize sample evaporation
- Products produced and/or packed in a clean environment to reduce contamination
- Glass vials which are available deactivated/silanized



# Performance level 1: Everyday analysis



## Chromatography approved

### Meet your chromatographic needs

Choose the right vial for chromatographic analyses. Thermo Scientific™ SureSTART™ Performance level 1 products are designed for everyday chromatography analysis. They provide an affordable choice for use with all GC and HPLC/UHPLC instrument types.

If you are verifying compound presence and quantification using detection techniques such as UV/Vis, PDA, RI, ELSD, FLD, FID, NPD, ECD, TCD, or FPD, our Performance level 1 products are the perfect solution for you— select the products with the one wave.

Within Performance level 1 you will find a selection of vials (glass, plastic, <2 mL, 2 mL and headspace).

You can also find a great selection of standard and bonded caps to support robotic autosamplers within this performance level.

Need stoppers? These can also be found within this performance level.

Vials	Caps
<2 mL polypropylene screw microvials	9 mm screw caps
2 mL glass screw vials	
2 mL glass crimp vials	11 mm crimp caps
<2 mL polypropylene snap microvials	11 mm snap caps
Plastic inserts	—
20 mL glass crimp headspace vials	20 mm crimp caps
20 mm stopper	—

### Performance level 1

#### for everyday analyses

- Packaged in material that has been tested and selected for cleanliness
- All products within this performance level are suitable for use with GC and HPLC/UHPLC
- Headspace vials and caps available in 20 mL options
- Vials are identified by one wave and a convenient write-on patch as standard
- Vials and caps available as screw, snap and crimp
- Vials available as clear or amber glass and as either glass or plastic
- Vial volume sizes ranging from 0.3 mL to 20 mL covering limited sample volumes to headspace analyses
- Caps come in a choice of polypropylene, aluminium and magnetic steel caps with silicone/PTFE, rubber/TEF, or butyl/PTFE septa
- Use Thermo Scientific™ manual or electronic crimpers and decrimpers for easy application and removal of crimp caps
- Buy vials and caps in bulk for greater savings

#### Specification certified

- All Thermo Scientific SureSTART vials are dimensionally verified to ensure autosampler compatibility
- Automated optical and gauge inspection to ensure critical dimensions and tolerances
- Vials meet all relevant requirements of US, EU, JPN Pharmacopia
- Uniform and defect-free

#### Lot traceable

- 100% traceable through the manufacturing process
- Certificate of Conformance available by lot number upon request



# Screw vials and associated caps

(<2 mL – 2 mL vials, 9 mm caps)

## <2 mL polypropylene screw microvials

Performance Level 1 for everyday analysis



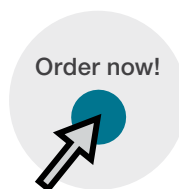
### Comments

- Short thread screw
- 12 mm x 32 mm (diameter x height)
- No marking spot
- Specification certified

For use with 9 mm screw caps, or 9 mm AVCS screw caps



Vial color and material	Clear plastic	Clear plastic
Total volume	0.4 mL	1.5 mL
Usable volume	0.3 mL	1 mL
Residual volume	4 µL	170 µL
Available packs		
100/pack 	<a href="#">6ESV9-04PP</a>	<a href="#">6ESV9-1PP</a>
10 x 100/pack 	<a href="#">6ESV9-04PPT</a>	<a href="#">6ESV9-1PPT</a>
50 x 100/pack 	<a href="#">6ESV9-04PPF</a>	<a href="#">6ESV9-1PPF</a>





# Screw vials and associated caps Continued

## (<2 mL – 2 mL vials, 9 mm caps)

### 2 mL glass screw vials

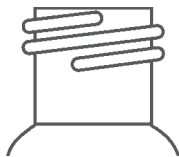
Performance Level 1 for everyday analysis



#### Comments




- Short thread screw
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- Specification certified

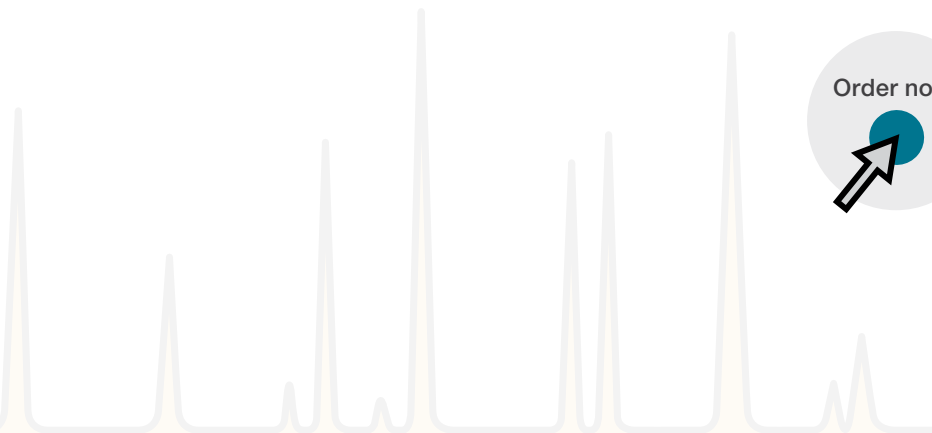
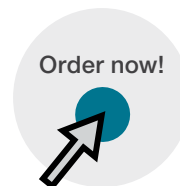
For use with 9 mm screw caps, or 9 mm AVCS screw caps



Vial color and material	Clear glass	Amber glass
Total volume	2 mL	
Usable volume	1.5 mL	
Residual volume	170 µL	



Available packs		
100/pack 	<a href="#">CHSV9-10P</a>	<a href="#">CHSV9-20P</a>
10 x 100/pack 	<a href="#">CHSV9-10PT</a>	<a href="#">CHSV9-20PT</a>
50 x 100/pack 	<a href="#">CHSV9-10PF</a>	<a href="#">CHSV9-20PF</a>





# Screw vials and associated caps Continued

## (<2 mL – 2 mL vials, 9 mm caps)

### 9 mm screw caps

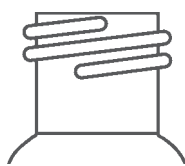
Performance Level 1 for everyday analysis



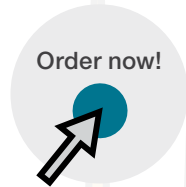
#### Comments

- Short thread screw
- 9 mm
- Specification certified

For use with <2 mL and 2 mL screw vials



Cap color and material	—	—	—	—	Bonded	Bonded
	—	—	—	Pre-slit septa	—	Pre-slit septa
	Blue polypropylene					
Septum color and material	Red natural rubber/clear TEF	Red silicone/ivory PTFE	White silicone/red PTFE	White silicone/blue PTFE	White silicone/white PTFE	White silicone/white PTFE
Septum thickness	1 mm					
Septum hardness	60 shore	45 shore	55 shore	55 shore	45 shore	45 shore
<b>Available packs</b>						
100/pack	<a href="#">CHSC9-10</a>	<a href="#">CHSC9-20</a>	<a href="#">CHSC9-30</a>	<a href="#">CHSC9-40</a>	<a href="#">CHSC9-35UB</a>	<a href="#">CHSC9-35UBS</a>
10 x 100/pack	<a href="#">CHSC9-10T</a>	<a href="#">CHSC9-20T</a>	<a href="#">CHSC9-30T</a>	<a href="#">CHSC9-40T</a>	<a href="#">CHSC9-35UBT</a>	<a href="#">CHSC9-35UBST</a>
50 x 100/pack	<a href="#">CHSC9-10F</a>	<a href="#">CHSC9-20F</a>	<a href="#">CHSC9-30F</a>	<a href="#">CHSC9-40F</a>	<a href="#">CHSC9-35UBF</a>	<a href="#">CHSC9-35UBSF</a>





# Crimp vials and associated caps

## (2 mL, 11 mm caps)



Seal these crimp vials with 11 mm aluminium crimp caps and septa using a manual or electronic crimper tool.

### 2 mL glass crimp vials

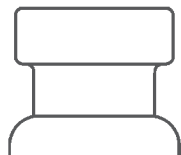
Performance Level 1 for everyday analysis



#### Comments




- Crimp closure (11 mm)
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- Specification certified

For use with 11 mm crimp caps



Vial color and material	Clear glass	Amber glass
Total volume	2 mL	
Usable volume	1.5 mL	
Residual volume	170 µL	



Available packs		
100/pack 	<a href="#">CHCV11-10P</a>	<a href="#">CHCV11-20P</a>
10 x 100/pack 	<a href="#">CHCV11-10PT</a>	<a href="#">CHCV11-20PT</a>
50 x 100/pack 	<a href="#">CHCV11-10PF</a>	<a href="#">CHCV11-20PF</a>

Order now!





# Crimp vials and associated caps Continued

## (2 mL, 11 mm caps)

### 11 mm crimp caps

Performance Level 1 for everyday analysis

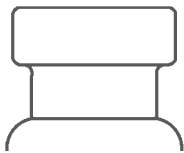


#### Comments

- Crimp closure (11 mm)
- Specification certified

For use with <2 mL and 2 mL crimp vials, or <2 mL and 2 mL snap vials

Use with 11 mm crimpers and decrimpers



Cap color and material	Silver aluminium	
Septum color and material	Natural rubber/clear TEF	White silicone/red PTFE
Septum thickness	1 mm	1.3 mm
Septum hardness	60 shore	45 shore



Available packs		
100/pack	<a href="#">CHCC11-10</a>	<a href="#">CHCC11-30</a>
10 x 100/pack	<a href="#">CHCC11-10T</a>	<a href="#">CHCC11-30T</a>
50 x 100/pack	<a href="#">CHCC11-10F</a>	<a href="#">CHCC11-30F</a>

#### Learn more about:

- Manual crimpers and decrimpers
- Electronic crimpers and decrimpers





# Snap vials and associated caps

(<2 mL vials, 11 mm caps)

## <2 mL polypropylene snap microvials

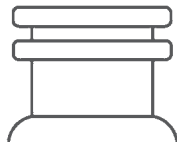
Performance Level 1 for everyday analysis



### Comments

- Snap (11 mm)
- 12 mm x 32 mm (diameter x height)
- No marking spot
- Specification certified

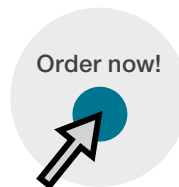
For use with 11 mm snap caps



	Clear polypropylene		
Vial color and material	Conical	Conical	Flat bottom
Total volume	0.3 mL	0.8 mL	1.0 mL
Usable volume	0.2 mL	0.6 mL	0.8 mL
Residual volume	4 µL	6 µL	80 µL



Available packs				
100/pack		<a href="#">6ERV11-03PPC</a>	<a href="#">6ERV11-08PPC</a>	<a href="#">6ERV11-08PPFB</a>
10 x 100/pack		<a href="#">6ERV11-03PPCT</a>	<a href="#">6ERV11-08PPCT</a>	<a href="#">6ERV11-08PPFBT</a>
50 x 100/pack		<a href="#">6ERV11-03PPCF</a>	<a href="#">6ERV11-08PPCF</a>	<a href="#">6ERV11-08PPFBF</a>







# Snap vials and associated caps Continued

## (<2 mL vials, 11 mm caps)

### 11 mm snap caps

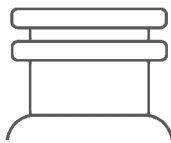
Performance Level 1 for everyday analysis




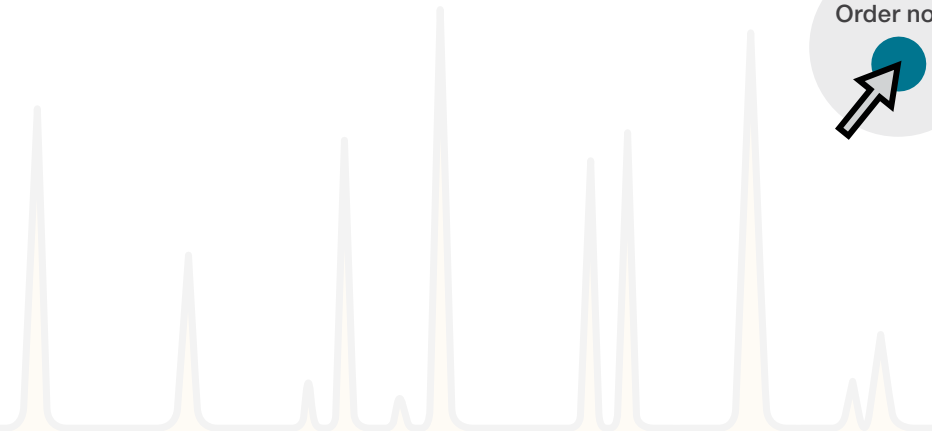
#### Comments

- Snap closure (11 mm)
- Specification certified
- Does not re-seal after puncture

For use with <2 mL and 2 mL snap vials



Cap color and material	Blue polyethylene membrane cap
Septum color and material	Membrane thickness 0.5 mm
Septum thickness	This cap comes with no septa
Septum hardness	
<b>Available packs</b>	
100/pack 	<a href="#">6ERC11PE</a>





# Plastic inserts

## (2 mL vials)

Need more information about which insert is most suitable for you?

 **Watch this short video**

### Plastic inserts for 2 mL vials

Performance Level 1 for everyday analysis



#### Comments




- 6 mm x 31 mm (diameter x height) (size x height) conical with polyspring base
- No marking spot
- Specification certified

For use with 2 mL screw vials, 2 mL snap vials or 2 mL crimp vials



Insert color and material	Clear glass with clear polypropylene polyspring
Total volume	0.30 mL
Usable volume	0.25 mL
Residual volume	4 µL



Available packs	
100/pack 	<a href="#">6EME03CPPSP</a>
10 x 100/pack 	<a href="#">6EME03CPPSPT</a>
50 x 100/pack 	<a href="#">6EME03CPPSPF</a>

#### Learn more about:



2 mL glass screw vials



2 mL glass crimp vials



2 mL glass snap vials



# Headspace vials and associated caps

(20 mL vials, 20 mm caps)

## 20 mL glass crimp headspace vials

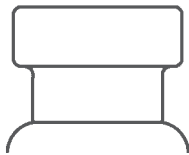
Performance Level 1 for everyday analysis





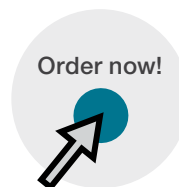
### Comments

- Crimp
- 22.50 mm x 75.5 mm (diameter x height) square rim, round bottom base
- Marking spot
- Specification certified

For use with 20 mm crimp caps



Vial color and material	Clear glass
Total volume	20 mL
Usable volume	18 mL
Residual volume	0.8 mL
<b>Available packs</b>	
100/pack 	<a href="#">CHCV20-14</a>
10 x 100/pack 	<a href="#">CHCV20-14T</a>





# Headspace vials and associated caps Continued

## (20 mL vials, 20 mm caps)

### 20 mm crimp caps

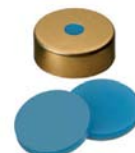
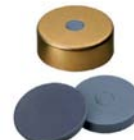
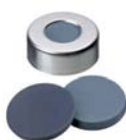
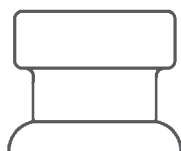
Performance Level 1 for everyday analysis



#### Comments

- Crimp closure (20 mm)
- Specification certified

For use with 10 mL and 20 mL crimp headspace vials (with diameter neck size of 20 mm)  
Use with 20 mm crimpers and decrimpers



Cap color and material	Silver aluminium	Silver aluminium	Gold magnetic steel	Gold magnetic steel
Septum color and material	Molded	—	Molded	—
	Grey butyl/ grey PTFE	Blue silicone/ white PTFE	Grey butyl/ grey PTFE	Blue transparent silicone/clear PTFE
Septum thickness	3 mm			
Septum hardness	50 shore	45 shore	50 shore	45 shore
<b>Available packs</b>				
100/pack	<a href="#">CHCC20-1</a>	<a href="#">CHCC20-2</a>	<a href="#">CHCC20-1M</a>	<a href="#">CHCC20-2M</a>
10 x 100/pack	<a href="#">CHCC20-1T</a>	<a href="#">CHCC20-2T</a>	<a href="#">CHCC20-1MT</a>	<a href="#">CHCC20-2MT</a>
50 x 100/pack	<a href="#">CHCC20-1F</a>	<a href="#">CHCC20-2F</a>	<a href="#">CHCC20-1MF</a>	<a href="#">CHCC20-2MF</a>



#### Learn more about:

- Manual crimpers and decrimpers
- Electronic crimpers and decrimpers





# Stoppers

## 20 mm stopper

Performance Level 1 for everyday analysis



### Comments

- Specification certified

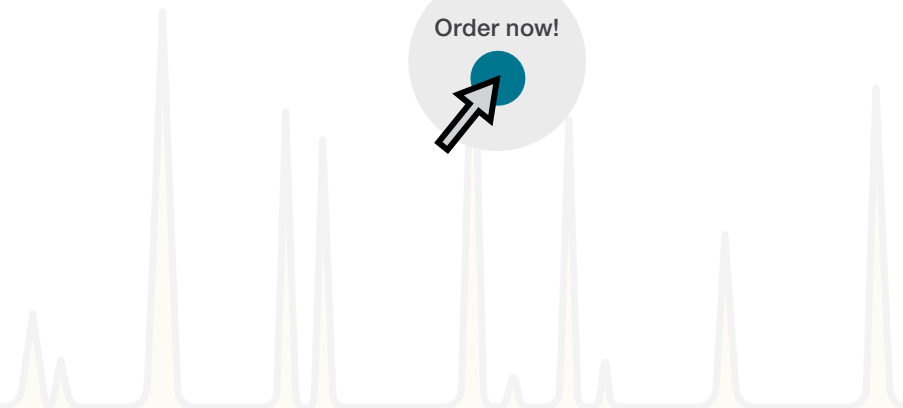
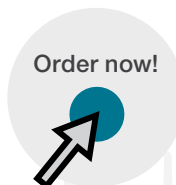
For use with vials (e.g. 10 mL/20 mL crimp vials) with diameter neck size of 20 mm



Product description	Stopper (20 mm)
Color and material	Grey bromobutyl
Septum thickness	3 mm
Septum hardness	45 shore



Available packs	
100/pack	<a href="#">CHBS-20</a>
10 x 100/pack	<a href="#">CHBS-20T</a>
50 x 100/pack	<a href="#">CHBS-20F</a>



# Performance level 2: High-throughput analysis

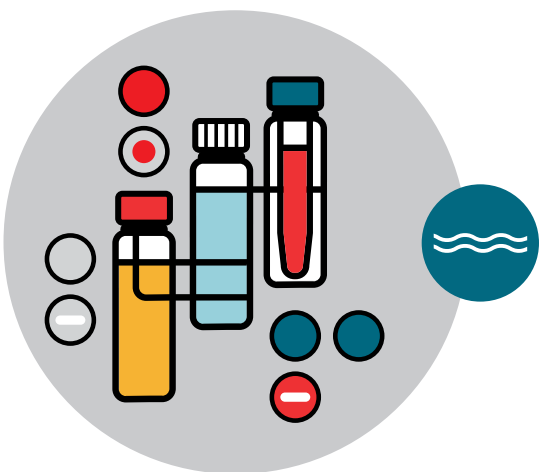
## When robustness and reproducibility are key

### Be compliant-ready for your high-throughput samples in regulated environments

Choose Thermo Scientific™ SureSTART™ Performance level 2 products, to ensure high quality data with an uninterrupted workflow in high throughput applications using GC, HPLC/UHPLC, single or triple quadrupole MS systems. Use these Level 2 vials for routine QA/QC applications, where the analyte levels are achievable or close to the method detection level. These products have very low metal content and extractables and leachables and conform to high standards so that you can meet your regulatory requirements. They are Specification Certified to ensure their physical dimensions and autosampler compatibility.

If you need products that support routine analyses, our Performance Level 2 products are here for you. Select the products with the two waves.

Within Performance Level 2 you will find a selection of kits (including our range of EPA and Scintillation), vials, caps, inserts, septa and stoppers.



#### Performance level 2 for high-throughput applications

- All products within this performance level are suitable for GC, HPLC/UHPLC, and mass spectrometry (MS) applications
- Volume sizes ranging from 0.3 mL to 20 mL covering limited sample volumes to headspace analyses
- Headspace vials and caps available from 10 mL – 20 mL
- Vials are identified by two waves and a convenient write-on patch as standard
- Vials available as screw, snap and crimp
- Vials available in glass, silanized glass and plastic
- Vials available as clear or amber glass
- Caps available as screw, screw AVCS, snap and crimp
- Use Thermo Scientific manual or electronic crimpers and decrimpers for easy application and removal of crimp caps
- EPA, scintillation and specification certified kits can be found within performance level 2
- Buy vials and caps in bulk for greater savings

#### Specification certified

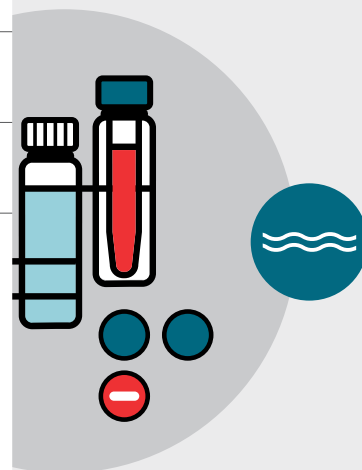
- All Thermo Scientific SureSTART vials are dimensionally verified to ensure autosampler compatibility
- Inspected by automated optical and gauge inspection to ensure critical dimensions and tolerances
- Vials meet all requirements of US, EU, JPN Pharmacopia
- Uniform and defect-free

#### Lot traceable

- 100% traceable through the manufacturing process
- Certificate of Conformance available by lot number upon request

# Performance level 2: High-throughput analysis

Vials	Caps
1.7 mL glass high recovery screw microvials for <2 mL sample	9 mm screw caps
2 mL glass screw vials	11 mm crimp caps
2 mL glass crimp vials	11 mm snap caps 11 mm crimp caps
Inserts for 2 mL vials	—
4 mL glass screw vials	13 mm screw caps
10 mL glass screw vials	
10 mL glass crimp headspace vials	20 mm crimp caps
20 mL glass screw vials	
20 mL glass crimp headspace vials	
20 mm stoppers and septa	
Kits	
Specification certified	EPA
Scintillation	—





# Screw vials and associated caps

(<2 mL – 2 mL vials, 9 mm caps)

## 1.7 mL high-recovery glass screw microvials for <2 mL samples

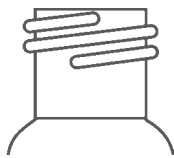
Performance Level 2 for high-throughput applications



### Comments




- Short thread screw
- 12 mm x 32 mm (diameter x height) inner V-bottom base
- Marking spot
- Specification certified

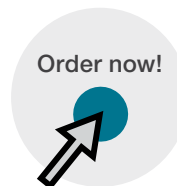
For use with 9 mm screw caps, or 9 mm AVCS screw caps



Vial color and material	Clear glass
Total volume	1.7 mL
Usable volume	1.3 mL
Residual volume	4 µL



Available packs	
100/pack 	<a href="#">6ASV9-V1</a>
10 x 100/pack 	<a href="#">6ASV9-V1T</a>
50 x 100/pack 	<a href="#">6ASV9-V1F</a>







# Screw vials and associated caps Continued

## (<2 mL – 2 mL vials, 9 mm caps)

### 2 mL glass screw vials

Performance Level 2 for high-throughput applications



#### Comments

- Short thread screw
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- Specification certified

For use with 9 mm screw caps, or 9 mm AVCS screw caps



Vial color and material	Clear glass	Amber glass	Amber glass, silanized
Total volume		2.0 mL	
Usable volume		1.5 mL	
Residual volume		170 µL	



Available packs			
100/pack	<a href="#">6ASV9-1P</a>	<a href="#">6ASV9-2P</a>	<a href="#">6ASV9-S2P</a>
10 x 100/pack	<a href="#">6ASV9-1PT</a>	<a href="#">6ASV9-2PT</a>	—
50 x 100/pack	<a href="#">6ASV9-1PF</a>	<a href="#">6ASV9-2PF</a>	—

#### Need a smaller volume?

- Why not use with our polyspring glass inserts





# Screw vials and associated caps Continued

(<2 mL – 2 mL vials, 9 mm caps)

## 9 mm screw caps

Performance Level 2 for high-throughput applications



### Comments

- Short thread screw
- 9 mm
- Specification certified

For use with <2 mL and 2 mL screw vials



Cap components	—	Bonded	Bonded	—	—	—
	—	Pre-slit	—	—	—	—
Cap color and material	Blue polypropylene			Red polypropylene		
Septum color and material	White silicone/red PTFE	White silicone/beige PTFE	White silicone/beige PTFE	Red rubber/ivory PTFE	White silicone/red PTFE	Red rubber/ivory PTFE
Septum thickness	1 mm					
Septum hardness	45 shore	45 shore	45 shore	45 shore	45 shore	45 shore



Available packs						
100/pack		<a href="#">6ASC9ST1</a>	<a href="#">6ASC9STBS1</a>	<a href="#">6ASC9STB1</a>	<a href="#">6ASC9RT1</a>	<a href="#">6ASC9ST1R</a> <a href="#">6ASC9RT1R</a>
10 x 100/pack		<a href="#">6ASC9ST1T</a>	<a href="#">6ASC9STBS1T</a>	<a href="#">6ASC9STB1T</a>	<a href="#">6ASC9RT1T</a>	<a href="#">6ASC9ST1RT</a> <a href="#">6ASC9RT1RT</a>
50 x 100/pack		<a href="#">6ASC9ST1F</a>	<a href="#">6ASC9STBS1F</a>	<a href="#">6ASC9STB1F</a>	<a href="#">6ASC9RT1F</a>	<a href="#">6ASC9ST1RF</a> <a href="#">6ASC9RT1RF</a>



# Crimp vials and associated caps

## (2 mL vials, 11 mm caps)

### 2 mL glass crimp vials

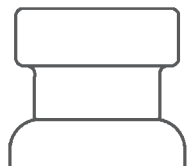
Performance Level 2 for high-throughput applications



#### Comments




- Crimp
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- Specification certified

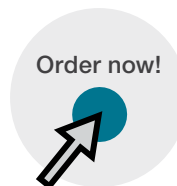
For use with 11 mm crimp caps, or 11 mm snap caps



Vial color and material	Clear glass	Amber glass
Total volume	2 mL	
Usable volume	1.7 mL	
Residual volume	170 µL	



Available packs		
100/pack 	<a href="#">6ACV11-1P</a>	<a href="#">6ACV11-2P</a>
10 x 100/pack 	<a href="#">6ACV11-1PT</a>	<a href="#">6ACV11-2PT</a>
50 x 100/pack 	<a href="#">6ACV11-1PF</a>	<a href="#">6ACV11-2PF</a>





# Crimp vials and associated caps Continued

## (2 mL vials, 11 mm caps)

### 11 mm crimp caps

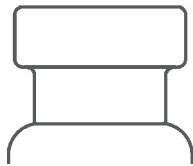
Performance Level 2 for high-throughput applications



#### Comments




- Crimp closure (11 mm)
- Specification certified

For use with <2 mL - 2 mL crimp vials, or <2 mL - 2 mL snap vials  
Use with 11 mm crimpers and decrimpers



Cap color and material	Silver aluminium closure	
Septum color and material	White silicone/red PTFE	Red rubber/ivory PTFE
Septum thickness	1 mm	
Septum hardness	45 shore	60 shore



Available packs		
100/pack 	<a href="#">6ACC11ST1</a>	<a href="#">6ACC11RT1</a>
10 x 100/pack 	<a href="#">6ACC11ST1T</a>	<a href="#">6ACC11RT1T</a>
50 x 100/pack 	<a href="#">6ACC11ST1F</a>	<a href="#">6ACC11RT1F</a>

#### Learn more about:

- Manual crimpers and decrimpers
- Electronic crimpers and decrimpers





# Snap vials and associated caps

(2 mL vials, 11 mm caps)

## 2 mL glass snap vials

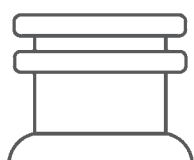
Performance Level 2 for high-throughput applications



### Comments

- Snap
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- Specification certified



For use with 11 mm snap caps or 11 mm crimp caps



Vial color and material	Clear glass	Amber glass
Total volume	2 mL	
Usable volume	1.7 mL	
Residual volume	170 µL	



### Available packs

100/pack 	<a href="#">6ARV11-1P</a>	<a href="#">6ARV11-2P</a>
10 x 100/pack 	<a href="#">6ARV11-1PT</a>	<a href="#">6ARV11-2PT</a>
50 x 100/pack 	<a href="#">6ARV11-1PF</a>	<a href="#">6ARV11-2PF</a>

### Need a smaller volume?

- Why not use with our polyspring glass inserts





# Snap vials and associated caps Continued

## (2 mL vials, 11 mm caps)

### 11 mm snap caps

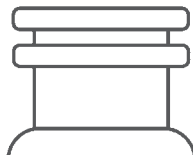
Performance Level 2 for high-throughput applications



#### Comments

- Snap closure (11 mm)
- Specification certified

For use with 11 mm glass or plastic snap vials

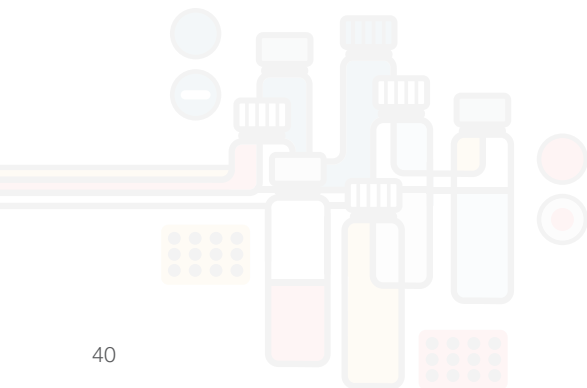
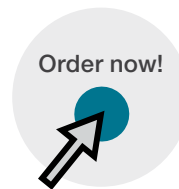


Cap color and material	Blue polyethylene	Blue polyethylene	Red polyethylene	Red polyethylene
Septum color and material	White silicone/ red PTFE	Natural rubber/ clear TEF	White silicone/ red PTFE	Natural rubber/ clear TEF
Septum thickness	1 mm			
Septum hardness	45 shore	60 shore	55 shore	60 shore



#### Available packs

100/pack		<a href="#">6ARC11ST1</a>	<a href="#">6ARC11NRT1</a>	<a href="#">6ARC11ST1R</a>	<a href="#">6ARC11NRT1R</a>
10 x 100/pack		<a href="#">6ARC11ST1T</a>	<a href="#">6ARC11NRT1T</a>	<a href="#">6ARC11ST1RT</a>	<a href="#">6ARC11NRT1RT</a>
50 x 100/pack		<a href="#">6ARC11ST1F</a>	<a href="#">6ARC11NRT1F</a>	<a href="#">6ARC11ST1RF</a>	<a href="#">6ARC11NRT1RF</a>





# Screw vials and associated caps

## (4 mL vials, 13 mm caps)

### 4 mL glass screw vials

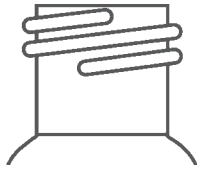
Performance Level 2 for high-throughput applications



#### Comments

- Screw
- 15 x 45 mm (diameter x height) flat base
- Specification certified

For use with 13 mm screw caps



Vial color and material	Clear glass	Amber glass
Total volume	4.0 mL	
Usable volume	3.5 mL	
Residual volume	800 µL	



Available packs		
100/pack 	<a href="#">6ASV13-1P</a>	<a href="#">6ASV13-2P</a>





# Screw vials and associated caps Continued

## (4 mL vials, 13 mm caps)

### 13 mm screw caps

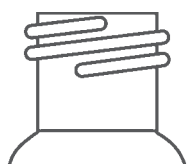
Performance Level 2 for high-throughput applications



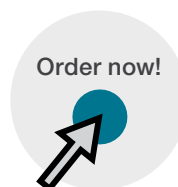
#### Comments

- Short thread screw closure (13 mm/13-425)
- Specification certified

For use with 4 mL screw vials (and other vials with screw 13 mm dimensions)



Cap color and material	—	Pre-slit septa
Septum color and material	Black polypropylene	White polypropylene
Septum thickness	White silicone/red PTFE	White silicone/blue PTFE
Septum hardness	1.5 mm	
Available packs	55 shore	45 shore
100/pack	<a href="#">6ASC13ST15</a>	<a href="#">6PSC13STS15W</a>







# Screw vials and associated caps Continued

## (4 mL vials, 13 mm caps)

### 10 mL glass screw headspace vials

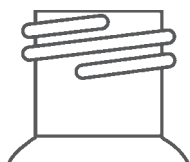
Performance Level 2 for high-throughput applications



#### Comments




- Screw
- 22.5 mm x 46 mm (diameter x height) round bottom base
- Marking spot
- Specification certified

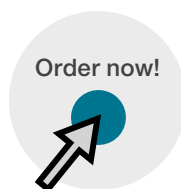
For use with 18 mm screw caps



Vial color and material	Clear glass	Amber glass
Total volume	10 mL	10 mL
Usable volume	8 mL	8 mL
Residual volume	0.8 mL	0.8 mL



Available packs		
100/pack 	<a href="#">6ASV10-1</a>	<a href="#">6ASV10-2</a>
10 x 100/pack 	<a href="#">6ASV10-1T</a>	<a href="#">6ASV10-2T</a>
50 x 100/pack 	<a href="#">6ASV10-1F</a>	<a href="#">6ASV10-2F</a>





# Screw vials and associated caps Continued

## (4 mL vials, 13 mm caps)

### 20 mL glass screw headspace vials

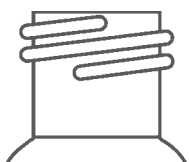
Performance Level 2 for high-throughput applications



#### Comments




- Screw
- 22.5 mm x 75 mm (diameter x height) round bottom base
- Marking spot
- Specification certified

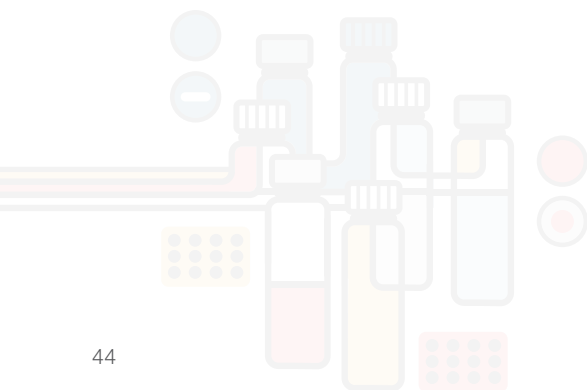
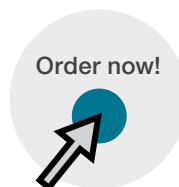
For use with 18 mm screw caps



Vial color and material	Clear glass	Amber glass
Total volume	20 mL	20 mL
Usable volume	18 mL	18 mL
Residual volume	0.8 mL	0.8 mL



Available packs		
100/pack 	<a href="#">6ASV20-1</a>	<a href="#">6ASV20-2</a>
10 x 100/pack 	<a href="#">6ASV20-1T</a>	<a href="#">6ASV20-2T</a>
50 x 100/pack 	<a href="#">6ASV20-1F</a>	<a href="#">6ASV20-2F</a>





# Headspace crimp vials and associated caps (10 mL – 20 mL vials, 20 mm caps)

## 10 mL glass crimp headspace vials

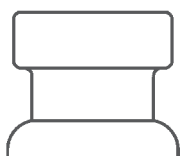
Performance Level 2 for high-throughput applications



### Comments

- Crimp
- 22.50 mm x 46 mm (diameter x height) round bottom base with beveled edge rim
- Marking spot
- Specification certified

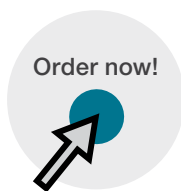
For use with 20 mm crimp caps



Vial color and material	Clear glass	Amber glass
Total volume	10 mL	
Usable volume	8 mL	
Residual volume	0.8 mL	



Available packs		
100/pack		<a href="#">6ACV10-1R</a> <span style="margin-left: 150px;"><a href="#">6ACV10-2R</a></span>
10 x 100/pack		<a href="#">6ACV10-1RT</a> <span style="margin-left: 150px;"><a href="#">6ACV10-2RT</a></span>
50 x 100/pack		<a href="#">6ACV10-1RF</a> <span style="margin-left: 150px;"><a href="#">6ACV10-2RF</a></span>





# Headspace crimp vials and associated caps Continued

## (10 mL – 20 mL vials, 20 mm caps)

### 20 mL glass crimp headspace vials

Performance Level 2 for high-throughput applications



#### Comments

- Crimp
- 22.50 mm x 75 mm (diameter x height) round bottom base with beveled edge rim ([6ACV20-1R](#))
- 23 mm x 75.5 mm (diameter x height) round bottom base with beveled edge rim ([6ACV20-1PE](#), [6ACV20-2PE](#))
- Marking spot
- Specification certified

For use with 20 mm crimp caps

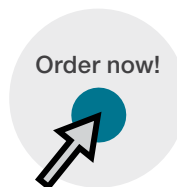


Vial color and material	Clear glass		Amber glass
Vial diameter and length	22.50 x 75.0	23.00 x 75.5	23.00 x 75.5
Total volume	20 mL		
Usable volume	18 mL		
Residual volume	0.8 mL		



Available packs				
100/pack		<a href="#">6ACV20-1R</a>	<a href="#">6ACV20-1PE</a>	<a href="#">6ACV20-2PE</a>
10 x 100/pack		<a href="#">6ACV20-1RT</a>	<a href="#">6ACV20-1PET</a>	<a href="#">6ACV20-2PET</a>
50 x 100/pack		<a href="#">6ACV20-1RF</a>	<a href="#">6ACV20-1PEF</a>	<a href="#">6ACV20-2PEF</a>

[6ACV20-1PE](#) and [6ACV20-2PE](#) fit Perkin-Elmer instruments





# Headspace crimp vials and associated caps Continued

## (10 mL – 20 mL vials, 20 mm caps)

### 20 mm crimp caps

Performance Level 2 for high-throughput applications



#### Comments

- Crimp closure (20 mm)
- Specification certified

For use with 10 mL and 20 mL crimp headspace vials (with neck size of 20 mm)

Use with 20 mm crimpers and decrimpers



Cap components	–	–	–	Magnetic	Magnetic
	–	–	Pressure release	–	Suitable for high temperature
	–	–	–	Soft septa	–
Cap color and material	Silver aluminium	Silver aluminium	Silver aluminium	Gold steel	Silver steel
Septum color and material	Black butyl/grey PTFE; molded Pharmafix	White silicone/beige PTFE	White silicone/beige PTFE	Blue silicone/clear PTFE	Red silicone/natural PTFE
Septum thickness	3.0 mm	3.2 mm	3.2 mm	3.0 mm	3.0 mm
Septum hardness	50 shore	45 shore	45 shore	40 shore	55 shore



#### Available packs

100/pack		<a href="#">6ACC20-PFT</a>	<a href="#">6ACC20-ST1</a>	<a href="#">6APRCC20-ST1</a>	<a href="#">6AMCC20-ST3</a>	<a href="#">6AMCC20-STH</a>
10 x 100/pack		<a href="#">6ACC20-PFTT</a>	<a href="#">6ACC20-ST1T</a>	<a href="#">6APRCC20-ST1T</a>	<a href="#">6AMCC20-ST3T</a>	<a href="#">6AMCC20-STHT</a>
50 x 100/pack		<a href="#">6ACC20-PFTE</a>	<a href="#">6ACC20-ST1F</a>	<a href="#">6APRCC20-ST1F</a>	<a href="#">6AMCC20-ST3F</a>	<a href="#">6AMCC20-STHF</a>

#### Learn more about:

- Manual crimpers and decrimpers
- Electronic crimpers and decrimpers





# Stoppers and septa

## 20 mm stoppers and septa

Performance Level 2 for high-throughput applications



### Comments




- Specification certified

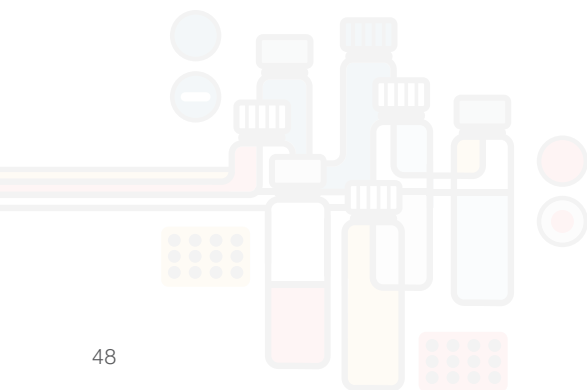
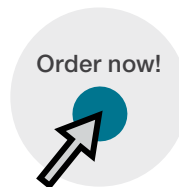
For use with vials (e.g. 10 mL/20 mL crimp vials) with diameter neck size of 20 mm



Product description	Stopper (20 mm)	Septum (20 mm)
Color and material	Grey bromobutyl	White silicone/beige PTFE
Septum thickness	3.0 mm	3.2 mm
Septum hardness	45 shore	



Available packs		
100/pack 	<a href="#">6A20BS</a>	<a href="#">6A20ST1</a>
10 x 100/pack 	<a href="#">6A20BST</a>	<a href="#">6A20BST</a>
50 x 100/pack 	<a href="#">6A20BSF</a>	<a href="#">6A20BSF</a>





# Specification certified vial and cap kits, EPA kits, and scintillation kit

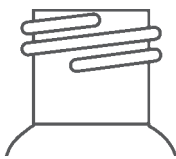
## Specification certified screw vial and cap kits


Performance Level 2 for high-throughput applications



### Comments

- 2 mL screw vial (9 mm) with short thread screw closure
- Marking spot
- Specification certified



Key attributes	AVCS				
Vial color and material	Clear glass	Amber glass	Clear glass	Clear glass	Amber glass
Vial total volume	2 mL				
Cap color and material	Blue polypropylene				
Septum color and material	Red silicone/ ivory PTFE	Red silicone/ ivory PTFE	Red PTFE/white silicone/red PTFE	White silicone/ red PTFE	White silicone/ red PTFE
Available packs					
100/pack	 <a href="#">6AK80W</a>	<a href="#">6AK82W</a>	<a href="#">6AK86W</a>	<a href="#">6AK92W</a>	<a href="#">6AK94W</a>





# Specification certified vial and cap kits, EPA kits, and scintillation kit

Continued

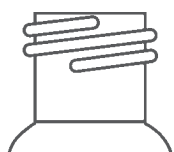
## Specification certified screw vial and cap kits Continued

Performance Level 2 for high-throughput applications



### Comments

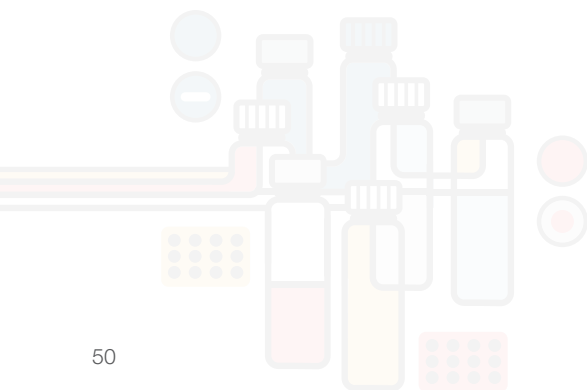
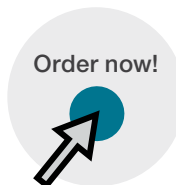
- 2 mL screw vial (9 mm) with short thread screw closure
- Marking spot
- Specification certified



Key attributes	SureStop/ AVCS	SureStop/ AVCS	AVCS	AVCS	Bonded	Bonded
	-	-	Soft septa	Preslit septa	Preslit septa	-
Vial color and material	Clear glass	Amber glass	Clear glass	Clear glass	Clear glass	Clear glass
Vial total volume	2 mL					
Cap color and material	Blue polypropylene	Blue polypropylene	Blue polypropylene	Blue polypropylene	Grey polypropylene	Black polypropylene
Septum thickness	White silicone/ red PTFE	White silicone/ red PTFE	Blue silicone/ clear PTFE	White silicone/ blue PTFE	White silicone/ red PTFE	White silicone/ red PTFE



Available packs							
100/pack		<a href="#">6AK592W</a>	<a href="#">6AK594W</a>	<a href="#">6AK599W</a>	<a href="#">6AK95W</a>	<a href="#">6AK93BW</a>	<a href="#">6AK78BW</a>







# Specification certified vial and cap kits, EPA kits, and scintillation kits

Continued

## EPA screw vial and cap kits

Performance Level 2 for high-throughput applications

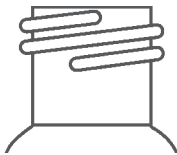


### Comments

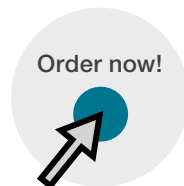
- 4 mL – 40 mL screw vials with screw closures (13 mm – 24 mm)
- Level 100 EPA vials

These are processed and packaged under a strict registered ISO Quality Management System. The products are not certified to EPA standards or pre-cleaned. Every case of product is labeled with its production number and is custody sealed to ensure reliable chain-of-custody.

EPA Screw Vials convenience kits are recommended for discrete water sampling under EPA 40 CFR 136 “Guidelines for Establishing Test Procedures for the Analysis of Pollutants” and EPA 40 CFR 141 “National Interim Primary Drinking Water Regulations: Control of Trihalomethanes in Drinking Water”.



<b>Vial color and material</b>	Clear glass	Amber glass	Clear glass	Amber glass	Clear glass	Amber glass
<b>Vial total volume</b>	4 mL (13 mm)		8 mL (15 mm)		12 mL (15 mm)	
<b>Cap color and material</b>	White screw cap (PP) (13 mm)			White screw cap (PP) (15 mm)		
<b>Septum color and material</b>	PE foam/white PTFE closed top					
<b>Available packs</b>						
100/pack		<a href="#">6AK4CCT</a>	<a href="#">6AK4ACT</a>	–	–	–
2 x 100/pack		–	–	<a href="#">6AK8CCT</a>	<a href="#">6AK8ACT</a>	<a href="#">6AK12CCT</a> <a href="#">6AK12ACT</a>





# Specification certified vial and cap kits, EPA kits, and scintillation kit

Continued

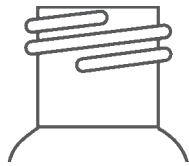
## EPA screw vial and cap kits Continued

Performance Level 2 for high-throughput applications

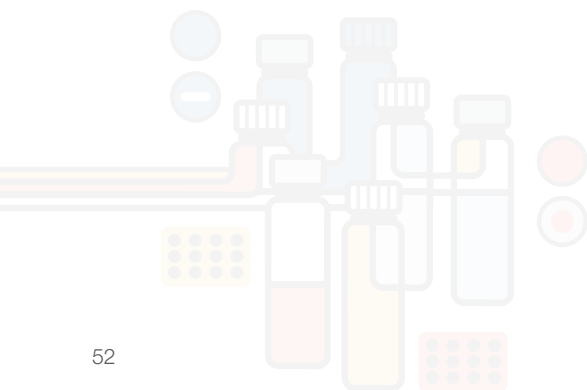
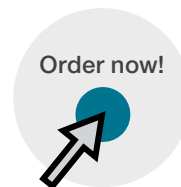


### Comments

- 4 mL – 40 mL screw vials with screw closures (13 mm – 24 mm)
- Level 100 EPA vials



Vial color and material	Clear glass	Amber glass	Clear glass	Amber glass
Vial total volume	16 mL (18 mm 18-400)		20 mL (24 mm /24-400)	
Cap color and material	White screw cap (PP) (18 mm)		White screw cap (PP) (24 mm)	
Septum color and material	PE foam/white PTFE closed top			
<b>Available packs</b>				
100/pack	—	—	<a href="#">6AK20CCTAS</a>	<a href="#">6AK20ACTAS</a>
2 x 100/pack	<a href="#">6AK16CCT</a>	<a href="#">6AK16ACT</a>	—	—





# Specification certified vial and cap kits, EPA kits, and scintillation kit

Continued

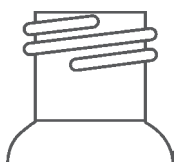
## EPA screw vial and cap kits Continued

Performance Level 2 for high-throughput applications



### Comments

- 4 mL – 40 mL screw vials with screw closures (13 mm – 24 mm)
- Level 100 EPA vials



Vial color and material	Clear glass	Amber glass	Clear glass	Amber glass
Vial total volume	40 mL (24 mm)			
Cap color and material	White screw cap (PP) (24 mm)			
Septum color and material	Clear silicone/white open top		PE foam/white PTFE closed top	



### Available packs

100/pack		<a href="#">6AK40COTAS</a>	<a href="#">6AK40AOTAS</a>	<a href="#">6AK40CCT</a>	<a href="#">6AK40ACT</a>
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Key attributes	Scintillation
Vial color and material	Clear screw
Vial total volume	20 mL
Cap color and material	White closed screw cap
Septum color and material	Silver polypropylene foil

### Available packs

5 x 100/pack		<a href="#">6AK20SCIN</a>
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# Performance level 3: High performance



## When sensitivity is a must

Protect your most valuable samples and deliver consistent, reproducible results for your most demanding analyses

Our Thermo Scientific™ SureSTART™ Performance Level 3 products are packed in clean rooms to protect them against environmental factors, and contain the lowest amounts/levels of metals, extractables and leachables; ensuring that you can get the sensitivity and selectivity from your most challenging analytes confidently and consistently.

If you are looking for the ultimate performance from your methods, whilst maintain the highest levels of and sample security and integrity, our Performance Level 3 products will meet your needs. Select the products with the three waves.

For analytes that are prone to glass adsorption why not try our GOLD-grade glass technology which has been specifically designed for these more challenging polar analytes, as well as our silanised vials and inserts

This offering includes Thermo Scientific SureStop vials, which, when used with 9 mm AVCS caps, ensure an optimal seal every time. The SureStop vial-AVCS cap system is specially designed to prevent screw thread vial failures such as cap tilt, cap deformities, dislodged septa or septa push through, thus prevents injection failures and sample evaporation.

Our Performance level 3 septa have the highest purity as they have been conditioned to remove all the low-mid boiling volatiles providing the lowest extractables and leachables within the collection. You can also find within this performance level soft septa options for ultimate needle performance, as these products offer protection for even the most fragile needles with the highest gauge, and SPME fibers. You can also find our high temperature compatible septa here.

### Performance level 3 for high performance applications

- All products within this performance level are suitable for GC, HPLC/UHPLC, and nominal mass and high-resolution accurate mass (HR-AM) applications.
- Headspace vials and caps available from 6 mL – 20 mL.
- Vials are identified by three waves and a convenient write-on patch as standard.
- Vials available as screw, SureStop, snap and crimp.
- Vials available in glass, GOLD-grade glass, silanized and TPX.
- Vials available as clear or amber glass.
- Volume sizes ranging from 0.2 mL to 20 mL covering limited sample volumes to headspace analyses.
- Vials with fixed inserts are available.
- Caps available as screw, screw AVCS, snap and crimp.
- Use Thermo Scientific Manual or Electronic Crimpers and decrimpers for easy application and removal of crimp caps.
- LC/GC Certified, MSCERT and MSCERT+ Kits can be found within performance level 3.
- Buy vials and caps in bulk for greater savings.

### Specification certified

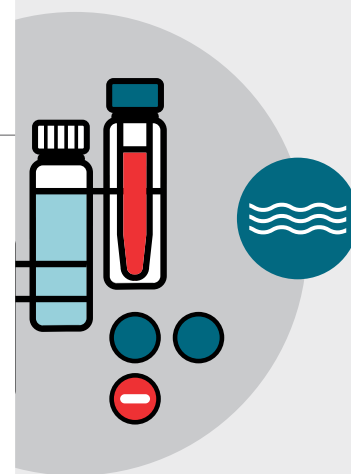
- All Thermo Scientific SureSTART vials are dimensionally verified.
- Inspected by automated optical and gauge inspection to ensure critical dimensions and tolerances.
- Meet all relevant requirements of US, EU, JPN Pharmacopeia.
- Uniform and defect-free

### Lot traceable

- 100% traceable through the manufacturing process
- Certificate of Conformance available by lot number upon request

# Performance level 3: High performance

Vials	Caps
0.2 mL TPX screw microvial	
Glass screw microvials	
1.5 mL total recovery glass screw microvials	
1.7 mL high recovery glass screw microvials	9 mm screw caps
2 mL glass screw vials	
2 mL GOLD-grade glass screw vials	
Glass crimp microvials	
2 mL GOLD-grade glass crimp vial	
2 mL glass crimp vials	11 mm crimp caps
Glass snap microvials	
1.5 mL total recovery glass snap microvials	
High recovery glass snap microvials	11 mm snap caps
2 mL glass snap vials	
Vial inserts for 2 mL vials	—
Glass crimp headspace vials	20 mm crimp caps
<b>Crimpers and decrimpers</b>	
Electronic crimpers and decrimpers	—
<b>Kits</b>	
LC/GC certified	MSCERT and MSCERT+
TOC	—





# Screw vials and associated caps (<2 mL – 2 mL vials, 9 mm caps)



## What is TPX?

It is a transparent plastic (polymethylpentene) that is heat resistant and has excellent resealability.

## 0.2 mL TPX screw microvial with glass insert

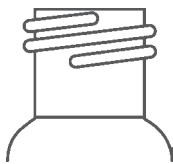
Performance Level 3 for high performance analysis




### Comments

- Short thread screw
- 12 mm x 32 mm (diameter x height) fixed conical glass insert
- No marking spot
- Specification certified

For use with 9 mm screw caps, or 9 mm AVCS screw cap



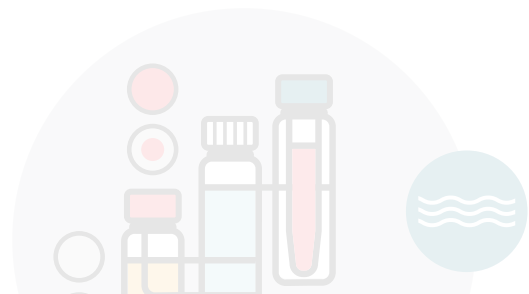
Vial color and material	TPX with fixed insert
	Clear glass, amber transparent plastic
Total volume	200 µL
Usable volume	150 µL
Residual volume	1 µL
Available packs	
100/pack 	<a href="#">60180-1655</a>



Want to learn more?



Watch this short microsampling video





# Screw vials and associated caps Continued

## (<2 mL – 2 mL vials, 9 mm caps)

### Glass screw microvials

Performance Level 3 for high performance analysis



#### Comments

- Short thread screw
- 12 mm x 32 mm (diameter x height) fixed conical insert, flat bottom base
- Marking spot
- Specification certified

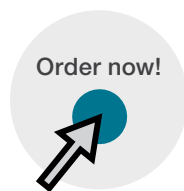
For use with 9 mm screw caps, or 9 mm AVCS screw caps



Vial color and material	Clear glass	Amber glass
Total volume	300 µL	
Usable volume	250 µL	
Residual volume	4 µL	



Available packs		
100/pack	<a href="#">6PSV9-03FIVP</a>	<a href="#">6PSV9-03FIVAP</a>
10 x 100/pack	<a href="#">6PSV9-03FIVPT</a>	<a href="#">6PSV9-03FIVAPT</a>
50 x 100/pack	<a href="#">6PSV9-03FIVPF</a>	<a href="#">6PSV9-03FIVAPF</a>





# Screw vials and associated caps Continued

## (<2 mL – 2 mL vials, 9 mm caps)

### 1.5 mL total recovery glass screw microvial

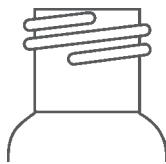
Performance Level 3 for high performance analysis



#### Comments

- Short thread screw
- 12 mm x 32 mm (diameter x height) total recovery internal base
- No marking spot
- Specification certified

For use with 9 mm screw caps, or 9 mm AVCS screw caps



Vial color and material	Clear glass
Total volume	1.5 mL
Usable volume	1.1 mL
Residual volume	1 µL



<b>Available packs</b>	
100/pack	<a href="#">6PSV9-TR1</a>
10 x 100/pack	<a href="#">6PSV9-TR1T</a>
50 x 100/pack	<a href="#">6PSV9-TR1F</a>







# Screw vials and associated caps Continued

## (<2 mL – 2 mL vials, 9 mm caps)

### 1.7 mL high recovery glass screw microvial

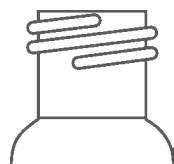
Performance Level 3 for high performance analysis



#### Comments

- Short thread screw
- 12 mm x 32 mm (diameter x height) internal V-base
- No marking spot
- Specification certified

For use with 9 mm screw caps, or 9 mm AVCS screw caps



Vial color and material	Clear glass
Total volume	1.7 mL
Usable volume	1.5 mL
Residual volume	4 µL



Available packs	
100/pack 	<a href="#">6PSV9-V1</a>
10 x 100/pack 	<a href="#">6PSV9-V1T</a>
50 x 100/pack 	<a href="#">6PSV9-V1F</a>





# Screw vials and associated caps Continued

## (<2 mL – 2 mL vials, 9 mm caps)

### 2 mL Gold-grade glass screw vials

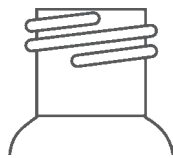
Performance Level 3 for high performance analysis






#### Comments

- Short thread screw
- 12 mm x 32 mm (diameter x height), flat bottom base
- Marking spot
- Specification certified

For use with 9 mm screw caps, or 9 mm AVCS screw caps

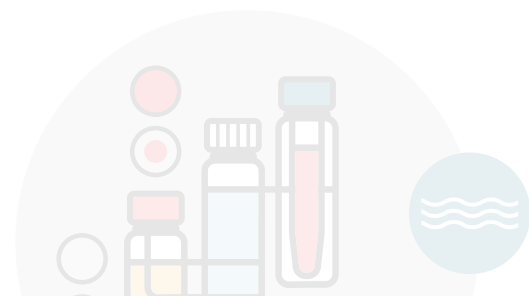


Vial color and material	SureStop, GOLD-grade glass
	Clear glass
Total volume	2 mL
<b>Available packs</b>	
100/pack 	<a href="#">6PSV9-1PG</a>
10 x 100/pack 	<a href="#">6PSV9-1PGT</a>
50 x 100/pack 	<a href="#">6PSV9-1PGF</a>



#### Learn more about our quality materials:

- Thermo Scientific SureSTART products—Innovation





# Screw vials and associated caps Continued

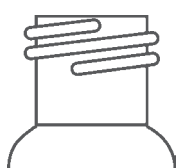
## (<2 mL – 2 mL vials, 9 mm caps)

### 2 mL glass screw vials

Performance Level 3 for high performance analysis



Comments
<ul style="list-style-type: none"> <li>• Screw</li> <li>• 12 mm x 32 mm (diameter x height) flat bottom base</li> <li>• Marking spot</li> <li>• Specification certified</li> </ul>
For use with 9 mm screw caps, or 9 mm AVCS screw caps



Vial color and material	—	Silianised	SureStop	SureStop
	Clear glass	Clear glass	Clear glass	Amber glass
Total volume	2 mL			
Usable volume	1.5 mL			



Available packs					
100/pack		<a href="#">6PSV9-1P</a>	<a href="#">6PSV9-S1P</a>	<a href="#">6PSV9-1PSS</a>	<a href="#">6PSV9-2PSS</a>
10 x 100/pack		<a href="#">6PSV9-1PT</a>	—	<a href="#">6PSV9-1PSST</a>	<a href="#">6PSV9-2PSST</a>
50 x 100/pack		<a href="#">6PSV9-1PF</a>	—	<a href="#">6PSV9-1PSSF</a>	<a href="#">6PSV9-2PSSF</a>

#### Need a smaller volume?

- Why not use with our polyspring glass inserts





# Screw vials and associated caps Continued

(<2 mL – 2 mL vials, 9 mm caps)

## 9 mm screw caps Continued

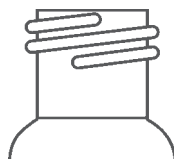
Performance Level 3 for high-throughput applications



### Comments




- Short thread screw
- Specification certified

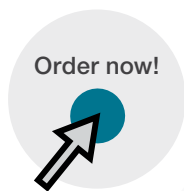
For use with <2 mL - 2 mL screw vials



Cap components	AVCS Cap					
	—	Pre-slit septa	—	Pre-slit septa	—	—
	—	—	—	Soft septa	Soft septa	
Cap color and material	Blue polypropylene	Blue polypropylene	Blue polypropylene	Blue polypropylene	Blue polypropylene	Red polypropylene
Septum color and material	Red PTFE/ white silicone/ red PTFE	White silicone/ blue PTFE	White silicone/ red PTFE	Blue silicone/ clear PTFE	Blue silicone/ clear PTFE	Red PTFE/ white silicone/ red PTFE
Septum hardness	45 shore	54 shore	54 shore	30 shore	30 shore	45 shore



Available packs						
100/pack 	<a href="#">6PSC9TST</a>	<a href="#">6PSC9STS1</a>	<a href="#">6PSC9ST1</a>	<a href="#">6PSC9ST101X</a>	<a href="#">6PSC9ST101</a>	<a href="#">6PSC9TSTR</a>
10 x 100/pack 	<a href="#">6PSC9TSTT</a>	<a href="#">6PSC9STS1T</a>	<a href="#">6PSC9ST1T</a>	—	—	<a href="#">6PSC9TSTRT</a>
50 x 100/pack 	<a href="#">6PSC9TSTF</a>	<a href="#">6PSC9STS1F</a>	<a href="#">6PSC9ST1F</a>	—	—	<a href="#">6PSC9TSTRF</a>





# Screw vials and associated caps Continued

(<2 mL – 2 mL vials, 9 mm caps)

## 9 mm screw caps

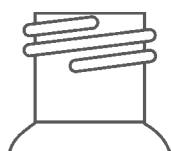
Performance Level 3 for high-throughput applications



### Comments

- Short thread screw
- Specification certified

For use with <2 mL - 2 mL screw vials



Cap components	AVCS cap Pre-slit septa –	AVCS cap – –	Bonded cap Pre-slit septa –	Bonded cap – –	AVCS cap – Magnetic cap
Cap color and material	Red polypropylene	Red polypropylene	Grey polypropylene	Black polypropylene	Blue polypropylene with gold magnetic tinplate cover
Septum color and material	White silicone/blue PTFE	White silicone/red PTFE	White silicone/red PTFE	White silicone/red PTFE	White silicone/red PTFE
Septum thickness	1 mm				
Septum hardness	54 shore				



Available packs						
100/pack		<a href="#">6PSC9STS1R</a>	<a href="#">6PSC9ST1R</a>	<a href="#">6PSC9STBS1</a>	<a href="#">6PSC9STB1</a>	<a href="#">6PMSC9ST1</a>
10 x 100/pack		<a href="#">6PSC9STS1RT</a>	<a href="#">6PSC9ST1RT</a>	<a href="#">6PSC9STBS1T</a>	<a href="#">6PSC9STB1T</a>	–
50 x 100/pack		<a href="#">6PSC9STS1RF</a>	<a href="#">6PSC9ST1RF</a>	<a href="#">6PSC9STBS1F</a>	<a href="#">6PSC9STB1F</a>	–





# Crimp vials and associated caps (<2 mL – 2 mL, 11 mm caps)

## Glass crimp microvials

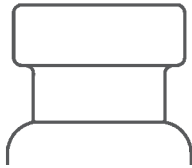
Performance Level 3 for high performance analysis



### Comments



- Crimp
- 12 mm x 32 mm (diameter x height) fixed conical insert, flat bottom base
- Marking spot
- Specification certified

For use with 11 mm crimp caps

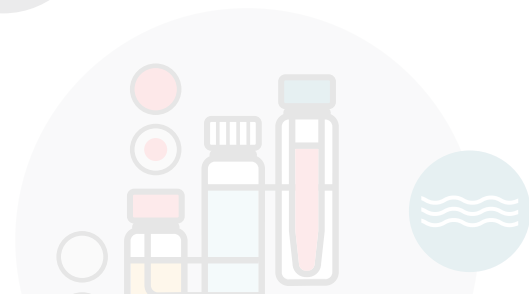


Vial color and material	Clear glass	Amber glass
Total volume	300 µL	
Usable volume	250 µL	
Residual volume	4 µL	



Available packs		
100/pack 	<a href="#">6PCV11-03FIVP</a>	<a href="#">6PCV1103FIVAP</a>
10 x 100/pack 	<a href="#">6PCV11-03FIVPT</a>	<a href="#">6PCV1103FIVAPT</a>
50 x 100/pack 	<a href="#">6PCV11-03FIVPF</a>	<a href="#">6PCV1103FIVAPF</a>

Order now!





# Crimp vials and associated caps Continued

## (<2 mL – 2 mL, 11 mm caps)

### 2 mL GOLD-grade crimp vials

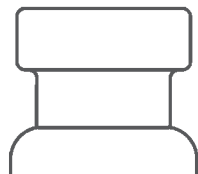
Performance Level 3 for high performance analysis



#### Comments

- Crimp
- 12 mm x 32 mm (diameter x height)
- Marking spot
- Specification certified

For use with 11 mm crimp caps



Vial color and material	GOLD-grade glass
	Clear glass
Total volume	2 mL
Available packs	
100/pack	<a href="#">6PCV11G</a>



#### Need a smaller volume?

- Why not use with our glass inserts



#### Learn more about our quality materials:

- Thermo Scientific SureSTART products—Innovation





# Crimp vials and associated caps Continued

## (<2 mL – 2 mL, 11 mm caps)

### 2 mL glass crimp vials

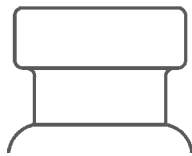
Performance Level 3 for high performance analysis






#### Comments

- Crimp
- 12 mm x 32 mm (diameter x height)
- Marking spot
- Specification certified

For use with 11 mm crimp caps

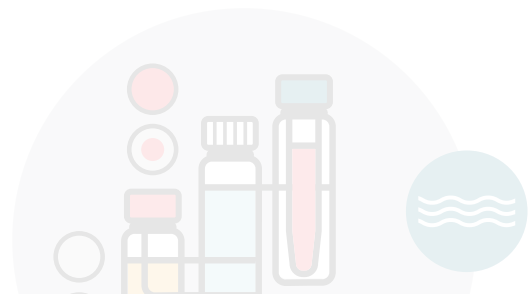


Vial color and material	Clear glass
Total volume	2 mL
Usable volume	1.5 mL
<b>Available packs</b>	
100/pack 	<a href="#">6PCV11-1P</a>
10 x 100/pack 	<a href="#">6PCV11-1PT</a>
50 x 100/pack 	<a href="#">6PCV11-1PF</a>



#### Need a smaller volume?

- Why not use with our glass inserts







# Crimp vials and associated caps Continued

## (<2 mL – 2 mL, 11 mm caps)

### 11 mm crimp caps

Performance Level 3 for high performance analysis

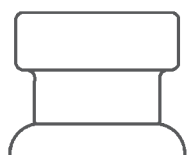


#### Comments

- Crimp closure (11 mm)
- Specification certified

For use with <2 mL - 2 mL crimp vials, or <2 mL - 2 mL snap vials

Use with 11 mm crimpers and decrimpers



Cap color and material	—	Soft septa	Soft septa
Septum thickness	—	—	Magnetic cap, pre-slit
Septum color and material	Red PTFE/ white silicone/red PTFE	Silver aluminium	Silver magnetic steel
Septum thickness	—	1 mm	—
Septum hardness	45 shore	30 shore	30 shore
<b>Available packs</b>			
100/pack	<a href="#">6PCC11TST</a>	<a href="#">6PCC11ST101</a>	<a href="#">6PCCMST101X</a>



#### Learn more about:

- Manual crimpers and decrimpers
- Electronic crimpers and decrimpers





# Snap vials and associated caps

(<2 mL – 2 mL vials, 11 mm caps)

## Glass snap microvials

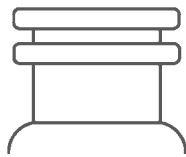
Performance Level 3 for high performance analysis



### Comments

- Snap
- 11 mm x 32 mm (diameter x height) fixed conical insert, flat bottom base
- Marking spot
- Specification certified

For use with 11 mm snap caps or 11 mm crimp caps



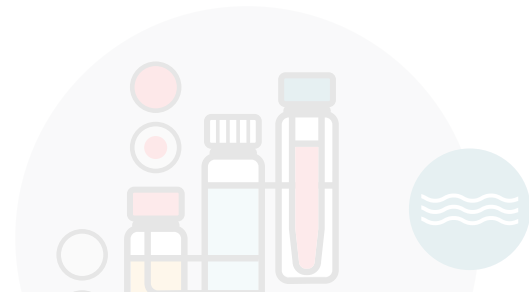
Vial color and material	Clear glass	Amber glass
Total volume	300 µL	
Usable volume	250 µL	
Residual volume	4 µL	



### Available packs

100/pack 	<a href="#">6PRV11-03FIVP</a>	<a href="#">6PRV1103FIVAP</a>
10 x 100/pack 	<a href="#">6PRV11-03FIVPT</a>	<a href="#">6PRV1103FIVAPT</a>
50 x 100/pack 	<a href="#">6PRV11-03FIVPF</a>	<a href="#">6PRV1103FIVAPF</a>

Order now!





# Snap vials and associated caps Continued

## (<2 mL – 2 mL vials, 11 mm caps)

### 1.5 mL total recovery glass snap microvials

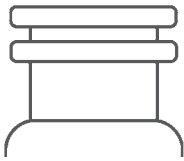
Performance Level 3 for high performance analysis






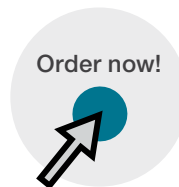
#### Comments

- Snap
- 12 mm x 32 mm (diameter x height) total recovery internal base
- No marking spot
- Specification certified

For use with 11 mm snap caps



Vial color and material	Clear glass
Total volume	1.5 mL
Usable volume	1.1 mL
Residual volume	1 µL
<b>Available packs</b>	
100/pack 	<a href="#">6PRV11-TR1</a>
10 x 100/pack 	<a href="#">6PRV11-TR1T</a>
50 x 100/pack 	<a href="#">6PRV11-TR1F</a>





# Snap vials and associated caps Continued

(<2 mL – 2 mL vials, 11 mm caps)

## High recovery glass snap microvials

Performance Level 3 for high performance analysis



### Comments

- Snap
- 12 mm x 32 mm (diameter x height) internal V-base
- No marking spot
- Specification certified




For use with 11 mm snap caps



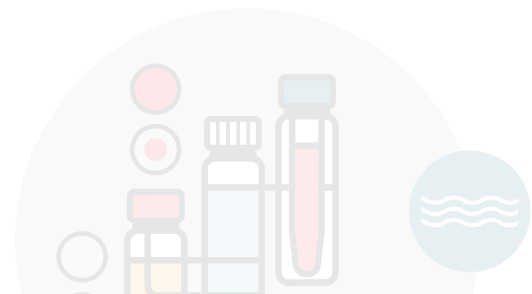
Vial color and material	Silanized glass	Clear glass
Total volume	1.7 mL	1.5 mL
Usable volume	1.5 mL	1.2 mL
Residual volume	4 µL	



### Available packs

100/pack 	<a href="#">6PRV11-S1V</a>	<a href="#">6PRV11-15V</a>
10 x 100/pack 	–	<a href="#">6PRV11-15VT</a>
50 x 100/pack 	–	<a href="#">6PRV11-15VF</a>

Order now!





# Snap vials and associated caps Continued

## (<2 mL – 2 mL vials, 11 mm caps)

### Glass snap vials

Performance Level 3 for high performance analysis





Comments	
<ul style="list-style-type: none"> <li>• Snap</li> <li>• 12 mm x 32 mm (diameter x height)</li> <li>• Marking spot</li> <li>• Specification certified</li> </ul>	
For use with 11 mm snap caps	



Vial color and material	Clear glass
Total volume	2 mL
Usable volume	1.5 mL



Available packs	
100/pack 	<a href="#">6PRV11-1P</a>
10 x 100/pack 	<a href="#">6PRV11-1PT</a>
50 x 100/pack 	<a href="#">6PRV11-1PF</a>

#### Need a smaller volume?

- Why not use with our glass inserts





# Snap vials and associated caps Continued

## (<2 mL – 2 mL vials, 11 mm caps)

### 11 mm snap cap

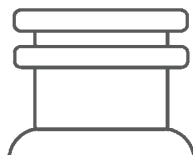
Performance Level 3 for high performance analysis



#### Comments




- Snap closure (11 mm)
- Specification certified

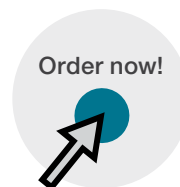
For use with <2 mL and 2 mL snap vials



Key attributes	Pre-slit	–	–	Star pre-slit	–	–	–	–
Cap color and material	Blue polyethylene	Blue polyethylene	Blue polyethylene	Clear polyethylene	Red polyethylene	Red polyethylene	Red polyethylene	Red polyethylene
Septum color and material	White silicone/blue PTFE	White silicone/red PTFE	Blue silicone/clear PTFE	White silicone/red PTFE	Red silicone/blue PTFE	White silicone/red PTFE	White silicone/red PTFE	Red silicone/clear PTFE
Septum thickness	54 shore	54 shore	45 shore	54 shore	54 shore	54 shore	54 shore	45 shore
Septum hardness	1 mm	1 mm	1 mm	1 mm	1.3 mm	1.3 mm	1.3 mm	1 mm



Available packs	
100/pack 	<a href="#">6PRC11STS1</a> <a href="#">6PRC11ST1</a> <a href="#">6PRC11ST101</a> <a href="#">6PRC11STS1X</a> <a href="#">6PRC11STS1R</a> <a href="#">6PRC11ST1R</a> <a href="#">6PRC11ST1R</a> <a href="#">6PRC11ST1R</a> <a href="#">6PRC11ST101R</a>
10 x 100/pack 	<a href="#">6PRC11STS1T</a> <a href="#">PRC11ST1T</a> <a href="#">6PRC11ST101T</a> <a href="#">6PRC11STS1XT</a> <a href="#">6PRC11STS1RT</a> <a href="#">6PRC11ST1RT</a> <a href="#">6PRC11ST1RT</a> <a href="#">6PRC11ST1RT</a> <a href="#">6PRC11ST101RT</a>
50 x 100/pack 	<a href="#">6PRC11STS1F</a> <a href="#">6PRC11ST1F</a> <a href="#">6PRC11ST101F</a> <a href="#">6PRC11STS1XF</a> <a href="#">6PRC11STS1RF</a> <a href="#">6PRC11ST1RF</a> <a href="#">6PRC11ST1RF</a> <a href="#">6PRC11ST1RF</a> <a href="#">6PRC11ST101RF</a>





# Inserts

## (2 mL vials)



Watch this short  
microsampling  
video

## Inserts for 2 mL vials

Performance Level 3 for high-throughput applications



### Comments

- 6 mm x 31 mm (diameter x height)
- No marking spot
- Specification certified

For use with 2 mL screw vials, 2 mL snap vials or 2 mL crimp vials



Insert color and material	GOLD-grade glass	Deactivated/silanized glass	—	—	—
	0.2 mL clear conical glass insert	0.3 mL clear conical glass insert, with PE polyspring	0.3 mL conical glass insert, with PE polyspring	0.4 mL clear conical glass insert, with pulled point	0.5mL clear flat bottom glass insert
Total volume	200 µL	300 µL	300 µL	400 µL	500 µL
Usable volume	150 µL	250 µL	250 µL	350 µL	450 µL
Residual volume	2 µL	4 µL	4 µL	4 µL	35 µL
Height	31 mm	30 mm	30 mm	31 mm	31 mm
Inner diameter	6 mm	6 mm	6 mm	6 mm	6 mm
Base style	Conical base	Conical base	Conical base	Conical base	Flat bottom



Available packs					
100/pack		—	<a href="#">6PME03C1SSP</a>	<a href="#">6PME03C1SP</a>	<a href="#">6PME04C1</a>
10 x 100/pack		<a href="#">6PME02CG</a>	<a href="#">6PME03C1SSPT</a>	<a href="#">6PME03C1SPT</a>	<a href="#">6PME04C1T</a>
50 x 100/pack		—	<a href="#">6PME03C1SSPF</a>	<a href="#">6PME03C1SPF</a>	<a href="#">6PME04C1F</a> <a href="#">6PME05F1</a>

Learn more about:



2 mL glass screw vials



2 mL glass crimp vials



2 mL glass snap vials



# Headspace crimp vials and associated caps (6 mL – 20 mL vials, 20 mm caps)

## 6 mL, 10 mL and 20 mL glass crimp headspace vials

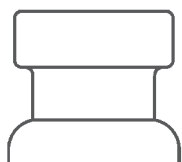
Performance Level 3 for high performance analysis



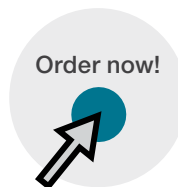
### Comments

- Crimp (20 mm)
- Marking spot
- Specification certified

For use with 20 mm crimp caps



Vial color and material	Clear glass			
Total volume	6 mL	10 mL	20 mL	20 mL
Usable volume	5 mL	8 mL	18 mL	18 mL
Residual volume	–	–	–	0.8 mL
Dimensions	21.75 mm x 38 mm	22.75 mm x 46 mm	22.75 mm x 75.0 mm	22.75 mm x 75.0 mm
Rim and base style	Square rim, flat bottom	Beveled rim, flat bottom	Beveled rim, flat bottom	Beveled rim, round bottom
Available packs				
100/pack	<a href="#">6PCV6-1F</a>	<a href="#">6PCV10-1F</a>	<a href="#">6PCV20-1F</a>	<a href="#">6PCV20-1R</a>
10 x 100/pack	<a href="#">6PCV6-1FT</a>	<a href="#">6PCV10-1FT</a>	<a href="#">6PCV20-1FT</a>	<a href="#">6PCV20-1RT</a>
50 x 100/pack	<a href="#">6PCV6-1FF</a>	<a href="#">6PCV10-1FF</a>	<a href="#">6PCV20-1FF</a>	<a href="#">6PCV20-1RF</a>







# Headspace crimp vials and associated caps Continued

## (6 mL – 20 mL vials, 20 mm caps)

### 20 mm crimp caps

Performance Level 3 for high performance analysis

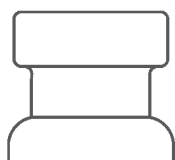





#### Comments

- Crimp closure (20 mm)
- Specification certified

For use with 10 mL and 20 mL crimp headspace vials (with neck size of 20 mm)

Use with 20 mm crimpers and decrimpers



	—	Magnetic	Magnetic	Magnetic
Cap color and material	Silver aluminium	Red aluminium/ magnetic tinplate	Silver aluminium/ magnetic tinplate	Blue aluminium/ magnetic tinplate
Septum color and material	Blue silicone/ clear PTFE; soft	Blue silicone/ clear PTFE; soft	Red silicone/ natural PTFE; high Temperature	White silicone/ blue PTFE
Septum thickness	45 shore	45 shore	54 shore	54 shore
Septum hardness	3 mm	3 mm	3 mm	3 mm, 1.5 mm at thinned area
Available packs				
100/pack 	<a href="#">6PCC20-ST3</a>	<a href="#">6PBCC20-ST3</a>	<a href="#">6PBCC20-STH</a>	<a href="#">6PBCC20-STME</a>
10 x 100/pack 	<a href="#">6PCC20-ST3T</a>	<a href="#">6PBCC20-ST3T</a>	<a href="#">6PBCC20-STHT</a>	<a href="#">6PBCC20-STMET</a>
50 x 100/pack 	<a href="#">6PCC20-ST3F</a>	<a href="#">6PBCC20-ST3F</a>	<a href="#">6PBCC20-STHF</a>	<a href="#">6PBCC20-STMEF</a>



#### Learn more about:

- Manual crimpers and decrimpers
- Electronic crimpers and decrimpers





# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits

## 1. Specification certified kits

### For everyday analysis

- Tested and certified for up to 15 critical physical specifications

## 2. LC/GC certified kits

### For chromatographic analysis

- Tested and certified for up to 15 critical physical specifications
- Tested and certified using LC-UV and GC-FID to ensure that there are no residual manufacturing agents present in the vial
- A certificate is provided with each kit

## 3. MSCERT and MSCERT+ kits

### For use with mass spectrometry systems

- Our mass spec certified vials carry our highest level of certification and are recommended for low adsorption
- Tested and certified for up to 15 critical physical specifications
- Tested using LC-MS and GC-MS for low contamination
- Certification comes with the kit
- MSCERT+ kits are pre-cleaned and certified for particle count
  - Highly recommended for direct injection analysis (DIA)

	MSCERT	MSCERT+
Proprietary cleaning process to reduce particulates	—	+
Packaged in cleanroom conditions	—	+
Cleanest product available on the market	—	+
Vial/closure combination tested by GC/MS and LC/MS	+	+
Batch specific test certificate with MS-chromatograms	+	+
Glass surface with very low adsorption tendencies for all polar compounds	+	+
Closures contain very soft ultra-low bleed silicone septa with PTFE layer or bonded caps	+	+
Optimised for trace analysis	+	+



# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits Continued

## Specification certified screw vial and cap kits

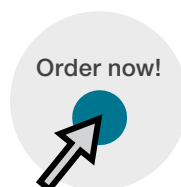
Performance Level 3 for high performance analysis



Comments
<ul style="list-style-type: none"> <li>• Short thread screw kit</li> <li>• 12 mm x 32 mm (diameter x height) fixed conical glass insert</li> <li>• No marking</li> <li>• Specification certified</li> </ul>
For use with short thread screw cap closure



Key attributes	Bonded caps
	TPX vials
	0.2 mL with fixed glass insert
Vial color and material	Amber TPX
Vial total volume	200 µL
Vial usable volume	150 µL
Vial residual volume	1 µL
Cap color and material	Black screw cap
Septa color and material	White silicone/red PTFE
Septa thickness	1 mm
<b>Available packs</b>	
100/pack	<a href="#">6PK1655</a>





# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits Continued

## Specification certified screw vial and cap kits Continued

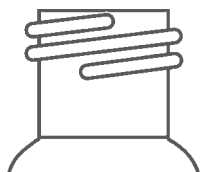
Performance Level 3 for high performance analysis




### Comments

- Short thread screw kit
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- Specification certified

For use with short thread screw cap closure



Key attributes	GOLD-grade glass
	SureStop vials
	AVCS caps
Vial total volume	2 mL
Vial color and material	Clear glass
Cap color and material	Blue screw cap (PP)
Septa color and material	White silicone/red PTFE
Septa thickness	1 mm
Available packs	
100/pack 	<a href="#">6PKG592W</a>

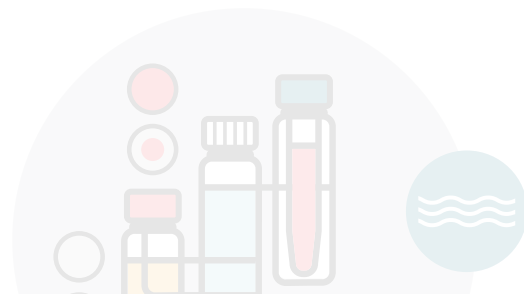


### Learn more about our quality materials:

- Thermo Scientific SureSTART products—Innovation

### Analyzing polar compounds/compounds prone to glass adsorption?

- We recommend using our GOLD-grade glass vials





# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits Continued

## LC/GC certified kits – 2 mL vials with 9 mm caps

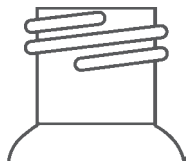
Performance Level 3 for high performance analysis



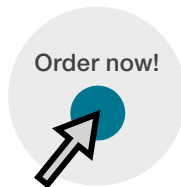
### Comments

- Short thread screw kit
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- LC/GC certified

For use with short thread screw cap closure



	–	–	–	SureStop vials	SureStop vials	SureStop vials
Key attributes	Bonded caps	Bonded caps	AVCS caps	AVCS caps	AVCS caps	AVCS caps
	Pre-slit septa	Pre-slit septa	Pre-slit septa	Pre-slit septa	–	–
Vial total volume	2 mL					
Vial color and material	Clear glass	Amber glass	Clear glass	Amber glass	Clear glass	Amber glass
Cap color and material	Grey screw cap (PP)	Grey screw cap (PP)	Blue screw cap (PP)	Blue screw cap (PP)	Blue screw cap (PP)	Blue screw cap (PP)
Septa color and material	White silicone/red PTFE	White silicone/red PTFE	White silicone/blue PTFE	White silicone/blue PTFE	White silicone/red PTFE	
Septa thickness	1 mm					
Available packs						
100/pack	<a href="#">6PCK93W</a>	<a href="#">6PCK76W</a>	<a href="#">6PCK593W</a>	<a href="#">6PCK576W</a>	<a href="#">6PCK578W</a>	<a href="#">6PCK575W</a>





# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits Continued

## MSCERT kits

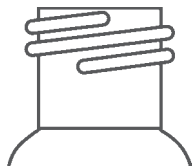
Performance Level 3 for high performance analysis



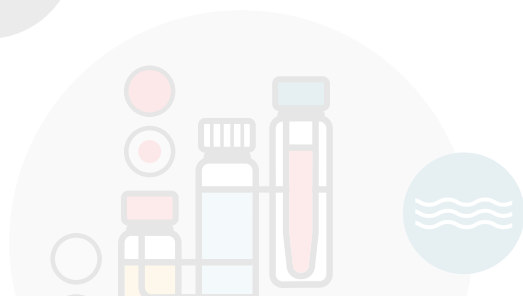
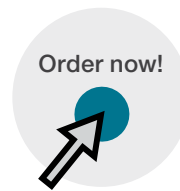
### Comments

- Short thread screw kit
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- MSCERT certified

For use with short thread screw cap closure



Key attributes	SureStop vials				
	AVCS caps				
	—	—	Pre-slit septa	Pre-slit septa	
Vial total volume	2 mL				
Vial color and material	Clear glass	Amber glass	Clear glass	Amber glass	
Cap color and material	Blue screw cap (PP)				
Septa color and material	Blue silicone/clear PTFE septa				
Septa thickness	1 mm				
Available packs					
100/pack		<a href="#">6PMSCK534W</a>	<a href="#">6PMSCK535W</a>	<a href="#">6PMSCK540W</a>	<a href="#">6PMSCK541W</a>





# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits Continued


## MSCERT kits Continued

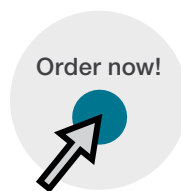
Performance Level 3 for high performance analysis



Comments				
<ul style="list-style-type: none"> <li>• Short thread screw kit</li> <li>• 12 mm x 32 mm (diameter x height) flat bottom base</li> <li>• Marking spot</li> <li>• MSCERT certified</li> </ul>				
For use with short thread screw cap closure				



Key attributes	Pre-slit septa			
	Bonded caps			
	—	—	SureStop vials	SureStop vials
Vial total volume	2 mL	—	—	—
Vial color and material	Amber glass	Amber glass	Clear glass	Amber glass
Cap color and material	Blue screw cap (PP)			
Septa color and material	White silicone/beige PTFE			
Septa thickness	1 mm			
Available packs				
100/pack	 <a href="#">6PMSCK651W</a>	<a href="#">6PMSCK641W</a>	<a href="#">6PMSCK601W</a>	<a href="#">6PMSCK611W</a>





# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits Continued

## MSCERT+ kits

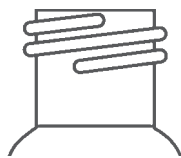
Performance Level 3 for high performance analysis



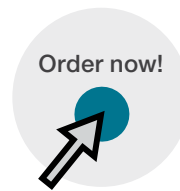
### Comments

- Short thread screw kit
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- MSCERT+ certified and pre-cleaned

For use with short thread screw cap closure



Key attributes	SureStop vials				
	AVCS caps				
	—	—	Pre-slit septa	Pre-slit septa	
Vial total volume	2 mL				
Vial color and material	Clear glass	Amber glass	Clear glass	Amber glass	
Cap color and material	Blue screw cap				
Septa color and material	Blue silicone/clear PTFE				
Septa thickness	1 mm				
Available packs					
100/pack		<a href="#">6PMCK34W</a>	<a href="#">6PMCK35W</a>	<a href="#">6PMCK40W</a>	<a href="#">6PMCK41W</a>







# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits Continued

## MSCERT+ kits Continued

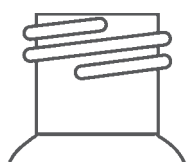
Performance Level 3 for high performance analysis



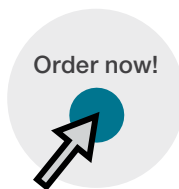
### Comments

- Short thread screw kit
- 12 mm x 32 mm (diameter x height) flat bottom base
- Marking spot
- MSCERT+ certified

For use with short thread screw cap closure



Key attributes	SureStop vials		Fused-insert	
		Bonded		
	—	—	—	Pre-slit septa
Vial total volume	2 mL	2 mL	0.3 mL	0.3 mL
Vial color and material	Clear glass	Amber glass	Clear glass	Clear glass
Cap color and material	Blue screw cap	Blue screw cap	Blue screw cap	Grey screw cap
Septa color and material	Clear silicone/clear PTFE			
Septa thickness	1 mm			
<b>Available packs</b>				
100/pack	<a href="#">6PMCK341W</a>	<a href="#">6PMCK351W</a>	<a href="#">6PMCK30LVW</a>	<a href="#">6PMCK36LVW</a>





# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits Continued

## MSCERT+ kits Continued

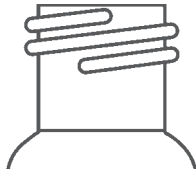
Performance Level 3 for high performance analysis



### Comments

- High recovery vial
- Short thread screw vial
- 12 mm x 32 mm (diameter x height) flat bottom base
- MSCERT+ certified

For use with short thread screw cap closure



Key attributes	Total recovery
	Bonded
	Pre-slit
Vial total volume	1.5 mL
Vial color and material	Clear glass
Cap color and material	Grey screw cap
Septa color and material	Clear silicone/clear PTFE
Septa thickness	1 mm
<b>Available packs</b>	
100/pack	<a href="#">6PMCK39TR</a>





# Specification certified, LC/GC certified, MSCERT and MSCERT+ kits Continued

## TOC certified screw vial and cap kits

Performance Level 3 for high performance analysis




### Comments

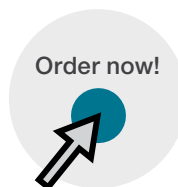
- TOC certification (20 ppb)
- TOC certification (10 ppb)

Our low-level certified vials for Total Organic Carbon testing and sampling are manufactured, tested and packaged by exacting standards.

Thermo Scientific™ TOC Certified Containers are certified to contribute <10ppb or < 20ppb TOC as background.



Vial description	40 mL (24 mm) screw glass vial	
Vial color and material	Clear	
Cap description	Bonded white screw cap (24-400) (PP)	
Septum color and material	White silicone/clear PTFE open top	
Septum thickness	3 mm	
Septum hardness	50 shore	
Certification level	TOC certification (20 ppb)	TOC certification (10 ppb)
<b>Available packs</b>		
72/pack 	<a href="#">6PK40TOC20</a>	<a href="#">6PK40TOC10</a>



# SureSTART vials and caps accessories



## Manual crimpers and decrimpers

### Manual crimpers and decrimpers

Achieve secure, repeatable crimps or remove seals with minimized risk of damage



Use Thermo Scientific™ SureSTART™ vial crimpers and decrimpers to manually attach or remove crimp caps from vials, respectively. These manual crimpers and decrimpers are available in 8 mm, 11 mm, 13 mm, and 20 mm sizes and allow you to easily seal or remove crimp caps reliably.



Product description	Red manual crimper	Red manual crimper	Red manual crimper	Red manual crimper	Stainless steel manual crimper
Suitable for	8 mm crimp caps	11 mm crimp caps	13 mm crimp caps	20 mm crimp caps	20 mm crimp caps
Available packs					
1/pack	<a href="#">60180-CR8</a>	<a href="#">60180-CR11</a>	<a href="#">60180-CR13</a>	<a href="#">60180-CR20</a>	<a href="#">60180-CR20SS</a>



Product description	—	Black manual decrimper	Black manual decrimper	—	Black manual decrimper
Suitable for	—	11 mm crimp caps	13 mm crimp caps	—	20 mm crimp caps
Available packs					
1/pack	—	<a href="#">60180-DCR13</a>	<a href="#">60180-DCR11</a>	—	<a href="#">60180-DCR20</a>





# Electronic crimpers and decrimping tools

## Electronic crimpers and decrimpers

Our electronic Thermo Scientific crimper portfolio includes tools for 8 mm, 11 mm, 13 mm, and 20 mm crimp caps.

The tools provide all important settings like actual crimp power at one glance. The hand-held crimpers and decrimpers allow crimping of vials with aluminium, pressure release and bi-metal caps while remaining in most sample trays.

The crimp head selection includes also special crimp heads for 13 mm and 20 mm flip-off caps, further specials are available on request.

Attach or remove crimp vial seals with high sample security with a simple, one-handed push of a button.

### Electronic hand-held crimpers and decrimpers

The battery charge icon on the color screen of the hand-held tools changes to red when battery is low. Each hand-held tool comes with fully rechargeable lithium ion battery and universal power supply/recharger and international plug adapters.

For steel caps and/or high numbers of crimp or decrimp processes per day we recommend the Thermo Scientific™ High-Power Crimp Station as it provides the highest crimping force independent from battery charge status.



Versatile and programmable crimp station

### Electronic crimpers and decrimpers features and benefits

- Tools available for use with 8 mm, 11 mm, 13mm, and 20 mm crimp vial caps
- Available as handheld and high-power models
- These electronic vial crimpers also feature adjustable settings for best crimp results and a motor with extended lifetime and no particle emission
- Interchangeable crimper and decrimper jaw sets for Programmable Electronic High-Power Crimp Stations
- One hand operation with a simple push of a button
- Error message feedback after the incorrect crimping process
- Adjustable settings for best crimp results
- Actual crimp power setting displayed on the color screen.
- 8 different languages available—EN, CN, JA, DE, FR, ES, IT, KO
- Motor with extended lifetime and no particle emission
- Free hands for faster crimping operations with the adjustable Thermo Scientific™ Accessory Base for Programmable Electronic High-Power Crimp Stations. (ECRH-STAND)
- Each High-Power Crimper comes with 12-volt DC supply with power cord
- Crimp and Decrimp Heads for the High-Power Crimper are included in the kits or available separately




# Electronic crimpers and decrimping tools

Continued

## Electronic hand-held battery-operated crimper (black)

Generation 4




Product description	Electronic hand-held battery-operated crimper (black). Generation 4			
Suitable for	8 mm crimp caps	11 mm crimp caps	13 mm crimp caps	20 mm crimp caps
Available packs				
1/pack 	<a href="#">60180-ECR8</a>	<a href="#">60180-ECR11</a>	<a href="#">60180-ECR13</a>	<a href="#">60180-ECR20</a>

## Electronic hand-held battery-operated decrimper (black)


Generation 4



Product description	Electronic hand-held battery-operated decrimper (black). Generation 4			
Suitable for	—	11 mm crimp caps	13 mm crimp caps	20 mm crimp caps
Available packs				
1/pack 	—	<a href="#">60180-EDCB11</a>	<a href="#">60180-EDCB13</a>	<a href="#">60180-EDCB20</a>

## Electronic crimper for FTFO and Flip-Off crimper



Product description	13 mm electronic crimper for FTFO	20 mm electronic Flip-Off crimper
Available packs		
1/pack 	<a href="#">60180-ECR13FO</a>	<a href="#">60180-ECR20FO</a>




# Electronic crimpers and decrimping tools

Continued


## Electronic high-power programmable crimp station

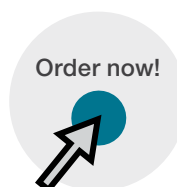


<b>Product description</b>	Electronic high-power crimp station (without crimp heads) (black). Generation 2		
<b>Available packs</b>			
1/pack 	<a href="#">60180-ECRHB</a>		

## Electronic high-power programmable crimper kits



<b>Product description</b>	Electronic high-power programmable crimper kit		
<b>Suitable for</b>	11 mm	13 mm	20 mm
<b>Include</b>	11 mm crimp head 11 mm decrimp head	13 mm crimp head 13 mm decrimp head	20 mm crimp head 20 mm decrimp head
<b>Available packs</b>			
1/pack 	<a href="#">60180-ECRH11KIT</a>	<a href="#">60180-ECRH13KIT</a>	<a href="#">60180-ECRH20KIT</a>





# Electronic crimpers and decrimping tools

Continued

## Accessories for electronic high-power programmable crimper



<b>Product description</b>	<b>Accessory base for electronic crimpers:</b> Height adjustable and solvent resistant (consists of base plate and bar)			
<b>Available packs</b>				
1/pack		<a href="#">ECRH-STAND</a>		



<b>Product description</b>	8 mm crimp head	11 mm crimp head	13 mm crimp head	20 mm crimp head	
<b>Available packs</b>					
1/pack		<a href="#">ECMJ-8</a>	<a href="#">ECMJ-11</a>	<a href="#">ECMJ-13</a>	<a href="#">ECMJ-20</a>



	13 mm Flip-Off crimp head	20 mm Flip-Off crimp head	
<b>Available packs</b>			
1/pack		<a href="#">ECMJ-13FO</a>	<a href="#">ECMJ-20FO</a>



## Accessories for electronic high-power programmable decrimper



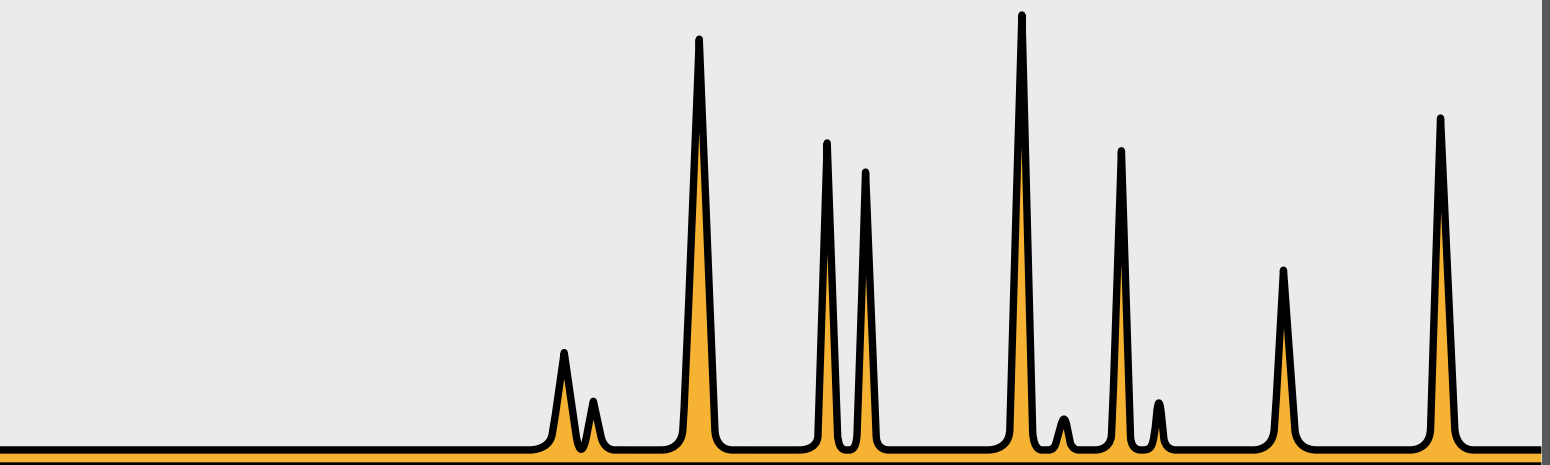
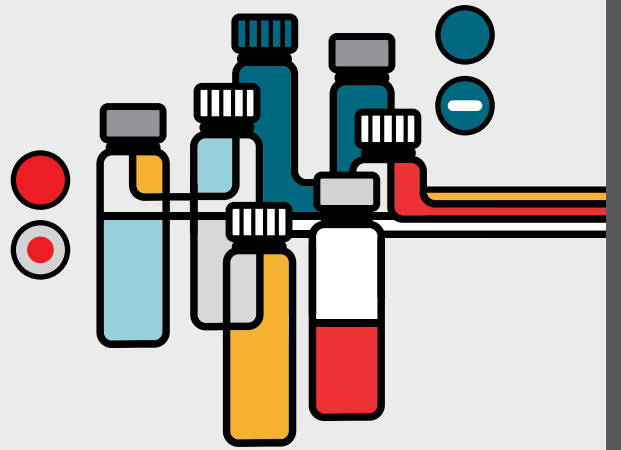
<b>Product description</b>	11 mm decrimp head	13 mm decrimp head	20 mm decrimp head	
<b>Available packs</b>				
1/pack		<a href="#">ECDJ-11</a>	<a href="#">ECDJ-13</a>	<a href="#">ECDJ-20</a>







Exchangeable jaw sets  
for crimping or decrimping of  
aluminum and stainless steel  
seals on various diameter vials



# WebSeal Performance Level 1 products



## Well plates and mats

Performance Level 1 for everyday analysis

### A full selection of high quality sample well plates for your UHPLC, LC and GC applications

We offer a comprehensive range of Thermo Scientific™ 96- and 384- well plates for complex and routine analyses in high-throughput screening laboratories.

We offer a broad selection of polypropylene (PP) well plates that meet ANSI and SBS standards with different sealing options and fit most manifolds, autosamplers, and robots.



#### Handle more samples in less time

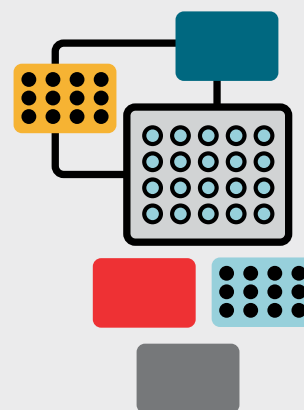
- Low volume and high recovery cavity

#### Solutions for all applications

- Chromatography tested for solvent compatibility and inertness

#### Ultimate sample security

- Low-leachable, high-purity materials and manufacturing processes





# Well plates and mats Continued

## Performance Level 1 for everyday analysis

### WebSeal well plates

Plastic, non-coated, non-sterile, chromatography tested



#### Comments

- Thermo Scientific™ WebSeal™ well plates are manufactured from a GC/MS tested polypropylene material
- Microplates are chemically and thermally resistant and will tolerate temperatures from -80° C to +121°C
- SBS and ANSI standard footprint design for broad instrument compatibility
- Microplates are ideal for pharmaceutical applications, sample collection and storage, combinatorial chemistry and HTS applications
- U- and V- bottom wells for optimal sample recovery



Description	Total height	Well format	Total volume (µL)	Working volume range µL/well	Cat. no.	Pack size
96 well microplate, round well	14.4	V-Shape, 8 mm diameter	450	10-400	<a href="#">60180-P100</a>	20
					<a href="#">60180-P130</a>	120
96 well plates, round well	26.5	U-shape, 8 mm diameter, mid height plate	1100	50-900	<a href="#">60180-P154</a>	50
	31.6		1300	50-1000	<a href="#">60180-P103</a>	5
					<a href="#">60180-P133</a>	50
96 deep well plate, square well	45.0	U-shape, 8 mm diameter, deep-well plate	2000	50-1900	<a href="#">60180-P104</a>	5
					<a href="#">60180-P124</a>	50
96 deep well plate, square well	31.0	U-shape, square, mid height plate	1600	50-1300	<a href="#">60180-P155</a>	96
	44.0	V-Shape, square, deep-well plate	2000	50-1900	<a href="#">60180-P105</a>	5
384 well microplate					<a href="#">60180-P135</a>	50
	15.5	V-Shape, square, micro titer plate	145	4-120	<a href="#">60180-P109</a>	10
					<a href="#">60180-P129</a>	100
384 well microplate	22.0	V-shape, square, mid-height plate	252	5-240	<a href="#">60180-P107</a>	5
	22.0	V-shape, square, mid-height plate			<a href="#">60180-P127</a>	100



# Well plates and mats Continued

## Performance Level 1 for everyday analysis

### WebSeal mats and sealing tapes, non-sterile

For plates with round and square wells of 8 mm or 384 well plates



#### Comments

- Mats manufactured of EVA (Ethylene-vinyl acetate) or pure silicone with or without PTFE coating
- The footprint permits plates to be securely stacked without robotic arm interference
- Eliminates cross contamination of samples
- Dry heat autoclavable (only silicone mats) with excellent chemical compatibility, withstand low temperature to -80°C
- Resists coring and tearing
- Superior resealability after multiple injections
- Available pre-slit for easy penetration and reduced vacuum formation
- Sealing tapes minimize evaporation and protect samples from contamination and spilling.
- Adhesive seals effectively seal all microplate formats
- Wide range of adhesive seals for every assay
- Thin, lightweight tapes seal onto the plate with a convenient, handheld applicator (available separately, cat. no. 60180-M950)

60180-M126



60180-M121



60180-M123



60180-M999



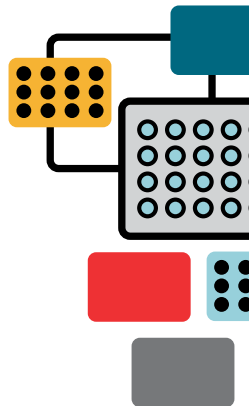


# Well plates and mats Continued

Performance Level 1 for everyday analysis

## WebSeal mats and sealing tapes, non-sterile Continued

For plates with round and square wells of 8 mm or 384 well plates



Description	Color	Material	Well design	Pre-slit	Cat. no.	Pack size
WebSeal mats CLR silicone mat, round well		Silicone	96 round well, 8 mm diameter, flat base with cross		<a href="#">60180-M184</a>	50
WebSeal mats alcohol resistant), round well	Clear	EVA	96 round well, 8 mm diameter	No	<a href="#">60180-M101</a>	5
					<a href="#">60180-M171</a>	50
WebSeal CLR silicone mat, round well		Silicone	96 round well – flat base, 8 mm diameter, large penetration area	Yes	<a href="#">60180-M134</a> <a href="#">60180-M183</a>	
				No	<a href="#">60180-M102</a>	5
WebSeal mats (solvent resistant), round well	Blue	Silicone/PTFE		Yes	<a href="#">60180-M103</a>	
					<a href="#">60180-M177</a>	
WebSeal mats (alcohol resistant), square well		EVA	96 square well - flat base	No	<a href="#">60180-M178</a>	50
				Yes	<a href="#">60180-M121</a> <a href="#">60180-M123</a>	5
WebSeal CLR silicone mat, square well	Clear	Silicone	96 square well – flat base, 8 mm diameter, flat base with cross	No	<a href="#">60180-M185</a>	50
				Yes	<a href="#">60180-M126</a>	5
					<a href="#">60180-M150</a>	50
Sealing tape, -40°C - 90°C		PE/silicone		No	<a href="#">60180-M142</a>	
Sealing tape, -70°C - 100°C		PES/silicone			<a href="#">60180-M143</a>	
Sealing tape, -80°C - 120°C	Silver	Aluminum/silicone		N/A	<a href="#">60180-M144</a>	100
Sealing tape with SRA (synthetic rubber adhesive)		Polyolefin/rubber	N/A	No	<a href="#">60180-M145</a>	
Re-sealing tape with 3 layer no adhesive at cavity area	Clear	PET/silicone/PET		Yes	<a href="#">60180-M146</a>	
					<a href="#">60180-M176</a>	25
Hand held sealing tape applicator	Gold	N/A		N/A	<a href="#">60180-M950</a>	2
Hand held mat applicator	Black				<a href="#">60180-M999</a>	1

# WebSeal Performance Level 2 products



## Well plates and mats

Performance Level 2 for high-throughput applications

### WebSeal well plates

Plastic, non-coated, non-sterile, certified



#### Comments

- Polypropylene microplates are manufactured from ultra low bleed high purity basis resin
- Plates are fully LOT tested by GC-MS and LC/MS for organic extractables
- Microplates are chemically and thermally resistant and will tolerate temperatures from -80°C to +121°C
- SBS and ANSI standard footprint design for broad instrument compatibility
- Microplates are ideal for pharmaceutical applications, sample collection and storage, combinatorial chemistry and HTS applications
- U- and V- bottom wells for optimal sample recovery, Total V-plates for low volume applications

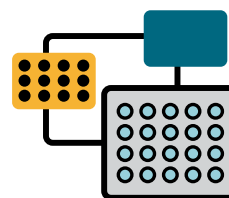
60180-P201



60180-P202



60180-P204





# Well plates and mats Continued

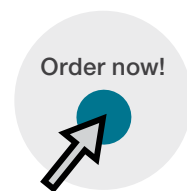
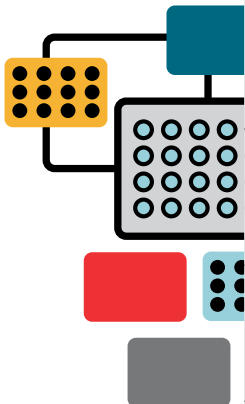
Performance Level 2 for high-throughput applications

## WebSeal well plates Continued

Plastic, non-coated, non-sterile, certified



Description	Total height	Well format	Total volume (µL)	Working volume range µL/well	Cat. no.	Pack size
96 well microplate, low volume	15.0	Total V-shape, 5.6 mm diameter	100	5-80	<a href="#">60180-P210</a>	50
		Flat bottom, 7 mm diameter	350	10-300	<a href="#">60180-P205</a>	100
				10-300	<a href="#">60180-P215</a>	10
96 well microplate, round well	14.7	U-shape, 7 mm diameter	270	10-250	<a href="#">60180-P206</a>	100
					<a href="#">60180-P216</a>	10
		V-shape, 7 mm diameter	220	10-190	<a href="#">60180-P207</a>	100
					<a href="#">60180-P217</a>	10
96 well mid height plates, round well	41.6	U-shape, 7 mm diameter	1200	50-1100	<a href="#">60180-P201</a>	50
	41.6			<a href="#">60180-P211</a>	5	
96 deep well plate, square well	44.4	V-shape, 8 mm diameter	2000	50-1900	<a href="#">60180-P202</a>	50
				<a href="#">60180-P212</a>	5	
384 well microplate	14.4	U-shape, square, micro titer plate	58	2-35	<a href="#">60180-P203</a>	60
				<a href="#">60180-P213</a>	10	
	30.2	V-shape, square, deep well plate	300	5-240	<a href="#">60180-P204</a>	48
				<a href="#">60180-P214</a>	6	





# Well plates and mats Continued

Performance Level 2 for high-throughput applications

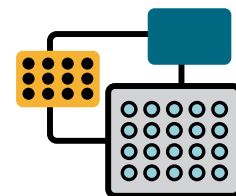
## WebSeal mats, non-sterile

For certified well plates with 7 mm round well cavities,  
8 mm square wells or 384 plates



### Comments

- Manufactured of pure silicone with or without PTFE coating
- The footprint permits plates to be securely stacked without robotic arm interference
- Eliminates cross contamination of samples
- Dry heat autoclavable with excellent chemical compatibility, withstand low temperature to -80°C
- Resists coring and tearing
- Superior resealability after multiple injections
- Available pre-slit for easy penetration and reduced vacuum formation





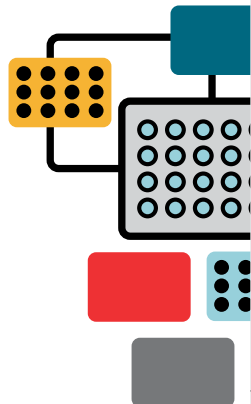


# Well plates and mats Continued

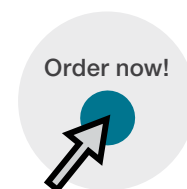
Performance Level 2 for high-throughput applications

## WebSeal mats, non-sterile Continued

For certified well plates with 7 mm round well cavities, 8 mm square wells or 384 plates



Description	Color	Material	Well design	Pre-slit	Cat. no.	Pack size
WebSeal mats (alcohol resistant), round well		EVA	96 round well, 7 mm diameter		<a href="#">60180-M179</a>	100
			96 round well – flat base, 5.6 mm diameter, cross	No	<a href="#">60180-M210</a>	50
WebSeal CLR silicone mat, round well			96 round well – flat base, 7 mm diameter, large penetration area		<a href="#">60180-M105</a>	5
			96 round well – 7 mm diameter, step, small penetration area	Yes	<a href="#">60180-M116</a>	
					<a href="#">60180-M113</a>	
					<a href="#">60180-M149</a>	
WebSeal CLR silicone mat, square well	Clear	Silicone	96 square well – flat base, 8 mm diameter, flat base with cross	No	<a href="#">60180-M185</a>	50
			96 square well – flat base, 8 mm diameter, large penetration area	Yes	<a href="#">60180-M121</a>	5
					<a href="#">60180-M123</a>	
			384 square well for 384 well plates	No	<a href="#">60180-M126</a>	50
				Yes	<a href="#">60180-M150</a>	
			384 square well, flat base with cross for 384 microtiter plates	No	<a href="#">60180-M186</a>	
WebSeal mat (solvent resistant), round well			96 round well – flat base, step, 7 mm diameter	Yes	<a href="#">60180-M111</a>	5
				No	<a href="#">60180-M112</a>	
WebSeal mat, (solvent resistant), square well	Blue	Silicone/PTFE	96 square well – flat base, 8 mm diameter, large penetration area	No	<a href="#">60180-M120</a>	5
				Yes	<a href="#">60180-M122</a>	
			384 square well for 384 well plates	No	<a href="#">60180-M125</a>	
				Yes	<a href="#">60180-M131</a>	
WebSeal mat for Plate+			96 round well – dome base, 7.2 mm diameter	No	<a href="#">60180-M108</a>	5
				Yes	<a href="#">60180-M115</a>	



# WebSeal Performance Level 3 products



## Well plates and mats

Performance Level 3 for high performance analysis

### WebSeal Plate+ Glass coated microplates



#### Comments

- High quality polypropylene microplates coated with 200nm thick layer of silicon dioxide
- Plate+ provides microplates with a chemical resistance similar to glass while retaining the advantages of polypropylene
- Cost-effective alternative to inserted glass vials
- Excellent for applications where plastic microplates are not applicable
- Plate+ is chemically and thermally resistant and will tolerate temperatures from -80° C to +80° C
- Lightweight, precision molded, cost-effective alternative to solid glass plates



Description	Total height	Well format	Total volume (µL)	Working volume (µL)	Cat. no.	Pack size
96 well microplate, round well	14.6	U-shape, 7.2 mm diameter	300	250	60180-P300	10
		V-shape, 7.2 mm diameter	220	190	60180-P302	
		Flat bottom, 7.2 mm diameter	370	300	60180-P304	
96 well mid height plate, round well	41.5	U-shape, 7.2 mm diameter	1.2 mL	1.0 mL	60180-P306	
96 deep well plate, square well	44.0	V-shape, 8 mm diameter	2.4 mL	2.0 mL	60180-P308	
384 well microplate	14.4	Square-rounded, flat, micro titer plate	120	90	60180-P310	
	22.0	Square-rounded, U-shape, deep well plate	240	180	60180-P312	6



# Well plates and mats Continued

Performance Level 3 for high performance analysis

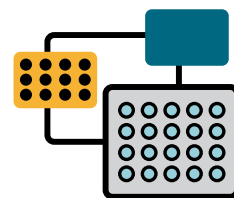
## WebSeal glass inserted plate kits

With 96-position mats



### Comments

- Convenient wellplate kits with pre-assembled glass vials
- Replacement parts for kits available separatel
- Unique cutting tool allows removal of individual samples with the seal in place, eliminating cross contamination
- Mats with solid plugs are used for sample storage





# Well plates and mats Continued

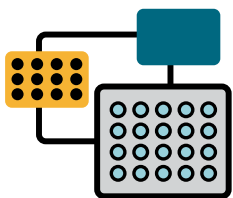
## Performance Level 3 for high performance analysis

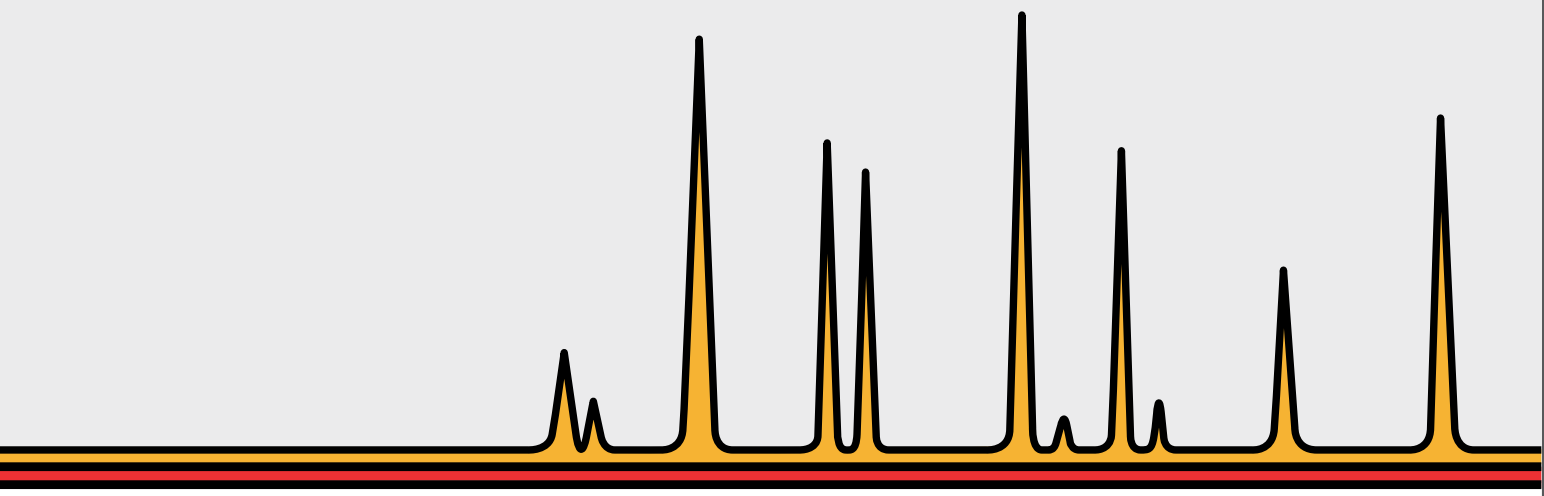
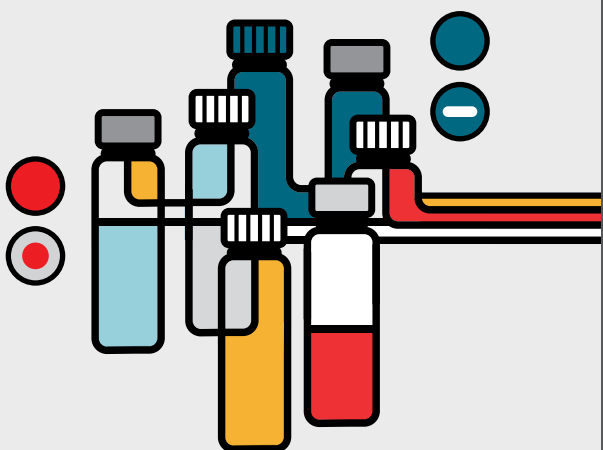
### WebSeal glass inserted plate kits Continued

#### With 96-position mats



Kit type	Vial material	Total volume (µL)	Vial dimension (mm)	Profile	Mat material	Total height (mm)	Vial cat. no.	Mat cat. no.	Kit cat. no.	Pack size
96 well small volume microplate with sealing mat	Clear glass	500	6.5 x 31	Taper	Silicone/PTFE	32.0	<a href="#">60180-V100</a>	<a href="#">60180-M151</a>	<a href="#">60180-K100</a>	5
						44.0	<a href="#">60180-V101</a>	<a href="#">60180-M151</a>	<a href="#">60180-K101</a>	
96 well small volume microplate with sealing mat and cutting tool	Clear glass	1100	7.45 x 38.5	Round	Silicone/PTFE	41.5	<a href="#">60180-V104</a>	<a href="#">60180-M153</a>	<a href="#">60180-K104</a>	5
						64.5	<a href="#">60180-V106</a>	<a href="#">60180-M153</a>	<a href="#">60180-K106</a>	
96 deep well plate with sealing mat	Clear glass	1500	7.25 x 60.5	Constricted	Silicone/PTFE	47.3	—	<a href="#">60180-M111</a>	<a href="#">60180-K107</a>	1
96 square well plate with sealing mat						47.3	—	<a href="#">60180-M112</a>	<a href="#">60180-K108</a>	
96 square well plate with sealing mat		1000	7.6 x 45		Precut	47.3	—	<a href="#">60180-M112</a>	<a href="#">60180-K108</a>	





# WebSeal kit accessories



## WebSeal kit accessories

### WebSeal 96 well mats Silicone/PTFE



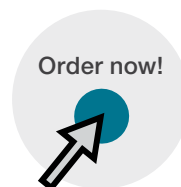
60180-M151



60180-M154



Kit type	Details	Pre-slit	Cat. no.	Pack size
96 well WebSeal mat	60180-K100, 60180-K101, 60180-K103	No	<a href="#">60180-M151</a>	
		Yes	<a href="#">60180-M152</a>	
96 well WebSeal mat	60180-K104, 60180-K106	No	<a href="#">60180-M153</a>	5
		Yes	<a href="#">60180-M154</a>	
96 well WebSeal mat, welled plugs	60180-K107	No	<a href="#">60180-M111</a>	
	60180-K108	Yes	<a href="#">60180-M112</a>	
WebSeal cutter for vial removal	—	—	60180-M975	1





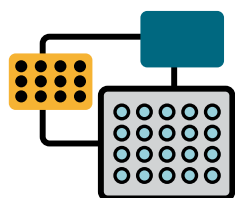
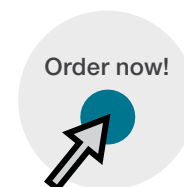
# WebSeal kit accessories

Continued

## Plate vials For 96 wells



Kit type	Vial material	Total volume (µL)	Vial dimension (mm)	Profile	Cat. no.	Pack size
Micro titer plate vial for 96 wells	Clear glass	500	6.5 x 31	Taper	<a href="#">60180-V100</a>	500
		700	6.5 x 41.4		<a href="#">60180-V101</a>	
Deep well plate vial for 96 wells	Clear glass	1100	7.45 x 38.5	Round	<a href="#">60180-V104</a>	
		1500	7.25 x 60.5		<a href="#">60180-V106</a>	





# WebSeal kit accessories

Continued

## Well plates and racks

PP



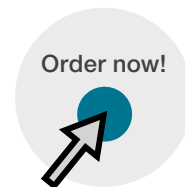
60180-P400



60180-P401



Kit type	Vial material	Total volume (μL)	Profile	Total height (mm)	Cat. no.	Pack of
Plastic 96 round well micro titer plate (60180-K100)	—	800	V-shape, 7 mm diameter	31.5	<a href="#">60180-P400</a>	5
PP 96 round well micro rack (60180-K101, K102)	PP	—	U-shape, 7 mm diameter	41.6	<a href="#">60180-P211</a>	
PP 96 well square well plate (60180-K107/108/109)	PP	2000	U-shape, square	44.0	<a href="#">60180-P403</a>	1
PP 96 well square well plate (60180-K106)	PP	2000	V-shape, square		<a href="#">60180-P212</a>	5







# WebSeal kit accessories

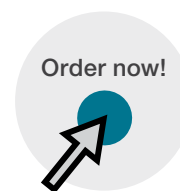
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## Plate vials and accessories

For 96 wells



Kit type	Vial material	Total volume (µL)	Vial dimension (mm)	Profile	Septum	Cat. no.	Pack of
Micro titer plate vial for 96 wells	Clear glass	100	5.7 x 15.5	Flat bottom	—	<a href="#">60180-V108</a>	960
Deep well plate vial for 96 wells		350	6 x 42.5	Taper	—	<a href="#">60180-V109</a>	
Square well vial for 96 Wells		1000	7.6 x 45.9	Round	—	<a href="#">60180-V110</a>	
MTRS vial for 96 wells		800	7.6 x40		—	<a href="#">60180-V111</a>	
PE cap, red, center hole for 96 Well Plate Inserts	—	—	—	—	Silicone/PTFE, pre-slit, 45°	<a href="#">60180-C100</a>	96
8mm PE plug, blue, for 60180-K204	—	—	—	—	PE plug	<a href="#">60180-C101</a>	
DW-block, PP, 96 positions	—	1200	—	U-shape	—	<a href="#">60180-P405</a>	
Micro-tube-rack-system, PP, 96 positions	—	—	—	—	—	<a href="#">60180-P407</a>	





# WebSeal kit accessories

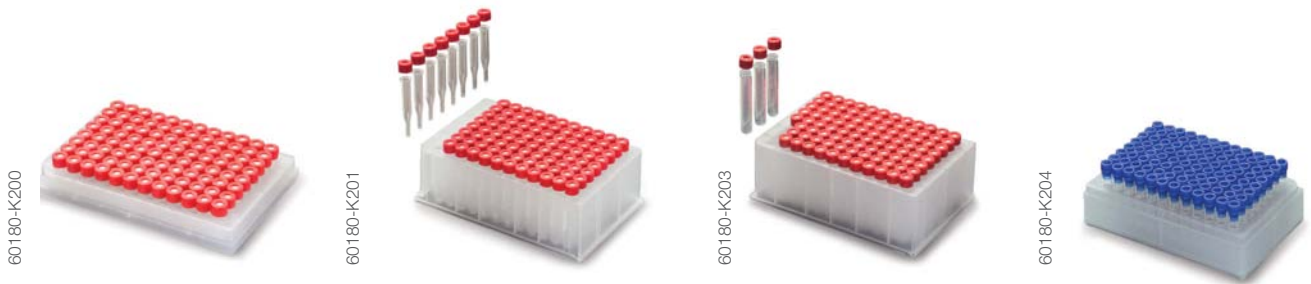
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## WebSeal clear glass inserted plate kits

With individual closures

### Comments

- 96 position block systems with glass inserts are used when the pure PP block is not inert enough
- Inserts manufactured from clear, Type 1 Class A or amber, Type 1 Class B borosilicate glass
- Inserts are sealed individually with a PE Cap Seal and can be easily removed and used externally without risk of losing sample
- The products can be obtained as individual components or as completely assembled, ready-to-use convenience blocks



Kit type	Total volume (μL)	Vial dimension (mm)	Profile	Septum	Vial cat. no.	Cap cat. no.	Kit cat. no.	Pack size
96 well microplate	100	5.7 x 15.5	Flat bottom	Silicone/PTFE, pre-slit, 45°	<a href="#">60180-V108</a>		<a href="#">60180-K200</a>	
96 deep well Plate	350	6 x 42.5	Taper		<a href="#">60180-V109</a>	<a href="#">60180-C100</a>	<a href="#">60180-K201</a>	
96 square well plate	1000	7.6 x 45.9	Round	Silicone/PTFE, 45°	<a href="#">60180-V110</a>		<a href="#">60180-K202</a>	1
				Silicone/PTFE, pre-slit, 45°			<a href="#">60180-K203</a>	
96 micro-tube-rack-system	800	7.6 x 40		PE plug	<a href="#">60180-V111</a>	<a href="#">60180-C101</a>	<a href="#">60180-K204</a>	



# WebSeal kit accessories

Continued

## Barcoded well plates

### For Thermo Scientific™ Vanquish™ Systems

#### Comments

- These well plates provide advanced sample security and sample integrity.
- This secure choice offers a tested portfolio for chromatography applications
- Barcoded well plates have an assured plate fit and a pre-applied orientation barcode in the correct reader position; therefore there is no risk of placing the plate incorrectly
- The secured side orientation in the autosampler alleviates the risk of starting the sequence in the wrong plate orientation
- The instrument controls plate orientation and verifies the plate before implementing the sequence

60180-P206-216B

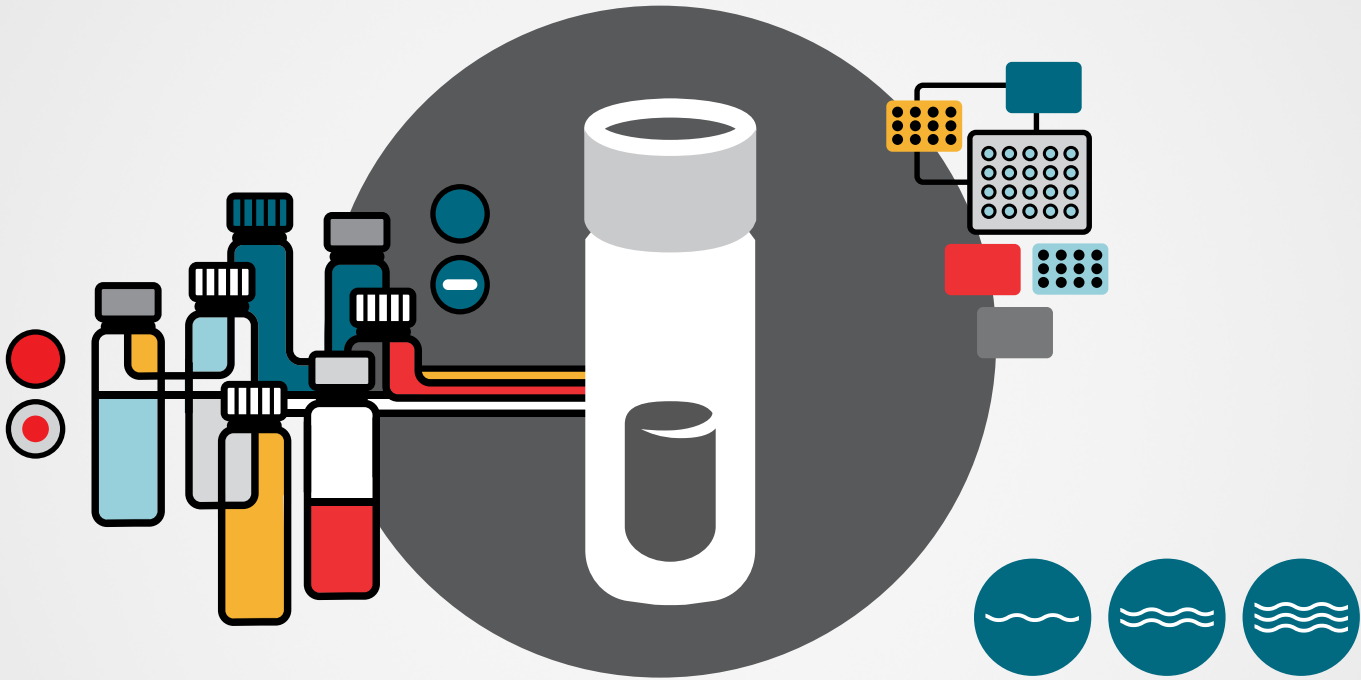


60180-P207-217B



Description	Total height	Well format	Total volume $\mu\text{L}/\text{well}$	Working volume range $\mu\text{L}/\text{well}$	Cat. no.	Pack size
96 well microplate, round well, barcoded	14.7	U-shape, 7 mm diameter	270	10-250	<a href="#">60180-P206B</a>	100
					<a href="#">60180-P216B</a>	10
		V-shape, 7 mm diameter	220	10-190	<a href="#">60180-P207B</a>	100
					<a href="#">60180-P217B</a>	10
96 well mid height plate, round well, barcoded	31.6	U-shape, 8 mm diameter	1300	50-1000	<a href="#">60180-P103B</a>	5
					<a href="#">60180-P133B</a>	50
	41.6	U-shape, 7 mm diameter	1000	50-900	<a href="#">60180-P201B</a>	5
					<a href="#">60180-P211B</a>	
96 deep well plate, square well, barcoded	44.0	V-shape, square	2000	50-1900	<a href="#">60180-P105B</a>	50
					<a href="#">60180-P135B</a>	

For mats see previous pages with mats for 7 or 8 mm cavity diameter

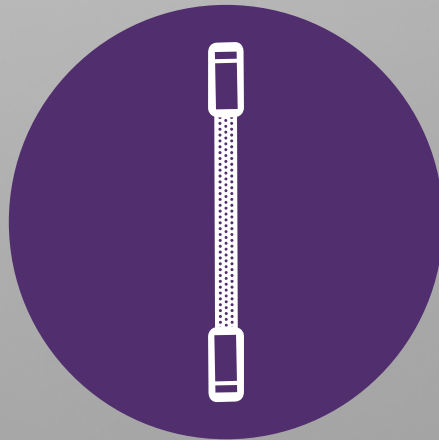
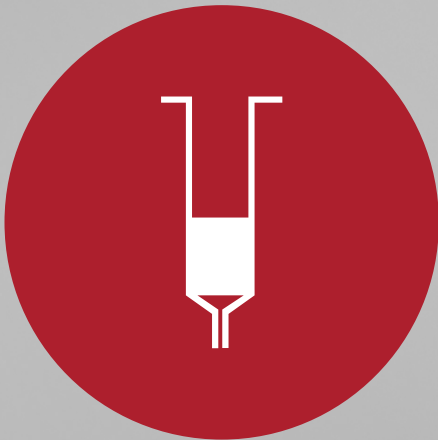


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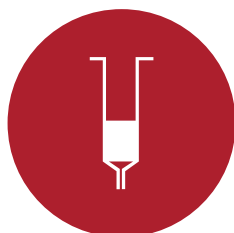
Chromatography consumables

# Connected chromatography solutions

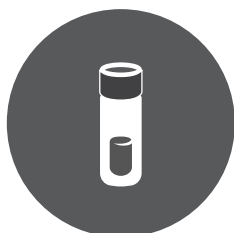
Chromatography consumables catalog

# Comprehensive products to support your chromatography workflows

## Sample preparation solutions



## Sample handling solutions



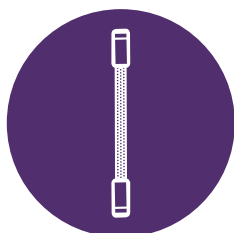
## Low-flow LC columns and accessories



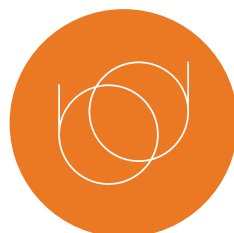
## BioLC columns and accessories



## LC columns and accessories



## GC columns and accessories

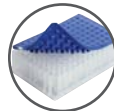


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- SMART Digest™ kits
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- MS certified vials
- Polyspring vial inserts
- Electronic crimping and decrimping tools
- WebSeal™ well-plates and sealing mats for chromatography



- EASY-Spray™ HPLC columns for top-down and bottom-up proteomics
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- Application specific HPLC columns
- Hypersil™ BDS and Hypersil™ classical HPLC columns
- LC accessories
- Preparative HPLC columns



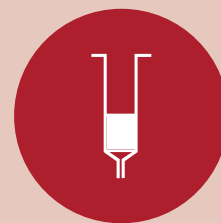
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- TraceGOLD™ packed GC columns
- GuardGOLD™ capillary GC columns
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- Super Clean™ gas cartridge filters
- GC consumables
- Gas management
- GC equipment
- GC reagents



# Our portfolio

## Sample preparation solutions

Save time, improve reproducibility, and extend the lifetime of your High/Ultra High Performance Liquid Chromatography (HPLC/UHPLC) and gas chromatography (GC) columns with our comprehensive range of sample preparation products. Achieve high sensitivity, selectivity, and recovery with advanced solid-phase extraction (SPE) consumables.



## Sample handling solutions

We provide a broad selection of sample handling and containment solutions from all your chromatography requirements. Our vials, closures and well plates, come with the lowest levels of extractables and leachables, are made from glass that has low compound adsorption, and the highest level of standards and certification available in the marketplace. Whether you have routine and robust samples, or you need to ensure the highest level of confidence and compliance, our market leading portfolio of storage and autosampler vials and closure, well plates and sample handling accessories has everything you'll need.



## Low-flow LC columns and accessories

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.



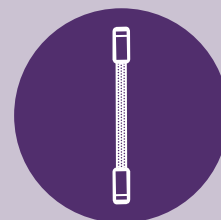
## BioLC columns and accessories

Achieve ultrahigh resolution and high efficiency separations of proteins, peptides, monoclonal antibodies, biosimilars, carbohydrates, oligonucleotides and more. Our unique column chemistries for biological samples have a long-standing reputation for providing excellent reproducibility and durability under a broad range of pH, temperature, and mobile phase compositions.



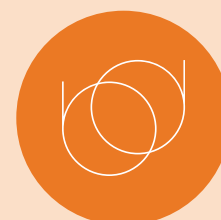
## LC columns and accessories

As a leader in LC column technology including silica, polymer and porous graphitic carbon manufacturing, bonded phase production and column packing for 40 years, you can rely on the quality of Thermo Scientific high performance liquid chromatography (HPLC) products: a comprehensive range of innovative columns, accessories and equipment for fast and reproducible analytical and prep HPLC and ultra-high performance liquid chromatography (UHPLC) analysis.



## GC columns and accessories

We offer a broad portfolio of GC columns and accessories designed to give optimal system performance for today's challenging analyses. Our range of GC accessories include all the tools needed by today's gas chromatographers.



# Product selection tools and additional resources

## Sample handling selection guide

### ? Need a quick answer?

Why not use our online product selector guide that includes our entire SureSTART Collection of vials, caps, well plates and mats.



## Sample handling cross reference tool

### ? Already purchasing an existing product from us or someone else?

Let our cross-reference tool find the equivalent SureSTART product/catalog number for you.





# Product selection tools and additional resources

## Septa selection tool



### Choosing the right septa can be complex!

There are a number of factors that should be considered including: needle type, vial type, solvents and temperature that the septa will be exposed to. Let us help you find the right septa with this easy-to-use tool.



The screenshot shows the 'Septa Selection Tool' webpage. The header features the title 'Septa Selection Tool' and a subtitle 'An easy-to-use tool that ensures you find the right septa for your experimental requirements.' Below this is a white box titled 'About this tool' with a 'Get Started' button. The main content area is titled 'Why use the Septa Selection Guide?' and contains three columns of text, each with a red circular icon: 'Needle / autosampler issues', 'Septa compatibility with solvents', and 'New experimental parameters'. The background is red with a pattern of colorful septa.

## LC columns selection guide



### Find your columns with ease!

Finding the correct column can be a challenge, so we have made it easy for you. This guide will take you directly to the right product for you, so that you can start your method today.



The screenshot shows the 'LC Column Selection Guide' webpage. The header features the title 'LC Column Selection Guide' and a subtitle 'An easy-to-use tool that ensures you find the right LC column for your experimental requirements.' Below this is a white box titled 'Find your column with ease!' with a 'Get started' button. The main content area is titled 'Find your column with ease!' and contains three columns of text, each with a red circular icon: 'Need an equivalent column?', 'Setting up a USP method?', and 'Brand new method?'. The background is grey with a red molecular structure graphic on the right.

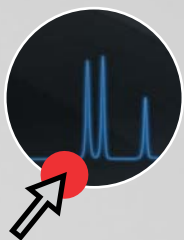
# More information



## Chromatography columns and consumables

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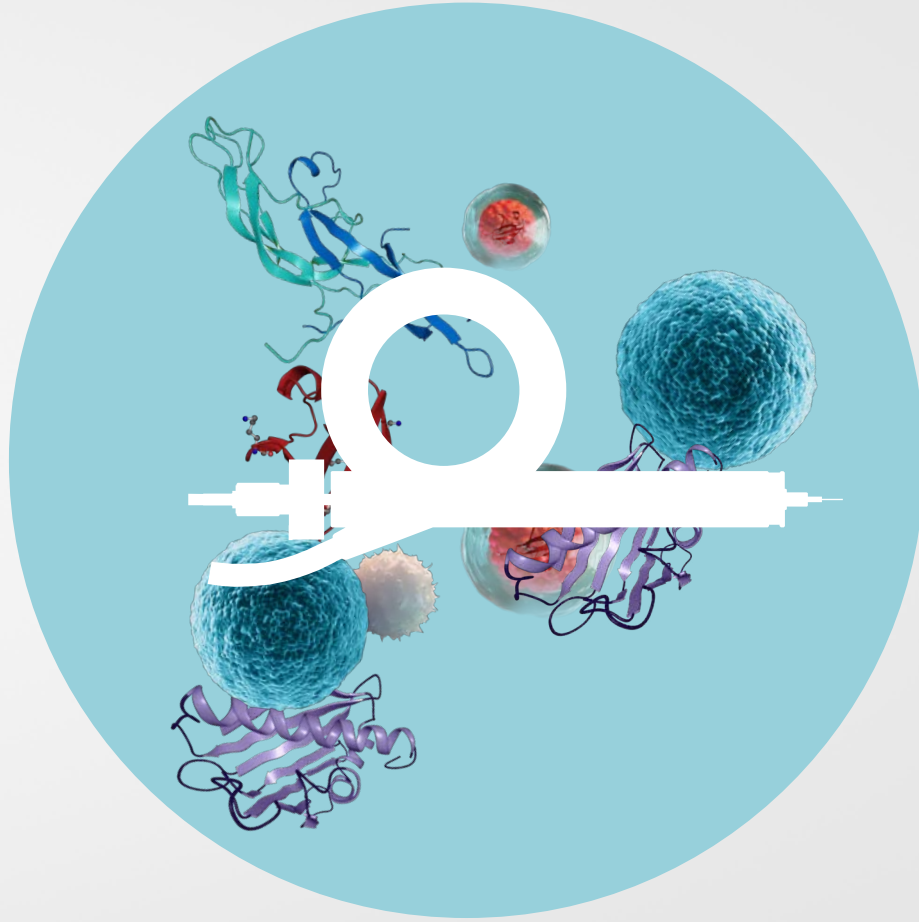
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## NIBRT collaboration information

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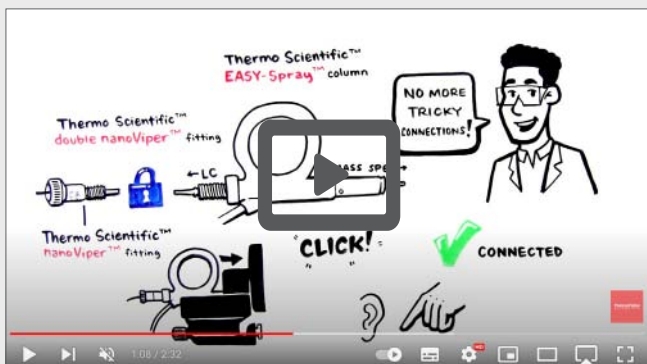
# Connected chromatography solutions

Low-flow columns and accessories

# Introduction

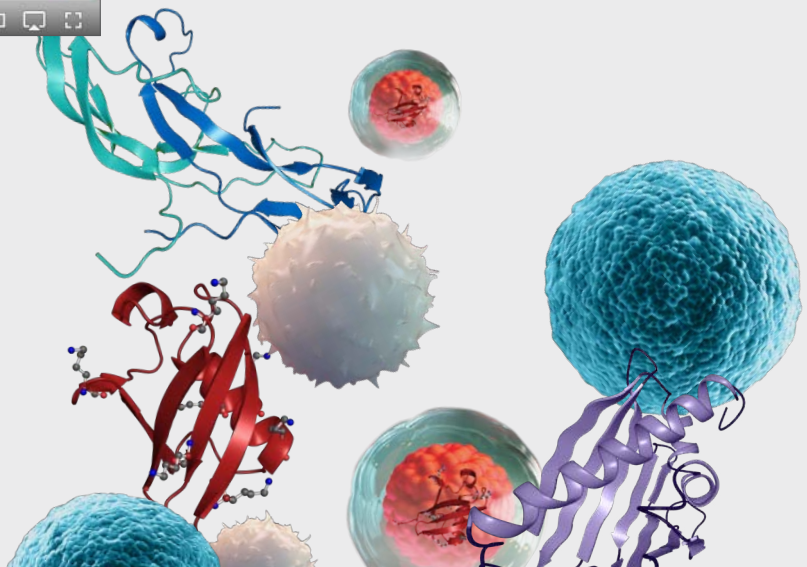
Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics, metabolomics, and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.

- Thermo Scientific™ EASY-Spray™ HPLC columns
- Thermo Scientific™ Double nanoViper™ HPLC columns
- Thermo Scientific™  $\mu$ PAC™ HPLC columns



## Video:


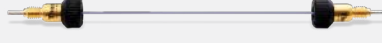

Low-flow  
HPLC columns  
connectivity



# Section contents

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# Column selection guide

	Packed bed format		Pillar array column format
	EASY-Spray	Double nanoViper	μPAC
Technology			
Benefits	<p><b>Ease-of-use</b></p> <ul style="list-style-type: none"> <li>Click-and-Spray ion connection with EASY-Spray source</li> <li>nanoViper connections</li> <li>Integrated column and emitter</li> <li>Integrated temperature control</li> <li>For use with Thermo Scientific MS Systems</li> </ul>	<p><b>Analytical flexibility</b></p> <ul style="list-style-type: none"> <li>Universal Thermo Scientific nanoViper Fingertight Fittings for column inlet and outlet</li> <li>Simple zero-dead-volume (ZDV) connections</li> <li>Separate emitters</li> <li>Compatible with all low flow U/HPLC instruments</li> </ul>	<p><b>Ultimate separation</b></p> <ul style="list-style-type: none"> <li>Excellent retention time stability</li> <li>Low back pressure separations, improving column and emitter robustness</li> <li>Separate emitters</li> <li>Compatible with all low-flow U/HPLC instruments</li> </ul>
Application areas	Bottom-up proteomics		Proteomics research
	<p>PepMap Neo UHPLC columns are the latest addition to our portfolio. PepMap Neo columns are packed to higher pressure, which provides 1500 bar pressure rating, improved column-to-column consistency, and increased efficiency.</p>		<ul style="list-style-type: none"> <li>50 cm column &lt;120 min separations</li> <li>200 cm column &gt;120 min separations</li> </ul>
	Top-down and middle-down proteomics		
	<p>The MAbPac capillary column is best suited for the characterization of intact proteins in top-down proteomics applications where sample amount is critically limited.</p>		



### Reference guide:

Low-flow chromatography consumables reference guide for LC-MS proteomics research



### Flyer:

Low-flow HPLC columns. Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomics research

# EASY-Spray HPLC columns



Ensure robust nano and capillary flow LC-MS analysis using Thermo Scientific™ EASY-Spray™ HPLC Columns. The integrated column/emitter design eliminates dead volume and is temperature-controlled for maximum reliability and performance. Rigorously tested to ensure maximum quality, these columns deliver maximum simplicity and ease-of-use.

The capillary flow HPLC columns provide sensitive protein, peptide, and monoclonal antibody (mAb) separation. They give proteomics researchers more than ever before: more throughput, more sensitivity, more separation power, and more ease of use.



## Choose an EASY-Spray column when:

- You want simple connections with an EASY-Spray source. This is ideal for novice users.
- Sample amount is limited
- Analytical UHPLC does not provide sufficient sensitivity
- Workflow simplicity is key
- High sensitivity is required to identify proteins and peptides at low expression levels
- Analyses are done in a targeted and untargeted way for screening and verification



## What makes an EASY-Spray column special?

Unique design provides uncompromised performance in an ease-of-use format for nano and capillary LC-MS analysis.

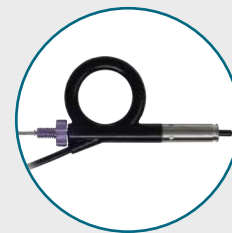
Features for optimum data quality:

- Simple connection to the LC and Thermo Scientific MS instruments
- Precision machined and positioned glass emitters
- Integrated nanoViper zero-dead-volume (ZDV) unions
- Integrated temperature control



## Video:

Thermo Scientific  
EASY-Spray 150 mm  
LC columns



## PepMap Neo HPLC columns Bottom-up columns

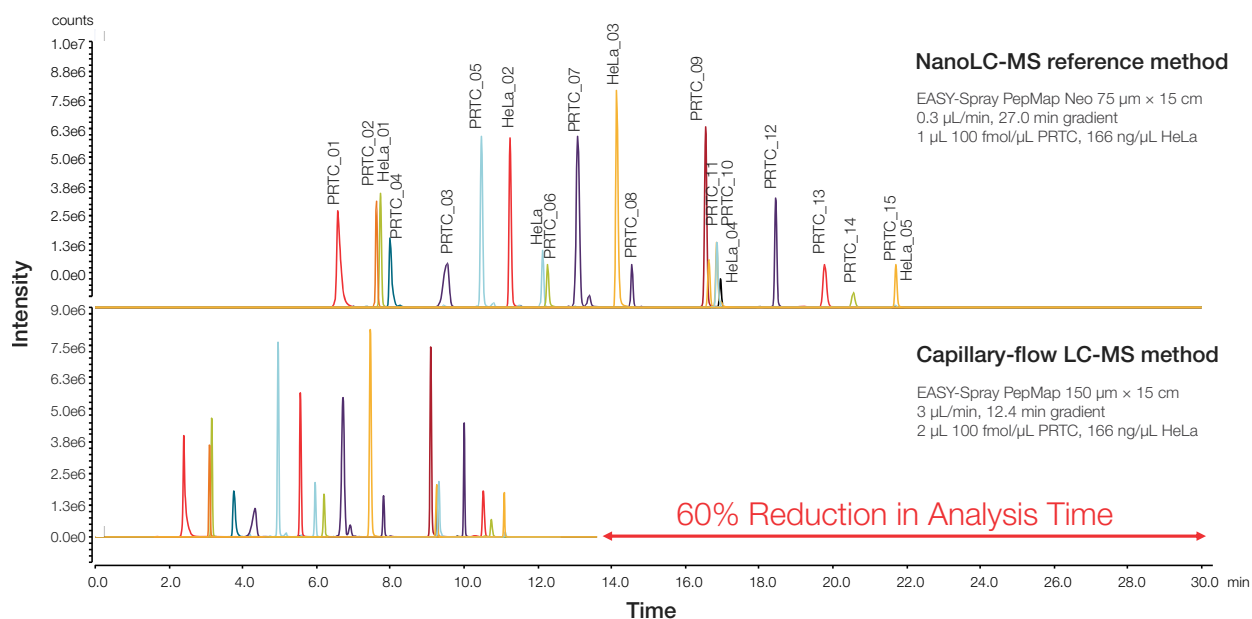


**Additional reading**  
Learn more at [thermofisher.com/lowflowlc](https://thermofisher.com/lowflowlc)



The Thermo Scientific™ EASY-Spray™ PepMap™ Neo UHPLC columns are perfect for bottom-up proteomics. Packed at higher pressure and rated to 1500 bar, they

provide consistent column-to-column performance, long column lifetime, and excellent efficiency. These benefits are true at any pressure.



The 60% reduction in total analysis time allows increasing the sample throughput moving from the nano- to the capillary-flow LC-MS method.



### PepMap Neo columns

Format	Length (mm)	Column ID ( $\mu\text{m}$ )	Part number
Bottom-up columns	150	75	<a href="#">ES75150PN</a>
	500	75	<a href="#">ES75500PN</a>
	750	75	<a href="#">ES75750PN</a>





## MABPac RP Cap HPLC columns Top-down columns

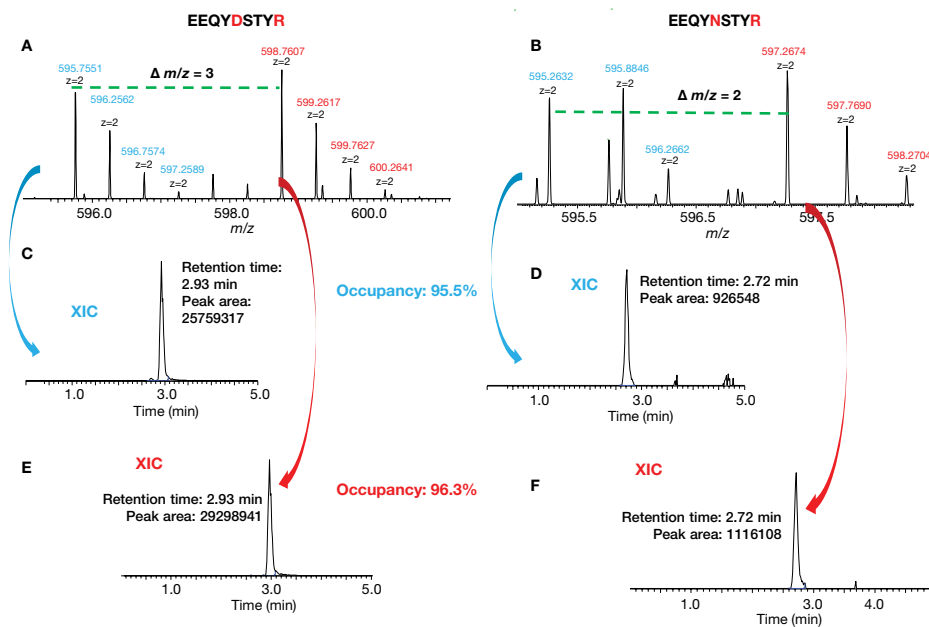


**Additional reading**  
Learn more at [thermofisher.com/lowflowlc](http://thermofisher.com/lowflowlc)



The Thermo Scientific™ MABPac™ RP capillary column is best suited for the characterization of intact proteins in top-down proteomics, clinical and anti-doping

applications where sample amount is limited or sensitivity is crucial.

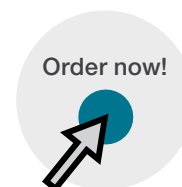


Calculation of site occupancy of N306 in Fab glycosylated mAb



### MABPac column

Format	Length (mm)	Column ID (μm)	Part number
Top-down column	150	150	<a href="#">ES907</a>





# EASY-Spray HPLC columns

Continued



## EASY-Spray accessories



### Additional reading

Learn more at [thermofisher.com/lowflowlc](https://www.thermofisher.com/lowflowlc)



For the best performance from your EASY-Spray column consider investing in these accessories.



### Thermo Scientific™ Acclaim™ PepMap™ traps

Description	Union type	Particle size (µm)	Column ID (µm)	Media bed length (mm)	Trap length (mm)	Part number
PepMap Neo Trap Cartridge	N/A	5	300	5	N/A	<a href="#">174500</a>
PepMap nanotrap 500 bar	Nut/sleeve	5	100	20	150	<a href="#">164199</a>
PepMap nanotrap 500 bar	Double nanoViper	5	100	20	150	<a href="#">164750</a>
PepMap nanotrap 500 bar	Double nanoViper	3	75	20	150	<a href="#">164535</a>
PepMap nanotrap 1200 bar	Double nanoViper	3	75	20	70	<a href="#">164946</a>
PepMap nanotrap 500 bar	Nut/sleeve	5	200	20	150	<a href="#">164213</a>

### PEEK Tubing and trap holder

Description	For use with	Part number
PEEK with nanoViper fittings 30 µm X 100 mm 2PK 1500 bar	Low-flow PepMap columns	<a href="#">174501</a>
Trap holder + nanoViper fittings kit 1500 bar		<a href="#">174502</a>



#### Reference guide:

Low-flow chromatography consumables reference guide for LC-MS proteomics research



#### Flyer:

Low-flow HPLC columns. Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomics research

# Double nanoViper columns



The Thermo Scientific™ Viper™ and Thermo Scientific™ nanoViper™ Fingertight Fitting Systems provide tool-free connections designed to be used for the entire fluidic pathway in LC systems to improve chromatographic results.

Virtually without any dead-volume, Viper and nanoViper fittings combine usability with high performance. Viper and nanoViper

connections can be used on all standard LC modules, valves, and columns quickly, independent of different connection geometries and system backpressures. Dedicated capillary kits for standard LC system configurations and application-specific setups enable high qualitative and reproducible results for all flow rates and pressure ranges.



## Choose these columns when:

- Maximum flexibility is required
- Changing the emitter and column independently is important



## What makes these columns special?

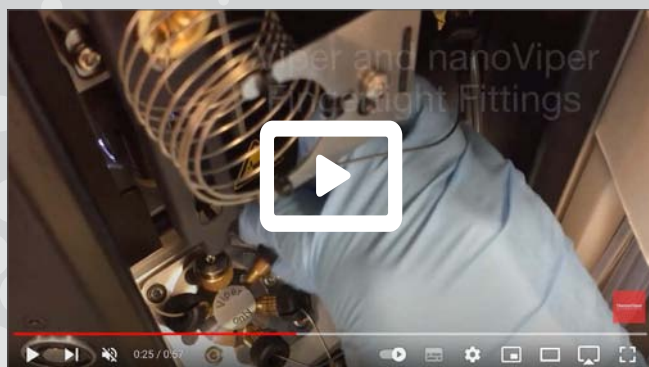
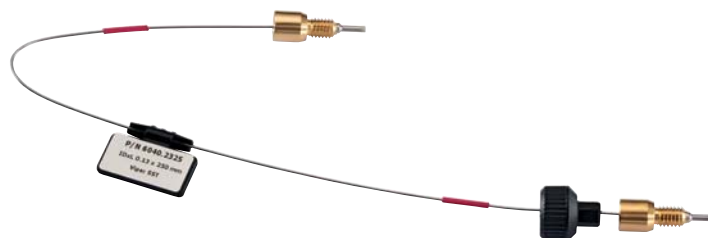
These stand-alone nano-, capillary, and micro-flow columns are:

- Designed with single nanoViper and double nanoViper fingertight fittings for trouble-free connection
- For robust separation in proteomics research, drug discovery, and high-throughput proteomics laboratories



## Product specifications:

Viper and nanoViper  
Fingertight  
Fitting Systems

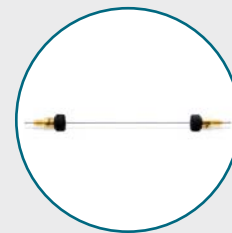


## Video:

Discover a better  
LC connection



# Double nanoViper columns



## Double nanoViper PepMap Neo UHPLC columns Bottom-up columns

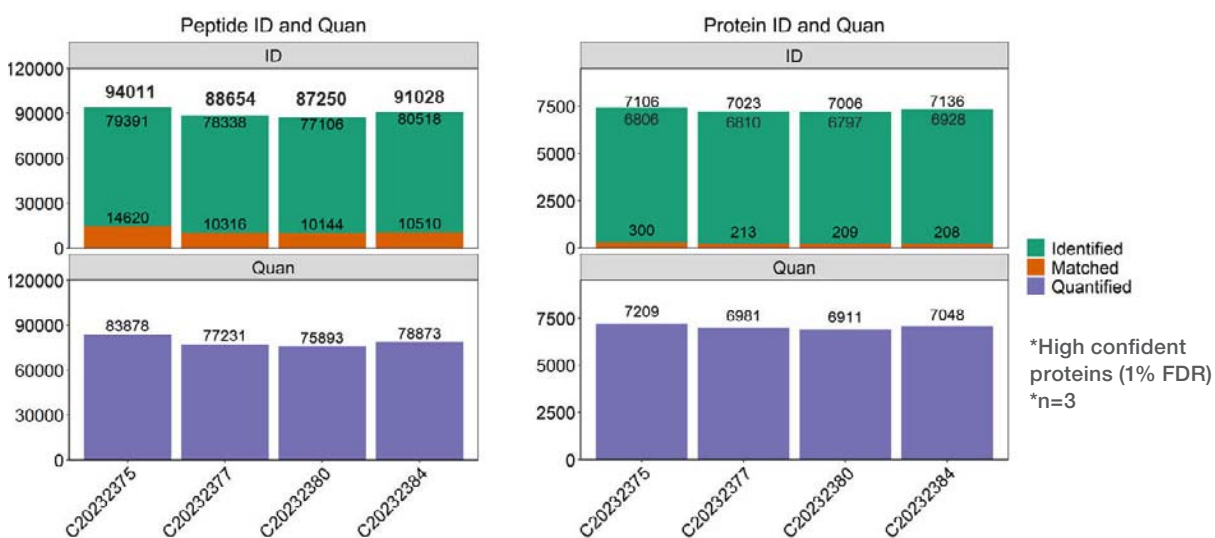


**Additional reading**  
Learn more at [thermofisher.com/lowflowlc](https://thermofisher.com/lowflowlc)



Separate challenging peptide mapping samples with Thermo Scientific™ Double nanoViper™ PepMap™ Neo UHPLC columns. These columns feature easy connectivity, high reproducibility, and excellent separations. Our Neo columns are packed to higher pressure and provide 1500 bar pressure capability, improved column-to-column consistency,

and increased efficiency. The column media is manufactured and selected to exacting standards and packed at high pressure, resulting in enhanced peak symmetry, resolution, and column-to-column reproducibility that allows you to obtain greater sample coverage and sample insights.



Reproducible identification and quantification of HeLa peptides and proteins over 4 EASY-Spray PepMap Neo columns while using Vanquish Neo UHPLC system coupled with the Orbitrap Exploris 480 mass spectrometer.



### Double nanoViper PepMap Neo columns

Format	Length (mm)	Column ID (µm)	Part number
Bottom-up columns	150	75	<a href="#">DNV75150PN</a>
	500	75	<a href="#">DNV75500PN</a>
	750	75	<a href="#">DNV75750PN</a>



# Double nanoViper columns

Continued



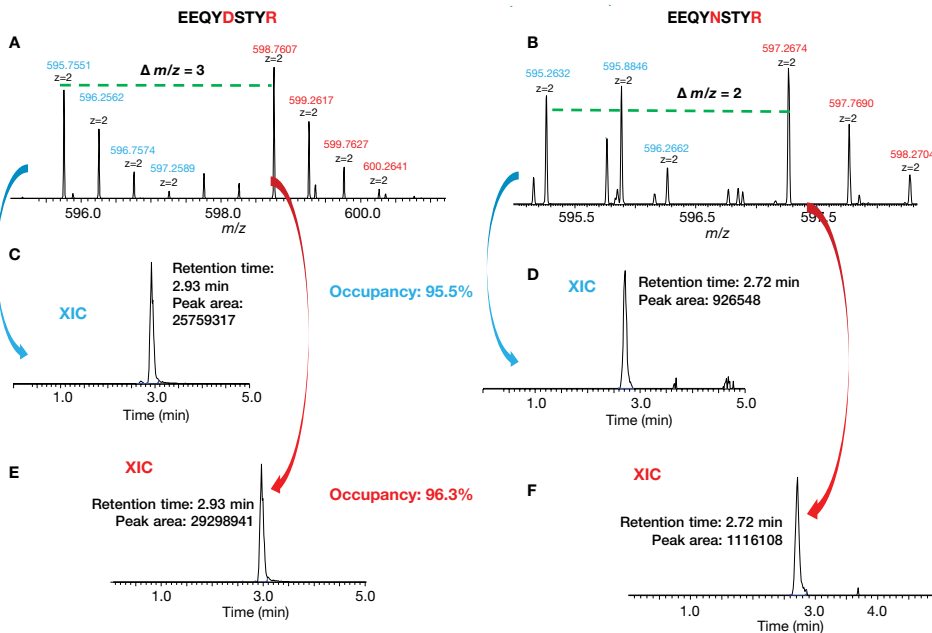
## MABPac RP Cap HPLC columns Top-down columns



**Additional reading**  
Learn more at [thermofisher.com/lowflowlc](https://thermofisher.com/lowflowlc)



The Thermo Scientific MABPac RP capillary column is best suited for the characterization of intact proteins in top-down proteomics, clinical and anti-doping applications where sample amount is limited or sensitivity is crucial.

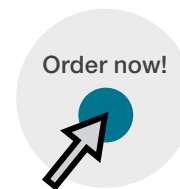


Calculation of site occupancy of N306 in Fab glycosylated mAb



### MABPac column

Format	Length (mm)	Column ID (µm)	Part number
Top-down column	150	150	<a href="#">164947</a>





# Double nanoViper columns

Continued



## LC-MS connection accessories and emitters



These emitters, nanoViper tubing kits, and unions offer easy connection from your LC system to an EASY-Spray source.



### Acclaim PepMap traps and nanotraps

Description	For use with	Part number
Two Viper unions	Double nanoViper columns	<a href="#">6040.2304</a>
NanoViper tubing 20 µm x 550 mm		<a href="#">6041.5260</a>
Emitter: 10 µm I.D.		<a href="#">ES993</a>
Emitter: 15 µm I.D		<a href="#">ES994</a>

## Traps and accessories



For the best performance from your double nanoViper column consider investing in these nanotraps.



### Acclaim PepMap traps and nanotraps

Description	Union type	Particle size (µm)	Column ID (µm)	Media bed length (mm)	Trap length (mm)	Part number
PepMap Neo Trap cartridge	N/A	5	300	5	N/A	<a href="#">174500</a>
PepMap nanotrap 500 bar	Nut/sleeve	5	100	20	150	<a href="#">164199</a>
PepMap nanotrap 500 bar	Double nanoViper	5	100	20	150	<a href="#">164750</a>
PepMap nanotrap 500 bar	Double nanoViper	3	75	20	150	<a href="#">164535</a>
PepMap nanotrap 1200 bar	Double nanoViper	3	75	20	70	<a href="#">164946</a>
PepMap nanotrap 500 bar	Nut/sleeve	5	200	20	150	<a href="#">164213</a>

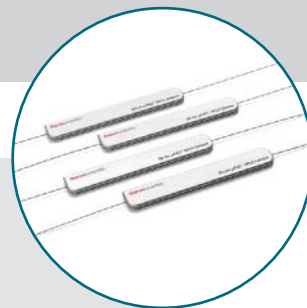
Order now!



# $\mu$ PAC HPLC columns



These HPLC columns are ideally suited for bottom-up proteomics where resolution is critical to the success of the analysis. Our  $\mu$ PAC HPLC columns provide excellent column-to-column reproducibility and peak capacity at a wide range of flow rates.



## Choose a $\mu$ PAC HPLC column when:

- Highest resolution and peak capacities is required
- Your samples span a wide concentration range
- Highest LC-MS sensitivity is needed
- You want to speed up your runtimes
- LC-MS robustness is needed
- You want an increased column lifetime
- You prefer working at much lower back pressures than with packed-bed columns
- When it is important to compare results from experiments spanning over time or geographical location



## What makes $\mu$ PAC HPLC columns special?

The unique separation path provides:

- $\mu$ -pillar stationary backbone, micromachined in a silicon wafer
- Flow path designed for highest analyte concentration during elution
- Extra high-resolution separations, using up to 200 cm column lengths
- Low back pressure separations, improving column and emitter robustness



### Additional reading

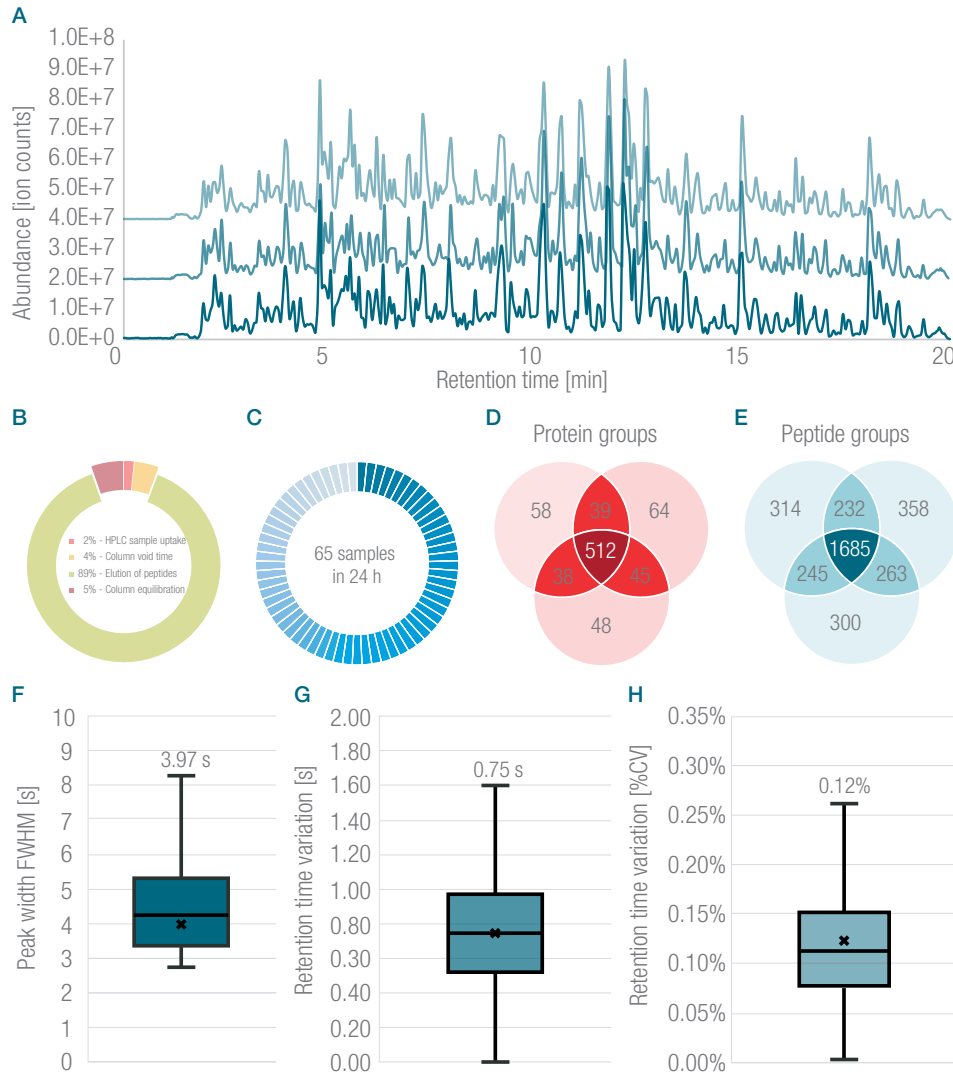
Learn more at [thermofisher.com/lowflowlc](https://www.thermofisher.com/lowflowlc)



# μPAC HPLC columns



High throughput proteome analysis with a μPAC column



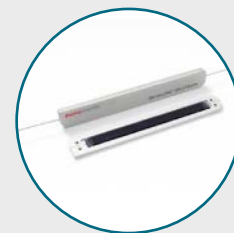
**High throughput proteome analysis with a μPAC column.** 2 μg of HeLa cell digest was injected using a direct injection mode. A) Basepeak chromatograms obtained for triplicate analysis. B) Relative time use of the instrument. C) Sample turnover rate. D) Number of identified protein groups. E) Number of identified peptide groups. F) Average peak widths (FWHM) for all PSMs. G) Retention time variation (absolute) observed for all peptides shared in triplicate runs. H) Retention time variation (relative %CV) observed for all peptides shared in triplicate runs.





# μPAC HPLC columns

Continued



## Thermo Scientific™ μPAC™ pillar array

### μPAC pillar array

Description	Pillar dimensions	Interpillar distance	Column length (cm)	Flowrate range (μL/min)	Part number
μPAC pillar array	5	2.5	50	0.1–2.0	<a href="#">COL-nano050G1B</a>
μPAC pillar array	5	2.5	200	0.1–1.0	<a href="#">COL-nano200G1B</a>
μPAC pillar array (capillary flow)	5	2.5	50	1.0–15.0	<a href="#">COL-cap050G1B</a>



## μPAC traps

### μPAC traps

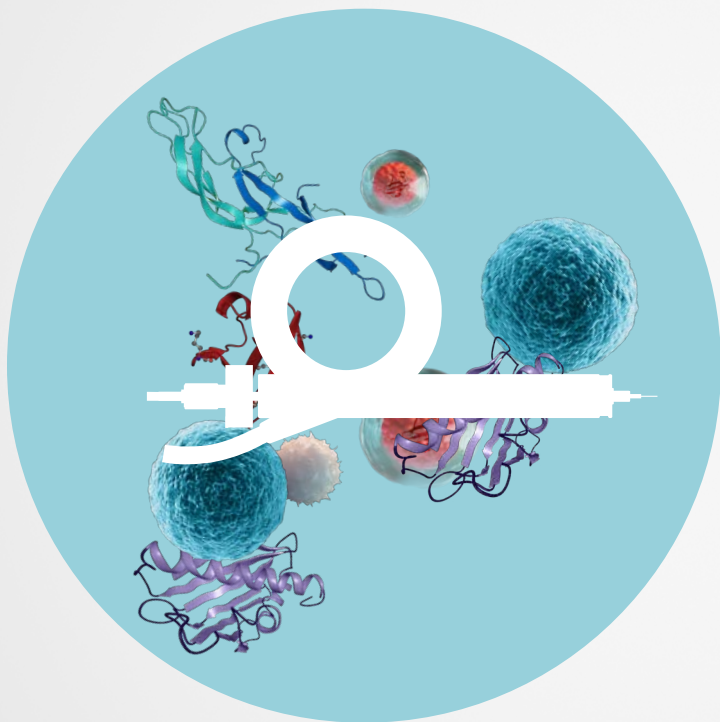
Description	Pillar dimensions	Interpillar distance	Column length (cm)	Part number
μPAC pillar array	5	2.5	1	<a href="#">COL-trpnano16G1B2</a> (Duo-pack)



## μPAC accessories

### μPAC accessories

Description	For use with	Part number
Flex iON Connect : Interface to connect Thermo Scientific™ μPAC™ nanoLC columns to Thermo Scientific™ Nanospray Flex™ Series ion source	μPAC nano columns	<a href="#">EMI-flexionB</a>
Grounding union and transfer line to connect to the EASY-Spray source		<a href="#">EMI-easysprayB</a>

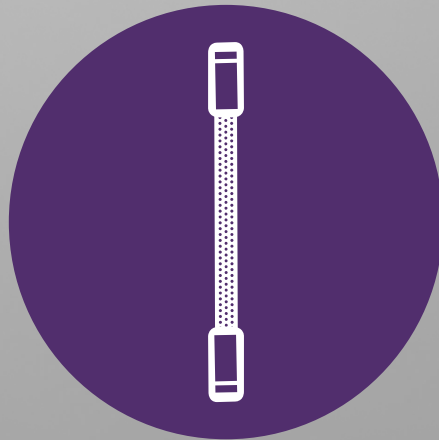
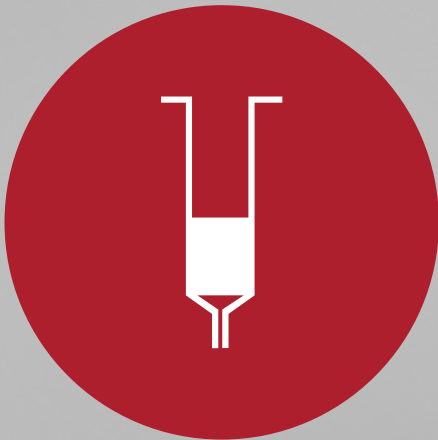


Expect reproducible results with sample prep, columns and vials



Don't see what you need? We would be happy to discuss your specific requirements. Please contact your local sales representative for custom orders.

Learn more at [thermofisher.com/chromatographyconsumables](https://www.thermofisher.com/chromatographyconsumables)



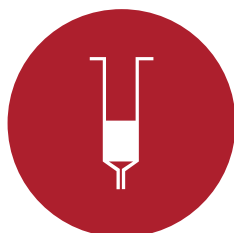
Chromatography consumables

# Connected chromatography solutions

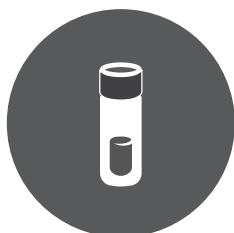
Chromatography consumables catalog

# Comprehensive products to support your chromatography workflows

## Sample preparation solutions



## Sample handling solutions



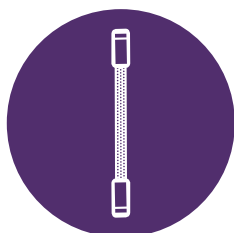
## Low-flow LC columns and accessories



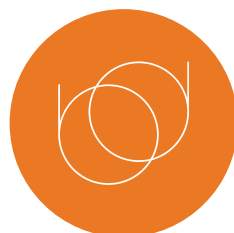
## BioLC columns and accessories



## LC columns and accessories



## GC columns and accessories

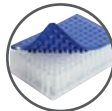


Thermo Scientific™ products:

- SMART Digest™ kits
- SOLA™ SPE products
- HyperSep™ SPE products
- TurboFlow™ and online sample preparation products
- QuEChERS products
- Automated micro solid-phase extraction (μSPE) products
- Syringes and syringe filters



- SureSTART™ AVCS™ closures and SureStop vials
- SureSTART™ Gold grade purity glass vials and vial kits
- SureSTART™ low residual microsampling vials and vial kits
- MS certified vials
- Polyspring vial inserts
- Electronic crimping and decrimping tools
- WebSeal™ well-plates and sealing mats for chromatography



- EASY-Spray™ HPLC columns for top-down and bottom-up proteomics
- Double nanoViper PepMap™ Neo HPLC columns for top-down and bottom-up proteomics
- μPAC™ HPLC columns for bottom-up proteomics



- MAbPac™ size exclusion chromatography
- MAbPac™ and ProPac™ charged variant profiling
- MAbPac™ intact and subunit analysis
- HILIC and mixed-mode glycan analysis
- DNAPac™ oligonucleotide and gene therapy analysis
- Vanquish™ UHPLC peptide analysis



- Accucore™ U/HPLC columns
- Acclaim™ U/HPLC columns
- Hypersil GOLD™ U/HPLC columns
- Hypercarb™ HPLC columns
- Application specific HPLC columns
- Hypersil™ BDS and Hypersil™ classical HPLC columns
- LC accessories
- Preparative HPLC columns



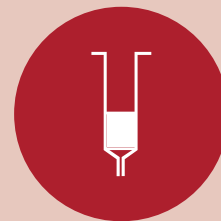
- TracePLOT™ GC columns
- TraceGOLD™ packed GC columns
- GuardGOLD™ capillary GC columns
- LinerGOLD™ liners
- Super Clean™ gas cartridge filters
- GC consumables
- Gas management
- GC equipment
- GC reagents



# Our portfolio

## Sample preparation solutions

Save time, improve reproducibility, and extend the lifetime of your High/Ultra High Performance Liquid Chromatography (HPLC/UHPLC) and gas chromatography (GC) columns with our comprehensive range of sample preparation products. Achieve high sensitivity, selectivity, and recovery with advanced solid-phase extraction (SPE) consumables.



## Sample handling solutions

We provide a broad selection of sample handling and containment solutions from all your chromatography requirements. Our vials, closures and well plates, come with the lowest levels of extractables and leachables, are made from glass that has low compound adsorption, and the highest level of standards and certification available in the marketplace. Whether you have routine and robust samples, or you need to ensure the highest level of confidence and compliance, our market leading portfolio of storage and autosampler vials and closure, well plates and sample handling accessories has everything you'll need.



## Low-flow LC columns and accessories

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.



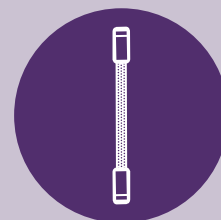
## BioLC columns and accessories

Achieve ultrahigh resolution and high efficiency separations of proteins, peptides, monoclonal antibodies, biosimilars, carbohydrates, oligonucleotides and more. Our unique column chemistries for biological samples have a long-standing reputation for providing excellent reproducibility and durability under a broad range of pH, temperature, and mobile phase compositions.



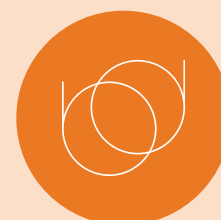
## LC columns and accessories

As a leader in LC column technology including silica, polymer and porous graphitic carbon manufacturing, bonded phase production and column packing for 40 years, you can rely on the quality of Thermo Scientific high performance liquid chromatography (HPLC) products: a comprehensive range of innovative columns, accessories and equipment for fast and reproducible analytical and prep HPLC and ultra-high performance liquid chromatography (UHPLC) analysis.



## GC columns and accessories

We offer a broad portfolio of GC columns and accessories designed to give optimal system performance for today's challenging analyses. Our range of GC accessories include all the tools needed by today's gas chromatographers.



# Product selection tools and additional resources

## Sample handling selection guide



### Need a quick answer?

Why not use our online product selector guide that includes our entire SureSTART Collection of vials, caps, well plates and mats.



SureSTART™ Selection Guide

Selecting your vial and well plate has never been easier.

**About this guide**

Have you ever struggled with finding the right sample handling solution for your application? You will struggle no longer! This simple guide will find the perfect solution product for you in just a few clicks.

[Get started](#)

- Application specific vials**  
Ensure what goes into the lab comes out... and that the vial you choose is fit for purpose for your application set up. This guide will take you right to your vial.
- Plates for high-throughput**  
If you use a high-throughput lab, you may be interested in finding a plate rather than a vial to speed up your throughput. As plate compatibility is dependent on your instrument this guide will find the plate that works with your instrument type.
- Low cost vials at your fingertips**  
Find the correct vial for your application - and budget. If cost is a key purchasing criteria for you then we've got you covered as this guide takes all your lab requirements into consideration.

## Sample handling cross reference tool



### Already purchasing an existing product from us or someone else?

Let our cross-reference tool find the equivalent SureSTART product/catalog number for you.



SureSTART Cross Reference Tool

Designed for cross referencing chromatography vials, caps and inserts, finding an equivalent product is easy. Using this cross-reference tool, there are 2 easy options for you to find an equivalent Thermo Scientific SureSTART™ product. All you need to know is your current catalog number part number.

**Option 1: Input SKUs Directly**

Either type or copy/paste a list of SKUs into the text field below.

**Option 2: Upload CSV**

File to upload:  [Choose file](#) [Don't have a data file? Download a sample .csv file](#)

[Search](#)

# Product selection tools and additional resources

## Septa selection tool



### Choosing the right septa can be complex!

There are a number of factors that should be considered including: needle type, vial type, solvents and temperature that the septa will be exposed to. Let us help you find the right septa with this easy-to-use tool.



The screenshot shows the 'Septa Selection Tool' webpage. The header is red with white text: 'Septa Selection Tool' and 'An easy-to-use tool that ensures you find the right septa for your experimental requirements.' Below this is a white box titled 'About this tool' with a 'Get Started' button. The main content area is white and features three columns of text under the heading 'Why use the Septa Selection Guide?'. Each column has a red circular icon with a white symbol: a needle for 'Needle / autosampler issues', a septum for 'Septa compatibility with solvents', and a list for 'New experimental parameters'.

## LC columns selection guide



### Find your columns with ease!

Finding the correct column can be a challenge, so we have made it easy for you. This guide will take you directly to the right product for you, so that you can start your method today.



The screenshot shows the 'LC Column Selection Guide' webpage. The header is grey with white text: 'LC Column Selection Guide' and 'An easy-to-use tool that ensures you find the right LC column for your experimental requirements.' Below this is a white box titled 'Find your column with ease!' with a 'Get started' button. The main content area is white and features three columns of text under the heading 'Find your column with ease!'. Each column has a red circular icon with a white symbol: a column for 'Need an equivalent column?', a list for 'Setting up a USP method?', and a plus sign for 'Brand new method?'. The background of the page features a molecular structure graphic on the right and a chromatogram on the left.

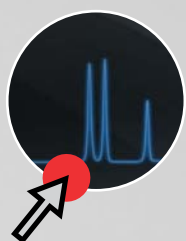
# More information



## Chromatography columns and consumables

For more information on our range of chromatography columns and consumables, including the latest applications, educational resources, selection guides and product literature, please visit

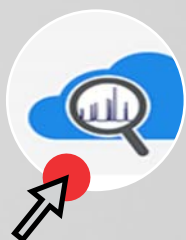
[thermofisher.com/chromatographyconsumables](https://thermofisher.com/chromatographyconsumables)



## Instrumentation and key applications

For more information on our instrumentation and key applications, please visit

[thermofisher.com/chromatography](https://thermofisher.com/chromatography)



## AppsLab

Gain access to our applications expertise on cloud-based Thermo Scientific™ AppsLab library of analytical applications for a comprehensive fully searchable method repository

[appslab.thermofisher.com](https://appslab.thermofisher.com)



## Webinars

Analytical and life science webinars live and on-demand



## NIBRT collaboration information

A collaboration built for Biopharma between the National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific

[thermofisher.com/nibrt](https://thermofisher.com/nibrt)





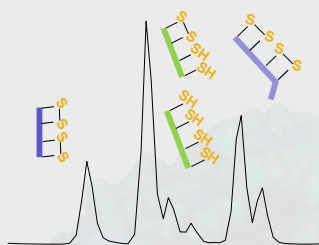
# Connected chromatography solutions

BioLC columns and accessories

# Introduction

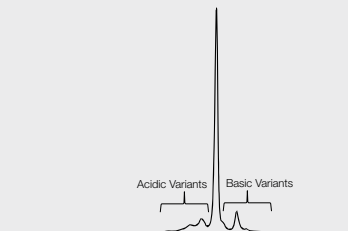
## Your complete tool kit

Thermo Fisher Scientific has innovative Thermo Scientific™ BioLC™ columns for each step of your therapeutic protein characterization, no matter how challenging your separation. Here is just one example, a fully characterized model sample of Pertuzumab. Discover our full range in this catalogue.



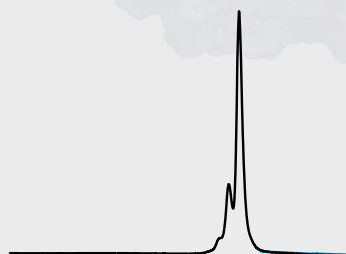
### Intact or subunit analysis

Thermo Scientific™ MABPac™ RP is ideal for intact and subunit analysis by MS or UV detection. The polymeric packing material offers column longevity, high resolution and the wide pores to allow for low carryover profiling of your sample.



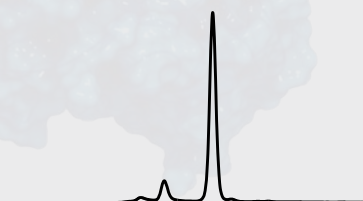
### Charge variant analysis

Quickly develop your charge variant method with the Thermo Scientific™ ProPac Elite WCX column and the easy-to-use Thermo Scientific™ CX-1 pH gradient buffers. Elucidate your profile as quickly as 10 minutes on this reproducible platform. Find excellent, complementary selectivity with the Thermo Scientific™ MABPac™ SCX-10 column.



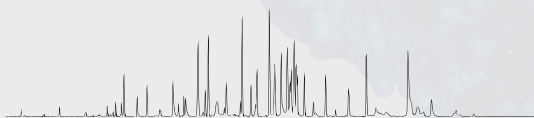
### Oxidation monitoring

Deduce protein folding errors or charge-neutral amino acid modifications with the Thermo Scientific™ MABPac™ HIC-20 hydrophobic interaction column. Our range of innovative HIC chemistries deliver native separations not seen on other columns.



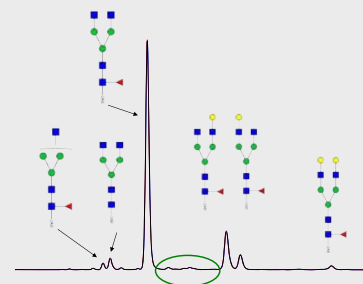
### Aggregate analysis

Thermo Scientific™ MABPac™ SEC-1 offers excellent size exclusion separation even under challenging conditions for aggregate analysis. Compatible with mass spectrometry for native LC-MS/MS workflows.



### Peptide mapping

Experience reproducible peptide mapping and quantitation. The combination of rapid digestion from the Thermo Scientific™ SMART Digest kit and separation with the high resolution Thermo Scientific™ Hypersil™ GOLD column delivers outstanding, reproducible and efficient peptide mapping separations.



### Released glycan analysis

Fully characterize your released N-glycans with the Thermo Scientific™ Accucore™ 150 Amide-HILIC column. This solid core column offers high resolution, durability, and the ability to run separations at lower temperatures to reveal the complete glycan profile.



### Flyer:

Take charge of your therapeutic protein separation with Thermo Scientific BioLC columns

# Section contents

Affinity columns	11
Intact analysis by HIC	12
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Intact and subunit analysis (RP)	21
Charge variant analysis	24
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Nucleic acids/oligonucleotides	36



# BioLC column selection quick guide

## BioLC column selection guide

Target applications	Column type	Mode of analysis	Recommended column	Particle size (µm)	Pore size (Å)	pH range	Maximum backpressure	Solvent compatibility
Affinity	Affinity columns	Affinity	MABPac Protein A	12	Non-porous	2.5-7.5	1,000	—
Intact analysis by HIC	Silica-based hydrophobic interaction chromatography columns	Hydrophobic interaction	MABPac HIC-10	5	1,000	2-8	4.6 x 100 mm = 6,000 7.8 x 100 mm = 5,800	Compatible with common HPLC solvents
			MABPac HIC-20	5	1,000	2-8	4.6 x 250 mm = 8,000	—
			MABPac HIC Butyl	5	1,000	2-12	4,000	—
Released glycan analysis	Released glycan analysis	Silica based, reversed-phase columns	Accucore 150-C18	2.6	150	1-11	11,600	—
	Silica based, mixed-mode columns	Mixed-mode	GlycanPac AXH-1	1.9	175	2-8	10,000	—
				3	120	2-8	6,000	—
			GlycanPac AXR-1	1.9	175	2-8	10,000	Compatible with 0 to 100% aqueous and common HPLC solvents
				3	175	2-8	6,000	Compatible with 0 to 100% aqueous and common HPLC solvents
	Silica-based HILIC columns	HILIC	Accucore 150 Amide HILIC	2.6	150	—	14,500	—
Aggregate fragment analysis	Silica-based size exclusion chromatography phases	Size exclusion	MABPac SEC-1	5	300	2.5-7.5	1,000	100% organic solvents
	Polymeric size exclusion chromatography phase	Size exclusion	Acclaim SEC-300	5	300	2-12	1,200 (7.8 x 150 mm = 700)	—
			Acclaim SEC-1000	7	1,000	—	600 (7.8 x 150 mm = 350)	—
Intact and subunit analysis	Polymeric ion-exchange columns	Reversed-phase	MABPac RP	4	1,500	2.1 mm, 3.0 mm (0-14) 1 mm (1-7)	4,000	Up to 100% CAN, IPA, MeOH
	Polymeric reversed-phase columns	Reversed-phase	ProSwift RP-2H	Monolith	Monolith	1.0-14	2,800	Most common organic solvents
			ProSwift RP-3U				3,000	
			ProSwift RP-4H				3,000	
			ProSwift RP-10R				2,800	
			ProSwift RP-4H				3,000	
Charge variant analysis	Polymeric ion-exchange columns	Ion-exchange	ProPac Elite WCX	5	Non-porous	2.0-12	1,500	Goods buffers and NaCl. Minimum 20 mM salt required. Do not rinse with pure DI H <sub>2</sub> O
			ProPac SAX-10	10			3,000	80% acetonitrile, acetone, MeOH
			MABPac SCX-10RS	5			7,000	—
			MABPac SCX-10	10			3,000	50% acetonitrile
Peptide mapping	Silica based, reversed-phase columns	Reversed-phase	Hypersil GOLD C18	1.9	175	1-11	18,130	—
				3	175	1-11	5,800	—
			Acclaim 120 C18	2.2	120	2-8	Various	—
				5	120	2-8		—
				3	120	2-8		—
Nucleic acids and oligonucleotides	Polymeric ion-exchange columns	Ion-exchange	DNAPac PA200	8	Non-porous	2.5-12.5	4,000	100% compatible with common organic solvents, Ionic form eluents: chloride, perchlorate
			DNAPac PA200RS	4	Non-porous	2-12	10,000	—
			DNASwift SAX 1S	Monolith	Monolith	2-14	1,500	Most common organic solvents
	Polymeric reversed-phase columns	Reversed-phase	DNAPac RP	4	Proprietary wide pore	0-14	4,000	—

# Affinity columns

Providing fast, accurate titer analysis of monoclonal antibodies in harvest cell cultures, the nonporous, polymeric **Thermo Scientific™ MAbPac™ Protein A** HPLC Column delivers reproducible, highly efficient separations.



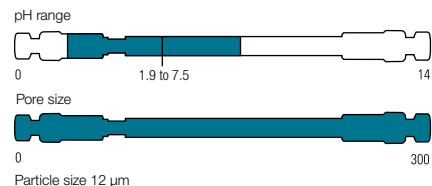
## MAbPac Protein A column



### Additional reading

- **Application note:** MAbPac Protein A: A novel affinity Protein A column for monoclonal antibody (mAb) titer analysis

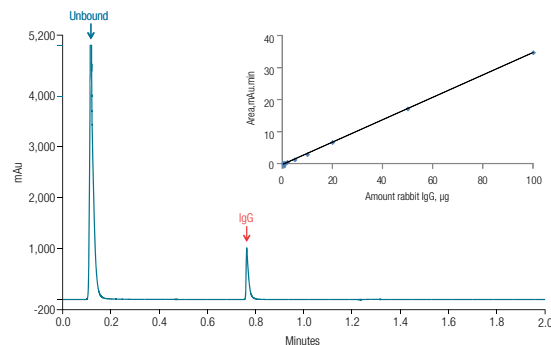
Learn more at [thermofisher.com/biolc](http://thermofisher.com/biolc)



### Harvest cell culture titer analysis

#### MAbPac Protein A, 12 µm, 35 x 4.0 mm

Flow rate	2 mL/min
Mobile phase A	50 mM sodium phosphate, 150 mM NaCl, 5% acetonitrile, pH 7.5
Mobile phase B	50 mM sodium phosphate, 150 mM NaCl, 5% acetonitrile, pH 2.5
Gradient	0% B for 0.2 mins, 100% B for 0.60 mins, 0% B for 1.20 mins
Temperature	30 °C
Injection volume	10 µL
Detection	UV at 280 nm
Sample	mAb B, 5 mg/mL harvest cell culture



### MAbPac Protein A column

Particle size (µm)	Format	Length (mm)	4.0 mm ID
12	HPLC column	35	<a href="#">082539</a>

# Intact analysis by HIC

Orthogonal to IEX and SEC, Hydrophobic Interaction Chromatography (HIC) offers selectivity to resolve charge neutral protein oxidations and protein misfolds. Our proprietary 300 Å silica **Thermo Scientific™ MAbPac™ HIC-10** and **Thermo Scientific™**

**MAbPac™ HIC-20** provide unique separation profiles offering high resolution for protein samples. For more hydrophobic samples, select the **Thermo Scientific™ MAbPac™ HIC-Butyl** column.



## MAbPac HIC-10, HIC-20, HIC-Butyl columns



### MAbPac HIC-10 column additional reading

- **Application note:** MAbPac HIC-10 High resolution separation of a fusion protein on MAbPac HIC-10 column
- **Application note:** HIC as a complementary, confirmatory tool to SEC for the analysis of mAb aggregates

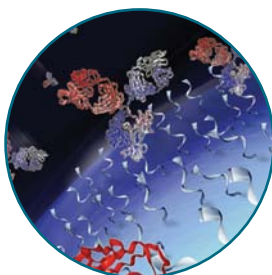
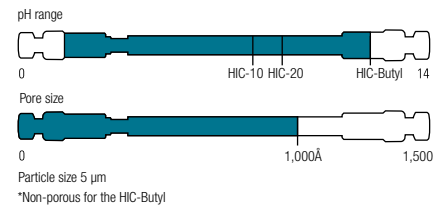
### MAbPac HIC-20 column additional reading

- **Application note:** MAbPac HIC-20 High resolution separation of mAb fragments on MAbPac HIC-20 column
- **Application note:** High resolution separation of monoclonal antibody (mAb) oxidation variants on the MAbPac HIC-20 column

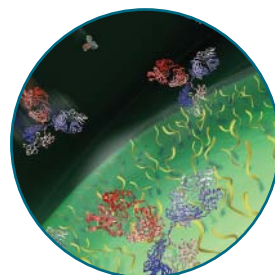
### MAbPac HIC-Butyl column additional reading

- **Application note:** High resolution separation of cysteine-conjugated antibody drug mimics using hydrophobic interaction chromatography

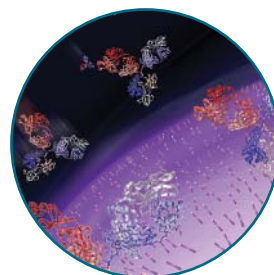
Learn more at [thermofisher.com/biolc](https://www.thermofisher.com/biolc)



MAbPac HIC-10



MAbPac HIC-20



MAbPac HIC-Butyl



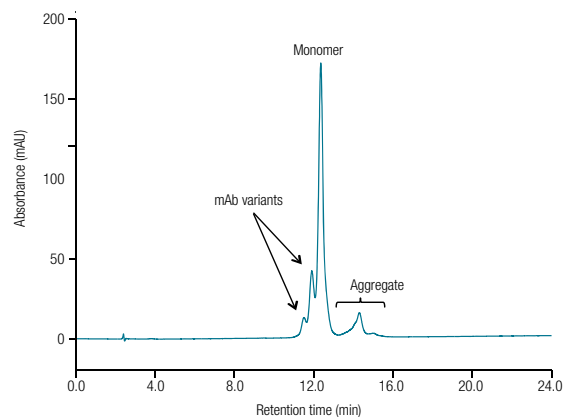
# MAbPac HIC-10, HIC-20, HIC-Butyl columns

Continued



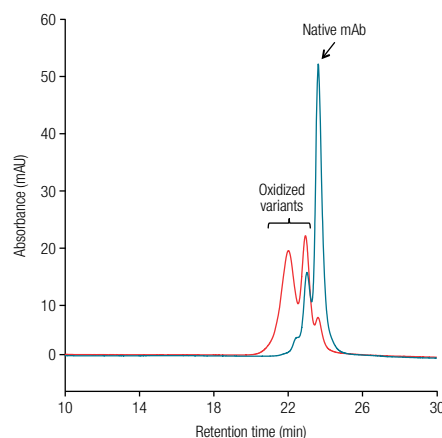
## Separation of mAb aggregates

MAbPac HIC-10, 5 $\mu$ m, 100 x 4.6 mm			
Flow rate	0.5 mL/min		
Mobile phase A	2 mM ammonium sulfate, 100 mM sodium phosphate, pH 7.0		
Mobile phase B	100 mM sodium phosphate, pH 7.0		
Temperature	20 °C		
Injection volume	15 $\mu$ L		
Detection	UV at 280 nm		
Sample	Monoclonal antibody (4 mg/mL)		
Gradient	Time (min)	%A	%B
	-5.0	60	40
	0.0	60	40
	1.0	60	40
	29.0	0	0
34.0	0	0	



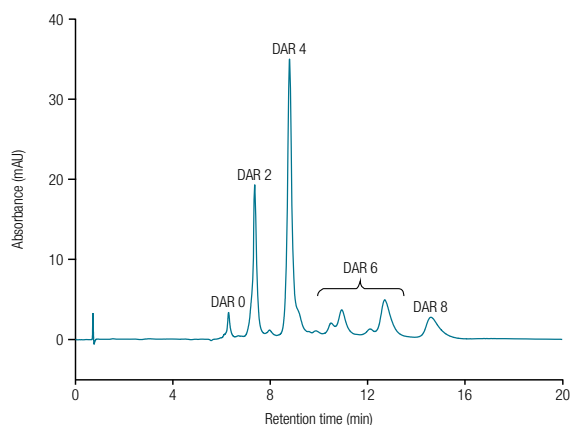
## Separation of mAb fragments

MAbPac HIC-20, 5 $\mu$ m, 250 x 4.6 mm			
Flow rate	0.5 mL/min		
Mobile phase A	2 mM ammonium sulfate, 100 mM sodium phosphate, pH 7.0		
Mobile phase B	100 mM sodium phosphate, pH 7.0		
Temperature	30 °C		
Injection volume	Untreated mAb: 20 $\mu$ L (1.25 mg/mL) Oxidized mAb: 20 $\mu$ L (1.25 mg/mL)		
Detection	UV at 280 nm		
Sample	Untreated mAb H <sub>2</sub> O <sub>2</sub> oxidized mAb		
Gradient	Time (min)	A%	%B
	-6.0	50	50
	0.0	50	50
	2.0	50	50
	30.0	0	100
35.0	0	100	



## Separation of Antibody Drug Conjugates (ADCs)

MAbPac HIC-Butyl, 5 $\mu$ m, 100 x 4.6 mm			
Flow rate	1.0 mL/min		
Mobile phase A	1.5 mM ammonium sulfate, 50 mM sodium phosphate, pH 7.0/ isopropanol (95:5 v/v)		
Mobile phase B	50 mM sodium phosphate, pH 7.0/isopropanol (80:20 v/v)		
Temperature	25 °C		
Injection volume	5 $\mu$ L		
Detection	UV at 280 nm		
Sample	Cys-conjugated ADC mimic (5 mg/mL)		
Gradient	Time (min)	%A	%B
	-5.0	100	0
	0.0	100	0
	1.0	100	0
	15.0	0	100
20.0	0	100	





# MABPac HIC-10, HIC-20, HIC-Butyl columns

Continued



## MABPac HIC selection guide

Column	MABPac HIC-10	MABPac HIC-20	MABPac HIC-Butyl
Intact mAbs/proteins	++++	+++	++
mAb aggregates	++++	+++	++
mAb fragments (F <sub>ab</sub> and F <sub>c</sub> )	+++	++++	+++
Oxidized mAbs	+++	++++	+++
Antibody Drug Conjugates (ADCs)	+++	+++	++++
Bispecific mAbs	+++	++++	++

Greater number of ++++ denotes greater suitability



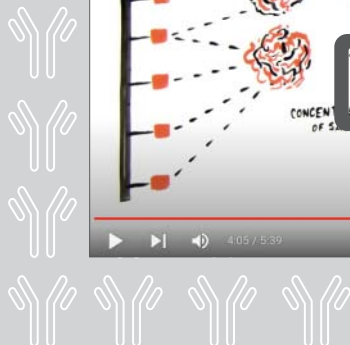
## MABPac HIC family columns

Description	Particle size (µm)	Format	Length (mm)	4.6 mm ID
MABPac HIC-10	5	Guard cartridges (2/pk)	10	<a href="#">088482</a>
		HPLC column	100	<a href="#">088480</a>
			250	<a href="#">088481</a>
MABPac HIC-20	5	Guard cartridges (2/pk)	10	<a href="#">088555</a>
		HPLC column	100	<a href="#">088553</a>
			250	<a href="#">088554</a>
MABPac HIC-Butyl	5	Guard cartridges (2/pk)	10	<a href="#">088559</a>
		HPLC column	100	<a href="#">088558</a>
Guard cartridge holder	—	—	—	<a href="#">069580</a>



### Video:

Introduction to hydrophobic interaction chromatography





# Released glycan analysis

For monoclonal antibodies, or protein samples with a lot of neutral glycans, the **Thermo Scientific™ Accucore™ 150-Amide HILIC** offers outstanding separation on a solid core particle. The low backpressure of this particle allows users to experiment with optimum temperature of their separation, to maximize the elucidation of their released glycan profile.

For proteins with charged glycans, we offer two mixed mode column chemistries combining anion exchange with HILIC or RP separations. **Thermo Scientific™ GlycanPac™ AXH-1** separates the glycan profile by charge, size, and hydrophilicity. **Thermo Scientific™ GlycanPac AXR-1** separates the profile by charge, size, and branch isomers.



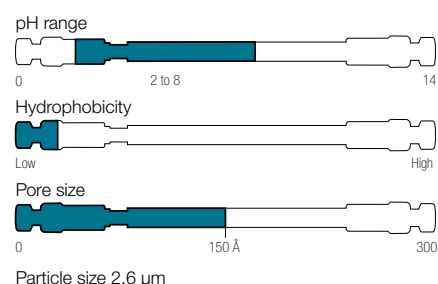
## Accucore 150-Amide-HILIC column



### Additional reading

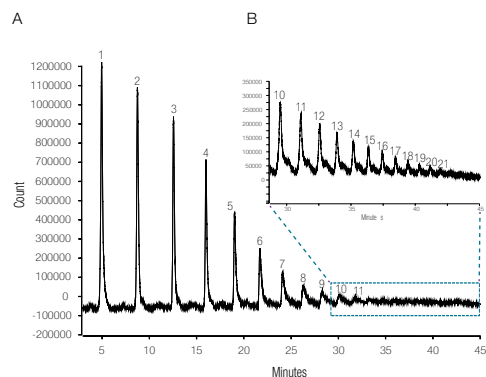
- **Application note:** Analysis of human IgG glycans on a solid core amide HILIC stationary phase

Learn more at [thermofisher.com/biolc](https://thermofisher.com/biolc)



### 2-AB labeled dextran ladder

Accucore 150-Amide-HILIC, 2.6 µm, 100 x 2.1 mm	
Flow rate	500 µL/min
Mobile phase A	Acetonitrile
Mobile phase B	50 mM ammonium formate, pH 4.5
Temperature	60 °C
Injection volume	2 µL to 5 µL
Backpressure at starting conditions	110 bar
Injection wash solvent	80:20 (v/v) acetonitrile:water
Detector	Fluorescence, 330 nm excitation wavelength; 420 nm emission wavelength; acquisition start after 3 min from gradient start
Run time	50 min
Gradient	20–50% B in 40.0 minutes 50% B for 5.0 minutes 50–20% B in 0.5 minutes 50% B for 4.5 minutes



(A) 2 µL injection of sample, where 11 glycans were separated.

(B) 5 µL injection of sample, zoomed-in to the later part of the gradient rise. A further 10 glycans were detected.



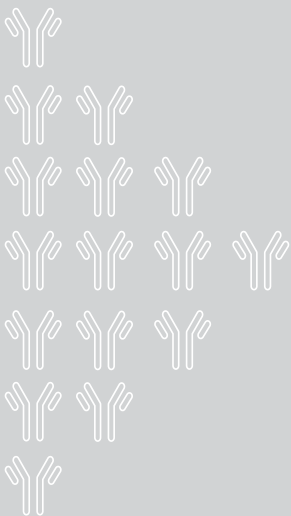
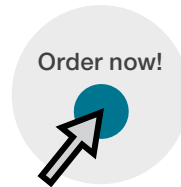
# Accucore 150-Amide-HILIC column

Continued



## Accucore 150-Amide-HILIC columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
2.6	Defender guard (4/pk)	10	<a href="#">16726-012105</a>	—	—
	HPLC column	50	<a href="#">16726-052130</a>	<a href="#">16726-053030</a>	—
		100	<a href="#">16726-102130</a>	<a href="#">16726-103030</a>	<a href="#">16726-104630</a>
		150	<a href="#">16726-152130</a>	<a href="#">16726-153030</a>	<a href="#">16726-154630</a>
		250	<a href="#">16726-252130</a>	—	—
—	Guard cartridge holder		<a href="#">852-00</a>	<a href="#">852-00</a>	<a href="#">850-00</a>



### Webinars:

Analytical and life science webinars live and on-demand



### NIBRT collaboration information

A collaboration built for Biopharma between the National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific

[thermofisher.com/nibr](http://thermofisher.com/nibr)



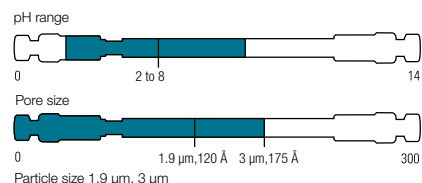
# GlycanPac AXH-1 column



## Additional reading

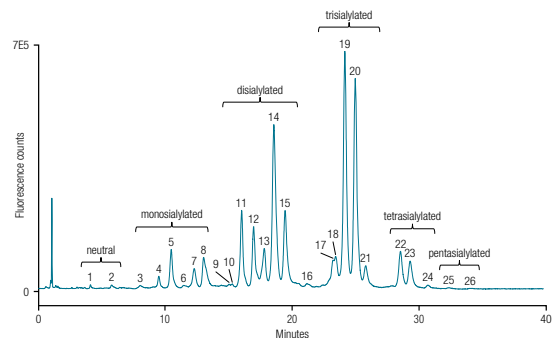
- **Application note:** Separation of 2AB-labeled N-linked glycans from bovine fetuin on a novel ultra high resolution mixed-mode column
- **Application note:** Separation of 2AA-labeled N-linked glycans from human IgG on a high resolution mixed-mode column
- **Application note:** Separation of 2AA-labeled N-linked glycans from glycoproteins on a high resolution mixed-mode column

Learn more at [thermofisher.com/biolc](https://thermofisher.com/biolc)



## Separation of 2AB labeled N-glycans from bovine fetuin by charge, size and polarity

GlycanPac AXH-1, 1.9 μm, 150 x 2.1 mm				
Flow rate	0.4 mL/min			
Mobile phase A	Acetonitrile (100%)			
Mobile phase B	Water			
Mobile phase C	Ammonium formate (100 mM, pH = 4.4)			
Temperature	30 °C			
Injection volume	5 μL			
Detection	Fluorescence, 320/420 nm			
Sample	2AB labeled N-glycan from bovine fetuin			
Curve	5			
Gradient	Time (min)	%A	%B	%C
	-10.0	78	20	2
	0.0	78	20	2
	30.0	70	20	10
	35.0	60	20	20
	40.0	50	20	30



## GlycanPac AXH-1 columns

Particle size (μm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
1.9	UHPLC column	100	<a href="#">082473</a>	—	—
		150	<a href="#">082472</a>	—	—
		250	<a href="#">082521</a>	—	—
3	Guard cartridges (2/pk)	10	<a href="#">082476</a>	<a href="#">082475</a>	<a href="#">082474</a>
	HPLC column	150	<a href="#">082470</a>	<a href="#">082469</a>	<a href="#">082468</a>
—	Guard cartridge holder	—	<a href="#">069580</a>	<a href="#">069580</a>	<a href="#">069580</a>



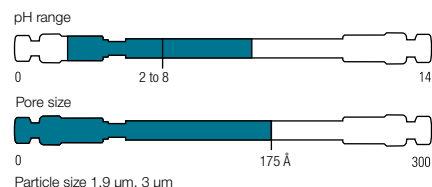
# GlycanPac AXR-1 column



## Additional reading

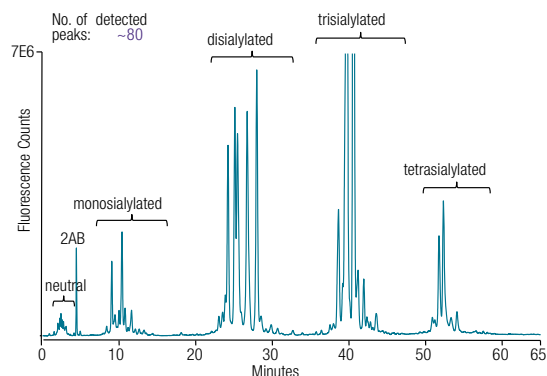
- **Analyteguru.com:** Separation of 2AB labeled N-glycans from bovine fetuin on a novel mixed-mode stationary phase
- **Application note:** Structural analysis of native N-glycans released from proteins using a novel mixed-mode column and a hybrid quadrupole-orbitrap mass spectrometer

Learn more at [thermofisher.com/biolc](https://www.thermofisher.com/biolc)



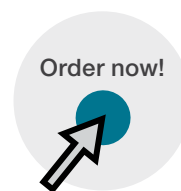
## Separation of 2AB labeled N-glycans from bovine fetuin

GlycanPac AXR-1, 1.9 μm, 150 x 2.1 mm				
Flow rate	0.4 mL/min			
Mobile phase A	Acetonitrile			
Mobile phase B	Water			
Mobile phase C	Ammonium formate (100 mM, pH = 4.4)			
Temperature	40 °C			
Sample load	100 pmoles			
Detection	Fluorescence, 320/420 nm			
Sample	2AB labeled N-glycan from bovine fetuin			
Curve	5			
Gradient	Time (min)	%A	%B	%C
	-10.0	0	95	5
	0.0	0	95	5
	1.0	0	95	15
	30.0	1	74	25
	65.0	20	50	30



## GlycanPac AXR-1 columns

Particle size (μm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
1.9	UHPLC column	150	<a href="#">088136</a>	—	—
		250	<a href="#">088135</a>	—	—
—	Guard cartridge holder	—	<a href="#">069580</a>	<a href="#">069580</a>	<a href="#">069580</a>



# Aggregate fragment analysis

For mAb samples, our 300 Å silica **Thermo Scientific™ MAbPac™ SEC-1** provides separation of aggregate and fragment samples to characterize your sample by LC-UV or LC-MS. Polymer-based **Thermo Scientific™ Acclaim™**

**SEC-300Å** and **Thermo Scientific™ Acclaim™ SEC-1000** columns should be selected when working with mAbs conjugated to another compound, such as PEGylated samples.



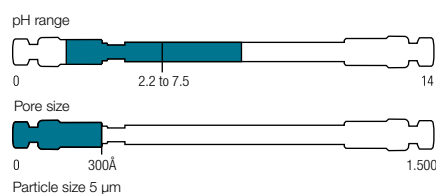
## MAbPac SEC-1 column



### Additional reading

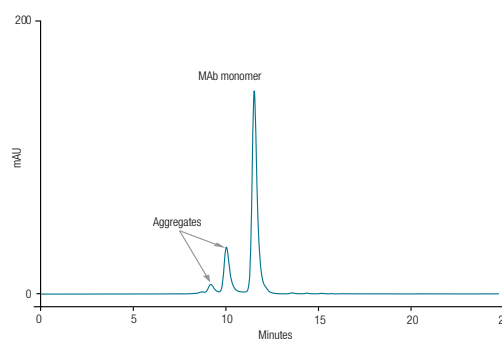
- **Application note:** Lifetime stability of size-exclusion chromatography columns for protein aggregate analysis
- **Application note:** Analysis of monoclonal antibodies and their fragments by size-exclusion chromatography coupled with an Orbitrap mass spectrometer

Learn more at [thermofisher.com/biolc](https://thermofisher.com/biolc)



### Monoclonal antibody aggregate separation

MAbPac SEC-1, 5 µm, 300 x 4.0 mm (PEEK)	
Flow rate	0.20 mL/min
Mobile phase	0.3 mM NaCl in 50 mM phosphate buffer pH 6.8
Gradient	0% B for 0.2 mins, 100% B for 0.60 mins, 0% B for 1.20 mins
Temperature	30 °C
Injection volume	2 µL
Detection	280 nM
Sample	mAb (10 mg/mL)



### MAbPac SEC-1 columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	4.0 mm ID	7.8 mm ID
5	Guard column	50	—	<a href="#">074697</a>	—
—	HPLC column	150	<a href="#">088790</a>	<a href="#">075592</a>	—
		300	<a href="#">088789</a>	<a href="#">074696</a>	<a href="#">088460</a>



# Acclaim SEC-300 column

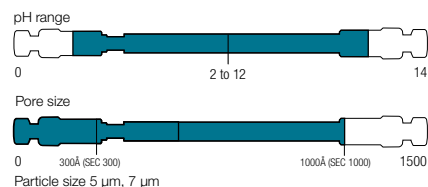
# Acclaim SEC-1000 column



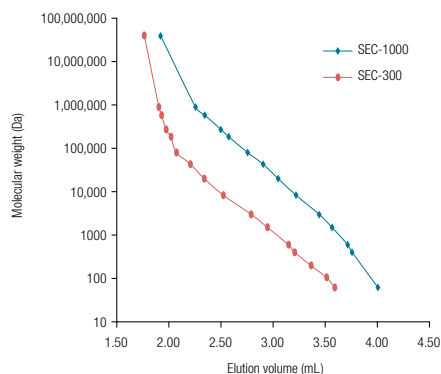
**Additional reading**

- **Technical note:** Acclaim column selection guide
- **Brochure:** Acclaim columns overview

Learn more at [thermofisher.com/biolc](https://thermofisher.com/biolc)

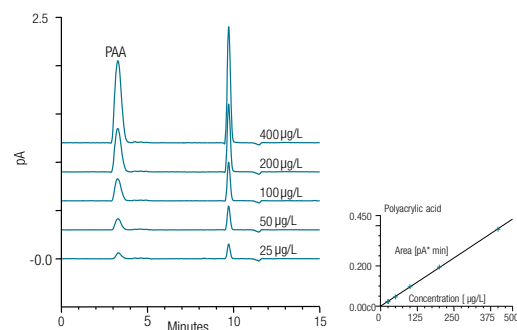


Acclaim SEC-300, 5 µm, 300 x 4.6 mm	
Acclaim SEC-1000, 7 µm, 300 x 4.6 mm	
Flow rate	0.35 mL/min
Mobile phase	10 mM sodium perchlorate
Analytes	(0.03% - 0.1% in mobile phase) dextran (MW 5,000,000-40,000,000), PEO (MW 895,000, 580,000, 272,000, 185,000, 80,000, 43,000, and 20,000), PEG (MW 8,300, 3,000, 1,500, 600, 400 and 200), diethylene glycol (MW 106 and ethylene glycol (MW 62)
Temperature	25 °C
Injection volume	50 µL
Detection	RI



## Polyacrylic acid using SEC with charged-aerosol detection

Acclaim SEC-300, 5 µm, 300 x 4.6 mm	
Flow rate	0.35 mL/min
Mobile phase	A: Acetonitrile B: Water
Analytes	1. PAA standards in water
Temperature	50 °C
Injection volume	35 µL
Detection	Corona III; evaporator 55 °C, Engine 40 °C, 2 Hz, filter 5, power function 1.20



## Acclaim size exclusion chromatography (SEC) columns

Description	Particle size (µm)	Format	Length (mm)	4.6 mm ID	7.8 mm ID
Acclaim SEC-300	5	Guard	33	<a href="#">082740</a>	—
		HPLC column	150	—	<a href="#">079726</a>
			300	<a href="#">079723</a>	<a href="#">079725</a>
Acclaim SEC-1000	7	Guard	33	<a href="#">082739</a>	—
		HPLC column	150	—	<a href="#">079722</a>
			300	<a href="#">079724</a>	<a href="#">079721</a>

# Intact and subunit analysis (RP)

The wide pore (1500 Å) polymeric **Thermo Scientific™ MAbPac™ RP** columns offers high resolution separation and minimal carryover for monoclonal antibody samples. Excellent lifetime and ability to separate intact and protein subunits, compatible with LC-UV and LC-MS/MS applications.

The monolithic **Thermo Scientific™ ProSwift™ RP** columns offer unique selectivity, high throughput separations for a wide range of protein sizes. These columns provide high loadability and operate under very low backpressure.



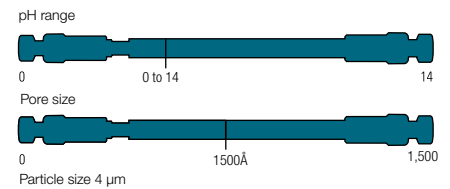
## MAbPac RP column



### Additional reading

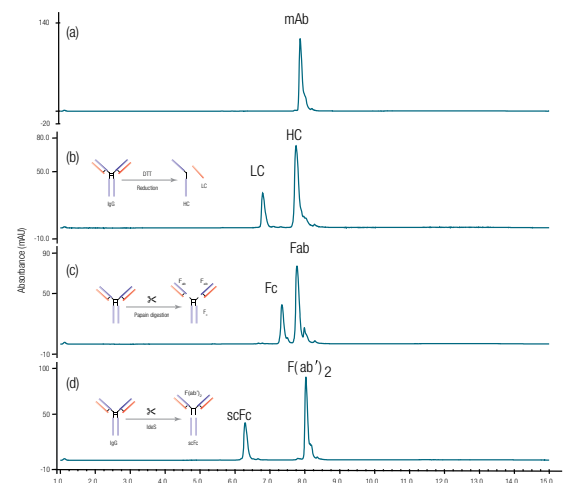
- **Application note:** Confident monoclonal antibody sequence verification by complementary LC-MS techniques
- **Application note:** Fast analysis of therapeutic monoclonal antibody fragments using a supermacroporous, reversed-phase chromatography column

Learn more at [thermofisher.com/biolc](https://thermofisher.com/biolc)



### mAb and mAb fragments analysis

MAbPac RP, 4 μm, 50 x 3.0 mm			
Flow rate	0.5 mL/min		
Mobile phase A	H <sub>2</sub> O/FA/TFA (99.88 : 0.1 : 0.02 v/v/v)		
Mobile phase B	ACN/H <sub>2</sub> O/FA/TFA 90 : 9.88 : 0.1 : 0.02 v/v/v/v)		
Temperature	80 °C		
Injection volume	5 μL		
Detection	UV at 280 nm		
Sample	(a) trastuzumab (5 mg/mL)		
	(b) trastuzumab + DTT (4 mg/mL)		
	(c) trastuzumab + Papain (2 mg/mL)		
	(d) trastuzumab + IdeS (2 mg/mL)		
Gradient	Time (min)	%A	%B
	0.0	80	20
	1.0	80	20
	11.0	55	45
	12.0	55	45
	16.0	80	20





# MABPac RP column

Continued

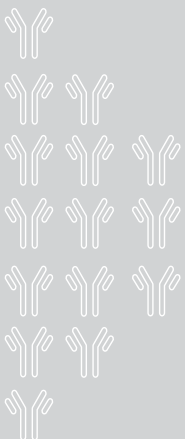
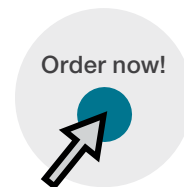


## MABPac RP columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID
4	Guard cartridges (2/pk)	10	<a href="#">088649</a>	<a href="#">088646</a>
		50	<a href="#">088648</a>	<a href="#">088645</a>
	HPLC column	100	<a href="#">088647</a>	<a href="#">088644</a>
		150	<a href="#">303270</a>	<a href="#">303269</a>
—	Guard cartridge holder	—	<a href="#">069580</a>	<a href="#">069580</a>

## MABPac RP 1 mm columns

Particle size (µm)	Length (mm)	1 mm ID
4	50	<a href="#">303182</a>
	100	<a href="#">303183</a>
	150	<a href="#">303184</a>



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# ProSwift RP column



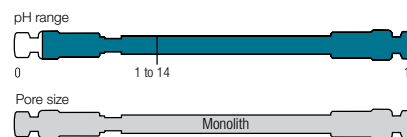
## Additional reading

Learn more at [thermofisher.com/biolc](http://thermofisher.com/biolc)

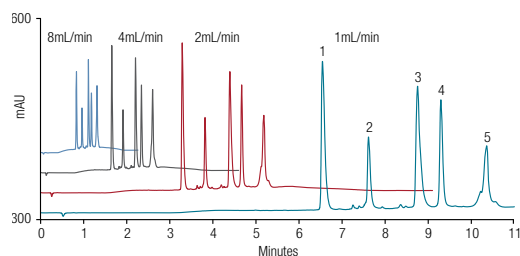


## ProSwift column

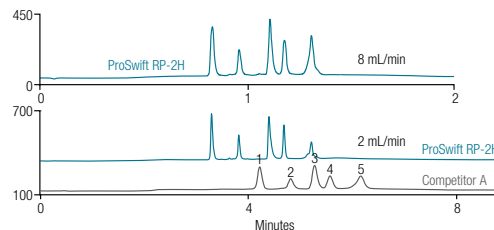
ProSwift RP-2H, 50 x 4.6 mm	
Flow rate	1, 2, 4, or 8 mL/min
Mobile phase A	H <sub>2</sub> O/ACN (95:5; V/V) + 0.1% TFA
Mobile phase B	H <sub>2</sub> O/ACN (5:95; V/V) + 0.1% TFA
Injection volume	2 µL
Detection	UV at 214 nm
Sample	Mixture of five proteins
Gradient	1 mL/min: 1-75% B in 12 min 2 mL/min: 1-75% B in 6 min 4 mL/min: 1-75% B in 3 min 8 mL/min: 1-75% B in 1.5 min
Analytes	1. Ribonuclease A 1.5 mg/mL 2. Cytochrome C 0.5 mg/mL 3. BSA 1.5 mg/mL 4. Carbonic anhydrase 0.9 mg/mL 5. Ovalbumin 1.5 mg/mL



## Proteins

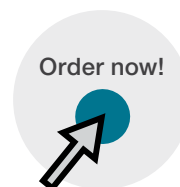


## Competitive comparison



## ProSwift RP columns

Functional group	Length (mm)	1.0 mm ID	4.6 mm ID
RP-1S	50	—	<a href="#">064297</a>
RP-2H	50	—	<a href="#">064296</a>
RP-3U	50	—	<a href="#">064298</a>
RP-4H	50	<a href="#">069477</a>	—
RP-10R	50	<a href="#">164586TS</a>	—
RP-4H	250	<a href="#">066640</a>	—

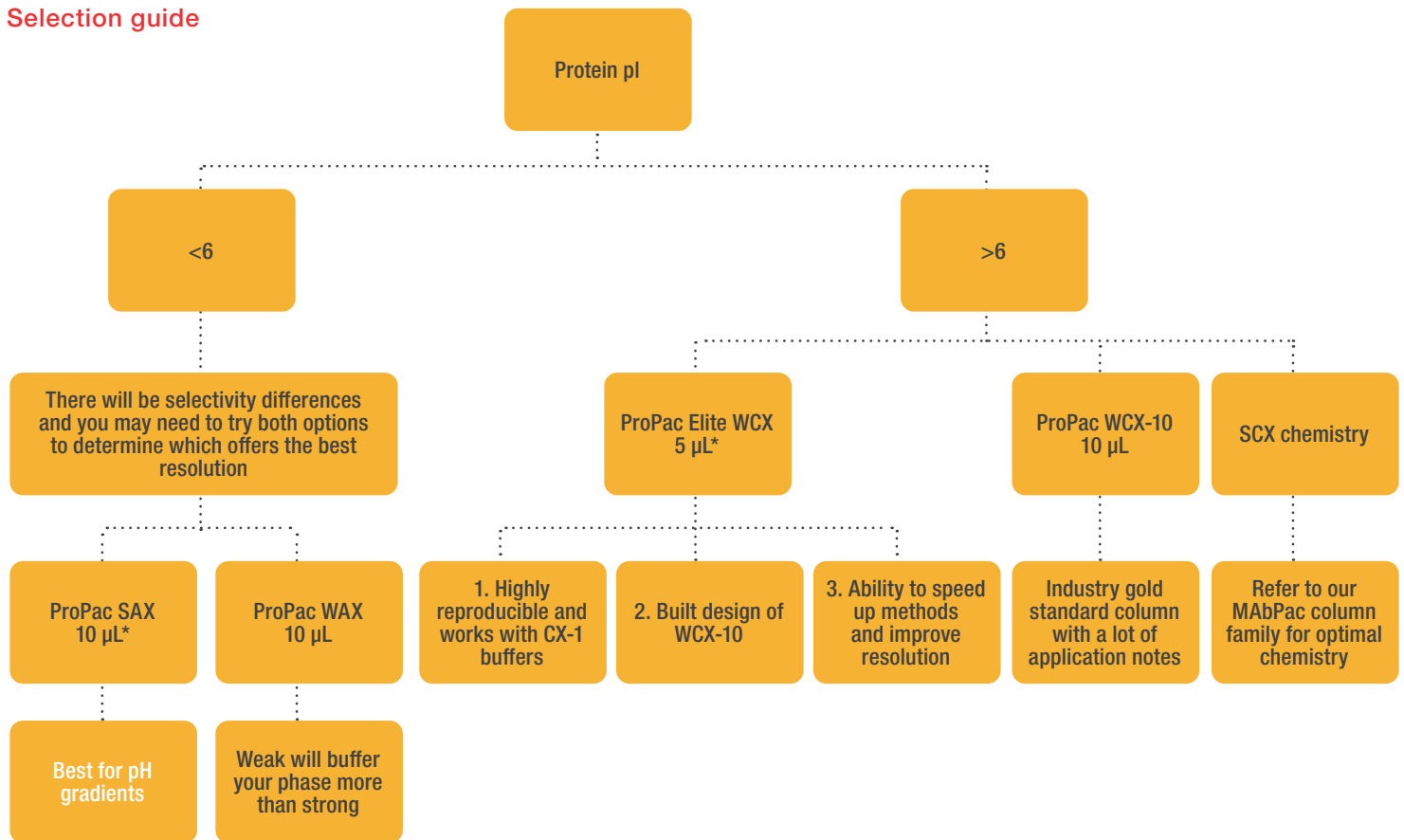


# Charge variant analysis

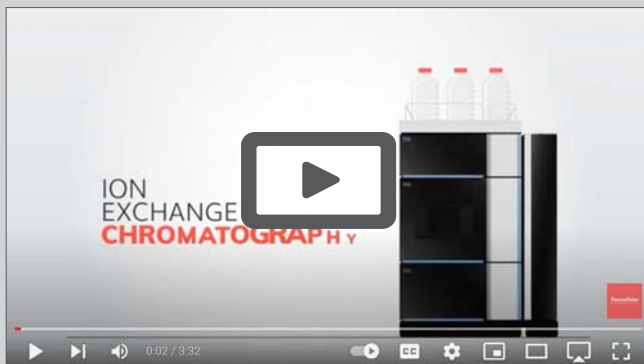
For charge variant analysis by LC-UV or LC-MS/MS **Thermo Scientific™ ProPac™ Elite WCX** and **Thermo Scientific™ MAbPac™ SCX-10** columns deliver outstanding resolution on a highly reproducible platform. When used in combination with our linear CX-1 pH gradient buffers, quickly develop

an LC-UV platform method for proteins with a pI from 6-10. For proteins with a pI less than 6, it is recommended that you start with a strong anion exchange column, such as the **Thermo Scientific™ ProPac™ SAX-10** columns.

## Selection guide

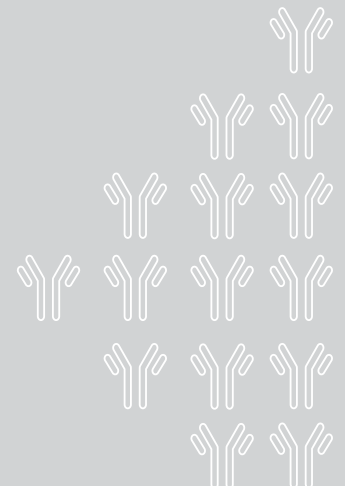


\*= if uncertain on which phase to choose start here



### Video:

Tips to improve your charge variant analysis by ion exchange





# ProPac Elite WCX column



## Additional reading

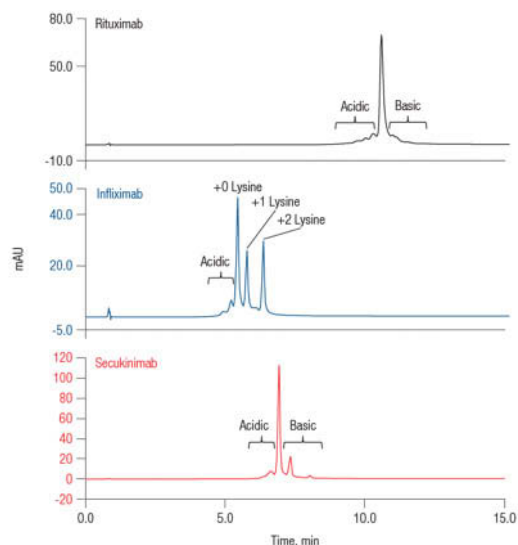
- **Application note:** Separation of IgG2 and IgG4 therapeutics using weak cation exchange chromatography
- **Application note:** Salt gradient analysis of IgG1 monoclonal antibodies using a 5 µm WCX chromatography column

Learn more at [thermofisher.com/biolc](https://thermofisher.com/biolc)



## ProPac Elite WCX, 5 µm, 150 x 4.0 mm

Flow rate	1.0 mL/min	
Mobile phase A	1x CX-1 pH Gradient buffer A	
Mobile phase B	1x CX-1 pH Gradient buffer B	
Temperature	30 °C	
Injection volume	2 µL	
Detection	UV at 280 nm	
Sample	Top: rituximab, 5 mg/mL Middle: infliximab, 5 mg/mL Bottom: secukinimab, 5 mg/mL	
Gradient	Time (min)	%A %B
	0.0	80 20
	15.0	20 80
	15.1	0 100
	17.0	0 100
	17.1	80 20
25.0	80 20	



## ProPac Elite WCX columns

Particle size (µm)	Format	Length (mm)	2.0 mm ID	4.0 mm ID
5	Analytical	50	<a href="#">303028</a>	<a href="#">302973</a>
		100	<a href="#">303027</a>	<a href="#">302972</a>
	HPLC column	250	<a href="#">303026</a>	<a href="#">303025</a>

## ProPac Elite WCX kits

Description	Set contents	Column dimensions	Part. no.
ProPac Elite WCX	3 columns from 1 lot	4 × 150 mm	<a href="#">302976</a>
	3 columns from 3 lots		<a href="#">302977</a>
ProPac Elite WCX, analytical	3 columns from 1 lot	4 × 250 mm	<a href="#">303061</a>
	3 columns from 3 lots		<a href="#">303062</a>



# pH gradient buffers



## Ready-to-use buffers for simple method development during charge variant characterization

The Thermo Scientific pH gradient platform accelerates method development and facilitates method transfer to QA/QC for a wide range of protein and mAb charge variants through a generic LC-based approach to charge variant characterization.

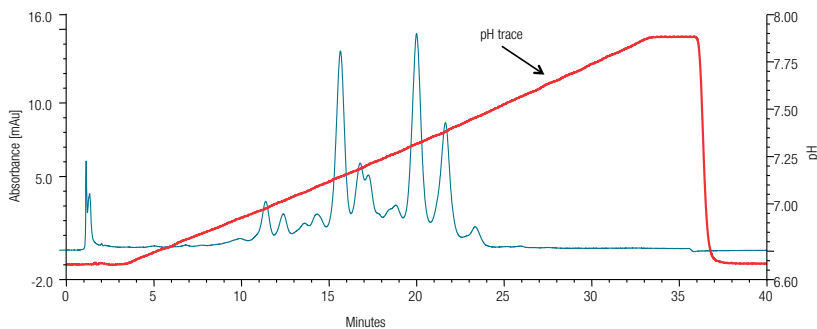
Thermo Scientific pH buffer concentrates can be purchased individually or as a pair, in quantities of 125 mL or 250 mL. For added convenience, the 125 mL buffers can also be bundled with columns in a number of specifically preconfigured kits.

- Patented buffer formulations enable fast, robust and reproducible pH gradients that are simple to optimize and easily automated
- Ready to use with existing LC columns and systems, without the need for time consuming mobile phase adjustments
- Applicable to the majority of mAbs

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## Optimization of mAb charge variant separation using a linear pH gradient: 25% B (pH 6.75) to 50% B (pH 7.9)



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# pH gradient buffers

Continued



## pH gradient buffers

Description	Buffer bottle size		
	125 mL	250 mL	500 mL
Buffer			
CX-1 pH Gradient buffer A (pH 5.6)	<a href="#">083273</a>	<a href="#">085346</a>	<a href="#">302779</a>
CX-1 pH Gradient buffer B (pH 10.2)	<a href="#">083275</a>	<a href="#">085348</a>	<a href="#">302780</a>

Kits	MABPac SCX-10 column	Buffer bottle size	
		125 mL	250 mL
Buffer			
Gradient buffer Kit: includes both buffer A and buffer B (available in either 125 mL or 250 mL size – one bottle each/kit)	—	<a href="#">083274</a>	<a href="#">085349</a>
Gradient starter kit: includes both buffer A and buffer B + MABPac SCX-10	10 µm, 4 × 250 mm	<a href="#">083381</a>	—
Gradient high throughput kit: includes both buffer A and buffer B + MABPac SCX-10	5 µm, 4 × 50 mm	<a href="#">083378</a>	—
Gradient high resolution kit: includes both buffer A and buffer B + MABPac SCX-10	5 µm, 4 × 250 mm	<a href="#">083272</a>	—



### Video:

Fast, reproducible biopharmaceutical charge variant profiling





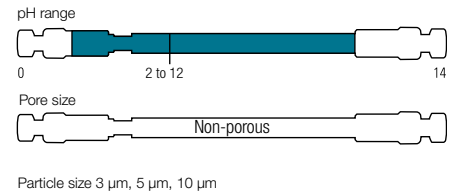
# MABPac SCX-10 column



**Additional reading**

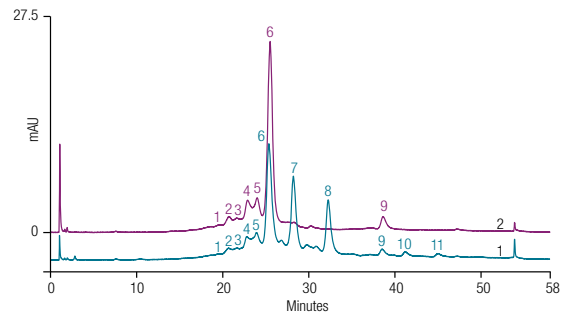
- Application note:** A global pH-gradient based charge variant analysis directly coupled to HRAM-MS (CVA-MS) for mAb analysis
- Application note:** High throughput, high resolution monoclonal antibody analysis with small particle size HPLC columns

Learn more at [thermofisher.com/biolc](https://www.thermofisher.com/biolc)



## Baseline resolution of C-terminal lysine variants of a monoclonal antibody

MABPac SCX-10, 5 µm, 250 x 4.0 mm	
Flow rate	1 mL/min
Mobile phase A	20 mM MES (pH 5.6) + 60 mM NaCl
Mobile phase B	20 mM MES (pH 5.6) + 300 mM NaCl
Gradient	15–36% B in 50 min
Temperature	30 °C
Injection volume	5 µL
Detection	UV at 280 nm
Sample	1. mAb B, 900 µg in 100 µL (no carboxypeptidase) 2. mAb B, 900 µg in 100 µL + carboxypeptidase, 50 µg, incubation at 37 °C for 3 h
Both chromatograms	Peaks 1–5: acidic variants
Sample 1	Peaks 6–8: C-Terminal lysine truncation variants of main peak. Peaks 9–11: C-Terminal lysine truncation variants of minor variant peak
Sample 2	Peak 6 results from peaks 6, 7, and 8 after CBP treatment. Peak 9 results from peaks 9, 10, and 11 after CBP treatment



## MABPac SCX-10 columns

Particle size (µm)	Format	Length (mm)	2.0 mm ID	4.0 mm ID	9.0 mm ID
3	HPLC column	50	—	<b>077907</b>	—
		50	—	<b>078656</b>	—
5	HPLC column	150	—	<b>085198</b>	—
		250	—	<b>078655</b>	—
10	Guard column	50	<b>075749</b>	<b>074631</b>	—
		50	—	<b>075603</b>	—
	HPLC column	150	—	<b>075602</b>	—
		250	<b>075604</b>	<b>074625</b>	<b>088784</b>

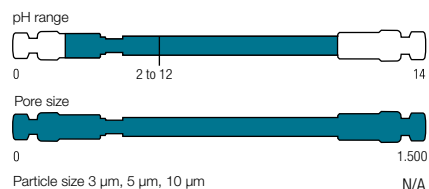


# MabPac SCX-10RS column

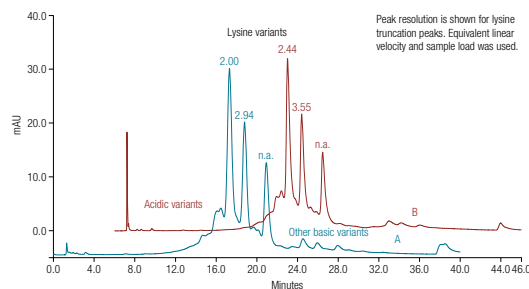


**Additional reading**

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MabPac SCX, 5 μm, 250 x 4.6 mm	
Flow rate	1.5 mL/min
Mobile phase A	20 mM MES pH 5.6 + 60 mM
Mobile phase B	20 mM MES pH 5.6 + 3 mM NaCl
Injection volume	15 μL
Detection	UV at 280 nm
Sample	mAb 5 mg/mL
Both chromatograms	Peaks 1–5: acidic variants
Chromatogram A	Gradient: 33-53% B in 30 min
Chromatogram B	Gradient: 33-53% B in 20 min

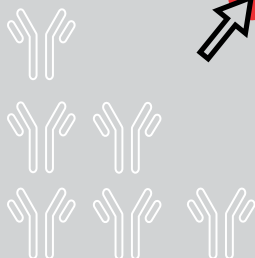


## MabPac SCX-10 RS columns

Particle size (μm)	Format	Length (mm)	2.1 mm ID	4.6 mm ID
5	UHPLC column	50	<a href="#">082675</a>	<a href="#">082674</a>
		150	<a href="#">088242</a>	<a href="#">085209</a>
		250	<a href="#">082515</a>	<a href="#">082673</a>



**Webinar:**  
Taking charged variant analysis of therapeutic proteins to the next level

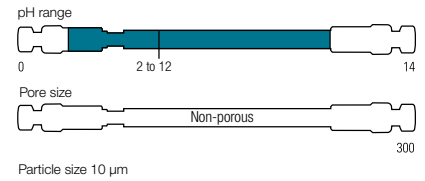




# ProPac SAX-1 column

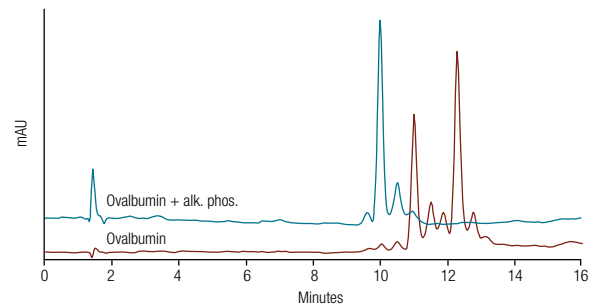


**Additional reading**  
Learn more at [thermofisher.com/biolc](https://www.thermofisher.com/biolc)



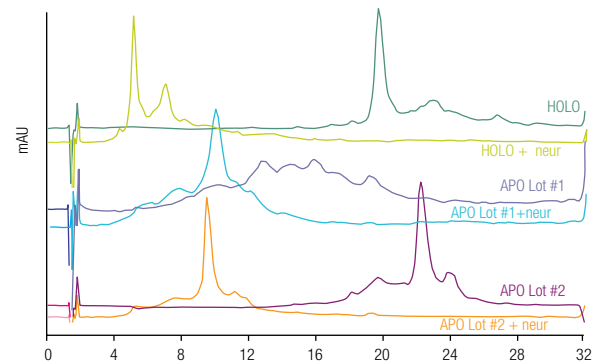
## Resolution of phosphorylation variants of ovalbumin

ProPac SAX-10, 10 µm, 250 x 4.0 mm				
Flow rate	1.0 mL/min			
Mobile phase A	Water			
Mobile phase B	2.0 mM NaCl			
Mobile phase C	0.1 mM Tris/HCl (pH 8.5)			
Injection volume	1.0 µL			
Detection	UV at 214 nm			
Sample	Ovalbumin before and after alkaline phosphatase treatment			
Gradient	Time (min)	%A	%B	%C
	0.0	80	0	20
	15.0	67.5	12.5	20



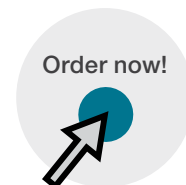
## Effect of sialylation on transferrin chromatography

ProPac SAX-10, 10 µm, 250 x 4.0 mm				
Flow rate	1.0 mL/min			
Mobile phase A	Water			
Mobile phase B	2.0 mM NaCl			
Mobile phase C	0.2 mM Tris/HCl (pH 9)			
Injection volume	50.0 µL			
Detection	UV at 214 nm			
Sample	HOLO (iron rich) and APO (iron poor) human transferrin samples before and after neuraminidase treatment. Digestions were carried out overnight at 37 °C in sodium acetate buffer at pH 5.			
Gradient	Time (min)	%A	%B	%C
	0.0	87	3	10
	30.0	83	7	10



## ProPac SAX-10 columns

Particle size (µm)	Format	Length (mm)	2.0 mm ID	4.0 mm ID	9.0 mm ID	22.0 mm ID	4 x 50 mm
10	Guard column	50	<a href="#">063454</a>	<a href="#">054998</a>	–	–	–
	HPLC column	250	<a href="#">063448</a>	<a href="#">054997</a>	<a href="#">063703</a>	<a href="#">088770</a>	<a href="#">078990</a>







# pH gradient buffers



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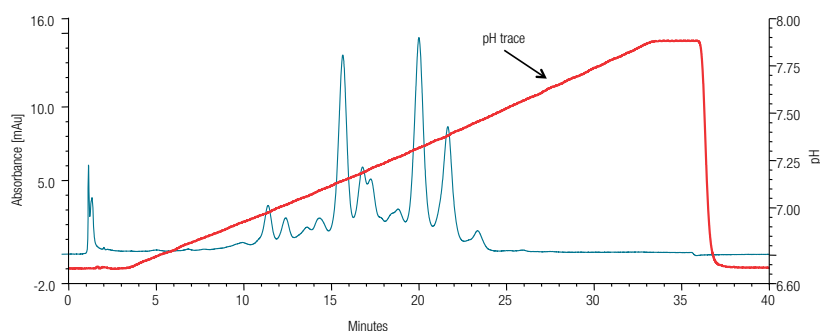
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## Optimization of mAb charge variant separation using a linear pH gradient: 25% B (pH 6.75) to 50% B (pH 7.9)



### Brochure:

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# pH gradient buffers

Continued



## pH gradient buffers

Description	Buffer bottle size		
Buffer	125 mL	250 mL	500 mL
CX-1 pH Gradient buffer A (pH 5.6)	<a href="#">083273</a>	<a href="#">085346</a>	<a href="#">302779</a>
CX-1 pH Gradient buffer B (pH 10.2)	<a href="#">083275</a>	<a href="#">085348</a>	<a href="#">302780</a>

Kits		Buffer bottle size	
Buffer	MABPac SCX-10 column	125 mL	250 mL
Gradient buffer Kit: includes both buffer A and buffer B (available in either 125 mL or 250 mL size – one bottle each/kit)	—	<a href="#">083274</a>	<a href="#">085349</a>
Gradient starter kit: includes both buffer A and buffer B + MABPac SCX-10	10 µm, 4 × 250 mm	<a href="#">083381</a>	—
Gradient high throughput kit: includes both buffer A and buffer B + MABPac SCX-10	5 µm, 4 × 50 mm	<a href="#">083378</a>	—
Gradient high resolution kit: includes both buffer A and buffer B + MABPac SCX-10	5 µm, 4 × 250 mm	<a href="#">083272</a>	—



### Video:

Fast, reproducible biopharmaceutical charge variant profiling



# Peptide mapping and MAM

## Thermo Scientific™ Hypersil GOLD™ VANQUISH™ C18

UHPLC columns are an excellent column choice for a broad range of peptides, offering high resolution for all critical quality attributes, without extremely long retention for more hydrophobic peptides.

For faster separation of peptide samples select the **Thermo Scientific™ Accucore™ C18 VANQUISH™** column. The column offers sub-2 µm particles providing ultra-short diffusion paths that result in extremely efficient separations.



### Additional reading

Learn more at [thermofisher.com/biolc](https://thermofisher.com/biolc)



### Multi-Attribute Method (MAM):

Straight through to breakthrough



Biopharmaceutical Multi-Attribute Method (MAM) learning centre



### Video:

End-to-end MAM solution to move biopharma forward



# Hypersil GOLD VANQUISH column



## Additional reading

- **Flyer:** VANQUISH UHPLC columns. Delivering powerful separations
- **Application note:** An integrated LC-MS system performance evaluation test for peptide mapping and monitoring

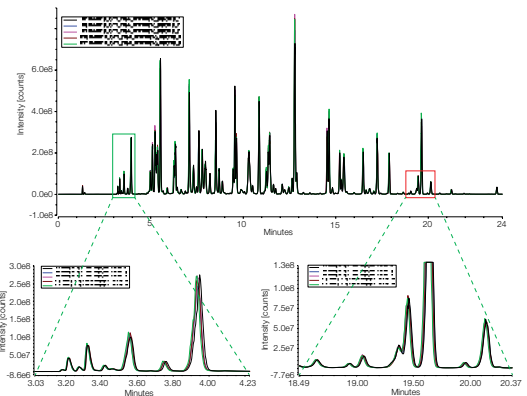
Learn more at [thermofisher.com/biolc](http://thermofisher.com/biolc)



## Overlay of 5 TIC traces from the SET injection sequence

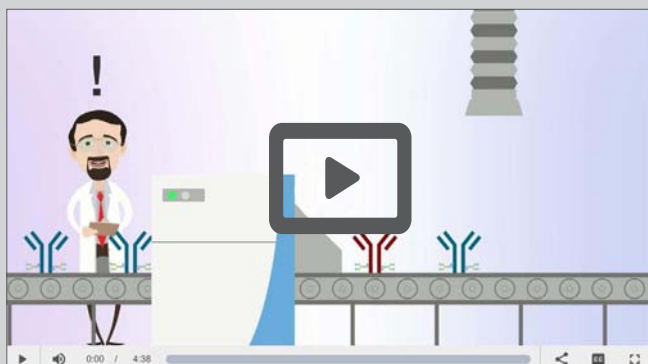
Hypersil GOLD VANQUISH C18 UHPLC column, 150 × 2.1 mm, 1.9 μm

Flow rate	0.25 mL/min
Mobile phase A	H <sub>2</sub> O + 0.1% FA
Mobile phase B	ACN + 0.1% FA
Injection volume	5 μL
Detection	Mass spectrometer – Full scan
Sample	Pierce BSA protein digest standard, MS grade, UD294474 (P/N 88341)
Chromatogram B	Gradient: 33-53% B in 20 min



## Hypersil GOLD Vanquish columns

Columns	Particle size (μm)	Length (mm)	ID (mm)	Cat. no.
		50		<a href="#">25002-052130-V</a>
Hypersil GOLD VANQUISH	1.9	100	2.1	<a href="#">25002-102130-V</a>
		150		<a href="#">25002-152130-V</a>



### Video:

Learn how innovation and monitoring strategies can reduce the number of tests and enhance the methodology of validating impurity





# Accucore VANQUISH C18+ column



### Additional reading

- **Application note:** Comparative analysis of innovator and biosimilar monoclonal antibodies using a multi-attribute method
- **Technical guide:** Powerful separations are our core performance
- **Poster:** Application of a MS in QC method for characterization and attribute monitoring in Antibody-Drug Conjugates

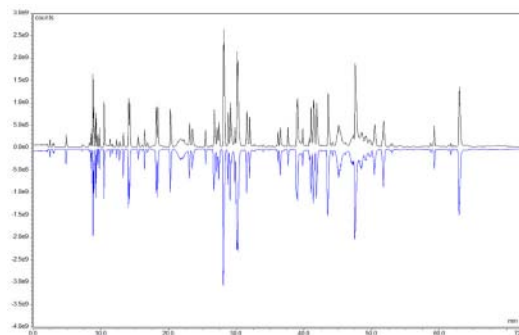
Learn more at [thermofisher.com/biolc](http://thermofisher.com/biolc)



### Mirrored base peak chromatograms of rituximab innovator (black) and its biosimilar product (blue)

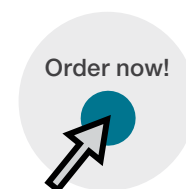
Accucore Vanquish C18+ UHPLC column, 1.5 µm, 2.1 × 150 mm (P/N 27101-152130)

Flow rate	0.25 mL/min
Mobile phase A	H2O + 0.1% FA
Mobile phase B	ACN + 0.1% FA
Injection volume	8 µL
Detection	Mass spectrometer
Sample	Rituximab innovator
Temperature	50 °C



### Accucore Vanquish C18+ columns

Particle size (µm)	Length (mm)	ID mm	Cat. no.
1.5 µm	50 mm	2.1	<a href="#">27101-052130</a>
	100 mm	2.1	<a href="#">27101-102130</a>
	150 mm	2.1	<a href="#">27101-152130</a>



# Nucleic acids/oligonucleotides

## Thermo Scientific™ DNAPac™ RP

column offers ion-pair reversed phase separations of nucleic acid mixtures. Samples from siRNA to mRNA easily resolve on this polymer chemistry. Compatible with LC-UV and LC-MS/MS methodologies this column delivers outstanding separations.

## Thermo Scientific™ DNAPac™ PA200 and Thermo Scientific™ DNAPac™ PA200RS

columns are strong anion exchange columns for n-1 separation of oligo samples. Compatible with LC-UV, these columns offer orthogonal separation to reversed phase columns, separating the oligonucleotide sample by size and charge.

## Thermo Scientific™ DNASwift™

column is a monolithic column designed for users who would like to do SAX purification of oligonucleotide samples using their analytical HPLC. These monolithic columns offer high loadability, with slightly less resolution than our analytical columns.

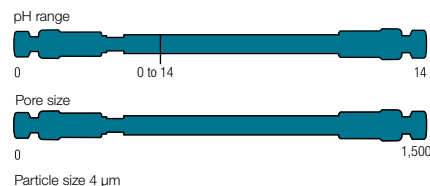


## DNAPac RP column



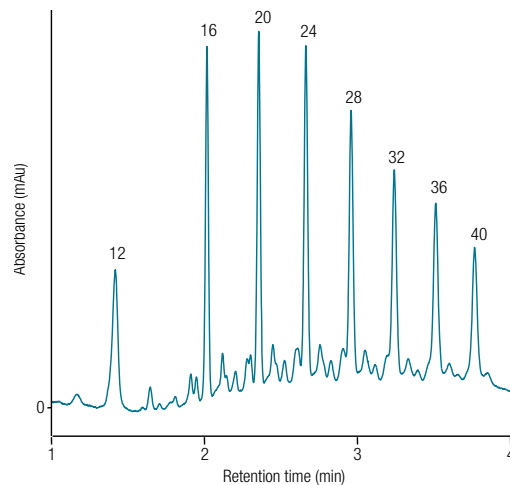
### Additional reading

Learn more at [thermofisher.com/biolc](https://www.thermofisher.com/biolc)



### Fast analysis of mixed base DNA

DNAPac RP, 4 μm, 50 x 2.1 mm			
Flow rate	0.8 mL/min		
Mobile phase A	25 mM HAA, pH 8.5		
Mobile phase B	25 mM HAA, pH 8.5/acetonitrile (50:50 v/v)		
Temperature	65 °C		
Injection volume	4 μL		
Detection	UV at 260 nm		
Sample	8-Combo DNA		
Gradient curve	3		
Peak label	Length of DNA		
Gradient	Time (min)	%A	%B
	-0.1	67	33
	0.0	67	33
	3.0	41	59
	3.1	5	95
	4.9	5	95
	5.0	67	33
	8.0	67	33





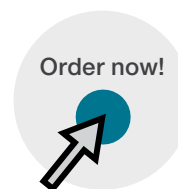
# DNAPac RP column

Continued



## DNAPac RP columns

Particle size ( $\mu\text{m}$ )	Format	Length (mm)	2.1 mm ID	3.0 mm ID
4	Guard cartridges (2/pk)	10	<a href="#">088925</a>	<a href="#">088921</a>
	HPLC column	50	<a href="#">088924</a>	<a href="#">088920</a>
		100	<a href="#">088923</a>	<a href="#">088919</a>
—	Guard cartridge holder	—	<a href="#">069580</a>	<a href="#">069580</a>



### Brochure:

Thermo Scientific  
DNAPac family of  
columns



### Webinar:

Oligonucleotide analysis,  
new practical advances  
and tips to a mature  
technique



### Webinar:

The future of  
oligonucleotide analysis,  
from short synthetic DNA  
to mRNA sequencing

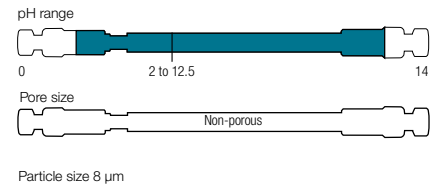


# DNAPac PA200 column



## Additional reading

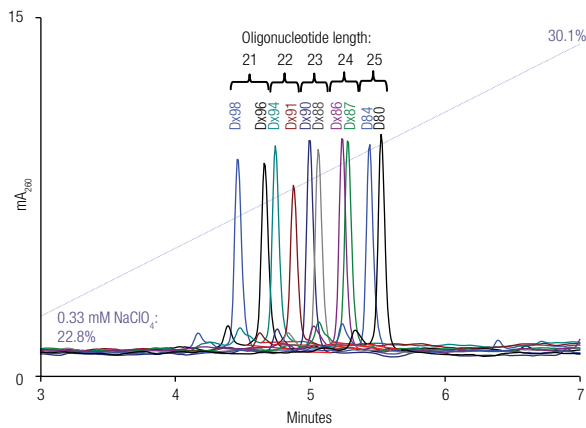
Learn more at [thermofisher.com/biolc](https://www.thermofisher.com/biolc)



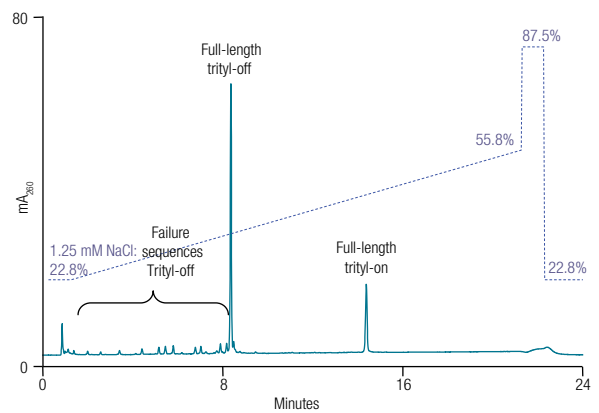
## DNAPac PA200, 8 µm, 250 x 4.0 mm

Flow rate	1.2 mL/min
Mobile phase	NaClO <sub>4</sub> , pH 6.5 with 20% ACN
Detection	UV at 260 nm
Flow rate	1.2 mL/min

## Separation of oligonucleotides by length

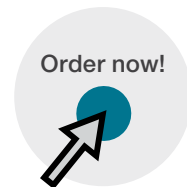


## Target, failure and trityl-on oligonucleotides



## DNAPac PA200 columns

Particle size (µm)	Format	Length (mm)	2.0 mm ID	4.0 mm ID	9.0 mm ID	22.0 mm ID
8	Guard column	50	<a href="#">063423</a>	<a href="#">062998</a>	<a href="#">063419</a>	<a href="#">088780</a>
	HPLC column	250	<a href="#">063425</a>	<a href="#">063000</a>	<a href="#">063421</a>	<a href="#">088781</a>







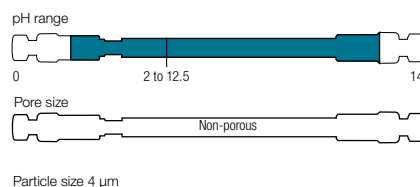
# DNAPac PA200 RS column



## Additional reading

- **Brochure:** Superior oligonucleotide analysis
- **Application note:** High resolution separation of oligonucleotides
- **Application note:** Ultra-high-resolution separation of oligonucleotides by UHPLC
- **Application note:** Separation of mixed-base oligonucleotides using a high-resolution, reversed-phase chromatography column

Learn more at [thermofisher.com/biolc](http://thermofisher.com/biolc)



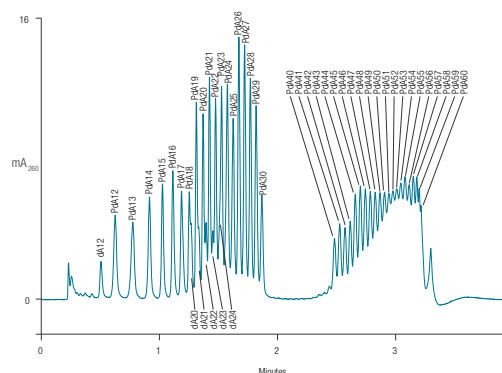
## Partial resolution of 46 oligonucleotides

### DNAPac PA200 RS, 4 µm, 50 x 4.6 mm

Flow rate	1.30 mL/min
Mobile phase A	20 mM Tris pH 8
Mobile phase B	A + 1.25 mM NaCl
Temperature	30 °C
Injection volume	2.5 µL
Gradient	28–43% B in 4 CV* (2.56 min) curve 3**
Sample	PdA12–30, 40–60

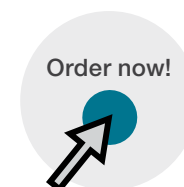
\*CV = column volumes

\*\*Curve 3 indicates continuously changing gradient, asymptotically approaching a maximum salt concentration. Programmed in Thermo Scientific™ Chromeleon™ 6.8.



## DNAPac PA200 RS columns

Particle size (µm)	Format	Length (mm)	4.6 mm ID
4	BioRS column	50	<a href="#">082508</a>
		150	<a href="#">082509</a>
		250	<a href="#">082510</a>



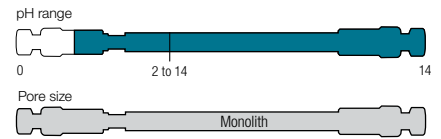


# DNASwift SAX-1S column



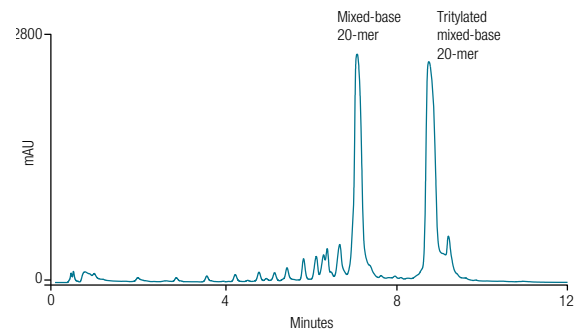
**Additional reading**

Learn more at [thermofisher.com/biolc](https://www.thermofisher.com/biolc)



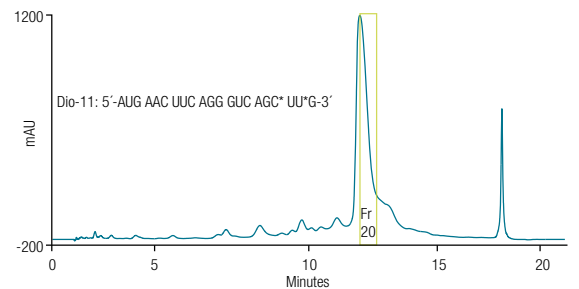
## Tritylated oligonucleotide

DNASwift SAX-1S, 150 x 5.0 mm	
Flow rate	1.5 mL/min
Mobile phase A	15 mM Tris, pH 8
Mobile phase B	15 mM Tris, pH 8, 1.25 M NaCl
Temperature	30 °C
Injection volume	20 µL
Detection	UV at 260 nm
Gradient	8–64% B in 10 min



## Purification of a 21-base RNA sample with aberrant 2'-5' linkages at the 1 and 3 positions from the 3' end

DNASwift SAX-1S, 150 x 5.0 mm	
Flow rate	1.5 mL/min
Mobile phase A	40 mM Tris, pH 7
Mobile phase B	40 mM Tris, pH 7 + 1.25 M NaCl
Temperature	30 °C
Injection volume	125 µg
Detection	UV at 260 nm
Gradient	26–42% B in 10 column volumes



## DNASwift SAX-1S column

Length (mm)	5.0 mm ID
150	<a href="#">066766</a>



### Webinar:

Oligonucleotide analysis, new practical advances and tips to a mature technique





**Brochure:**

See your protein therapeutics in high resolution



**Webinars**

Analytical and life science webinars live and on-demand



**NIBRT collaboration information**

A collaboration built for Biopharma between the National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific

[thermofisher.com/nibr](http://thermofisher.com/nibr)

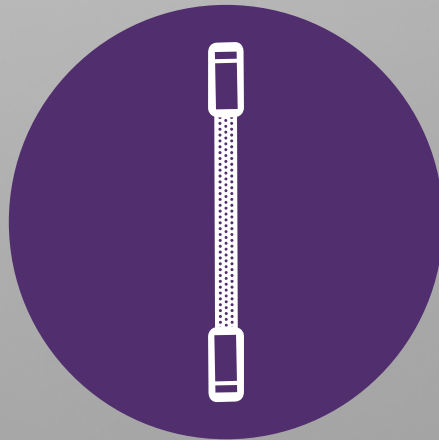
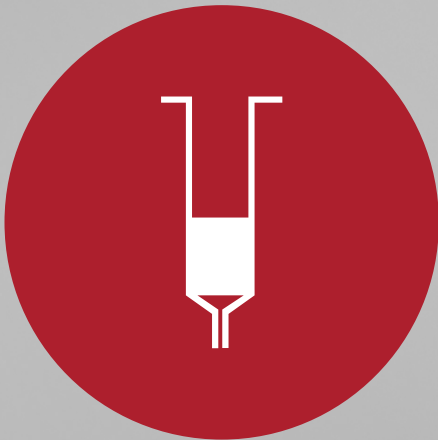


Expect reproducible results with sample prep, columns and vials



Don't see what you need? We would be happy to discuss your specific requirements. Please contact your local sales representative for custom orders.

 Learn more at [thermofisher.com/chromatographyconsumables](https://www.thermofisher.com/chromatographyconsumables)



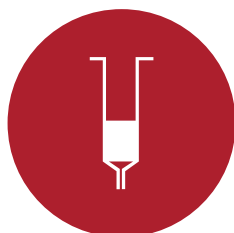
Chromatography consumables

## Connected chromatography solutions

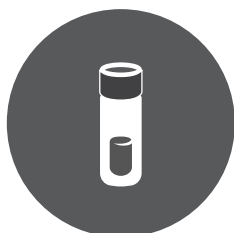
Chromatography consumables catalog

# Comprehensive products to support your chromatography workflows

## Sample preparation solutions



## Sample handling solutions



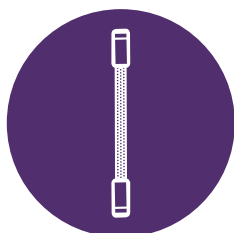
## Low-flow LC columns and accessories



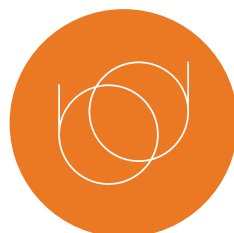
## BioLC columns and accessories



## LC columns and accessories



## GC columns and accessories

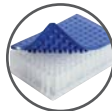


Thermo Scientific™ products:

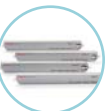
- SMART Digest™ kits
- SOLA™ SPE products
- HyperSep™ SPE products
- TurboFlow™ and online sample preparation products
- QuEChERS products
- Automated micro solid-phase extraction (μSPE) products
- Syringes and syringe filters



- SureSTART™ AVCS™ closures and SureStop vials
- SureSTART™ Gold grade purity glass vials and vial kits
- SureSTART™ low residual microsampling vials and vial kits
- MS certified vials
- Polyspring vial inserts
- Electronic crimping and decrimping tools
- WebSeal™ well-plates and sealing mats for chromatography



- EASY-Spray™ HPLC columns for top-down and bottom-up proteomics
- Double nanoViper PepMap™ Neo HPLC columns for top-down and bottom-up proteomics
- μPAC™ HPLC columns for bottom-up proteomics



- MAbPac™ size exclusion chromatography
- MAbPac™ and ProPac™ charged variant profiling
- MAbPac™ intact and subunit analysis
- HILIC and mixed-mode glycan analysis
- DNAPac™ oligonucleotide and gene therapy analysis
- Vanquish™ UHPLC peptide analysis



- Accucore™ U/HPLC columns
- Acclaim™ U/HPLC columns
- Hypersil GOLD™ U/HPLC columns
- Hypercarb™ HPLC columns
- Application specific HPLC columns
- Hypersil™ BDS and Hypersil™ classical HPLC columns
- LC accessories
- Preparative HPLC columns



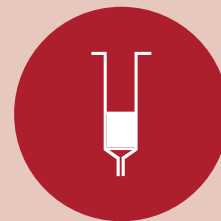
- TracePLOT™ GC columns
- TraceGOLD™ packed GC columns
- GuardGOLD™ capillary GC columns
- LinerGOLD™ liners
- Super Clean™ gas cartridge filters
- GC consumables
- Gas management
- GC equipment
- GC reagents



# Our portfolio

## Sample preparation solutions

Save time, improve reproducibility, and extend the lifetime of your High/Ultra High Performance Liquid Chromatography (HPLC/UHPLC) and gas chromatography (GC) columns with our comprehensive range of sample preparation products. Achieve high sensitivity, selectivity, and recovery with advanced solid-phase extraction (SPE) consumables.



## Sample handling solutions

We provide a broad selection of sample handling and containment solutions from all your chromatography requirements. Our vials, closures and well plates, come with the lowest levels of extractables and leachables, are made from glass that has low compound adsorption, and the highest level of standards and certification available in the marketplace. Whether you have routine and robust samples, or you need to ensure the highest level of confidence and compliance, our market leading portfolio of storage and autosampler vials and closure, well plates and sample handling accessories has everything you'll need.



## Low-flow LC columns and accessories

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.



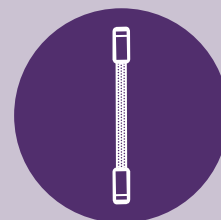
## BioLC columns and accessories

Achieve ultrahigh resolution and high efficiency separations of proteins, peptides, monoclonal antibodies, biosimilars, carbohydrates, oligonucleotides and more. Our unique column chemistries for biological samples have a long-standing reputation for providing excellent reproducibility and durability under a broad range of pH, temperature, and mobile phase compositions.



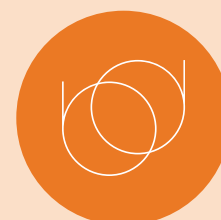
## LC columns and accessories

As a leader in LC column technology including silica, polymer and porous graphitic carbon manufacturing, bonded phase production and column packing for 40 years, you can rely on the quality of Thermo Scientific high performance liquid chromatography (HPLC) products: a comprehensive range of innovative columns, accessories and equipment for fast and reproducible analytical and prep HPLC and ultra-high performance liquid chromatography (UHPLC) analysis.



## GC columns and accessories

We offer a broad portfolio of GC columns and accessories designed to give optimal system performance for today's challenging analyses. Our range of GC accessories include all the tools needed by today's gas chromatographers.



# Product selection tools and additional resources

## Sample handling selection guide

### ? Need a quick answer?

Why not use our online product selector guide that includes our entire SureSTART Collection of vials, caps, well plates and mats.



SureSTART™ Selection Guide

Selecting your vial and well plate has never been easier.

**About this guide**

Have you ever struggled with finding the right sample handling solution for your application? You will struggle no longer! This simple guide will find the perfect solution product for you in just a few clicks.

[Get started](#)

- Application specific vials**  
Ensure what goes into the lab comes out... and that the vial you choose is fit for purpose for your application set up. This guide will take you right to your vial.
- Plates for high-throughput**  
If you use a high-throughput lab, you may be interested in finding a plate rather than a vial to speed up your throughput. As plate compatibility is dependent on your instrument this guide will find the plate that works with your instrument type.
- Low cost vials at your fingertips**  
Find the correct vial for your application - and budget. If cost is a key purchasing criteria for you then we've got you covered as this guide takes all your lab requirements into consideration.

## Sample handling cross reference tool

### ? Already purchasing an existing product from us or someone else?

Let our cross-reference tool find the equivalent SureSTART product/catalog number for you.



SureSTART Cross Reference Tool

Designed for cross referencing chromatography vials, caps and inserts, finding an equivalent product is easy. Using this cross-reference tool, there are 2 easy options for you to find an equivalent Thermo Scientific SureSTART™ product. All you need to know is your current catalog number part number.

**Option 1: Input SKUs Directly**

Either type or copy/paste a list of SKUs into the text field below.

**Option 2: Upload CSV**

[Don't have a data file? Download a sample .csv file](#)



# Product selection tools and additional resources

## Septa selection tool

? **Choosing the right septa can be complex!**  
There are a number of factors that should be considered including: needle type, vial type, solvents and temperature that the septa will be exposed to. Let us help you find the right septa with this easy-to-use tool.



**Septa Selection Tool**  
An easy-to-use tool that ensures you find the right septa for your experimental requirements.

**About this tool**  
Choosing the right septa can be complex. There are a number of factors that should be considered including: needle type, vial type, and solvents and temperature that the septa will be exposed to. Let us help you find the right septa for your requirements with this easy-to-use tool.

**Get Started**

**Why use the Septa Selection Guide?**

- Needle / autosampler issues**  
If you are experiencing needle or autosampler issues (e.g. needle bending or blocking), you may need to change the type of septa you are using.  
You may need to consider a pre-wet septa or changing the hardness and / or thickness of your current septa.
- Septa compatibility with solvents.**  
If you are having reproducibility issues it might be down to your septa. Some septa are better for non-polar solvents and others are more suitable for polar solvents.
- New experimental parameters**  
Are you doing a new experiment and can't decide whether your current septa is suitable?

## LC columns selection guide

? **Find your columns with ease!**  
Finding the correct column can be a challenge, so we have made it easy for you. This guide will take you directly to the right product for you, so that you can start your method today.



**LC Column Selection Guide**  
An easy-to-use tool that ensures you find the right LC column for your experimental requirements.

**Find your column with ease!**  
Finding the correct column can be a challenge, so we have made it easy for you. This guide will take you directly to the right product for you, so that you can start your method today.

**Get started**

**Find your column with ease!**

- Need an equivalent column?**  
If you are already using a column and would like to upgrade to newer Thermo Fisher Scientific technology LC column you can simply add your current part number and we do the rest.
- Setting up a USP method?**  
Unsure of how to find the right columns for your requirements? Answer only 2 questions and we find the column for you!
- Brand new method?**  
If you are setting up a new method and want to understand the different options we can provide, our "Find a Column for a new Application" pathway that will lead you directly to your solution.

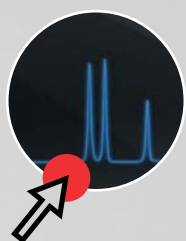
# More information



## Chromatography columns and consumables

For more information on our range of chromatography columns and consumables, including the latest applications, educational resources, selection guides and product literature, please visit

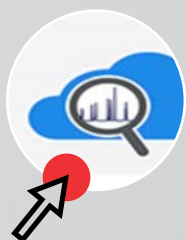
[thermofisher.com/chromatographyconsumables](https://thermofisher.com/chromatographyconsumables)



## Instrumentation and key applications

For more information on our instrumentation and key applications, please visit

[thermofisher.com/chromatography](https://thermofisher.com/chromatography)



## AppsLab

Gain access to our applications expertise on cloud-based Thermo Scientific™ AppsLab library of analytical applications for a comprehensive fully searchable method repository

[appslab.thermofisher.com](https://appslab.thermofisher.com)



## Webinars

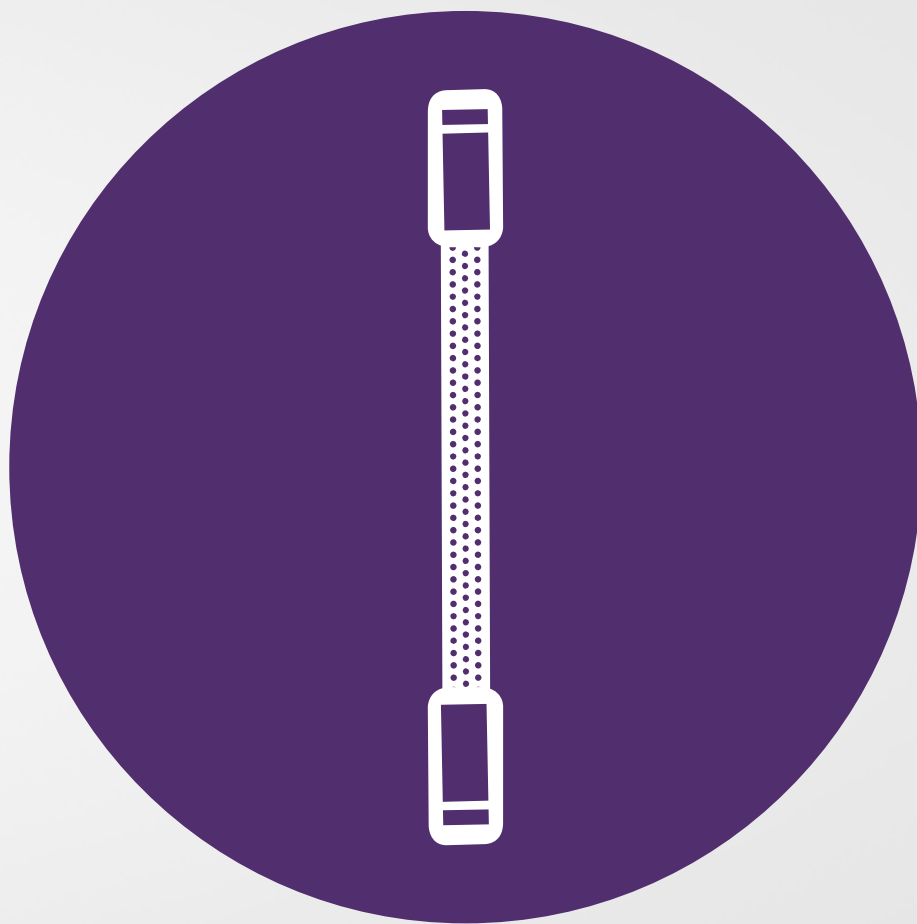
Analytical and life science webinars live and on-demand



## NIBRT collaboration information

A collaboration built for Biopharma between the National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific

[thermofisher.com/nibr](https://thermofisher.com/nibr)



# Connected chromatography solutions

LC columns and accessories

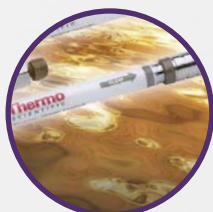
# LC columns and accessories

As a leader in LC column technology including silica, polymer and porous graphitic carbon manufacturing, bonded phase production and column packing for 40 years, you can rely on the quality of Thermo Scientific HPLC products. Here, we showcase our latest and most comprehensive range of innovative columns, accessories and equipment for fast LC, analytical HPLC and UHPLC.



## **Thermo Scientific™ Accucore™ columns**

Solid core particles enabling high speed, high resolution separations with back pressures significantly lower than those associated with UHPLC.



## **Hypersil GOLD**

Thermo Scientific™ Hypersil GOLD™ columns offers chromatographers outstanding peak shape for reversed phase, ion exchange, HILIC or normal phase chromatography.



## **Thermo Scientific™ Acclaim™ columns**

Acclaim columns are based on high-purity, porous silica particles with advanced and innovative column bonding technologies. This provides complementary selectivity, high column efficiencies and symmetrical peaks.



## **Thermo Scientific™ Viper™ fittings**

Maximize liquid chromatography (LC) performance and get zero-dead-volume connections to ensure optimal separations.

## Section contents

Accucore HPLC and UHPLC columns	10
Acclaim HPLC and UHPLC columns	39
Application specific HPLC columns	52
Synchronis HPLC and UHPLC columns	65
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LC accessories	84
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# Accucore HPLC and UHPLC columns

## Accucore Vanquish UHPLC columns

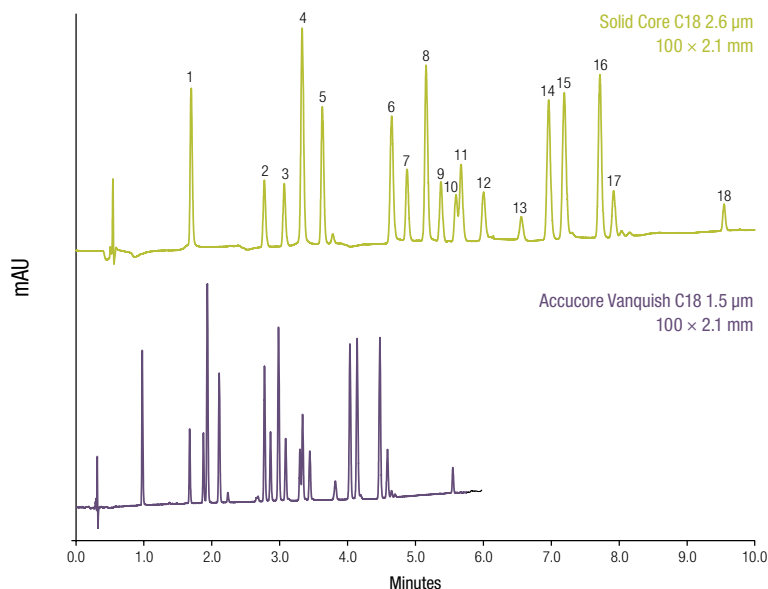
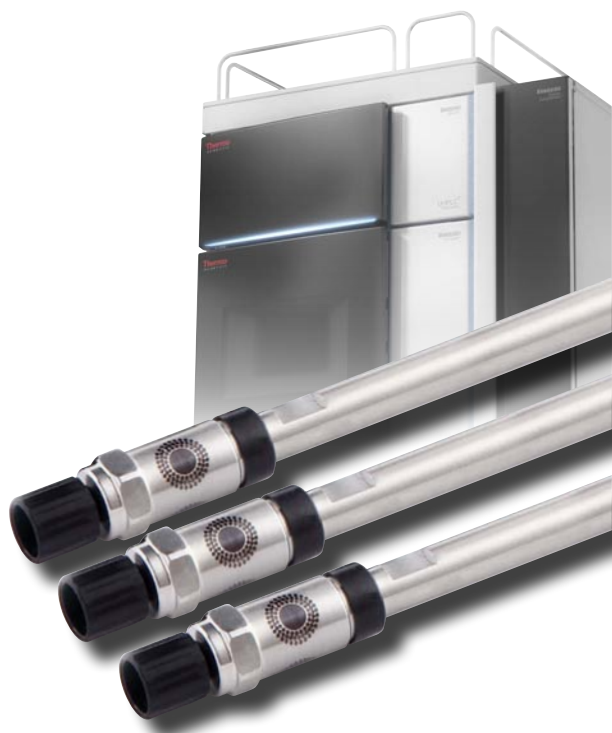
Thermo Scientific™ Accucore™ Vanquish™ UHPLC columns provide a robust chromatography solution to enhance laboratory workflows and productivity. These columns, in combination with Vanquish UHPLC systems, deliver powerful separations to solve your analytical challenges faster and more effectively.

These next-generation UHPLC columns feature 1.5µm solid core particles and combine the benefits of a solid core material and the increased chromatographic efficiency of a sub-2µm particle.

Modern analytical laboratories continue to be driven towards higher throughput workflows which require better separations, more results and easier interaction at a reduced cost. Accucore Vanquish UHPLC columns enable you to achieve this by delivering:

### Better separations

The high efficiency offered by Accucore Vanquish UHPLC columns enables the resolution of very complex mixtures.



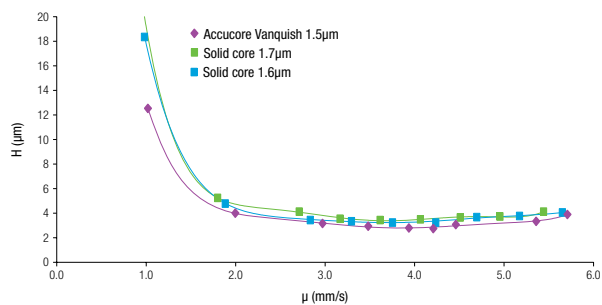
Comparison of separation of 18 pesticides using Accucore Vanquish 1.5µm column to a larger particle size solid core column

Mobile Phase A:Water	
Mobile Phase B:Acetonitrile	
Gradient:	Solid core C18 2.6µm 100 x 2.1mm
Time (min)	%B
0	20
6.9	40
12.1	80
Gradient:	Accucore Vanquish C18 1.5µm 100 x 2.1mm
Time (min)	%B
0	20
4	40
7	80
Temperature:	43°C
Flow Rate:	Solid Core C18 2.6µm 100 x 2.1mm = 380µL/min
	Accucore Vanquish C18 1.5µm 100 x 2.1mm = 650µL/min
Injection Volume:	0.5µL
Detection:	UV, 230nm (0.1s rise time, 50Hz)
Analytes:	1. Desethylatrazine 10. Diuron 2. Metoxuron 11. Isoproturon 3. Hexazinone 12. Metobromuron 4. Simazine 13. Metazachlor 5. Cyanazine 14. Sebutylazin 6. Methabenzthiazuron
15. Propazine	7. Chlorotoluron 16. Terbutylazine 8. Atrazine 17. Linuron 9. Monolinuron 18. Metolachlor

For more information, visit [thermofisher.com/accucore](http://thermofisher.com/accucore)

### More results

High efficiency is maintained even at high flow rates enabling fast reproducible separations.



#### Accucore Vanquish C18, 1.5μm

Solid Core C18 1.7μm  
Solid Core C18 1.6μm

Mobile Phase: Water:acetonitrile (50:50)  
Temperature: 30°C  
Flow Rate: 0.1 to 0.6mL/min

### Accucore Vanquish

Particle Size (μm)	Format	Length (mm)	ID (mm)	C18+
1.5	UHPLC Column	50	2.1	27101-052130
		100	2.1	27101-102130
		150	2.1	27101-152130

For more information, visit [thermofisher.com/vanquishcolumn](http://thermofisher.com/vanquishcolumn)

## Validated for Vanquish UHPLC columns

### Delivering Powerful Separations

The Thermo Scientific™ Accucore™ Vanquish™ and VANQUISH UHPLC columns were developed to complement the performance characteristics of the Vanquish UHPLC system. They provide greater selectivity and format flexibility, in combination with the increased chromatographic efficiency of lower particle sizes.

The UHPLC column and system solution allows you to achieve the best possible results for your application by delivering:

- Better Separations: High efficiency enables separation of very complex mixtures
- More Results: High efficiency at high flow rates
- Easier Interactions: Seamless workflow solution, for simple and easy separations
- Capable of pressure operation up to 21,000psi/1500 bar

### Ordering information

Description	Particle Size	Length (mm)	Diameter (ID)	Part Number
Accucore Vanquish C18+	1.5	50	2.1	27101-052130
		100	2.1	27101-102130
		150	2.1	27101-152130
Hypersil GOLD VANQUISH	1.9	50	2.1	25002-052130-V
		100	2.1	25002-102130-V
		150	2.1	25002-152130-V
Hypersil GOLD VANQUISH PFP	1.9	100	2.1	25402-102130-V
		150	2.1	25402-152130-V
		200	2.1	25402-202130-V
Hypersil GOLD VANQUISH aQ	1.9	100	2.1	25302-102130-V
		150	2.1	25302-152130-V
		200	2.1	25302-202130-V
Acclaim VANQUISH C18	2.2	150	2.1	071399-V
		250	2.1	074812-V
Acclaim VANQUISH PA2	2.2	150	2.1	071401-V
		250	2.1	074814-V

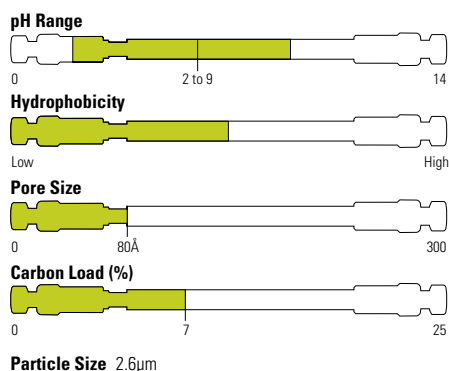
For more information, visit [thermofisher.com/vanquishcolumn](https://thermofisher.com/vanquishcolumn)



## Accucore Biphenyl

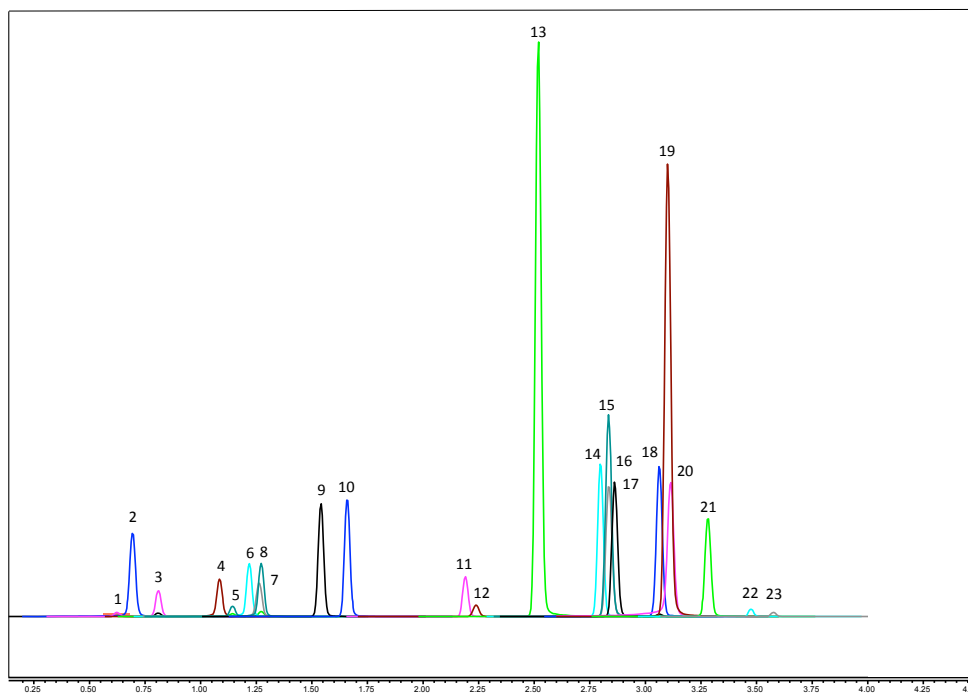
Generally C18 columns offer the ability to resolve a wide variety of analytes without issues. However, there are times when alternative chemistry is required for the separation of aromatic and moderately polar analytes. Biphenyl chemistry offers complementary selectivity to a C18 column, resolving analytes not just on hydrophobicity, but also  $\pi$ - $\pi$  interactions. This chemistry provides the ability to resolve isomeric compounds, such as drugs of abuse and steroids.

- Compatibility with 100% aqueous conditions
- Lower backpressure, UHPLC not required
- Great column lifetime
- Excellent lot-to-lot reproducibility
- Rugged column, suitable for a variety of matrices



### Accucore Biphenyl

Mobile Phase A:	Water/0.1% Formic Acid
Mobile Phase B:	Methanol/ 0.1% Formic Acid
Gradient:	Accucore Biphenyl
	2.6 $\mu$ m 50 x 2.1mm
Injection Volume:	2 $\mu$ L
Column Temp:	45C
Detection:	MS



1	Morphine
2	Oxymorphone
3	Hydromorphone
4	Naloxone
5	Codeine
6	Oxycodone
7	Naltrexone
8	Hydrocodone
9	Tramadol
10	Meperidine
11	Fentanyl
12	Buprenorphine
13	Methadone
14	Lorazepam
15	Oxazepam
16	Nitrazepam
17	Clonazepam
18	Flunitrazepam
19	Temazepam
20	Alprazolam
21	Diazepam
22	11-Hydroxy-THC
23	11-Carboxy-THC

### Part numbers

2.1x50mm	17826-052130
2.1x100mm	17826-102130
2.1x10mm drop in cartridge	17826-012105
Drop in Cartridge holder	852-00

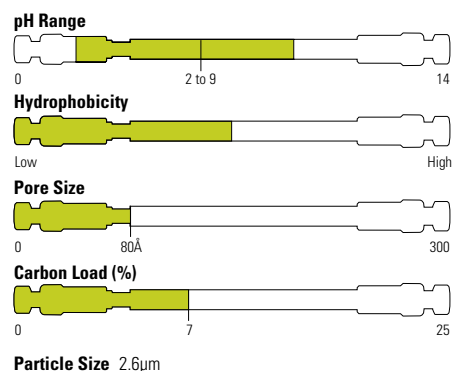
## Accucore RP-MS

- Optimized for MS detection
- Excellent peak shapes
- Excellent combination of speed and efficiency

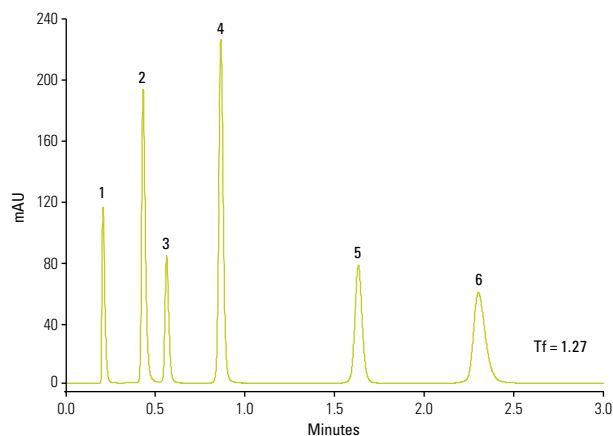
Accucore RP-MS uses an optimized alkyl chain length for more effective coverage of the silica surface. This coverage results in a significant reduction in non-hydrophobic interactions and thus highly efficient peaks with very low tailing.

RP-MS offers slightly lower retention than C18 and this combined with high efficiencies and low peak tailing make this the phase of choice for use with MS detection.

The selectivity offered by Accucore RP-MS matches that of C18 columns.



### Bases



#### Accucore RP-MS 2.6μm, 50mm x 2.1mm

Mobile Phase:	65% Methanol / 35% 25mM Potassium Phosphate pH7.0
Temperature:	30°C
Flow Rate:	500μL/min
Injection Volume:	1μL
Backpressure:	232 bar
Detection:	UV, 215nm
Analytes:	1. Uracil 2. Propranolol 3. Butylparaben 4. Naphthalene 5. Acenaphthene 6. Amitriptyline

### Accucore RP-MS

Particle Size (μm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17626-012105	17626-013005	17626-014005
	HPLC Column	30	17626-032130	-	-
		50	17626-052130	17626-053030	17626-054630
		100	17626-102130	17626-103030	17626-104630
		150	17626-152130	17626-153030	17626-154630
	Thermo Scientific™ UNIGUARD™ Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

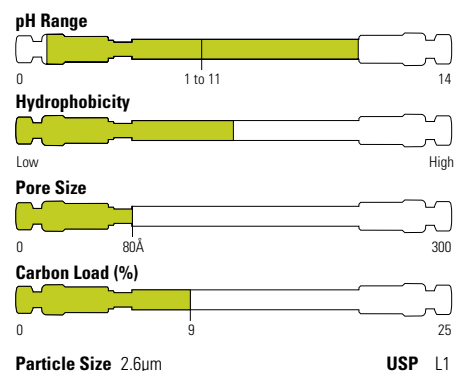
For more information, visit [thermofisher.com/accucore](http://thermofisher.com/accucore)

## Accucore C18

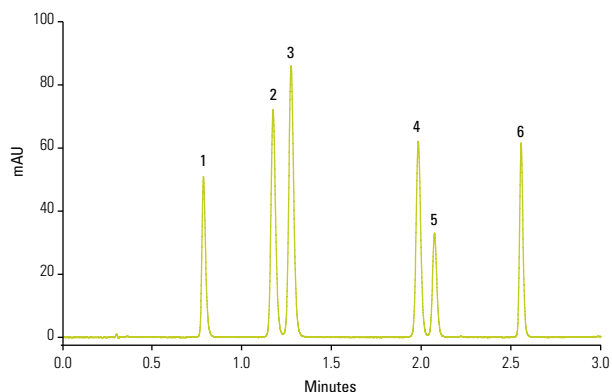
- Optimum retention of non-polar compounds
- Hydrophobic interaction mechanism
- Separates a broad range of analytes

The carbon loading of Accucore C18 phase provides high retention of non-polar analytes via a predominantly hydrophobic interaction mechanism.

The highly retentive nature of Accucore C18 phase means that it can be used to separate a broad range of analytes.



## Triazines



### Accucore C18 2.6µm, 50mm x 2.1mm

Mobile Phase A:	Water	
Mobile Phase B:	Acetonitrile	
Gradient:	Time (min)	%B
	1.0	35
	2.5	70
Temperature:	25°C	
Flow Rate:	600µL/min	
Injection Volume:	2µL	
Backpressure:	298 bar	
Detection:	UV, 280nm	
Analytes:	1. Simazine 2. Simetryn 3. Atrazine 4. Ametryn 5. Propazine 6. Prometryn	

## Accucore C18

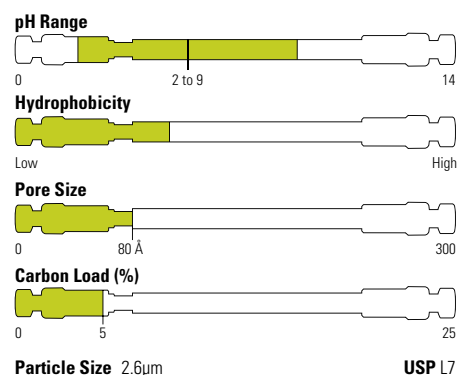
Particle Size (µm)	Format	Length (mm)	1mm ID	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	-	17126-012105	17126-013005	17126-014005
	HPLC Column	30	-	17126-032130	-	-
		50	-	17126-052130	17126-053030	17126-054630
		100	17126-101030	17126-102130	17126-103030	17126-104630
		150	-	17126-152130	17126-153030	17126-154630
4	UNIGUARD Drop-in Guard Cartridge Holder	10	-	852-00	852-00	850-00

## Accucore C8

- Lower hydrophobic retention
- Complementary steric selectivity to C18
- Low levels of secondary interactions
- Recommended for moderately polar analytes

Accucore C8 HPLC columns offer lower hydrophobic retention than columns packed with longer alkyl chain length material, such as C18, and are therefore recommended for analytes with medium hydrophobicity or when a less hydrophobic phase provides optimum retention.

The low levels of secondary interactions demonstrated in the phase characterization are the result of excellent bonded phase coverage and allow users of Accucore C8 HPLC columns to benefit from excellent peak shapes.



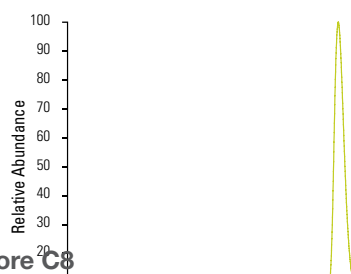
### Testosterone

#### Accucore C8 2.6µm, 50 x 2.1mm

Mobile Phase A: Water + 0.1% formic acid  
 Mobile Phase B: Acetonitrile + 0.1% formic acid  
 Gradient: 5–95 % B in 0.8 minutes  
 Temperature: 60°C  
 Flow Rate: 1500µL/min  
 Injection Volume: 5µL  
 Detection: ESI-MS/MS

Retention time (tR /min)	0.73
%RSD tR	0.22
%RSD Area	3.01

Data from six injections.



Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk) HPLC Column	10	17226-012105	17226-013005	17226-014005
		30	17226-032130	-	-
		50	17226-052130	17226-053030	17226-054630
		100	17226-102130	17226-103030	17226-104630
		150	17226-152130	17226-153030	17226-154630
4	UNIGUARD Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

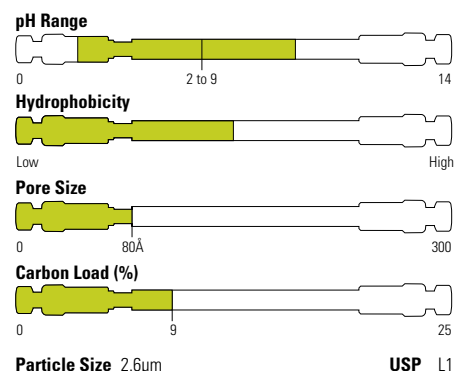
For more information, visit [thermofisher.com/accucore](http://thermofisher.com/accucore)

## Accucore aQ

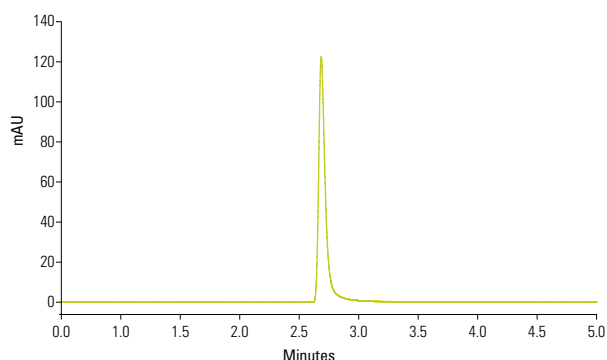
- Retention and resolution of polar analytes
- Polar endcapped C18 stationary phase for alternative selectivity
- Ideal for highly aqueous mobile phases

The polar functional group used to endcap Accucore aQ phase provides an additional controlled interaction mechanism by which polar compounds can be retained and resolved, making the Accucore aQ phase ideal for the quantitative analysis of trace levels of polar analytes.

The wettability of reversed phase media can be increased by the introduction of polar functional groups. The polar endcapping of Accucore aQ media also makes it usable in 100% aqueous mobile phases without the risk of loss of performance or poor stability.



## Lamivudine (USP)



### Accucore aQ 2.6µm, 50mm x 2.1mm

Mobile Phase:	95:5 (v/v) Ammonium Acetate, pH 3.80 / Methanol
Temperature:	35°C
Flow Rate:	200µL/min
Injection Volume:	1µL
Detection:	UV, 277nm
Analytes:	Lamivudine
Asymmetry	1.36
%RSD t <sub>r</sub>	0.00
%RSD Peak area	1.72
(%RSD calculated from 6 replicate injections)	
USP acceptance criteria: % RSD (t <sub>r</sub> , Peak Area)	<2.0

## Accucore aQ

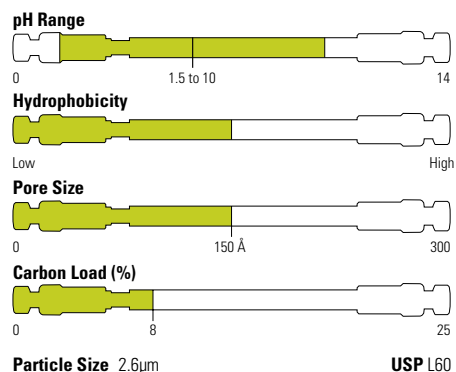
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17326-012105	17326-013005	17326-014005
	HPLC Column	30	17326-032130	-	-
		50	17326-052130	17326-053030	17326-054630
		100	17326-102130	17326-103030	17326-104630
		150	17326-152130	17326-153030	17326-154630
	UNIGUARD Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

## Accucore Polar Premium

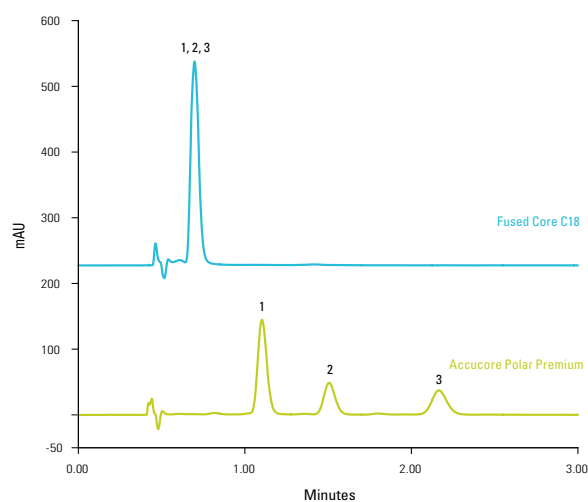
- Rugged amide-embedded C18 phase
- Selectivity complementary to conventional C18 phases
- Stable over a wide pH range and compatible with 100% aqueous mobile phase

Accucore Polar Premium is an exceptionally rugged polar embedded reverse phase material that offers high efficiency, wider operating pH range and unique selectivity complementary to standard C18 phases.

The specially designed bonded phase is stable from pH 1.5 to 10.5 and will not undergo phase collapse in 100% aqueous mobile phase.



### Curcuminoids (Turmeric)



#### Accucore Polar Premium 2.6µm, 100 x 3.0mm Fused Core C18, 100 x 3.0mm

Mobile Phase:	Methanol : 10mM Phosphoric Acid, 80 : 20
Temperature:	40°C
Flow Rate:	800µL/min
Injection Volume:	6µL
Detection:	UV, 428nm
Analytes:	1. Curcumin 2. Desmethoxycurcumin 3. Bis-desmethoxycurcumin

The Accucore Polar Premium HPLC column provides desirable selectivity that resolves the major and minor component under simple isocratic conditions in less than three minutes, while the C18 columns fail to separate these components.

### Accucore Polar Premium

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk) HPLC Column	10	28026-012105	-	-
		50	28026-052130	28026-053030	28026-054630
		100	28026-102130	28026-103030	28026-104630
		150	28026-152130	28026-153030	28026-154630
		250	28026-252130	-	-
	UNIGUARD Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

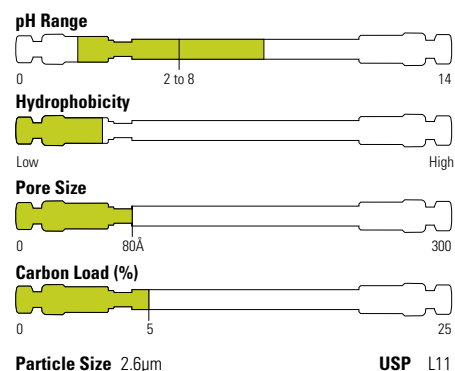
For more information, visit [thermofisher.com/accucore](http://thermofisher.com/accucore)

## Accucore Phenyl-Hexyl

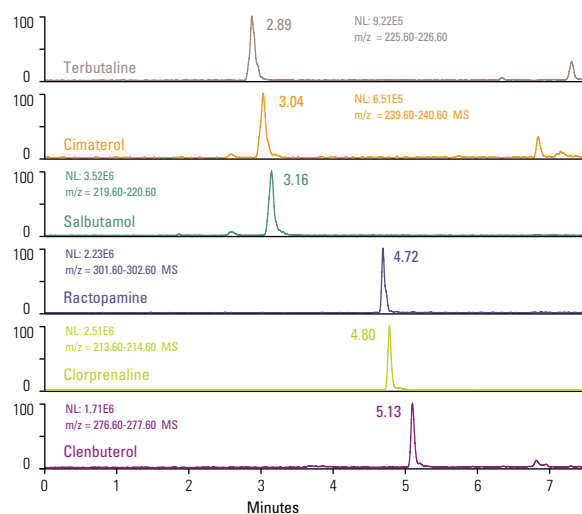
- Mixed-mode selectivity for aromatic and moderately polar analytes
- Enhanced pi-pi interactions with aromatics
- Moderate hydrophobicity

The C6 chain in Accucore Phenyl-Hexyl phase exhibits classical RP retention and selectivity, while the phenyl ring can add special selectivity by interacting with polar groups within the solutes. This results in a mixed-mode separation mechanism. The reduced hydrophobicity of this phase makes it ideal for the separation of very non-polar compounds.

The Phenyl-Hexyl phase should be selected for complex samples where some peaks are well resolved on a conventional alkyl phases, but are not well resolved on a conventional phenyl phase, or when other peaks are well resolved on a phenyl phase, but not well resolved on a conventional alkyl phase.



### Beta-agonistsaa



#### Accucore Phenyl-Hexyl 2.6µm, 100mm x 2.1mm

Mobile Phase A:	Ammonium Acetate 5mM, pH 4	
Mobile Phase B:	Acetonitrile	
Gradient:	Time (min)	%B
	0	5
	1	5
	10	100
Temperature:	40°C	
Flow Rate:	0.25mL/min	
Injection Volume:	1µL	
Backpressure:	120 bar (at 10)	
Detection:	+ESI-MS (45°C, 4.5kV, 60V, scan 150 – 350)	

### Accucore Phenyl-Hexyl

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17926-012105	17926-013005	17926-014005
		30	17926-032130	-	-
	HPLC Column	50	17926-052130	17926-053030	17926-054630
		100	17926-102130	17926-103030	17926-104630
		150	17926-152130	17926-153030	17926-154630
		UNIGUARD Drop-in Guard Cartridge Holder	10	852-00	852-00

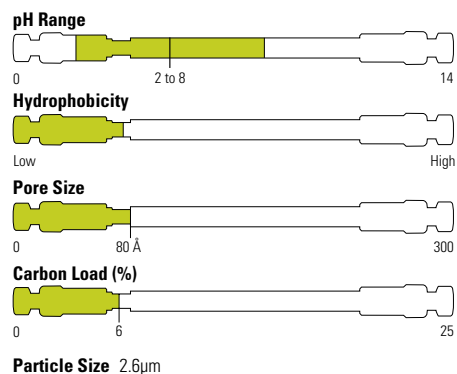
## Accucore Phenyl-X

- Unique reversed-phase shape selectivity
- Enhanced selectivity for aromatic compounds
- Compatible with highly aqueous mobile phases
- Robust, high-efficiency, low column bleed

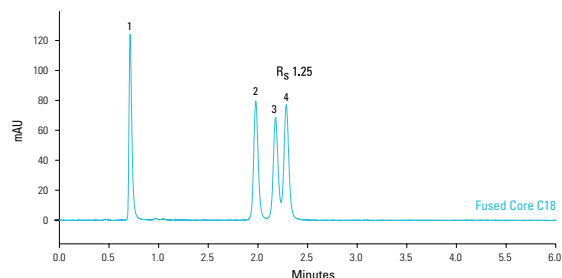
The proprietary Accucore Phenyl-X alkyl aromatic bonded phase provides a unique selectivity when compared to other reversed phase materials such as C18 or Phenyl.

The advanced design of the bonded phase makes it compatible with highly aqueous mobile phases and robust, demonstrating very low bleed.

Phenyl-X exhibits particularly high aromatic selectivity.



## Estrogens



Accucore Phenyl-X 2.6 μm, 100 x 2.1mm  
Fused Core C18, 100 x 2.1mm

Mobile Phase: 15:40:45 (v/v)

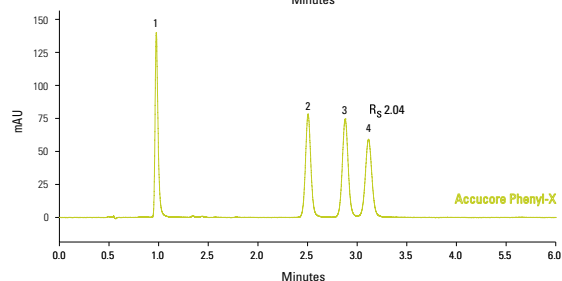
Acetonitrile:Methanol:Water

Temperature: 40°C

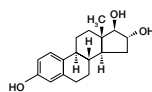
Flow Rate: 400 μL/min

Injection Volume: 1 μL

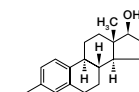
Detection: UV, 220nm



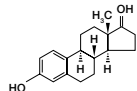
1. Estriol (E3)



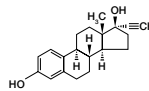
2. Estradiol (E2)



3. Estrone (E1)



4. Ethynylestradiol



## Accucore Phenyl-X

Particle Size (μm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	27926-012105	-	-
	HPLC Column	50	27926-052130	27926-053030	27926-054630
		100	27926-102130	27926-103030	27926-104630
		150	27926-152130	27926-153030	27926-154630
		250	27926-252130	-	-
Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00	

For more information, visit [thermofisher.com/accucore](http://thermofisher.com/accucore)

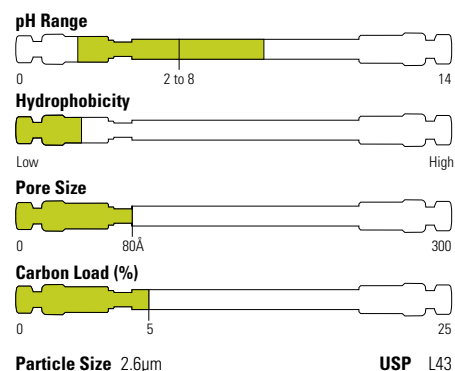


## Accucore PFP

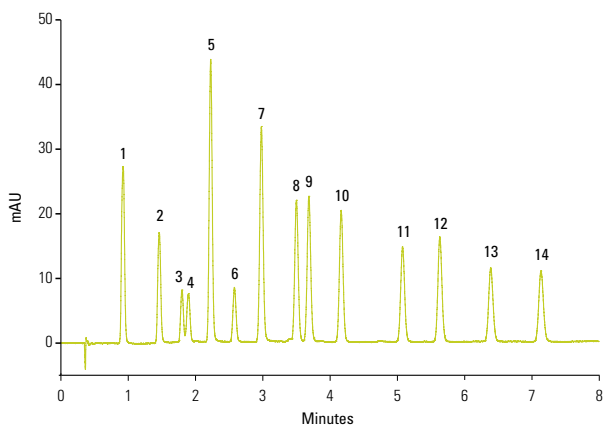
- Alternative selectivity to C18
- Extra retention for halogenated species
- Unique selectivity for non-halogenated polar compounds

The introduction of fluorine groups into the Accucore PFP (pentafluorophenyl) stationary phase causes significant changes in solute-stationary phase interactions. This can lead to extra retention and selectivity for positional isomers of halogenated compounds.

PFP Columns are also well suited to the selective analysis of non-halogenated compounds, in particular polar compounds containing hydroxyl, carboxyl, nitro, or other polar groups. High selectivity is often most apparent when the functional groups are located on an aromatic or other rigid ring system.



### Positional isomers



#### Accucore PFP 2.6µm, 50mm x 2.1mm

Mobile Phase A:	0.1% Formic Acid in Water
Mobile Phase B:	0.1% Formic Acid in Acetonitrile
Gradient:	15-30%B in 7 minutes
Temperature:	50°C
Flow Rate:	600µL/min
Injection Volume:	2µL
Detection:	UV, 270nm
Analytes:	1. 3,4 – Dimethoxyphenol 2. 2,6 – Dimethoxyphenol 3. 2,6 – Difluorophenol 4. 3,5 – Dimethoxyphenol 5. 2,4 – Difluorophenol 6. 2,3 – Difluorophenol 7. 3,4 – Difluorophenol 8. 3,5 – Dimethylphenol 9. 2,6 – Dimethylphenol 10. 2,6 – Dichlorophenol 11. 4 – Chloro-3-Methylphenol 12. 4 – Chloro-2-Methylphenol 13. 3,4 – Dichlorophenol 14. 3,5 – Dichlorophenol

### Accucore PFP

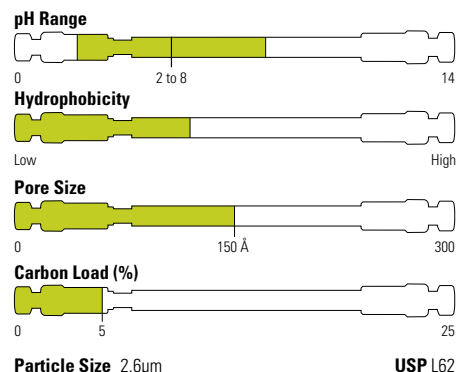
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17426-012105	17426-013005	17426-014005
		30	17426-032130	-	-
	HPLC Column	50	17426-052130	17426-053030	17426-054630
	100	17426-102130	17426-103030	17426-104630	
	150	17426-152130	17426-153030	17426-154630	
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

## Accucore C30

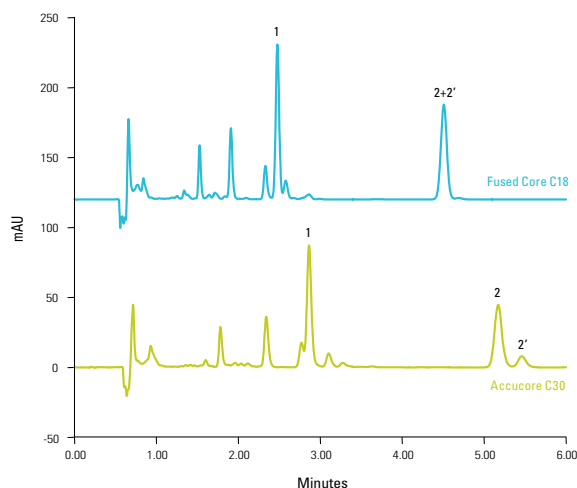
- Ideal for separation of hydrophobic, long alkyl chain compounds
- High shape selectivity for structurally related isomers
- Excellent aqueous-compatibility

Accucore C30 offers high shape selectivity for hydrophobic, long chain, structurally related isomers, for example carotenoids and steroids. This is a different form of shape selectivity from that measured in the steric selectivity phase characterisation test.

It is also an excellent alternative to normal-phase columns for lipid analysis. The optimized bonding density of the long alkyl chains facilitated by a wider pore diameter particle result in a phase that is stable even in highly aqueous mobile phases.



## Vitamin K isomers



Chromatogram showing the separation of Vitamin K compounds  
Minutes 1-Vitamin K2, 2-Vitamin K1 (trans isomer), 2'-Vitamin K1 (cis isomer)

Accucore C30 2.6µm, 100 x 3.0mm  
Fused Core C18, 100 x 3.0mm  
Mobile Phase: Methanol: 2mM Ammonium Acetate, 98:2  
Temperature: 20°C  
Flow Rate: 650µL/min  
Injection Volume: 5µL  
Detection: UV, 250nm  
Accucore C30 shows better separation for vitamin K1 isomers than the C18 column.

## Accucore C30

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	27826-012105	-	-
	HPLC Column	50	27826-052130	27826-053030	27826-054630
		100	27826-102130	27826-103030	27826-104630
		150	27826-152130	27826-153030	27826-154630
		250	27826-252130	-	-
		Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00

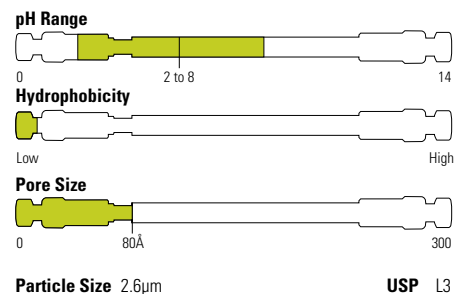
## Accucore HILIC

- Enhanced retention of polar and hydrophilic analytes
- Alternative selectivity to C18 without ion-pair or derivatization

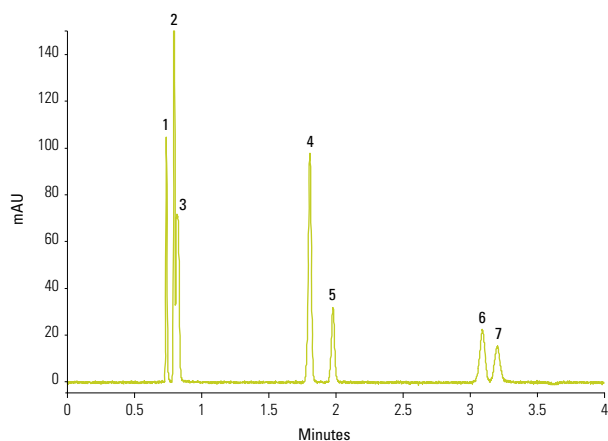
In HILIC mode the separation occurs through two mechanisms. The primary mechanism is a partitioning effect due to the enriched water layer around the polar or charged substrate material. The secondary mechanism involves interaction between the analyte and the active surface moiety.

Analyte properties that govern retention with HILIC phases are acidity/basicity, which determines hydrogen bonding, and polarizability which determines dipole-dipole interactions.

The highly organic mobile phases used with Accucore HILIC phase ensure efficient desolvation in ESI MS detection, which in turn leads to improved sensitivity.



## Catecholamines



### Accucore HILIC 2.6µm, 50mm x 2.1mm

Mobile Phase:	85:15 Acetonitrile:100mM Ammonium Formate, pH 3.2
Temperature:	40°C
Flow Rate:	2mL/min
Injection Volume:	5µL
Backpressure:	157 bar
Detection:	UV, 280nm
Analytes:	1. Catechol 2. 5-HIAA 3. DOPAC 4. Serotonin 5. L-tyrosine 6. Dopamine 7. L-DOPA

## Accucore HILIC

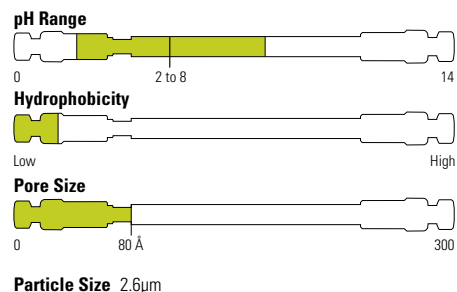
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17526-012105	17526-013005	17526-014005
	HPLC Column	30	17526-032130	-	-
		50	17526-052130	17526-053030	17526-054630
		100	17526-102130	17526-103030	17526-104630
		150	17526-152130	17526-153030	17526-154630
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

## Accucore Urea-HILIC

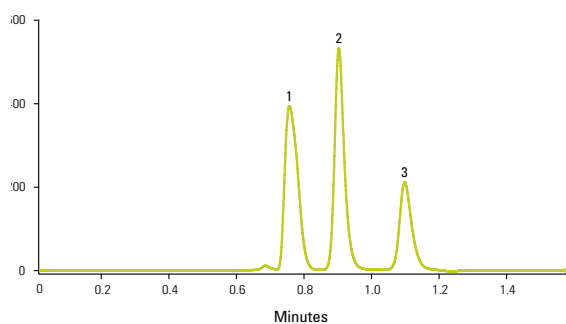
- Bonded hydrophilic stationary phase
- Unique selectivity compared to other HILIC phases
- Low ion exchange activity

Accucore Urea-HILIC has an alternative selectivity and lower ion exchange activity than other HILIC phases.

The bonded hydrophilic stationary phase provides retention of a broad range of polar analytes using up to 20% aqueous mobile phase.



### Analgesic compounds



#### Accucore Urea-HILIC 2.6µm, 100 x 2.1mm

Mobile Phase: Composition 10:80:10, A : B : C  
 A: Water  
 B: Acetonitrile  
 C: 100 mM Ammonium Acetate adjusted to pH 4.9  
 Temperature: 35°C  
 Flow Rate: 300µL/min  
 Injection Volume: 2µL into 10µL partial loop mode.  
 Backpressure: 71 bar  
 Detection: UV, 230nm

	1. Acetaminophen			2. Salicylic acid			3. Aspirin		
	$t_R$	$A_s$	$R_s$	$t_R$	$A_s$	$R_s$	$t_R$	$A_s$	$R_s$
Mean	0.760	1.474	0.908	1.303	2.359	1.100	1.318	3.264	
CV %	0.00	1.17	0.48	0.92	0.49	0.00	0.63	0.48	

Data from eight replicate analyses of a mixture of acetaminophen, salicylic acid and aspirin

Retention time ( $t_R$ ), peak asymmetry ( $A_s$ ), peak resolution ( $R_s$ )

### Accucore Urea-HILIC

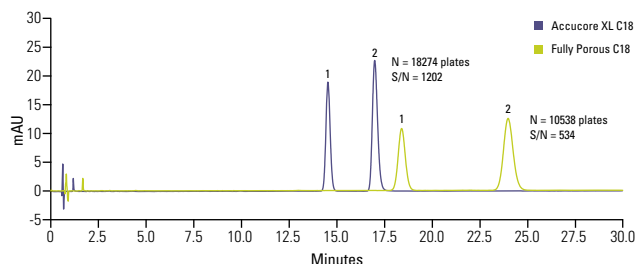
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	27726-012105	-	-
	HPLC Column	50	27726-052130	27726-053030	27726-054630
		100	27726-102130	27726-103030	27726-104630
		150	27726-152130	27726-153030	27726-154630
		250	27726-252130	-	-
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

## Accucore XL C18

- Optimum retention of non-polar compounds
- Hydrophobic interaction mechanism
- Separates a broad range of analytes

The carbon loading of Accucore XL C18 provides high retention of non-polar analytes via a predominantly hydrophobic interaction mechanism.

### Ibuprofen and valerophenone (USP)

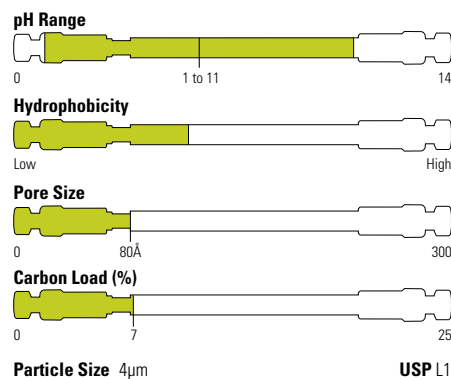
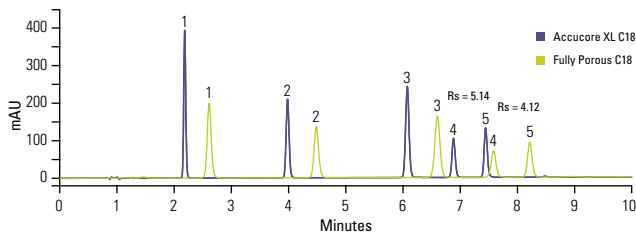


## Accucore XL C8

- Similar selectivity to C18 with lower retention
- Recommended for analytes with moderate hydrophobicity

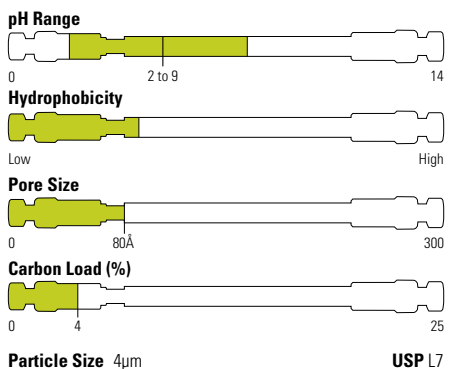
Accucore XL C8 is recommended for analytes with moderate hydrophobicity, or when a less hydrophobic phase provides optimum retention.

### Endocrine disruptors



#### Accucore XL C18 4µm, 150 x 4.6mm Fully porous C18 5µm, 150 x 4.6mm

Mobile Phase:	66.3:33.7 (v/v) Water with Phosphoric Acid, pH 2.5:Methanol
Temperature:	30°C
Flow Rate:	2mL/min
Injection Volume:	5µL
Detection:	UV, 214nm
Analytes:	1. Valerophenone 2. Ibuprofen



#### Accucore XL C8 4µm, 150 x 4.6mm Fully porous C8 5µm, 150 x 4.6mm

Mobile Phase A:	Water
Mobile Phase B:	Acetonitrile
Gradient:	Time (min)
% B	0.0 25
	20.0 70
	20.1 75
	25.0 25
Flow rate:	1.5mL/min
Temperature:	25°C
Detection:	UV at 220nm
Injection volume:	5µL
Analytes	1.Desethyl Atrazine 3.Atrazine 2.Simazine 4.Diuron 5.Bisphenol A

### Accucore XL

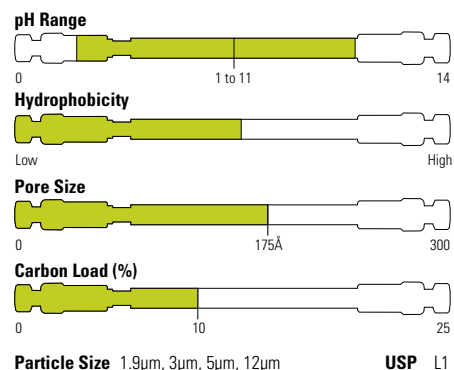
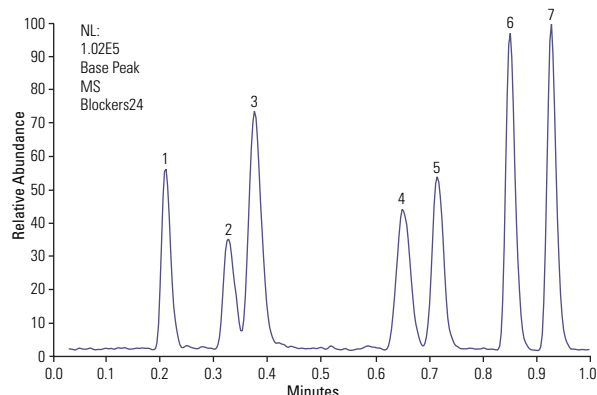
Particle Size (µm)	Format	Chemistry	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
4	Drop-in Guard (4/pk)	C18	10	74104-012101	74104-013001	74104-014001
			HPLC Column	50	74104-052130	74104-053030
	100		74104-102130	74104-103030	74104-104630	
	150		74104-152130	74104-153030	74104-154630	
	250		74104-252130	74104-253030	74104-254630	
4	Drop-in Guard (4/pk)	C8	10	74204-012101	74204-013001	74204-014001
			HPLC Column	50	74204-052130	74204-053030
	100		74204-102130	74204-103030	74204-104630	
	150		74204-152130	74204-153030	74204-154630	
	250		74204-252130	74204-253030	74204-254630	

## Hypersil GOLD

Endcapped, ultra-pure, silica-based columns with exceptional peak shape and resolution for HPLC and LC-MS

- Significant reduction in peak tailing while retaining C18 selectivity
- Excellent resolution, efficiency and sensitivity
- Confidence in the accuracy and quality of analytical data

### Seven b-blockers in 1 minute



#### Hypersil GOLD, 1.9µm, 20 x 2.1mm

Mobile Phase A: H<sub>2</sub>O+0.1%formic acid  
Mobile Phase B: MeCN+0.1%formic acid  
Gradient: 15 to 100% B in 1min  
Temperature: 30°C  
Flow Rate: 0.5mL/min  
Detection: +ESI  
Analytes: 1. Atenolol  
2. Nadolol  
3. Pindolol  
4. Timolol  
5. Metoprolol  
6. Oxprenolol  
7. Propranolol

### Hypersil GOLD

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	20	-	25002-022130	-	-	-
		30	25002-031030	25002-032130	-	-	-
		50	25002-051030	25002-052130	25002-053030	-	25002-054630
		100	25002-101030	25002-102130	25002-103030	-	-
		150	-	25002-152130	-	-	-
		200	-	25002-202130	-	-	-
3	Drop-in Guard (4/pk)	10	25003-011001	25003-012101	25003-013001	25003-014001	25003-014001
		20	-	25003-022130	25003-023030	-	-
	HPLC Column	30	-	25003-032130	25003-033030	-	25003-034630
		50	-	25003-052130	25003-053030	25003-054030	25003-054630
		100	25003-101030	25003-102130	25003-103030	25003-104030	25003-104630
		150	25003-151030	25003-152130	25003-153030	25003-154030	25003-154630
250	-	-	25003-253030	25003-254030	-		
5	Drop-in Guard (4/pk)	10	-	25005-012101	25005-013001	25005-014001	25005-014001
		30	-	25005-032130	25005-033030	-	25005-034630
	HPLC Column	50	-	25005-052130	25005-053030	-	25005-054630
		100	-	25005-102130	25005-103030	25005-104030	25005-104630
		150	-	25005-152130	25005-153030	25005-154030	25005-154630
		250	-	25005-252130	25005-253030	25005-254030	25005-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00	850-00

For more information, visit [thermofisher.com/hypersilgold](https://thermofisher.com/hypersilgold)

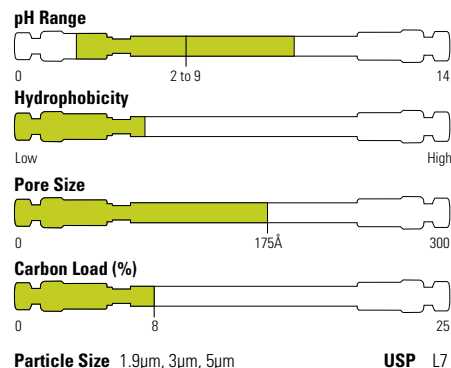
**Hypersil GOLD preparative**

Particle Size (µm)	Format	Length (mm)	10mm ID	20mm ID	21mm ID	30mm ID	50mm ID
5	Preparative HPLC Column	50	25005-059070A	-	25005-059270A	-	-
		100	25005-109070A	-	25005-109270A	-	-
		150	25005-159070A	-	25005-159270A	25005-159370A	-
		250	25005-259070A	-	25005-259270A	25005-259370A	-
12	Preparative Guard Cartridge (3/pk)	10	-	25012-019023A	-	-	-
	Preparative HPLC Column	150	-	25012-159270A	-	25012-159370A	-
		250	25012-259070A	25012-259270A	-	25012-259370A	25012-259570A

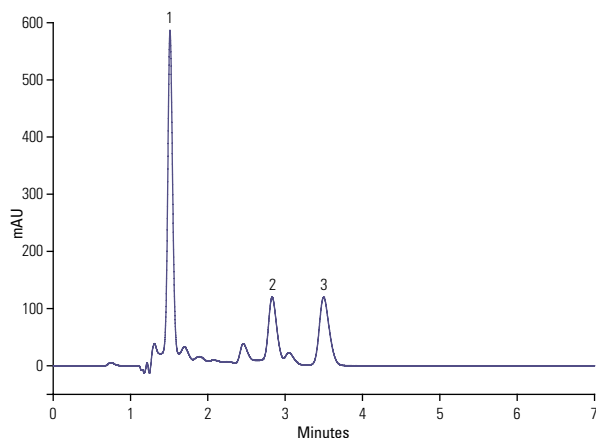
## Hypersil GOLD C8

Recommended for analytes with medium hydrophobicity or when a less hydrophobic phase is required to obtain optimum retention

- Similar selectivity to C18 columns but with reduced retention
- Lower hydrophobicity, allowing compounds to elute quicker
- Faster separations
- Excellent peak shape
- High efficiency
- Outstanding sensitivity



### β-carotene



#### Hypersil GOLD C8 5µm, 150 x 4.6mm

Mobile Phase:	MeOH
Temperature:	25°C
Flow Rate:	1.5mL/min
Detection:	UV, 450nm
Analytes:	1. Lutein 2. Lycopene 3. β-Carotene

### Hypersil GOLD C8

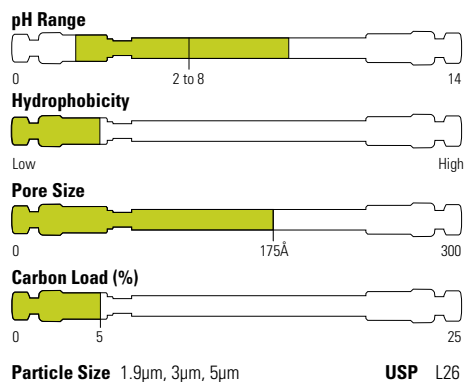
Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	30	-	25202-032130	-	-	-
		50	25202-051030	25202-052130	25202-053030	-	25202-054630
		100	25202-101030	25202-102130	25202-103030	-	-
		150	-	25202-152130	-	-	-
3	Drop-in Guard (4/pk)	10	25203-011001	25203-012101	25203-013001	25203-014001	25203-014001
		30	-	25203-032130	25203-033030	-	25203-034630
	HPLC Column	50	-	25203-052130	25203-053030	-	25203-054630
		100	25203-101030	25203-102130	25203-103030	-	25203-104630
5	HPLC Column	150	25203-051030	25203-152130	25203-153030	-	25203-154630
		10	-	25205-012101	25205-013001	25205-014001	25205-014001
		50	25205-051030	25205-052130	25205-053030	-	25205-054630
		100	-	25205-102130	25205-103030	-	25205-104630
	150	-	25205-152130	25205-153030	25205-154030	25205-154630	
250	-	25205-252130	25205-253030	25205-254030	25205-254630		
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00	850-00



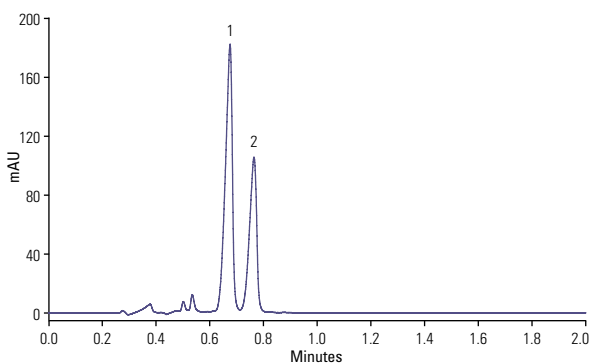
## Hypersil GOLD C4

Lower hydrophobicity than C18 or C8 recommended for very hydrophobic analytes

- Lower hydrophobicity
- Faster separations
- Excellent peak shape
- High efficiency
- Outstanding sensitivity



### Fatty acids



#### Hypersil GOLD C4 1.9µm, 100 x 2.1mm

Mobile Phase:	H <sub>2</sub> O / MeCN (20:80)
Temperature:	30°C
Flow Rate:	0.55mL/min
Injection Volume:	1µL
Detection:	200 nm
Analytes:	1. Linolenic acid 2. Linoleic acid

### Hypersil GOLD C4

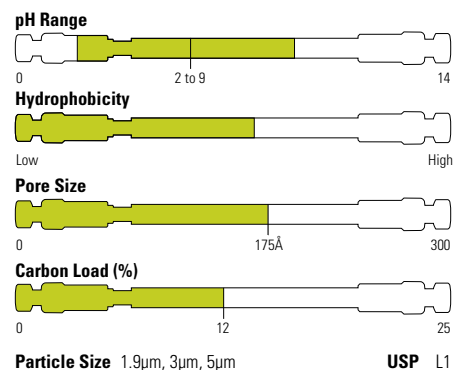
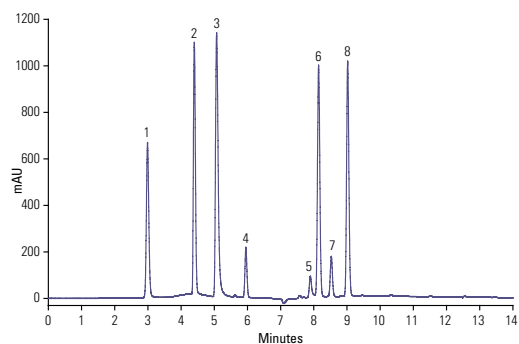
Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	25502-051030	25502-052130	-	-
		100	-	25502-102130	-	-
		150	25502-151030	25502-152130	-	-
3	Drop-in Guard (4/pk)	10	25503-011001	25503-012101	25503-013001	25503-014001
	HPLC Column	50	25503-051030	25503-052130	-	-
		100	-	25503-102130	25503-103030	25503-104630
150		25503-151030	25503-152130	25503-153030	25503-154630	
5	Drop-in Guard (4/pk)	10	-	25505-012101	-	25505-014001
	HPLC Column	50	-	25505-052130	-	25505-054630
		100	-	25505-102130	25505-103030	25505-104630
		150	-	25505-152130	-	25505-154630
		250	-	25505-252130	-	25505-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

## Hypersil GOLD aQ

Controlled interaction mechanism by which polar analytes can be retained and resolved

- Polar endcapped C18 phase for alternative selectivity
- Retention and resolution of polar analytes
- Stable in 100% aqueous mobile phases

### Water soluble vitamins



### Thermo Scientific™ Hypersil GOLD™ aQ 5µm, 150 x 4.6mm

Mobile Phase A: 50 mM KH<sub>2</sub>PO<sub>4</sub>, pH 3.5  
 Mobile Phase B: MeOH  
 Gradient: 0 – 100% B in 15 min  
 Flow Rate: 1mL/min  
 Detection: UV, 205nm  
 Analytes: 1. Vitamin B1 (thiamine)  
 2. Vitamin B6 (pyridoxine)  
 3. Vitamin B3 (nicotinamide)  
 4. Vitamin B5 (pantothenic acid)  
 5. Folic Acid  
 6. Vitamin B12 (cyanocobalamin)  
 7. Vitamin H (biotin)  
 8. Vitamin B2 (riboflavin)

### Hypersil GOLD aQ

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	20	-	25302-022130	-	-	-
		30	-	25302-032130	-	-	-
		50	25302-051030	25302-052130	25302-053030	-	25302-054630
		100	25302-101030	25302-102130	25302-103030	-	-
		150	-	25302-152130	-	-	-
		200	-	25302-202130	-	-	-
3	Drop-in Guard (4/pk)	10	25303-011001	25303-012101	25303-013001	25303-014001	25303-014001
	HPLC Column	30	-	25303-032130	-	-	-
		50	25303-051030	25303-052130	25303-053030	25303-054030	25303-054630
		100	25303-101030	25303-102130	25303-103030	25303-104030	25303-104630
		150	25303-151030	25303-152130	25303-153030	25303-154030	25303-154630
5	Drop-in Guard (4/pk)	10	-	25305-012101	25305-013001	-	25305-014001
	HPLC Column	50	-	25305-052130	25305-053030	-	25305-054630
		100	-	25305-102130	25305-103030	-	25305-104630
		150	-	25305-152130	25305-153030	-	25305-154630
		250	-	25305-252130	25305-253030	-	25305-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00	850-00

### Hypersil GOLD aQ preparative

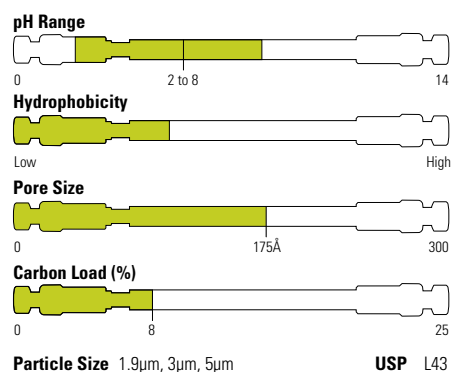
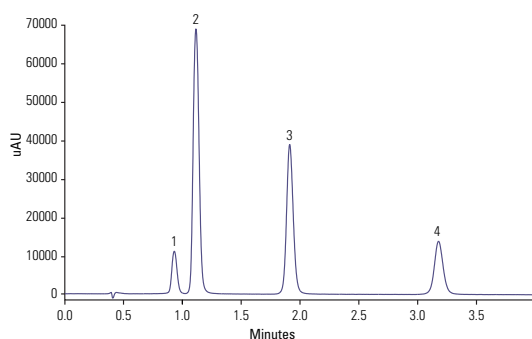
Particle Size (µm)	Format	Length (mm)	10mm ID	20mm ID	30mm ID	50mm ID
5	Preparative Guard Cartridge (3/pk)	10	-	25305-019023A	-	-
	Preparative HPLC Column	100	25305-109070A	25305-159070A	25305-109370A	25305-109570A
		150	25305-159070A	25305-159270A	25305-159370A	25305-159570A
		250	25305-259070A	25305-259270A	25305-259370A	25305-259570A

## Hypersil GOLD PFP

Introduction of a fluorine group into the stationary phase causes significant changes in solute-stationary phase interaction

- Fluorine atoms around the phenyl ring enhance pi-pi interactions with aromatic molecules
- Extra retention for halogenated species
- Selectivity for non-halogenated polar compounds

### Polyphenols



### Hypersil GOLD PFP 1.9µm, 50 x 2.1mm

Mobile Phase:	0.1% Acetic Acid
Temperature:	25°C
Flow Rate:	0.5mL/min
Injection Volume:	0.5µL
Detection:	UV, 280nm
Analytes:	1. Pyrogallol 2. Hydroquinone 3. Resorcinol 4. Phenol

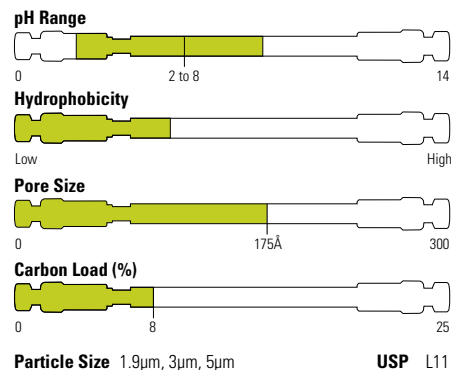
### Hypersil GOLD PFP

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	20	-	25402-022130	-	-
		30	-	25402-032130	-	-
		50	25402-051030	25402-052130	25402-053030	25402-054630
		100	25402-101030	25402-102130	25402-103030	-
		150	-	25402-152130	-	-
		200	-	25402-202130	-	-
3	Drop-in Guard (4/pk)	10	25403-011001	25403-012101	25403-013001	25403-014001
	HPLC Column	30	-	-	25403-033030	-
		50	-	25403-052130	25403-053030	-
		100	25403-101030	25403-102130	25403-103030	25403-104630
		150	-	25403-152130	25403-153030	25403-154630
5	Drop-in Guard (4/pk)	10	-	25405-012101	-	25405-014001
	HPLC Column	50	-	25405-052130	-	-
		100	-	25405-102130	25405-103030	25405-104630
		150	-	25405-152130	25405-153030	25405-154630
		250	-	25405-252130	-	25405-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

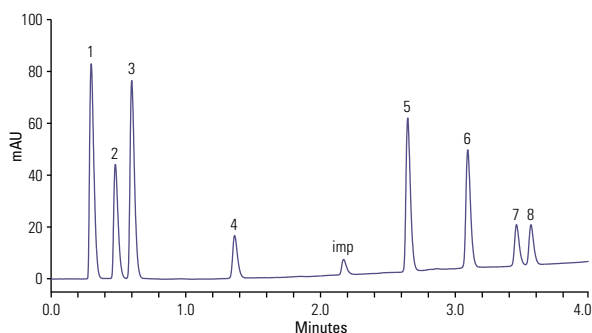
## Hypersil GOLD Phenyl

Contains a C4 linker which allows for superior alignment of the phenyl ring with aromatic molecules

- Enhanced pi-pi interactions with aromatics
- Moderate hydrophobicity
- Outstanding peak shape and sensitivity



### Antidepressants



#### Hypersil GOLD Phenyl 1.9µm, 50 x 2.1mm

Mobile Phase A:	0.1% Formic acid
Mobile Phase B:	0.1% Formic acid in MeCN
Gradient:	10 – 60% B in 3.4mins, 60 - 90% B in 0.24 min
Temperature:	60°C
Flow Rate:	0.5mL/min
Injection Volume:	0.7µL
Detection:	UV, 225 and 254nm
Analytes:	1. Uracil 2. Acetaminophen 3. p-Hydroxybenzoic acid 4. o-Hydroxybenzoic acid 5. Oxazepam 6. Diazepam 7. Di-isopropyl phthalate 8. Di-n-propyl phthalate

### Hypersil GOLD Phenyl

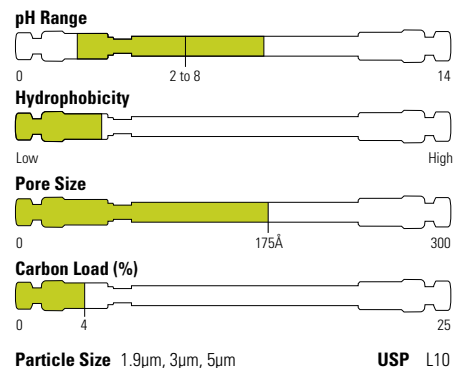
Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	25902-052130	-	25902-054630
		100	-	25902-102130	25902-103030	-
		150	-	25902-152130	-	-
		200	-	25902-202130	-	-
3	Drop-in Guard (4/pk)	10	-	25903-012101	25903-013001	25903-014001
	HPLC Column	50	-	25903-052130	25903-053030	-
		100	-	25903-102130	25903-103030	25903-104630
		150	25903-151030	25905-152130	25903-153030	25903-154630
5	Drop-in Guard (4/pk)	10	-	25905-012101	25905-013001	25905-014001
	HPLC Column	50	-	25905-052130	-	25905-054630
		100	-	25905-102130	25905-103030	25905-104630
		150	-	25905-152130	-	25905-154630
		250	-	-	-	25905-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

For more information, visit [thermofisher.com/hypersilgold](http://thermofisher.com/hypersilgold)

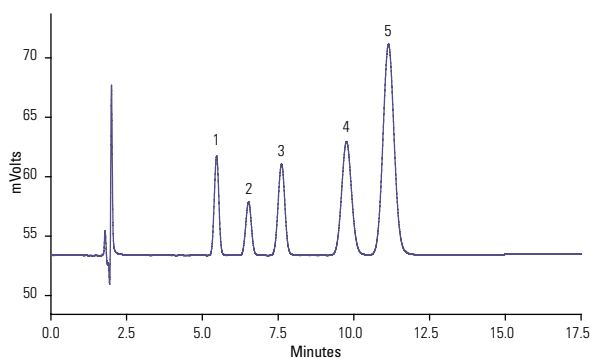
## Hypersil GOLD CN

For both normal phase and reversed-phase separations

- Provide alternative selectivity with lower hydrophobicity
- Excellent peak shape
- Outstanding sensitivity
- Less retention for faster analysis



### Organic acids



#### Hypersil GOLD CN 5µm, 150 x 4.6mm

Mobile Phase A:	25 mM KH <sub>2</sub> PO <sub>4</sub> , pH2
Mobile Phase B:	MeOH
Temperature:	25°C
Flow Rate:	1.5mL/min
Detection:	UV, 230nm
Analytes:	1. 4-Fluorobenzoic
	2. o-Toluic Acid
	3. p-Toluic Acid
	4. 2,4,6-Trimethylbenzoic Acid
	5. 2,5-Dimethylbenzoic Acid

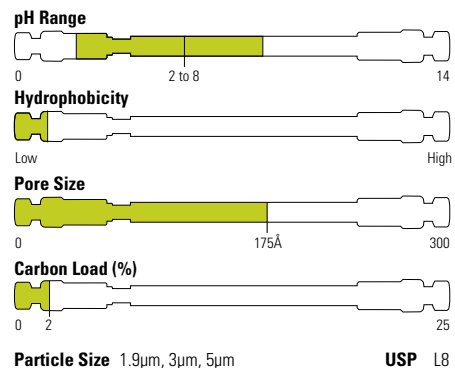
### Hypersil GOLD CN

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	25802-052130	-	-	-
		100	-	25802-102130	-	-	-
		150	-	25802-152130	-	-	-
		200	-	25802-202130	-	-	-
3	Drop-in Guard (4/pk)	10	25803-011001	25803-012101	25803-013001	-	25803-014001
		50	-	25803-052130	-	-	-
		100	25803-101030	25803-102130	25803-103030	-	25803-104630
		150	25803-151030	25803-152130	25803-153030	-	25803-154630
5	Drop-in Guard (4/pk)	10	-	25805-012101	25805-013001	25805-014001	25805-014001
		50	-	25805-052130	25805-053030	-	25805-054630
	HPLC Column	100	-	25805-102130	25805-103030	-	25805-104630
		150	-	25805-152130	-	-	25805-154630
		250	-	-	-	25805-254030	25805-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00	850-00

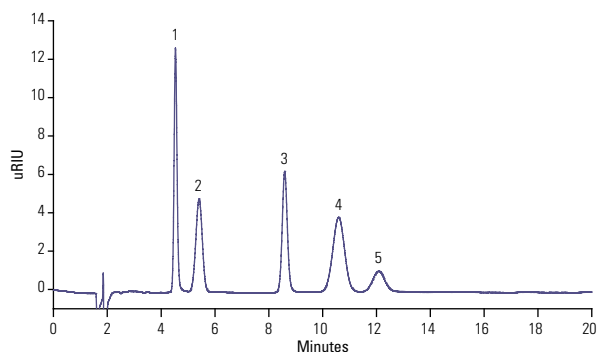
## Hypersil GOLD Amino

A high performance aminopropyl phase that gives excellent chromatographic properties in three modes: weak anion exchange, reversed-phase and normal phase

- Retains anions and organic acids in weak anion exchange
- Excellent for carbohydrate analysis in reversed-phase
- Alternative selectivity to silica columns in normal phase chromatography
- Outstanding peak shape and sensitivity



## Sugars



### Hypersil GOLD Amino 5µm, 150 x 4.6mm

Mobile Phase:	MeCN/Water (80:20)
Temperature:	35°C
Flow Rate:	1.2mL/min
Injection Volume:	20µL
Detection:	RI
Analytes:	1. Fructose
	2. Glucose
	3. Sucrose
	4. Maltose
	5. Lactose

## Hypersil GOLD Amino

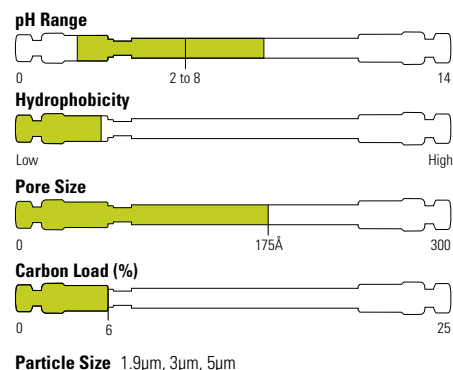
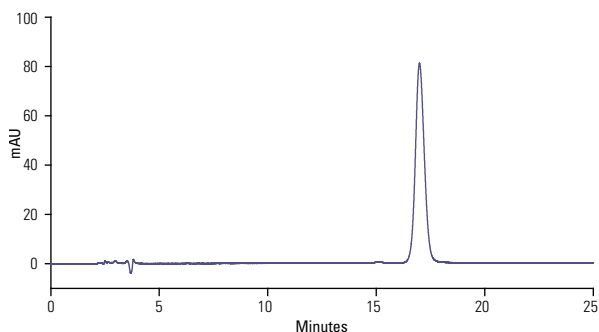
Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	25702-052130	-	-	-
		100	-	25702-102130	-	-	-
		150	-	25702-152130	-	-	-
		200	-	25702-202130	-	-	-
3	Drop-in Guard (4/pk)	10	25703-011001	25703-012101	25703-013001	-	25703-014001
	HPLC Column	30	-	25703-032130	-	-	-
		50	-	25703-052130	-	-	25703-054630
		100	-	25703-102130	25703-103030	-	25703-104630
		150	25703-151030	25703-152130	25703-153030	-	25703-154630
5	Drop-in Guard (4/pk)	10	-	25705-012101	25705-013001	25705-014001	25705-014001
	HPLC Column	50	-	25705-052130	-	-	25705-054630
		100	-	25705-102130	-	-	25705-104630
		150	-	25705-152130	-	-	25705-154630
		250	-	25705-252130	25705-253030	25705-254030	25705-254630
		Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

## Hypersil GOLD AX

A novel polymeric amine ligand bonded to highly pure base deactivated silica

- Weak anion exchange phase for multiple charged species
- Suitable for HILIC retention and separation of highly polar molecules
- Higher efficiency than polymer based ion exchange columns
- Outstanding peak shape and selectivity

### Vitamin C



Particle Size 1.9µm, 3µm, 5µm

#### Hypersil GOLD AX 5µm, 100 x 4.6mm

Mobile Phase:	100 mM Ammonium Acetate pH 6.8/ MeCN (30:70)
Temperature:	30°C
Flow Rate:	0.5mL/min
Injection Volume:	50µL
Detection:	UV, 240nm

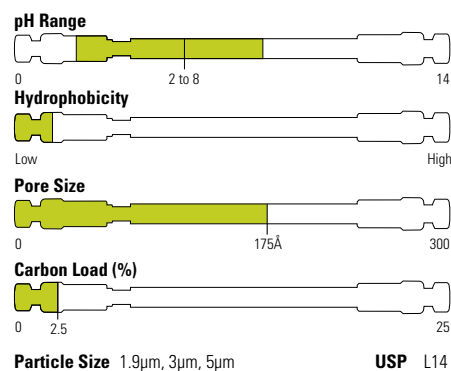
### Hypersil GOLD AX

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	26102-052130	-	-
		100	-	26102-102130	-	-
		150	-	26102-152130	-	-
		200	-	26102-202130	-	-
3	Drop-in Guard (4/pk)	10	26103-011001	26103-012101	-	26103-014001
	HPLC Column	30	-	26103-032130	-	-
		50	-	26103-052130	-	-
		100	-	26103-102130	-	26103-104630
		150	26103-151030	26103-152130	26103-153030	-
5	Drop-in Guard (4/pk)	10	-	26105-012101	26105-013001	26105-014001
	HPLC Column	50	-	-	-	26105-054630
		100	-	-	-	26105-104630
		150	-	-	-	26105-154630
		250	-	26105-252130	26105-253030	26105-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

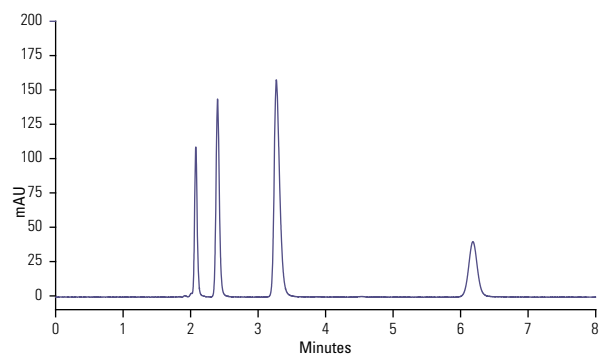
## Hypersil GOLD SAX

A highly stable quaternary amine strong anion exchange column for aqueous and low pH mobile phases

- High stability to aqueous and low pH mobile phases
- Ideally suited to the analysis of smaller organic molecules including nucleotides and organic acids
- Outstanding peak shape and sensitivity



### Monophosphates



#### Hypersil GOLD SAX 5µm, 150 x 4.6mm

Mobile Phase: Aqueous  $\text{KH}_2\text{PO}_4$  (50 mM, pH 3)  
 Temperature: 40°C  
 Flow Rate: 1.0mL/min  
 Injection Volume: 10µL  
 Detection: UV, 254nm

### Hypersil GOLD SAX

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	26302-052130	-	-
		100	26302-102130	-	-
		150	26302-152130	-	-
3	Drop-in Guard (4/pk)	10	26303-012101	-	26303-014001
	HPLC Column	50	26303-052130	-	-
		100	26303-102130	26303-103030	26303-104630
150		26303-152130	26303-153030	26303-154630	
5	Drop-in Guard (4/pk)	10	26305-012101	26305-013001	26305-014001
		HPLC Column	50	26305-052130	-
	100		26305-102130	-	26305-104630
	150		26305-152130	-	26305-154630
	250		26305-252130	26305-253030	26305-254630
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

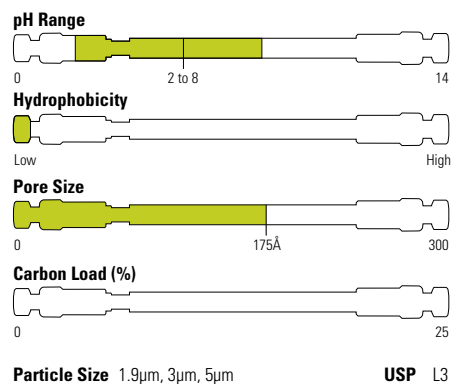
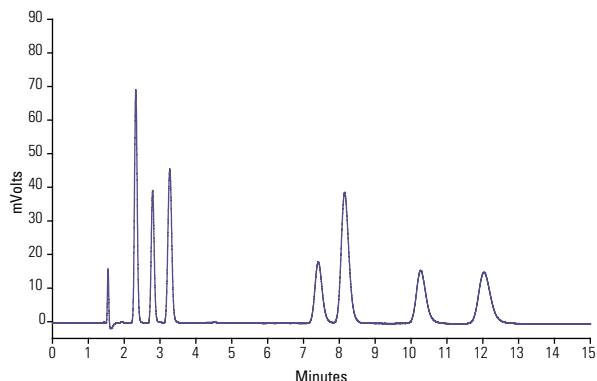


## Hypersil GOLD Silica

Unbonded, highly pure base deactivated silica media that is the backbone of the Hypersil GOLD range of columns

- Highly pure base deactivated silica media
- Outstanding peak shape and sensitivity

### Steroids



#### Hypersil GOLD Silica 5µm, 150 x 4.6mm

Mobile Phase:	19:1 (v/v) n-C6H14/EtOH
Temperature:	30°C
Flow Rate:	1.5mL/min
Injection volume:	5µL
Detection:	UV, 254nm
Analytes:	<ol style="list-style-type: none"> <li>1. Progesterone</li> <li>2. 21-Hydroxyprogesterone-21-acetate</li> <li>3. 17-a-Hydroxyprogesterone</li> <li>4. Cortisone</li> <li>5. 11-a-Hydroxyprogesterone</li> <li>6. Corticosterone</li> <li>7. Hydrocortisone</li> </ol>

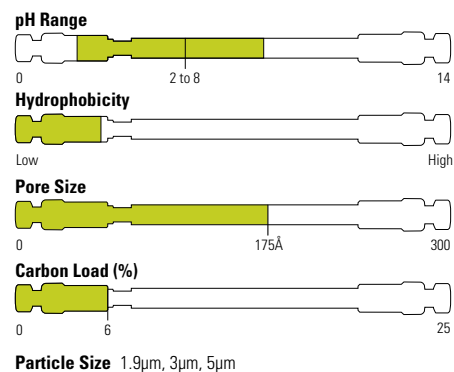
### Hypersil GOLD Silica

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	25102-052130	-	-	-
		100	-	25102-102130	-	-	-
		150	-	25102-152130	-	-	-
		200	-	25102-202130	-	-	-
3	Drop-in Guard (4/pk)	10	25103-011001	25103-012101	25103-013001	-	25103-014001
	HPLC Column	30	-	25103-032130	-	-	25103-034630
		100	-	25103-102130	-	-	25101-104630
		150	-	25103-152130	25103-153030	-	25103-154630
5	Drop-in Guard (4/pk)	10	-	25105-012101	-	25105-014001	25105-014001
	HPLC Column	50	-	25105-052130	-	-	25105-054630
		100	-	25105-102130	25105-103030	-	25105-104630
		150	-	25105-152130	-	-	25105-154630
		250	-	25105-252130	-	25105-254030	25105-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00	850-00

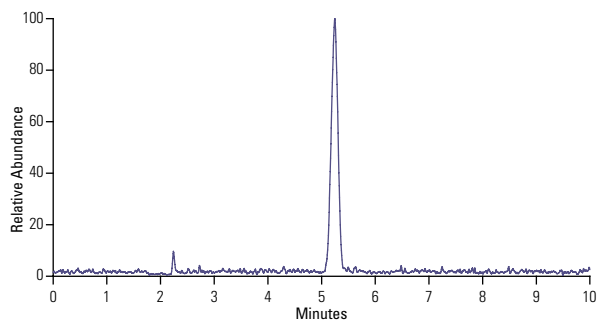
## Hypersil GOLD HILIC

Retains and separates polar analytes that are problematic using reversed-phase columns

- Alternative selectivity to C18
- Improved sensitivity for MS detection
- Alternative to ion-pair or derivatization
- Outstanding peak shape and selectivity



## Urea



### Hypersil GOLD HILIC 5µm, 150 x 4.6mm

Mobile Phase:	H <sub>2</sub> O/MeCN (10:90) + 0.1% formic acid
Temperature:	30°C
Flow Rate:	0.6mL/min
Injection Volume:	1µL
Detection:	+ESI
Analytes:	1. Urea

## Hypersil GOLD HILIC

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	26502-052130	-	-
		100	-	26502-102130	-	-
		150	-	26502-152130	-	-
3	Drop-in Guard (4/pk)	10	26503-011001	26503-012101	26503-013001	26503-014001
	HPLC Column	30	-	26503-032130	-	-
		50	-	26503-052130	-	-
		100	26503-101030	26503-102130	26503-103030	26503-104630
		150	26503-151030	26503-152130	26503-153030	26503-154630
5	Drop-in Guard (4/pk)	10	-	26505-012101	-	26505-014001
	HPLC Column	50	-	26505-052130	-	26505-054630
		100	-	26505-102130	26505-103030	26505-104630
		150	-	26503-101030	-	26505-154630
		250	-	26505-252130	26505-253030	26505-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

# Acclaim HPLC and UHPLC columns

Optimal selectivity through innovative chemistries

Designed for separating a variety of analytes, from small neutral and polar molecules to complex mixtures. Ideal for pharmaceutical, environmental, food and beverage and chemical applications.

## **Diversified selectivities**

- Novel and proprietary surface chemistries

## **Reproducible and reliable**

- Strict manufacturing and quality processes

## **High efficiencies**

- For optimum resolution of complex mixtures

## **Ultra-pure, porous, spherical silica**

- Providing consistent quality and performance

Download the Acclaim column selection guide [here](#)

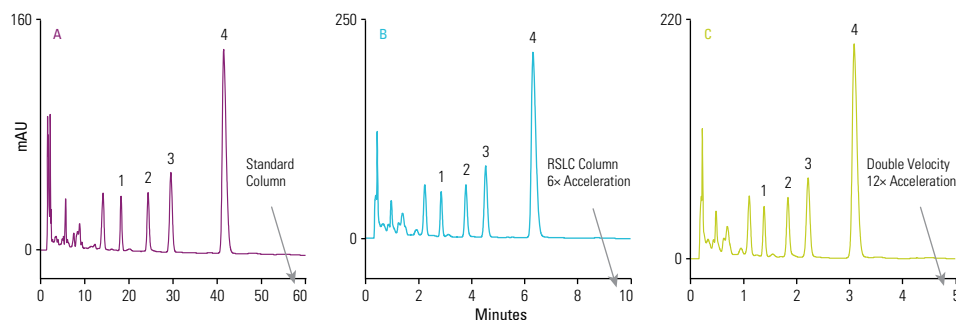
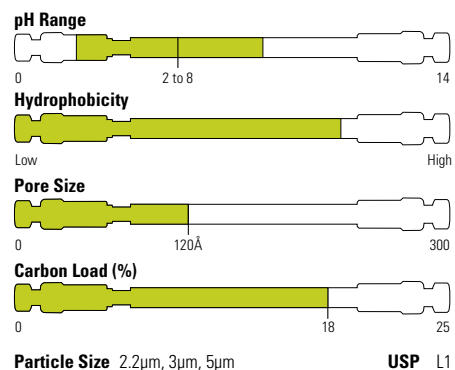
For more information, visit [thermofisher.com/acclaim](https://thermofisher.com/acclaim)

## Acclaim 120 C18

High performance reversed-phase columns for reproducible results

- High hydrophobic retention
- Excellent efficiencies for maximum resolution
- Low silanol activity for excellent peak shapes for basic analytes
- Extremely low bleed, fully compatible with MS

The Acclaim 120 columns are designed for high resolution reversed-phase separations. The very high surface coverage and very low metal content together result in columns with excellent efficiencies. These columns provide exceptional performance for a variety of applications in the pharmaceutical, chemical, environmental and food separations areas.



**A: Acclaim 120 C18, 5µm, 150 x 4.6mm**  
**B, C: Acclaim RSLC C18, 2.2µm, 50 x 2.1mm**

Mobile Phase:	200mM HOAc in 10% (v/v) MeOH
Temperature:	20°C
Flow Rate:	A: 1.00mL/min B: 0.41mL/min C: 0.82mL/min
Injection Volume:	A: 10µL B: 1.2µL C: 1.2µL
Detection:	UV, 254 nm, A: 1 Hz data rate B: 5 Hz data rate C: 10 Hz data rate
Analytes:	1. p-Hydroxybenzoic acid 2. p-Hydroxybenzaldehyde 3. Vanillic acid 4. Vanillin
Sample:	Commercial vanilla extract in 40% ethanol, filtered
Reference:	AOAC Official Method 990.25

### Acclaim 120 C18

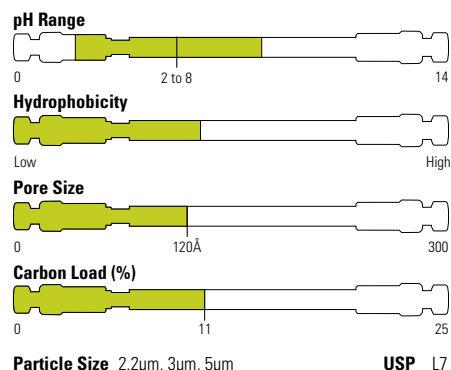
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	071400	071606	-
		50	068981	071605	-
		75	-	075697	-
		100	068982	071604	-
		150	071399	-	-
		250	074812	-	-
3	HPLC Column	33	-	066272	-
		50	059128	068971	059131
		75	-	066273	-
		100	059129	076186	059132
		150	059130	063691	059133
		250	076187	070077	-
5	Guard Cartridge (2/pk)	10	069689	071981	069695
	HPLC Column	50	059142	-	059146
		100	059143	-	059147
		150	059144	-	059148
		250	059145	-	059149

## Acclaim 120 C8

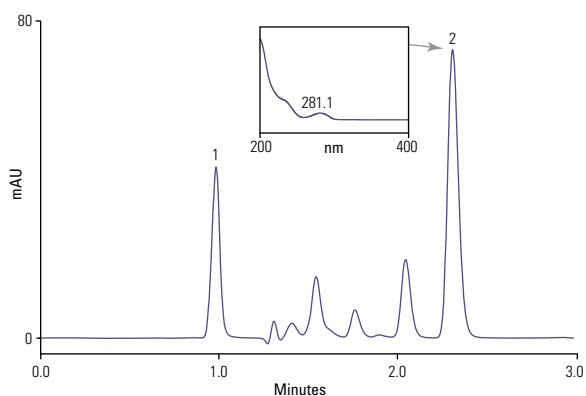
High performance reversed-phase columns with intermediate hydrophobic retention

- Low silanol activity for excellent peak shapes for basic analytes
- Excellent column efficiencies
- LC-MS compatible

Acclaim 120 C8 reversed-phase columns feature densely bonded monolayer C8 ligands on a high-purity, spherical porous silica substrate. The columns are a well-characterized line of LC-MS compatible C8 phases with very high surface coverage and extremely low silanol activity. These columns provide exceptional performance for a variety of applications in the pharmaceutical, environmental, food and many other industrial sectors.



## Triclosan in toothpaste



### Column: Acclaim RSLC C8, 2.2µm, 50 x 2.1mm

Mobile Phase:	Isocratic, 15% buffer, (2mM Ammonium acetate pH5), 85% methanol (v/v)
Temperature:	50°C
Flow Rate:	0.2mL/min
Injection Volume:	1.0µL
Detection:	Diode array detector, 281nm, 10Hz, 0.1 s resp. time and spectra 200-400 nm
Analytes:	1. Saccharin 2. Triclosan
Sample:	Toothpaste containing 0.3% triclosan

### Acclaim 120 C8

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	-	072618	-
		50	072615	072619	-
		100	072616	072620	-
		150	072617	-	-
		250	074811	-	-
3	HPLC Column	50	059122	-	059125
		100	059123	-	059126
		150	059124	068970	059127
5	Guard Cartridge	10	069688	071979	069696
	HPLC Column	50	059134	-	059138
		100	-	-	059139
		150	059136	-	059140
		250	-	-	059141

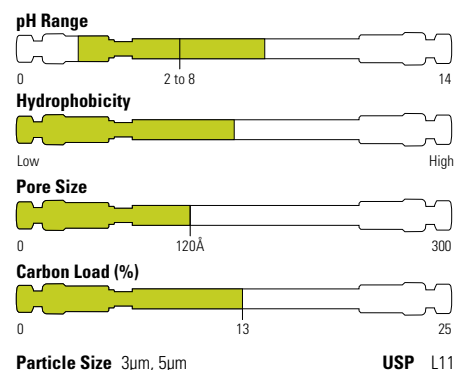
## Acclaim Phenyl-1

A unique reversed-phase column with high aromatic selectivity

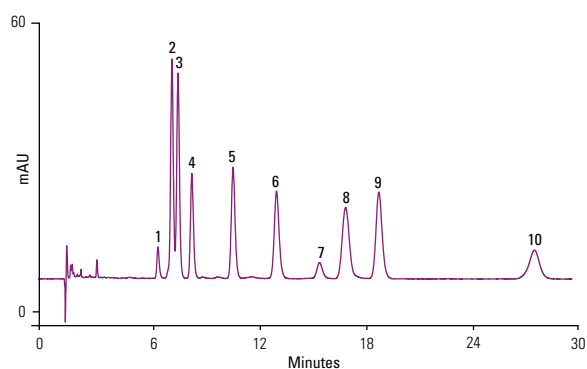
- High aromatic selectivity
- High hydrophobic retention
- Unique and complementary selectivity compared to any other phenyl type column
- Compatibility with highly aqueous mobile phase
- High efficiency and rugged packing

Acclaim Phenyl-1 has a higher pi-pi interaction than other phenyl phases and provides unique selectivity for aromatic compounds while maintaining sufficient hydrophobic interaction and aqueous compatibility for superior chromatographic performance.

The Acclaim Phenyl-1 column can be used in a wide range of applications in pharmaceutical, environmental, food testing and product-quality testing. This column is ideally suited for the analysis of aromatic analytes; some examples include glucocorticosteroids, estrogens, fat-soluble vitamins and phospholipids.



### Separation of fat-soluble vitamins



#### Acclaim Phenyl-1, 3µm, 150 x 3.0mm

Mobile Phase:	Methanol/water v/v 90/10
Temperature:	30°C
Flow Rate:	0.5mL/min
Injection Volume:	2µL
Detection:	UV, 220nm
Analytes:	(100 ppm each)
	1. Retinol acetate (vitamin A acetate)
	2. Vitamin D2
	3. Vitamin D3
	4. delta-Tocopherol
	5. gamma-Tocopherol
	6. alpha-Tocopherol (vitamin E)
	7. Impurity (unknown)
	8. Vitamin E acetate
	9. Vitamin K2
	10. Vitamin K1

#### Acclaim Phenyl-1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	Guard Cartridge	10	-	071974	071973
	HPLC Column	150	071971	071970	071969
5	HPLC Column	250	-	-	079697

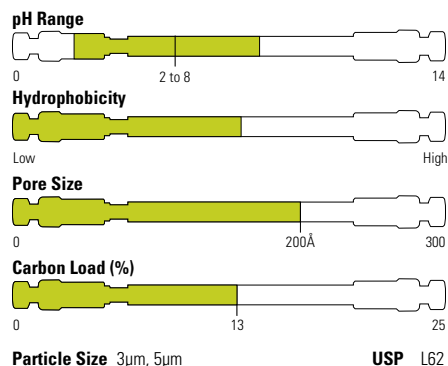
Learn more at [thermofisher.com/acclaim](http://thermofisher.com/acclaim)

## Acclaim C30

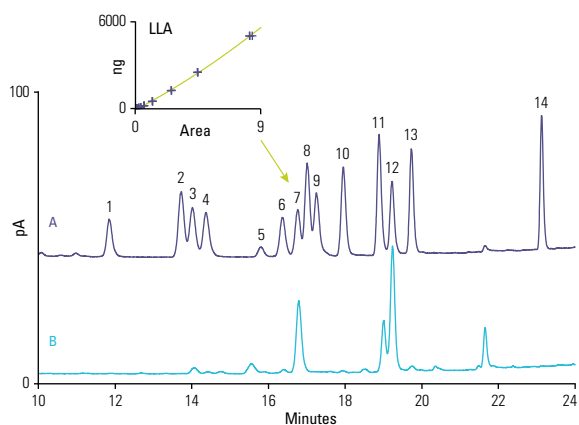
Columns for separating structurally related isomers

- High shape selectivity
- Unique selectivity complementary to other reversed-phase columns
- Compatibility with highly aqueous mobile phase
- High-quality: low column bleed, high efficiency and rugged packing

The Acclaim C30 is designed to provide high shape selectivity for separating hydrophobic structural related isomers and unique selectivity complementary to other reversed-phase columns (e.g. C18).



### Omega fatty acids



#### Acclaim C30, 5µm, 150 x 4.6mm

Mobile Phase A: Water:formic acid:mobile phase B  
900:3:6:100 (v/v)

Mobile Phase B: Acetone:acetonitrile:THF:formic acid  
675:225:100:4(v/v)

Gradient:	Time (min)	%A	%B
	0	100	0
	1	40	60
	13	30	70
	22	5	95
	24	5	95
	29	100	0
	32	100	0

Temperature: 30°C

Flow Rate: 1.00mL/min

Injection Volume: 2µL

Detection: Corona ultra, nebulizer 15°C, filter high

Analytes:  
1. SDA  
2. EPA  
3. ALA  
4. GLA  
5. DHA  
6. Arach.  
7. LLA

Samples:  
A. Standards in isopropanol  
B. Saponified chicken fat

### Acclaim C30

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	50	078666	078663	078661
		100	078665	078662	078660
		150	075725	075724	075723
		250	078664	075726	303056
5	Guard Cartridge	10	075722	075721	075720
	HPLC Column	150	-	-	075719
		250	-	-	075718

### Acclaim guard holder

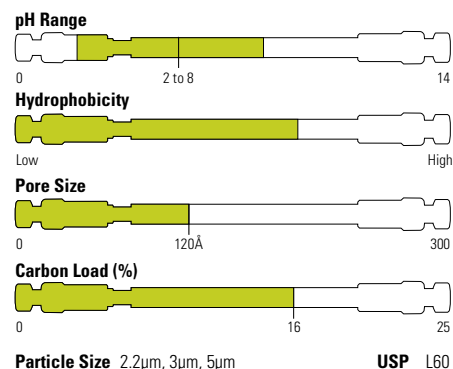
Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and Coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

## Acclaim PolarAdvantage

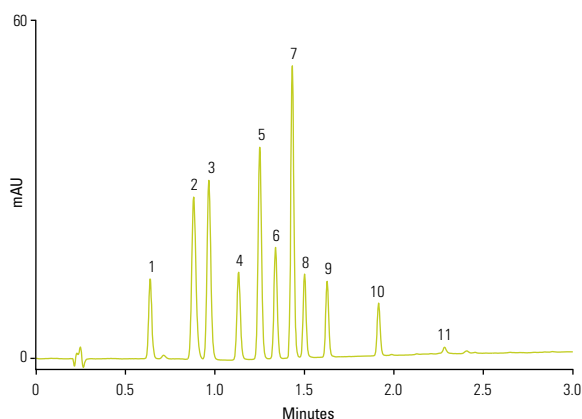
Novel polar-embedded reversed-phase columns with unique selectivity

- Selectivity complementary to the C18 column
- Low silanol activity for excellent peak shape with basic compounds
- Compatible with 100% aqueous mobile phase
- High selectivity for hydrophobic aromatic molecules
- Wide range of applications

Acclaim PolarAdvantage (PA) columns feature a patented bonding column chemistry that incorporates a polar sulfonamide group with an ether linkage near the silica surface. This unique chemistry provides low silanol activity, compatibility with 100% aqueous mobile phase. The Acclaim PA column offers great separation power to resolve a wide variety of polar and non-polar analytes and supports LC-MS analysis.



### EPA 604 Phenols



#### Acclaim RSLC PolarAdvantage, 2.2µm, 50 x 3.0mm

Mobile Phase A: 10mM formic acid + 10mM ammonium formate, pH 3.75 ± 0.05

Mobile Phase B: Acetonitrile

Gradient: -1.5 0.0 0.3 2.6 3.0  
 %A 70 70 70 10 10  
 %B 30 30 30 90 90

Temperature: 30°C

Flow Rate: 1.25mL/min

Injection Volume: 0.5µL

Detection: UV, 280nm, 10Hz, 0.5s resp. time

Analytes:  
 1. Phenol  
 2. 2,4-Dinitrophenol  
 3. 4-Nitrophenol  
 4. 2-Chlorophenol  
 5. 2-Nitrophenol  
 6. 2,4-Dimethylphenol  
 7. 4,6-Dinitro-2-methylphenol  
 8. 4-Chloro-3-methylphenol  
 9. 2,4-Dichlorophenol  
 10. 2,4,6-Trichlorophenol  
 11. Pentachlorophenol

Sample: Calibration mix, 50µg/mL in water

### Acclaim PolarAdvantage

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	50	072622	-	-
		100	072623	072627	-
		150	072624	-	-
		250	074813	-	-
3	HPLC Column	50	063174	068972	-
		100	061316	076214	-
		150	061317	063693	061318
		250	-	070079	-
5	Guard Cartridge	10	069691	071983	069698
	HPLC Column	50	-	-	061319
		150	-	-	061320
		250	-	-	061321

Learn more at [thermofisher.com/acclaim](http://thermofisher.com/acclaim)



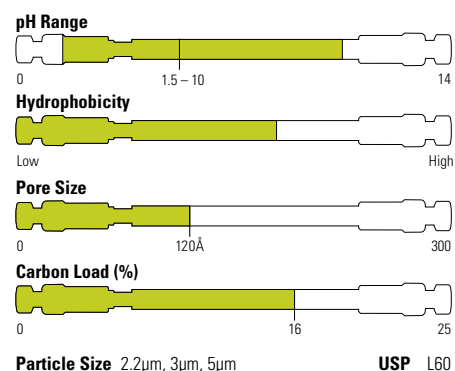
## Acclaim PolarAdvantage II

Complementary selectivity and enhanced hydrolytic stability

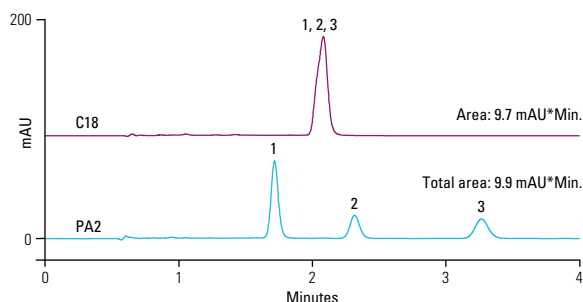
- Unique selectivity complementary to the C18 column
- Novel polar-embedded column chemistry for hydrolytic stability
- Compatible with 100% aqueous mobile phase
- Low bleed for MS compatibility
- Wide range of applications

Acclaim PolarAdvantage II (PA2) columns feature a patented surface chemistry that incorporates an amide-embedded polar group and multi-point attachment between the ligands and the silica surface. This unique chemistry provides enhanced hydrolytic stability from pH 1.5-10 with 100% aqueous mobile phases and exhibits high reversed-phase capacity, with selectivity complementary to conventional C18 columns.

The Acclaim PA2 column is specifically designed to withstand high pH conditions, making it a good choice for the separation of both basic and acidic analytes.



### Turmeric



#### Acclaim RSLC 120 C18 2.2µm, 100 x 2.1mm Acclaim RSLC PA2, 2.2µm, 100 x 2.1mm

Mobile Phase A:	15mM H <sub>3</sub> PO <sub>4</sub>
Mobile Phase B:	Methanol
Isocratic:	C18: 70% B (v/v) PA2: 80% B (v/v)
Temperature:	30°C
Flow Rate:	0.41mL/min
Detection:	UV, 428nm
Analytes:	1. Curcumin 2. Demethoxycurcumin 3. Bis-demethoxycurcumin
Sample:	Turmeric extract

### Acclaim PolarAdvantage II

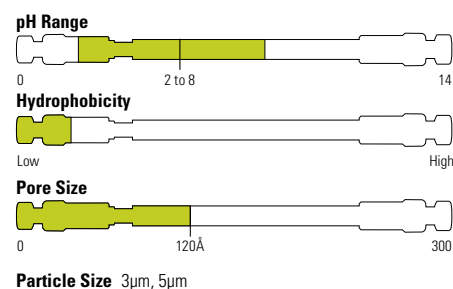
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	071402	-	-
		50	068989	071608	-
		100	068990	071607	-
		150	071401	-	-
		250	074814	-	-
3	HPLC Column	33	-	066276	-
		50	077999	068973	063189
		75	-	066277	-
		100	077998	078000	078001
		150	063187	063705	063191
		250	077997	070080	-
5	Guard Cartridge	10	069692	071985	069699
	HPLC Column	150	-	-	063197
		250	-	-	063199

## Acclaim HILIC-10

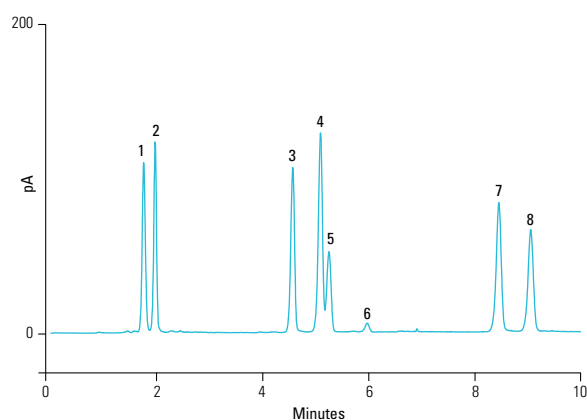
Designed with unique selectivity for hydrophilic molecules

- Retains highly polar molecules that are not retained by reversed-phase chromatography
- Unique selectivity, complementary to reversed-phase columns
- Hydrolytically stable
- Rugged column packing
- Broad application range

The Acclaim HILIC-10 column is designed for separating highly hydrophilic molecules by Hydrophilic Interaction Liquid Chromatography (HILIC). This column is based on high-purity spherical porous silica covalently modified with a proprietary hydrophilic layer.



### Glycerides



#### Acclaim HILIC-10, 3µm, 150 x 3.0mm

Mobile Phase A: Heptane  
 Mobile Phase B: 2-Propanol/acetic acid 99.5:0.5  
 Temperature: 25°C  
 Flow Rate: 0.50mL/min  
 Injection Volume: 4µL  
 Detection: Corona ultra, nebulizer 15°C  
 Analytes:  
 1. Tristearin  
 2. Trilaurin  
 3. Distearin isomer 1  
 4. Dilaurin isomer 1  
 5. Distearin isomer 2  
 6. Dilaurin isomer 2  
 7. Monostearin  
 8. Monolaurin

### Acclaim HILIC-10

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	150	074259	074258	074257
5	Guard Cartridge	10	074263	074261	074262

### Acclaim guard holder

Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and Coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

Learn more at [thermofisher.com/acclaim](https://www.thermofisher.com/acclaim)

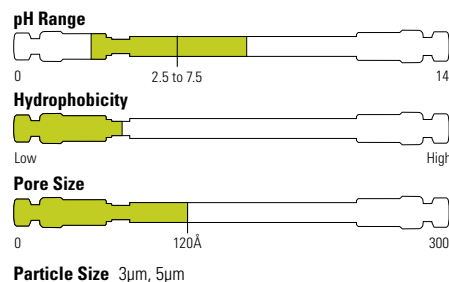
## Acclaim Mixed-Mode HILIC-1

Uniquely designed for both reversed-phase and HILIC operations

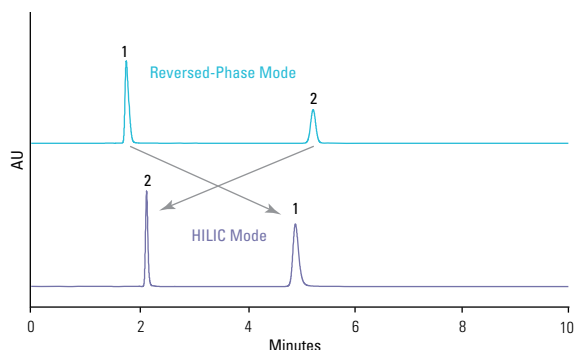
- Can operate in both RP and HILIC modes
- Retains highly polar molecules
- Unique selectivity complementary to RP columns
- Broader application range compared with conventional diol-based columns
- High-efficiency column for high-resolution separations

The Acclaim Mixed-Mode HILIC-1 column features a unique, high-efficiency, silica-based HPLC mixed-mode stationary phase that combines both reversed-phase (RP) and hydrophilic interaction liquid chromatography (HILIC) properties. This combination allows both hydrophobic and hydrophilic interactions to be utilized to optimize separations.

The functional group is of a hydrophobic alkyl chain with a diol group at the terminus. This unique combination results in the adjustable selectivity, making Acclaim Mixed-Mode HILIC-1 separate mixtures that would be impossible for a C18 column. This column is suitable for a broad range of applications, including non-ionic ethoxylated surfactants, drug metabolites, lipids, polyethylene glycols (PEGs), ethoxylated surfactants, and more.



### Cytosine and naphthalene



#### Acclaim Mixed-Mode HILIC-1, 5µm, 150 x 4.6mm

Mobile Phase:	CH <sub>3</sub> CN/0.1 M NH <sub>4</sub> OAc, pH 5.2 v/v 52/48 for RP mode v/v 92/8 for HILIC mode
Temperature:	30°C
Flow Rate:	1mL/min
Injection Volume:	10µL
Detection:	UV, 254nm
Analytes:	1. Cytosine (100 ppm) 2. Naphthalene (100 ppm)

#### Acclaim Mixed-Mode HILIC-1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	50	-	071912	-
		150	070091	070090	-
5	Guard Cartridge	10	069694	071913	069706
	HPLC Column	150	066847	-	066843
		250	-	-	066844

#### Acclaim guard holder

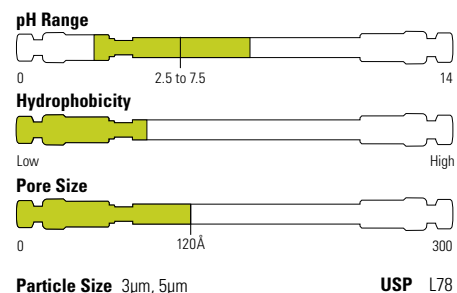
Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and Coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

## Acclaim Mixed-Mode WAX-1

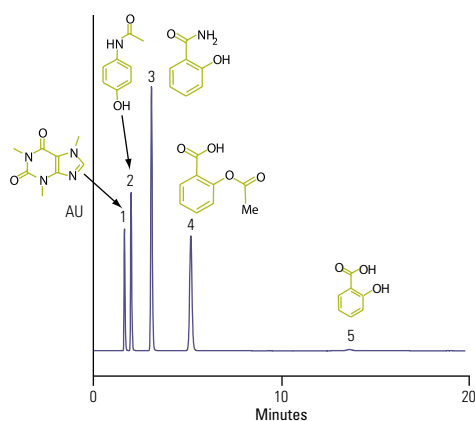
Designed for separating anionic molecules with powerful adjustable selectivity control

- Adjustable selectivity
- Selectivity orthogonal to reversed-phase (RP) columns
- Ideal selectivity for anionic molecules
- Excellent column efficiency and peak asymmetry
- Multimode retention mechanisms: reversed-phase, weak anion exchange, and HILIC modes

The Acclaim Mixed-Mode WAX-1 is a novel, high-efficiency silica HPLC column that combines hydrophobic and weak anion exchange characteristics. Its unique chemistry results in a multimode separation mechanism that includes reversed-phase, anion exchange, and HILIC interactions. Selectivity can be adjusted by changing ionic strength, pH or organic solvent content.



### Pain relief medicine



#### Acclaim Mixed-Mode WAX-1, 5µm, 150 x 4.6mm

Mobile Phase:	40/60 v/v Acetonitrile/buffer (6.8 g potassium monophosphate and 0.5 g pyrophosphate in 1000 g D.I. H <sub>2</sub> O, pH is adjusted to 6.0 with NaOH)
Temperature:	30°C
Flow Rate:	1mL/min
Injection Volume:	1µL
Detection:	UV, 220nm
Analyses:	1. Caffeine 2. Acetaminophen 3. Salicylamide 4. Acetyl salicylic acid (Aspirin) 5. Salicylic acid

### Acclaim Mixed-Mode WAX-1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	50	-	071908	-
		150	070089	070088	-
5	Guard Cartridge	10	069686	071909	069704
	HPLC Column	150	067084	-	064984
		250	-	-	064985

### Acclaim guard holder

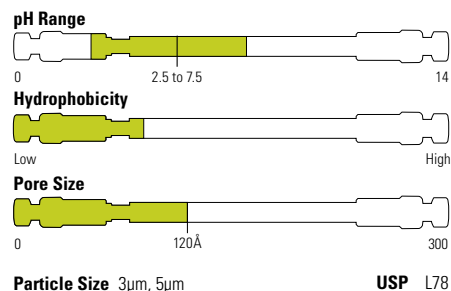
Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and Coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

## Acclaim Mixed-Mode WCX-1

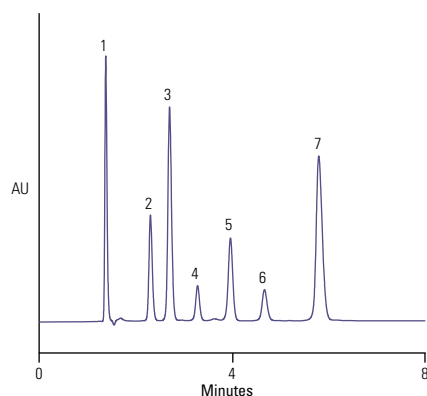
Designed for separating cationic molecules with adjustable selectivity control

- Adjustable selectivity
- Ideal selectivity for separating basic molecules
- Selectivity complementary to C18 RP columns
- Multimode separation mechanism: reversed-phase, weak cation exchange, anion-exclusion and HILIC

The Acclaim Mixed-Mode WCX-1 is a novel, high-efficiency, silica-based column, with a proprietary ligand with both hydrophobic and weak cation exchange properties. Selectivity of ionizable and neutral compounds can be controlled independently or simultaneously by tuning mobile phase ionic strength, pH or organic modifier. This column therefore can separate using multiple separation modes: reversed-phase, cation exchange, and normal-phase/HILIC and is recommended for a variety of industrial applications, including pharmaceutical, chemical, consumer products, foods and beverages.



### Pharmaceutical counterions



#### Acclaim Mixed-Mode WCX-1, 5µm, 150 x 4.6mm

Mobile Phase:	40/60 v/v CH <sub>3</sub> CN/NH <sub>4</sub> OAc, pH 5.2 (20 mM total)
Temperature:	30°C
Flow Rate:	1mL/min
Injection Volume:	5µL
Detection:	UV (225 nm)
Analytes:	1. Maleate 50µg/mL 2. Ketoprofen 30µg/mL 3. Naproxen 30µg/mL 4. Hydrocortisone 60µg/mL 5. Dexamethasone 60µg/mL 6. Oxprenolol 300µg/mL 7. Timolol 250µg/mL

### Acclaim Mixed-Mode WCX-1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	50	-	071910	-
		150	070093	070092	-
5	Guard Cartridge	10	085455	071911	069705
	HPLC Column	150	068371	-	068353
		250	-	-	068352

### Acclaim guard holder

Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and Coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

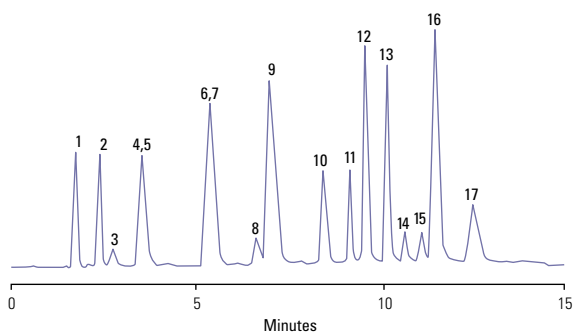
## OmniPac

DVB polymer columns for combined ion exchange and reversed-phase separations

- Acid, base and solvent compatible, pH 0 to 14
- Ideal for the separation of high molecular weight organic acids
- Delivers optimal separation of very hydrophobic anions
- Delivers optimal separation of halogenated anions
- Provides simultaneous separation of neutral and ionic species
- Unique selectivity for polar and ionic organic analytes
- Delivers optimal separation of organic, hydrophobic, and halogenated cations

Thermo Scientific™ OmniPac™ is a range of latex-based columns. Both PAX columns have an ion exchange capacity of about 40µeq per column, and the PCX columns have a capacity of approximately 120µeq per column. The PAX-500 and PCX-500 columns separate analytes through both ion exchange and reversed-phase mechanisms, due to their higher reversed-phase capacity relative to the PAX-100 and PCX-100 columns.

### Gradient separation of nitrogen-containing compounds



#### OmniPac PCX-500, 250 x 4.0mm

Mobile Phase:	Acetonitrile/Sodium Chloride/ Hydrochloric Acid Gradient
Flow Rate:	1.0mL/min
Detection:	UV, 254nm
Analytes:	1. Orotic Acid 2. 4-Hydroxybenzamide 3. Luminol Impurity 4. Luminol 5. Pyridine 6. PABA 7. 2,2'-Bipyridine 8. p-Phenylenediamine 9. Naphthylamine 10. Nitrobenzoic Acid 11. Tribenzylamine 12. p-Nitroaniline 13. 2,4-Dinitroaniline 14. Dibenzylamine 15. N-Methyl-N-nitrosoaniline 16. 4-Chloro-2-nitroaniline 17. 2,6-Dichloro-4-nitroaniline

#### OmniPac anion exchange

Description	Porosity	Length (mm)	4.0mm ID
PAX-100	Microporous	50	042151
		250	042150
PAX-500	Microporous	50	042153
		250	042152

#### OmniPac cation exchange

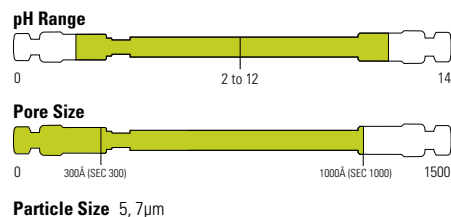
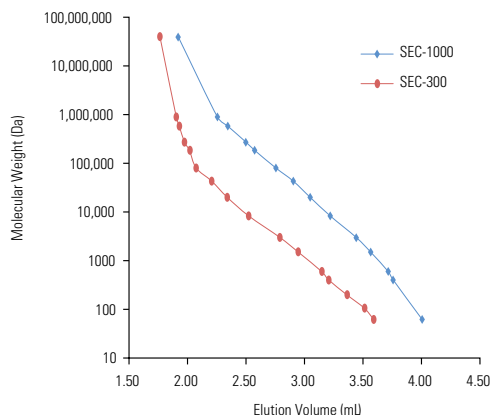
Description	Porosity	Length (mm)	4.0mm ID
PCX-100	Microporous	50	042193
		250	042189
PCX-500	Microporous	50	042195
		250	042191

## Acclaim Size Exclusion Chromatography (SEC)

High performance SEC columns for analysis of water soluble polymers

- Proprietary mono-dispersed multi-pore hydrophilic resin: no inflection points in calibration curve
- SEC-300 calibrated from 100 to 50,000 Daltons
- SEC-1000 calibrated from 1,000 to 1,000,000 Daltons
- Availability of small particle sizes packed in 300 x 4.6mm dimension allows for high-resolution analysis at reduced solvent consumption
- Stable surface bonding with low column bleed and compatibility with UV, RI, MS, ELSD and Thermo Scientific™ Dionex™ Corona™ Charged Aerosol Detectors

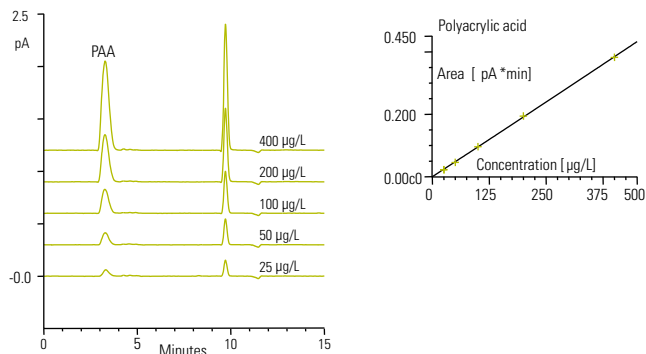
Thermo Scientific™ Acclaim™ SEC-300 and SEC-1000 are a family of resin based, high performance size exclusion chromatography columns specifically designed for the separation of water soluble polymers and oligomers.



**Acclaim SEC-300, 5μm, 300 x 4.6mm**  
**Acclaim SEC-1000, 7μm, 300 x 4.6mm**

Mobile Phase:	10mM sodium perchlorate
Temperature:	25°C
Flow Rate:	0.35mL/min
Injection Volume:	50μL
Detection:	RI
Analytes:	(0.03% - 0.1% in mobile phase) dextran (MW 5,000,000-40,000,000), PEO (MW 895,000, 580,000, 272,000, 185,000, 80,000, 43,000, and 20,000), PEG (MW 8,300, 3,000, 1,500, 600, 400 and 200), diethylene glycol (MW 106 and ethylene glycol (MW 62)

### Polyacrylic acid using SEC with charged-aerosol detection



**Acclaim SEC-300, 5μm, 300 x 4.6mm**

Mobile Phase A:	Acetonitrile
Mobile Phase B:	Water
Temperature:	30°C
Flow Rate:	0.35mL/min
Injection Volume:	35μL
Detection:	Corona III; evaporator 55°C, Engine 40 °C, 2 Hz, filter 5, power function 1.20
Analytes:	1. PAA standards in water

### Acclaim size exclusion chromatography (SEC)

Description	Particle Size (μm)	Format	Length (mm)	4.6mm ID	7.8mm ID
Acclaim SEC-300	5	Guard	33	082740	–
		HPLC Column	150	–	079726
			300	079723	079725
Acclaim SEC-1000	7	Guard	33	082739	–
		HPLC Column	150	–	079722
			300	079724	079721

# Application specific HPLC and UHPLC columns

Innovative chemistries tailored for challenging and critically important applications

Application specific columns utilize novel and unique chemistries to provide superior resolution with ease of use for key pharmaceutical and environmental applications.

## **Acclaim AmG C18**

- Aminoglycoside antibiotics separation

## **Acclaim Trinity P1 and P2**

- API & counterion analysis

## **Acclaim organic acid**

- Fast organic acid analysis

## **Acclaim surfactant and surfactant plus**

- Separation of surfactants

## **Acclaim explosives**

- Separation of explosive residues

## **Acclaim Trinity Q1**

- Diquat and paraquat analysis

## **Acclaim Carbamate**

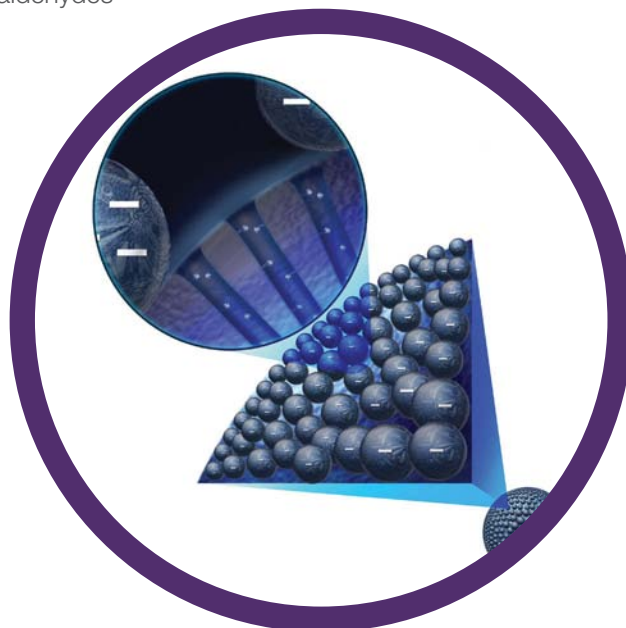
- The separation of carbamate pesticides

## **Acclaim Carbonyl C18**

- Separation of DNPH derivatives of aldehydes and ketones

Download the Acclaim column selection guide [here](#)

For more information, visit [thermofisher.com/acclaim](http://thermofisher.com/acclaim)





## Acclaim AmG C18

Designed to provide rugged and reproducible reversed-phase chromatography of aminoglycoside antibiotics.

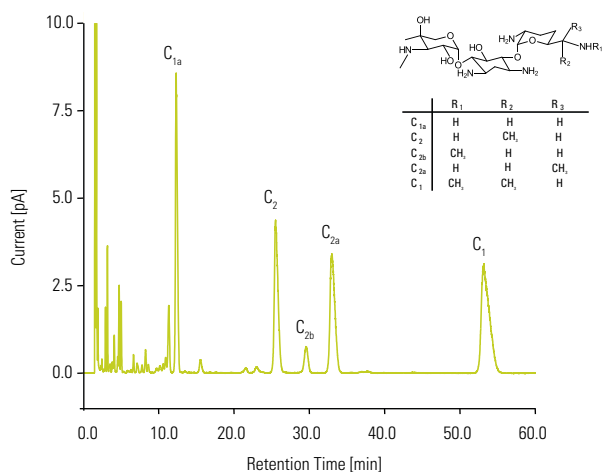
- Rugged and reproducible
- Excellent selectivity for the HPLC of aminoglycosides
- Superior resistance to acidic conditions for long column lifetime
- Easy to use with only aqueous mobile phase; TFA only, or TFA/HFBA or PFPA is needed
- Compatible with simple rugged methods; no solvents are required
- High efficiency and throughput



Aminoglycoside antibiotics are commonly used as clinical and veterinary medicines to treat bacterial infections. HPLC using ion-pairing reversed-phase separations is an effective technique for simultaneous qualitative and quantitative determination of aminoglycosides.

The Acclaim AmG C18 column is designed to provide excellent stability, selectivity and high resolution. It has a unique surface, a polymer encapsulated silica covalently bonded with a C18 ligand. This ensures ultra-stability when exposure to low pH (<1) and high temperature separation conditions.

### Isocratic separation of gentamicin sulfate using 100 mM TFA as the mobile phase



#### Acclaim AmG C18, 3µm, 150 x 3.0mm

Mobile Phase:	100 mM TFA
Temperature:	30°C
Flow Rate:	0.425 mL/min
Injection Volume:	2µL
Detection:	Corona Veo RS (Filter = 5.0 s; Evaporation Temp = 35 °C; Data Rate = 5 Hz; Power Function = 1.00)
Sample:	Gentamicin (1 mg/mL)

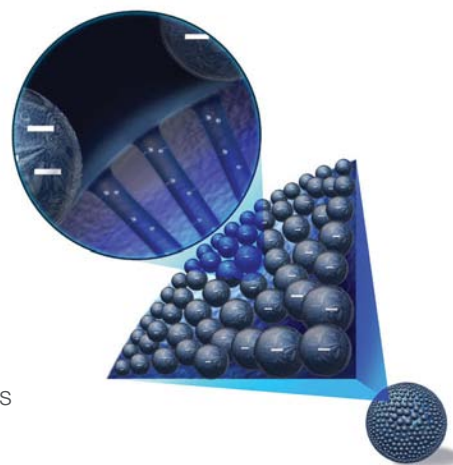
#### Acclaim AmG C18

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	Guard Cartridges (2/pk)	10	088754	088756	088758
	HPLC Column	150	088753	088755	088757
Guard Cartridge Holder			069580	069580	069580

## Acclaim Trinity P1

Mixed mode column technology combining reversed-phase, anion exchange and cation exchange functionality on a single support

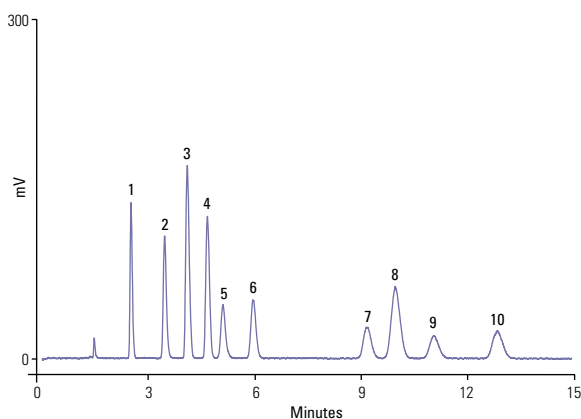
- Ideal selectivity for simultaneous separation of API and counterion
- Adjustable selectivity by mobile phase ionic strength, electrolyte type, pH, and organic solvent
- Low bleed; compatible with MS, CAD and ELSD
- Retention of hydrophilic ionic and ionizable analytes without ion-pairing reagents
- Greater flexibility in method development: each retention mechanisms can be controlled independently



The Thermo Scientific™ Acclaim™ Trinity™ P1 HPLC column is designed with Nanopolymer Silica Hybrid (NSH) technology, which results in a multimode surface chemistry ideal for the simultaneous separation of drugs and their counterions. The surface chemistry concurrently provides reversed-phase, cation exchange, and anion exchange functionalities. The result is maximum flexibility in method development. Separations can be optimized easily by adjusting the chromatographic parameters (mobile phase pH, ionic strength, and organic strength).

Download the Acclaim column selection guide [here](#)

### Simultaneous separation of pharmaceutical counterions



#### Acclaim Trinity P1, 3µm, 100 x 3.0mm

Mobile Phase: 60/40 v/v CH<sub>3</sub>CN/20mM (total) NH<sub>4</sub>OAc, pH 5

Temperature: 30°C

Flow Rate: 0.5mL/min

Injection Volume: 2µL

Detection: Corona ultra (Gain = 100 pA;

Filter = med; Neb Temp =

30°C)

Analytes: 1. Choline  
 (50 to 100ppm) 2. Tromethamine  
 3. Sodium  
 4. Potassium  
 5. Meglumine  
 6. Mesylate  
 7. Nitrate  
 8. Chloride  
 9. Bromide  
 10. Iodide

### Acclaim Trinity P1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID
3	Guard Cartridges (2/pk)	10	071391	071390
	HPLC Column	50	075565	071388
		100	071389	071387
		150	075564	075563

### Acclaim guard holder

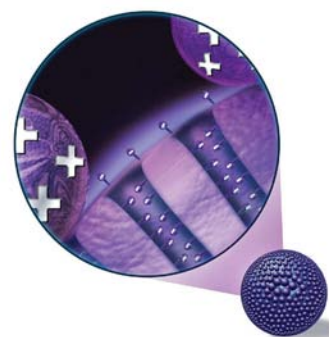
Format	Cat. No.
Acclaim SST Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

For more information, visit [thermofisher.com/acclaim](http://thermofisher.com/acclaim)

## Acclaim Trinity P2

Mixed-mode column technology; hydrophilic interaction combining HILIC, anion exchange and cation exchange functionalities

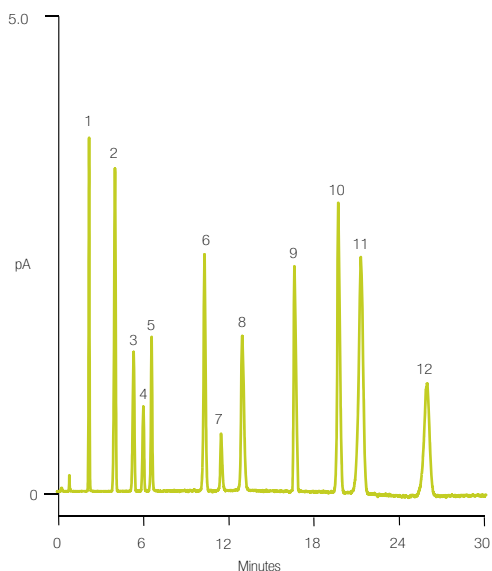
- Ideal for separating pharmaceutical counterions, including monovalent and divalent cations or anions
- Selectivity complementary to the Trinity P1 column
- Low column bleed, compatible with CAD and MS
- Hydrolytically stable
- High efficiency



The Acclaim Trinity P2 is a unique, high-efficiency, silica-based column specifically designed for separation of pharmaceutical counterions, including monovalent and divalent cations or anions. This column is based on Nanopolymer Silica Hybrid (NSH) technology, which consists of high-purity porous spherical silica particles coated with charged nanopolymer particles. The inner-pore area of the silica bead is modified with a covalently bonded organic layer that provides cation-exchange retention, while the outer surface is modified with anion-exchange nanopolymer beads.

Acclaim Trinity P2 column is aimed to complement Acclaim Trinity P1 to provide a total solution for pharmaceutical counter ion analysis by HPLC.

### Pharmaceutical-related anions and cations



#### Acclaim Trinity P2, 3µm, 100 x 3.0mm

Mobile Phase:	D.I. water and 100 mM NH <sub>4</sub> OFm, pH 3.65 gradient
Temperature:	30°C
Flow Rate:	0.60 mL/min
Injection Volume:	2µL
Detection:	Corona Veo Charged Aerosol Detector
Analytes:	<ol style="list-style-type: none"> <li>1. Phosphate</li> <li>2. Sodium</li> <li>3. Potassium</li> <li>4. Chloride</li> <li>5. Malate</li> <li>6. Bromide</li> <li>7. Nitrate</li> <li>8. Citrate</li> <li>9. Fumarate</li> <li>10. Sulfate</li> <li>11. Magnesium</li> <li>12. Calcium</li> </ol>
Samples:	0.02 – 0.10 mg/mL each in D.I. water

Time (min)	H <sub>2</sub> O	0.1 M Ammonium formate, pH3.65
-10	0.760	1.474
0	80	20
2	80	20
22	0	100
30	0	100

### Acclaim Trinity P2

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID
3	Guard Cartridges (2/pk)	10	085435	085436
	HPLC Column	50	085431	085433
		100	085432	085434

### Acclaim guard holder

Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

## Acclaim organic acid

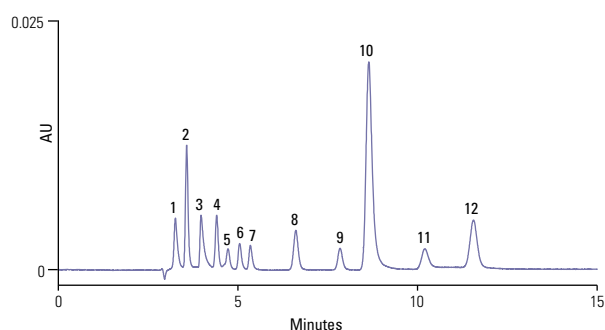
Optimized and application-tested for the analysis of hydrophilic organic acids

- Tested to guarantee consistent hydrophilic organic acid separations
- Compatible with 100% aqueous mobile phases
- Hydrolytic stability at low-pH conditions
- Ideal selectivity for separating a wide spectrum of organic acids
- Excellent column efficiency and peak shapes for organic acids



The Acclaim Organic Acid (OA) is a silica-based reversed-phase column designed for high-efficiency, high-throughput organic acids analysis. It offers unparalleled performance for separating hydroxyl aliphatic and aromatic organic acids. The Acclaim OA is the recommended column for determining small hydrophilic organic acids, C1 to C7 aliphatic acids, and hydrophilic aromatic acid and is also valuable for the analysis and quality assurance of food and beverage products, pharmaceutical preparations, plating baths, and manufacturing chemicals, chemical intermediates, and environmental samples.

### Hydrophilic organic acids



#### Acclaim Organic Acid, 5µm, 4 × 250mm

Mobile Phase:	100mM Na <sub>2</sub> SO <sub>4</sub> , pH 2.65 (adjusted with methanesulfonic acid)
Temperature:	30°C
Flow Rate:	0.6mL/min
Injection Volume:	5µL
Detection:	UV, 210nm
Analytes:	1. Oxalic acid 15mg/L (ppm) 2. Tartaric acid 120 3. Formic acid 180 4. Malic acid 120 5. iso-Citric acid 120 6. Lactic acid 180 7. Acetic acid 120 8. Citric acid 120 9. Succinic acid 120 10. Fumaric acid 7 11. cis-Aconitic acid * 12. trans-Aconitic acid *

\* 7ppm total for cis and trans isomers

Download the Acclaim column selection guide [here](#)

### Acclaim organic acid

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID
3	HPLC Column	150	070087	070086	–
5	Guard Cartridges (2/pkg)	10	–	071987	069700
	HPLC Column	150	–	–	062903
		250	–	–	062902

### Acclaim guard holder

Format	Cat. No.
Acclaim SST Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

For more information, visit [thermofisher.com/acclaim](http://thermofisher.com/acclaim)

## Acclaim surfactant

Excellent performance for separating a broad range of surfactants

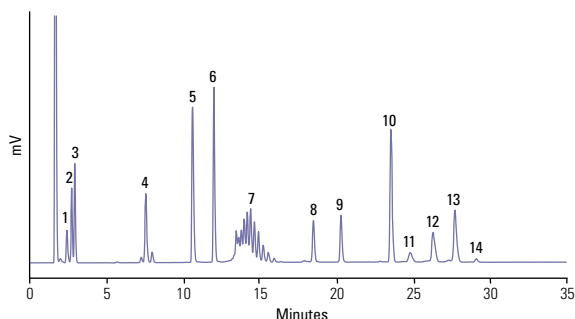
- Ideal selectivity for separation of anionic, nonionic, cationic and amphoteric surfactants
- Excellent peak shapes, especially for cationic surfactants
- Compatible with highly aqueous mobile phases
- Improved resolution for ethoxylated surfactants
- Rugged separations under a variety of conditions



The Acclaim Surfactant columns are the first generation high-efficiency, silica-based columns designed specifically for separating a wide variety of surfactants, including anionic, cationic, nonionic, ethoxylated and amphoteric surfactants using UV, ELSD or RI detection.

Surfactants are widely used in industrial, agricultural, and pharmaceutical markets, in products as diverse as pesticides, detergent powders, petroleum products, cosmetics, and pharmaceuticals. The Acclaim Surfactant column was designed specifically for HPLC separation of these surfactants.

### Inorganic anion, hydrotropes, cationic, nonionic, amphoteric, and anionic surfactants



#### Acclaim Surfactant, 5µm, 150 x 4.6mm

Mobile Phase A:	CH <sub>3</sub> CN
Mobile Phase B:	0.1 M NH <sub>4</sub> OAc, pH 5.4
Gradient:	25% to 85% A in 25min, then hold 85% A for 10min
Temperature:	30°C
Flow Rate:	1mL/min
Injection Volume:	25µL
Detection:	ELS detector
Analytes:	1. Chloride 2. Bromide 3. Nitrate 4. Xylene sulfonate 5. Laurylpyridinium chloride 6. Lauryldimethylbenzyl-ammonium chloride 7. Triton X-100 8. Cetyl betaine 9. Decyl sulfate 10. Dodecyl sulfate 11. C <sub>10</sub> -LAS 12. C <sub>11</sub> -LAS 13. C <sub>12</sub> -LAS 14. C <sub>13</sub> -LAS

### Acclaim surfactant

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	150	070085	070084	–
5	Guard Cartridges (2/pk)	10	069693	071991	069701
	HPLC Column	150	068123	–	063201
		250	–	–	063203

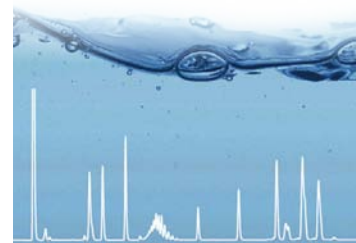
### Acclaim guard holder

Description	Cat. No.
Acclaim SST Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

## Acclaim surfactant plus

Column of choice for surfactant analysis using higher sensitivity detection: performance, versatility, throughput

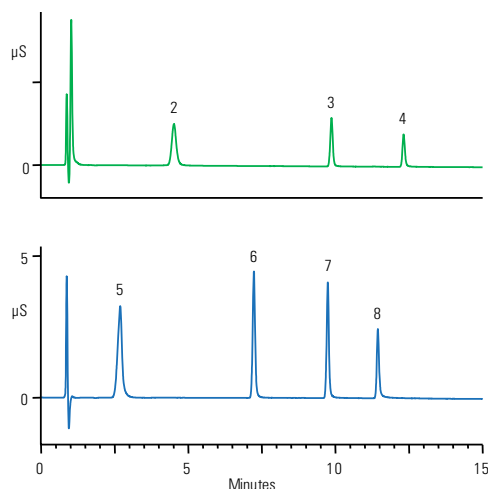
- Ideal selectivity for simultaneous separation of anionic, nonionic, cationic, and amphoteric surfactants
- Compatible with multiple detectors including MS, CAD, ELSD and UV
- Well suited for the determination of cationic surfactants
- High efficiency and fast analysis
- Rugged separations under a variety of conditions



Acclaim Surfactant Plus is a new generation of columns offering improved performance and higher throughput for analyzing surfactants. These columns exhibit exceptionally low bleed and are ideal for use with charged aerosol detectors (CAD) and mass spectrometers (MS). These columns can be used to separate a wide variety of surfactants including anionic, cationic, nonionic and amphoteric surfactants, as well as isomers of xylene sulfonate.

These columns can be used with evaporative light scattering detectors (ELSD), suppressed conductivity detectors (SCD), and UV-Vis detectors (UV). Non-metallic PEEK hardware is available for best compatibility with Dionex ion chromatography systems.

### Cationic surfactants



#### Acclaim Surfactant Plus, 3µm, 150 x 3.0mm

Mobile Phase A: Acetonitrile  
Mobile Phase B: 100mM Formic acid  
Mobile Phase C: Water

Gradient:

Time (min)	%A	%B	%C
-12	5	5	90
0	5	5	90
12	40	5	55
20	40	5	55

Temperature: 25°C

Flow Rate: 0.5mL/min

Injection Volume: 5µL

Detection: Conductivity with blank subtraction

Analytes:

1. Tetrabutylammonium
2. Tetrapentylammonium
3. Tetrahexylammonium
4. Tetraheptylammonium
5. Decyl-trimethylammonium
6. Dodecyl-trimethylammonium
7. Tetradecyl-trimethylammonium
8. Hexadecyl-trimethylammonium

### Acclaim Surfactant Plus

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID	4.0mm ID PEEK
3	HPLC Column	100	078955	078952	–	–
		150	078954	078951	078950	–
		250	078953	–	–	–
5	Guard Cartridges (2/pk)	10	078960	078959	082773	–
	HPLC Column	250	–	–	082767	–
		150	–	–	082768	078956

### Acclaim guard holder

Description	Cat. No.
Acclaim SST Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

## Acclaim explosives E2

The best solution for explosives analysis (EPA Method 8330)

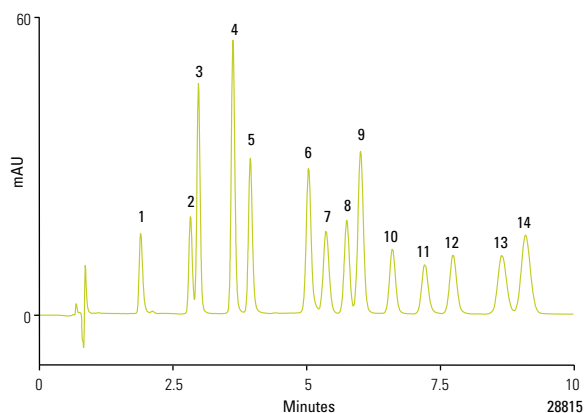
- Acclaim E2 columns provide baseline resolution of all 14 compounds targeted by EPA Method 8330
- Columns available in 2.2, 3 and 5µm particle size
- Simple isocratic elution conditions
- Rugged columns with good lot-to-lot reproducibility



Acclaim Explosives E2 columns are specifically designed to resolve all 14 explosives listed in EPA SW-846 Method 8330: Nitroaromatics and Nitramines by HPLC. The novel and unique chemistries of these columns provide superior resolution with complementary selectivities.

The Acclaim Explosives E2 may be used as either a primary or a confirmatory column. The unique selectivity and versatility of this column provides a wider application range, including the analysis of explosives beyond U.S. EPA Method 8330 (ISO22478).

### Rapid determination of EPA 8330A explosives



#### Acclaim RSLC Explosives E2, 2.2µm, 100 x 2.1mm

Mobile Phase:	Methanol:water 48:52 (v/v)														
Temperature:	31°C														
Flow Rate:	0.34mL/min (293 bar)														
Injection Volume:	1µL														
Detection:	UV, 254nm														
Analytes:	<table border="0"> <tr> <td>1. HMX</td> <td>8. 2,6-DNT</td> </tr> <tr> <td>2. RDX</td> <td>9. 2,4-DNT</td> </tr> <tr> <td>3. 1,3,5-TNB</td> <td>10. 2-NT</td> </tr> <tr> <td>4. 3,5-DNB</td> <td>11. 4-NT</td> </tr> <tr> <td>5. NB</td> <td>12. 3-NT</td> </tr> <tr> <td>6. 2,4,6-TNT</td> <td>13. 4-Am-2,6-DNT</td> </tr> <tr> <td>7. Tetryl</td> <td>14. 2-Am-4,6-DNT</td> </tr> </table>	1. HMX	8. 2,6-DNT	2. RDX	9. 2,4-DNT	3. 1,3,5-TNB	10. 2-NT	4. 3,5-DNB	11. 4-NT	5. NB	12. 3-NT	6. 2,4,6-TNT	13. 4-Am-2,6-DNT	7. Tetryl	14. 2-Am-4,6-DNT
1. HMX	8. 2,6-DNT														
2. RDX	9. 2,4-DNT														
3. 1,3,5-TNB	10. 2-NT														
4. 3,5-DNB	11. 4-NT														
5. NB	12. 3-NT														
6. 2,4,6-TNT	13. 4-Am-2,6-DNT														
7. Tetryl	14. 2-Am-4,6-DNT														
Sample:	Calibration mix, 25µg/mL in 50% acetonitrile														

### Acclaim Explosives E2

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	100	076225	076227	–
		150	076226	–	–
3	HPLC Column	150	070083	070082	–
		250	–	070081	–
5	Guard Cartridges (2/pk)	10	–	071989	069703
	HPLC Column	250	–	–	064309

## Acclaim Trinity Q1

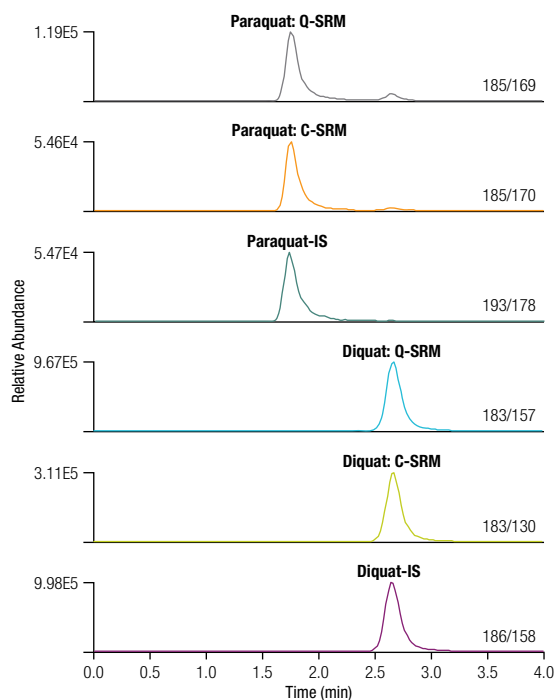
For trace analysis of diquat and paraquat

- Excellent resolution of diquat and paraquat
- Good peak shape
- Fast analysis
- LC-MS compatible
- No ion-pairing reagent needed



Acclaim Trinity Q1 columns are unique, high-efficiency, silica-based columns designed for the separation of the herbicides diquat and paraquat. These herbicides are toxic and residues are monitored in drinking water, wastewater and agricultural products. The Acclaim Trinity Q1 column is a tri-mode (WCX, WAX, RP), column based on Nano-polymer Silica Hybrid technology. It offers unmatched high-resolution and high-throughput trace analysis of the herbicides diquat and paraquat by LC-MS/MS and LC-UV methods.

### Diquat and Paraquat



#### Acclaim Trinity Q1, 3 $\mu$ m, 50 x 3.0mm

Mobile Phase: 25% ammonium acetate (100mM, pH 5.0); 75% acetonitrile

Temperature: Ambient

Flow Rate: 0.5mL/min

Injection Volume: 5 $\mu$ L

Detection: Show Mass Spectrometric conditions and the scan events etc. table underneath are the peaks section

Mass Spectrometric Conditions System: Thermo Scientific TSQ Quantiva Access MAX Quadrupole Mass Spectrometer

Interface: Heated Electrospray Ionization with HESI II probe

Spray Voltage: 1500 V

Vaporizer Temp: 400 °C

Sheath Gas Pressure: 70

Aux Gas Pressure: 10

Capillary Temp: 350 °C

Quantitation Mode: Selected Reaction Monitoring (SRM)

Scan Events	Precursor	Quantitative	Confirmative
		SRM (CID)	SRM (CID)
Paraquat	185	169 (27)	170 (17)
Paraquat-d <sub>6</sub>	193	178 (17)	
Diquat	183	157 (22)	130 (31)
Diquat-d <sub>3</sub>	186	158 (22)	

Download the Acclaim column selection guide [here](#)

#### Acclaim Trinity Q1

Particle Size		Length (mm)	2.1mm ID	3.0mm ID
3	HPLC Column	50	083242	083241
		100	079717	079715
5	Guard Cartridges (2/pk)	10	083244	079719

For more information, visit [thermofisher.com/acclaim](http://thermofisher.com/acclaim)



## Acclaim Carbamate

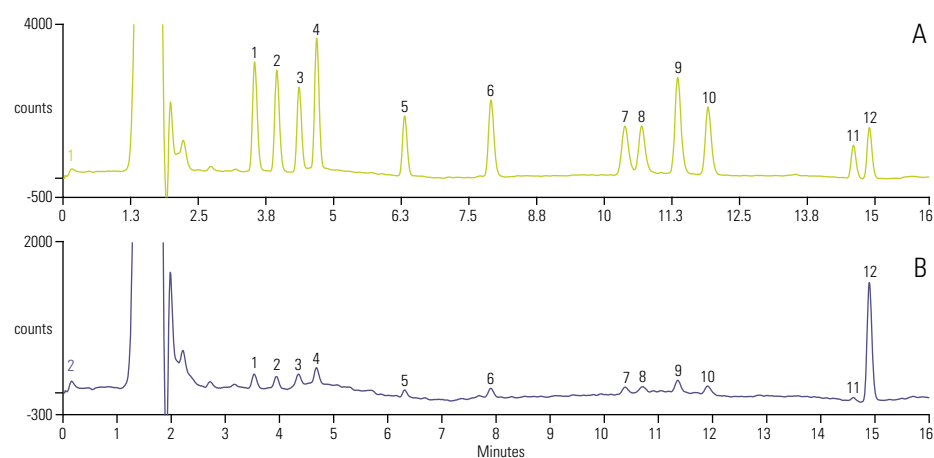
Designed for baseline separation of carbamate pesticides specified in US EPA Method 531.2

- Baseline separation of carbamate pesticides specified in US EPA Method 531.2
- Use with either LC/postcolumn derivatization/fluorescence or LC-MS detection
- Available in 2.2, 3 and 5µm particle size
- Compatible with both binary (methanol/water) and ternary (acetonitrile/methanol/water) mobile phase gradients
- High-efficiency, extremely low column bleed, and rugged column packing



Acclaim Carbamate columns are designed for baseline separation of carbamates (N-methylcarbamate and N-methylcarbamoyloxime pesticides) specified in US EPA Method 531.2. Carbamate pesticides are widely used throughout the world. Drinking water and raw surface water is monitored for the presence of carbamate pesticides and related compounds using an established EPA Method 531.2 that uses HPLC with postcolumn derivatization. LC-MS is the method of choice for the ultimate sensitivity.

### Carbamate standard - spiked rice samples



A: without dispersive SPE  
B: with dispersive SPE using PSA

#### Acclaim Carbamate, 3µm, 150 x 3.0mm

Mobile Phase:	Methanol-H <sub>2</sub> O
Gradient:	Methanol, -4.0–0.0 min, 14%;
	2.0 min, 20%; 8.0 min, 40%;
	13.6–16 min, 70%
Temperature:	50 °C
Flow Rate:	0.9mL/min
Injection Volume:	250µL
Detection:	Excitation/330nm and Emission/465nm
Analytes:	1. Aldicarb sulfoxide
	2. Aldicarb sulfone
	3. Oxamyl
	4. Methomyl
	5. 3-Hydroxy carbofuran
	6. Aldicarb
	7. Propoxur
	8. Carbofuran
	9. Carbaryl
	10. 1-Naphthol
	11. Methiocarb
	12. BDMC (I.S.)

### Acclaim carbamate

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	100	075597	–	–
		150	075596	–	–
3	Guard Cartridges (2/pk)	10	072930	072929	072928
	HPLC Column	150	072927	072926	072925
5	HPLC Column	250	–	–	072924

### Acclaim guard holder

Description	Cat. No.
Acclaim SST Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

## Acclaim Carbonyl C18

A silica-based, reversed-phase column designed specifically for separating DNPH derivatives of aldehydes and ketones

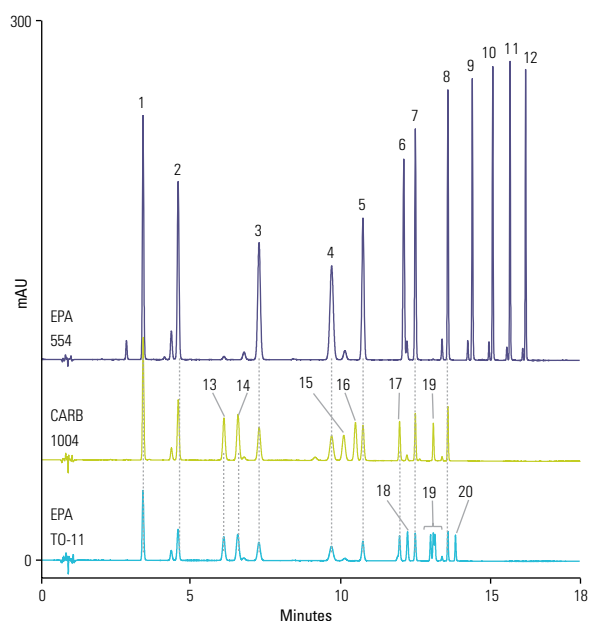
- Ideal selectivity for baseline resolution of DNPH derivatives of aldehydes and ketones regulated by various official methods, including EPA 554, EPA 8315, EPA 1667, EPA TO-11, and CARB 1004
- High efficiency for UHPLC performance
- Rugged columns with good lot-to-lot reproducibility
- Proven robust methods



Acclaim Carbonyl C18 columns are silica-based reversed phase columns designed specifically for separating DNPH derivatives of aldehydes and ketones. They exhibit superior resolution compared with other commercially available columns.

Aldehydes and ketones are common pollutants in air and water. Several standard methods have been developed to apply using dinitrophenylhydrazine (DNPH) to various environmental situations to measure these compounds. Some of the better known ones include CARB 1004 for vehicle exhaust, EPA 554 for drinking water, EPA 1667 for pharmaceutical wastewater, and EPA 8315 for general wastewater.

### DNPH aldehydes and ketones



#### Acclaim Carbonyl RSLC, 2.2 $\mu$ m, 150 x 2.1mm

Mobile Phase A:	D.I. water
Mobile Phase B:	Acetonitrile
Gradient (min):	-4.50,0 8.3 15.0,18.0
	%A 48 48 48 0 0
	%B 52 52 52 100 100
Flow Rate:	0.400mL/min
Injection Volume:	1 $\mu$ L
Temperature:	28°C
Detection:	UV, 360nm
Samples:	Calibration mixes diluted in methanol
Analytes:	1. Formaldehyde DNPH 2. Acetaldehyde DNPH 3. Propionaldehyde DNPH 4. Crotonaldehyde DNPH 5. Butyraldehyde DNPH 6. Cyclohexanone DNPH 7. Valeraldehyde DNPH 8. Hexanal DNPH 9. Heptanal DNPH 10. Octanal DNPH 11. Nonanal DNPH 12. Decanal DNPH 13. Acetone DNPH 14. Acrolein DNPH 15. Butanone DNPH 16. Methacrolein DNPH 17. Benzaldehyde DNPH 18. Isovaleraldehyde DNPH 19. Toluvaldehyde DNPH 20. Xylaldehyde DNPH

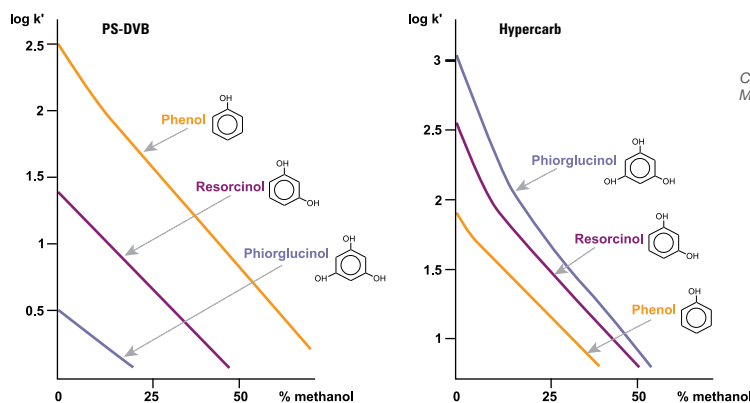
### Acclaim Carbonyl C18

Particle Size ( $\mu$ m)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	100	077972	077974	–
		150	077973	–	–
3	HPLC Column	150	079011	079010	–
		250	–	079009	–
5	Guard Cartridge (2/pk)	10	079012	079013	079014
		250	–	–	083214

For more information, visit [thermofisher.com/acclaim](http://thermofisher.com/acclaim)

## Increased retention of polar analytes

In typical reversed phase chromatography, the retention of an analyte is directly related to its hydrophobicity: the more hydrophobic the analyte, the longer its retention. Conversely, as the polarity of the analyte increases, analyte-solvent interactions begin to dominate and retention is reduced. This observation holds true for the majority of reversed phase systems. An exception to this rule is Hypercarb columns, for which retention may in some cases increase as the polarity of the analyte increases, illustrated to the right. This phenomenon is referred to as the "polar retention effect on graphite" (PREG). This property makes Hypercarb columns particularly useful for the separation of highly polar compounds (with logP as low as -4) that are normally difficult to retain and resolve on silica-based alkyl chain



Courtesy V. Coquart and M-C. Henion, J. Chrom., 1992

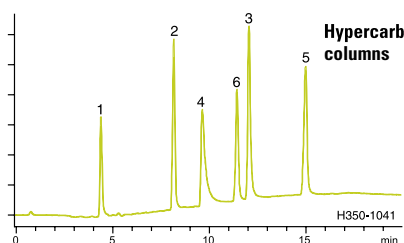
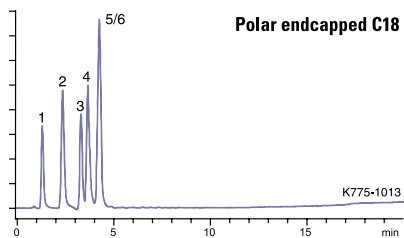
Retention on Hypercarb columns increases as polarity of the analyte increases, which is the opposite of typical reversed phase materials such as PS-DVB

phases. The retention of very polar solutes on Hypercarb columns can be achieved without ion pair reagents or complex mobile phase conditions, as illustrated in the chromatogram below.

### Extended pH range

One of the other key benefits of Hypercarb columns is the extreme stability of the phase to chemical or

physical attack. Due to the unique characteristics of the media, it can withstand chemical attack across the entire pH range of 0 to 14, allowing applications to be run at pH levels that are incompatible with typical silica-based columns. Hypercarb columns offer more choice in buffer selection while handling both high temperature and high pressure.



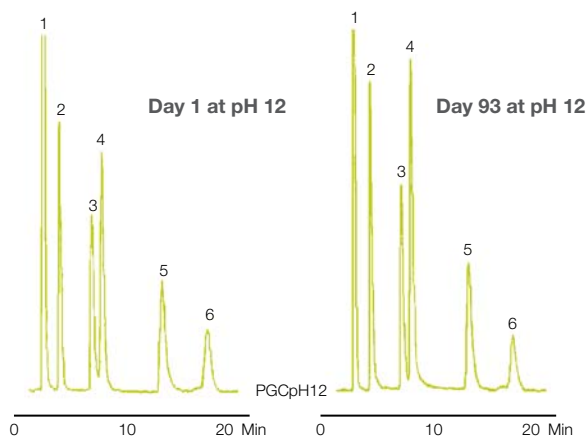
Additional retention is achieved for polar compounds using a Hypercarb column compared to a polar endcapped C18. Note also the change in elution order.

### Hypercarb, 5µm, 100 x 0.32mm

Mobile Phase A:	H <sub>2</sub> O + 0.1% formic acid
Mobile Phase B:	ACN + 0.1% formic acid
Gradient:	0 to 25% B in 15 minutes
Temperature:	25°C
Flow Rate:	8µL/min
Detection:	UV, 254nm
Analytes:	1. Cytosine 2. Uracil 3. Guanine 4. Adenine 5. Xanthine 6. Thymine

### Hypercarb, 5µm, 100 x 4.6mm

Mobile Phase:	MeOH:H <sub>2</sub> O
Gradient:	70:30
Flow Rate:	0.7mL/min
Detection:	UV, 254nm
Analytes:	1. Acetone 2. Phenol 3. p-Cresol 4. Anisol 5. Phenetole 6. 3,5 -Xylenol



Hypercarb column stability at pH 12: retention and selectivity do not change even after 93 days of storage in 0.1M NaOH/MeOH

## Hypercarb

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.		
3	Drop-in Guard (4/pk)	10	2.1	35003-012101		
			3.0	35003-013001		
			4.0 / 4.6	35003-014001		
	HPLC Column	30	30	2.1	35003-032130	
				3.0	35003-033030	
				4.6	35003-054630	
		50	50	2.1	35003-052130	
				3.0	35003-053030	
				4.6	35003-054630	
		100	100	2.1	35003-102130	
				3.0	35003-103030	
				4.6	35003-104630	
		150	150	2.1	35003-152130	
				3.0	35003-153030	
				4.6	35003-154630	
		High Temperature HPLC Column	30	30	2.1	35003-032146
					4.6	35003-054646
			50	50	2.1	35003-052146
	4.6				35003-054646	
	100		100	2.1	35003-102146	
				4.6	35003-104646	
	5	Drop-in Guard (4/pk)	10	2.1	35005-012101	
				3.0	35005-013001	
				4.6	35005-014001	
HPLC Column		30	30	2.1	35005-032130	
				3.0	35005-033030	
				4.6	35005-034630	
		50	50	2.1	35005-052130	
				3.0	35005-053030	
				4.6	35005-054630	
		100	100	2.1	35005-102130	
				3.0	35005-103030	
				4.6	35005-104630	
		150	150	2.1	35005-152130	
				3.0	35005-153030	
				4.6	35005-154630	
		High Temperature HPLC Column	30	30	2.1	35005-032146
					4.6	35005-034646
			50	50	2.1	35005-052146
4.6	35005-054646					
100	100		2.1	35005-102146		
			4.6	35005-104646		
Javelin HTS Column	20	20	2.1	35005-022135		
Preparative HPLC Column	100	100	10	35005-109070A		
			21.2	35005-109270A		
			30	35005-109370A		
			150	35005-159070A		
			21.2	35005-159270A		

Format	Length (mm)	ID (mm)	Cat. No.
Uniguard Guard Cartridge Holder	10	1.0	851-00
		2.1	852-00
		3.0	852-00
		4.6	850-00

# Synchronis HPLC and UHPLC columns

Remarkable separations  
guaranteed time after time

Thermo Scientific™ Synchronis™ HPLC columns are used to achieve consistent, reproducible separations. Chemistries available for a variety of applications.

## Consistent separations

- Highly pure, high surface area silica

## Dense bonding and double endcapping

- Reduction of residual silanols available to interact with basic analytes

## Strong quality control

- Rigorously tested to ensure quality

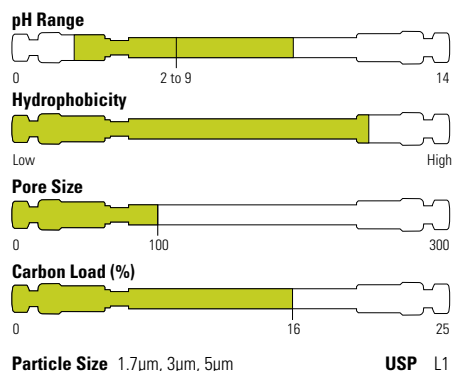


For more information,  
visit [thermofisher.com/synchronis](https://thermofisher.com/synchronis)

## Synchronis C18

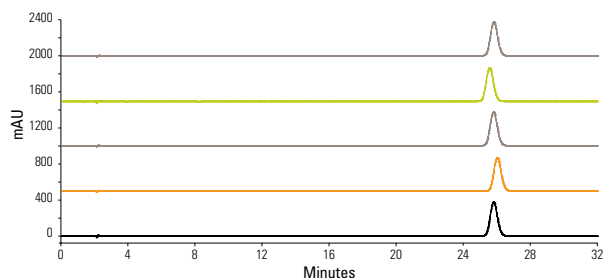
Synchronis C18 columns deliver remarkable separations, time after time

- Highly pure, high surface area silica
- High carbon load for increased retention
- Double endcapped for extra surface coverage
- Highly inert towards basic compounds
- Rigorously tested to ensure quality



Synchronis C18 columns show excellent column to column reproducibility, as illustrated here by the analysis of zidovudine using five separate columns. The reproducibility in terms of retention time and peak area is less than or equal to 0.5%, column to column.

### Zidovudine



#### Synchronis C18, 5µm, 150 x 4.6mm

Mobile Phase: Water:Methanol (4:1)  
 Temperature: 25°C  
 Flow Rate: 1.0mL/min  
 Injection Volume: 10µL  
 Detection: UV, 265nm  
 Analytes: 1. Zidovudine

### Synchronis C18

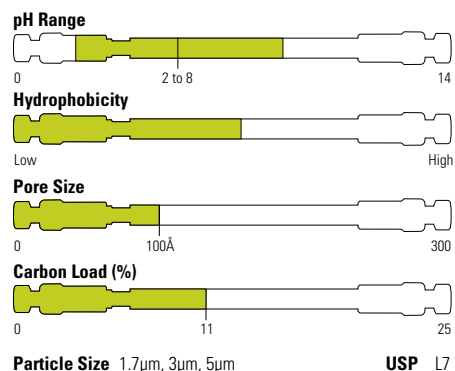
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	30	97102-032130	-	-
		50	97102-052130	-	-
		100	97102-102130	97102-103030	-
3	HPLC Column	50	97103-052130	-	97103-054630
		100	97103-102130	97103-103030	97103-104630
		150	97103-152130	-	97103-154630
5	Drop-in Guard (4/pk)	10	97105-012101	97105-013001	97105-014001
	HPLC Column	30	97105-032130	-	-
		50	97105-052130	-	97105-054630
		100	97105-102130	97105-103030	97105-104630
		150	97105-152130	97105-153030	97105-154630
		250	97105-252130	97105-253030	97105-254630
		Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00

For more information, visit [thermofisher.com/synchronis](http://thermofisher.com/synchronis)

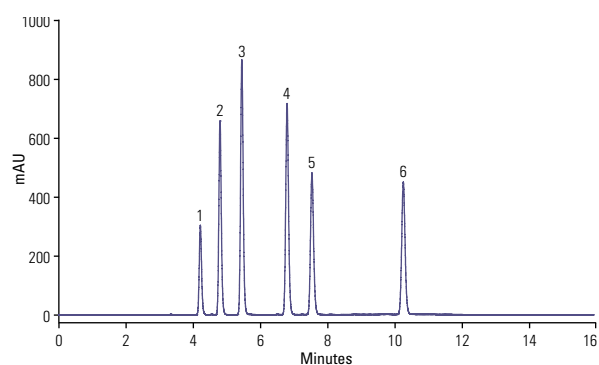
## Synchronis C8

Reduces hydrophobic interactions allowing compounds to elute quicker from the column. Recommended for analytes with medium hydrophobicity or when a less hydrophobic phase is required to obtain optimum retention.

- Highly pure, high surface area silica
- Less hydrophobic than Synchronis C18
- Double endcapped for extra surface coverage
- Rigorously tested to ensure quality



### Uron herbicides



#### Synchronis C8, 5µm, 150 x 4.6mm

Mobile Phase A:	Water
Mobile Phase B:	Acetonitrile
Gradient:	35 to 60% B in 10 minutes
Temperature:	30°C
Flow Rate:	1.0mL/min
Injection Volume:	20µL
Detection:	240nm
Analytes:	1. Tebuthiuron 2. Metoxuron 3. Monuron 4. Chlorotoluron 5. Diuron 6. Linuron

### Synchronis C8

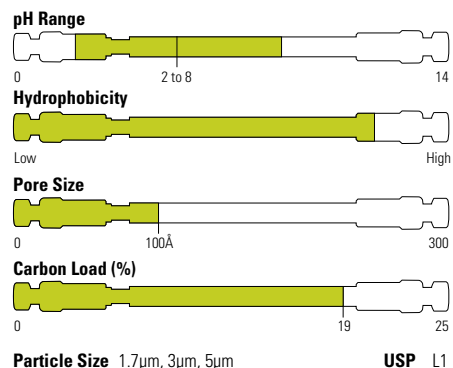
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	50	97202-052130	-	-
		100	97202-102130	-	-
3	HPLC Column	100	-	97203-103030	97203-104630
		150	-	-	97203-154630
5	Drop-in Guard (4/pk)	10	97205-012101	97205-013001	97205-014001
		100	-	-	97205-104630
		150	97205-152130	-	97205-154630
		250	-	97205-253030	97205-254630
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

## Synchronis aQ

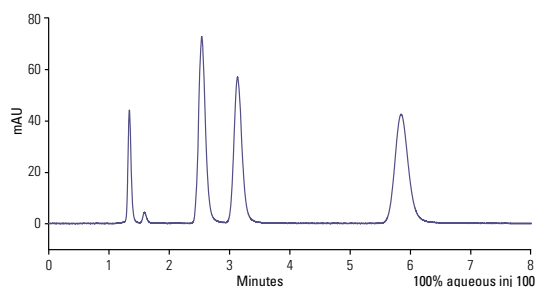
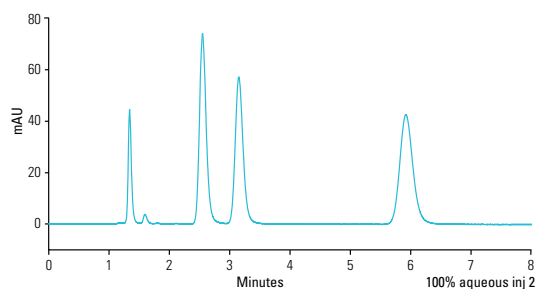
Polar endcapped Synchronis aQ columns provide a controlled interaction mechanism that retains and resolves polar analytes

- Stable in 100% aqueous mobile phase
- Enhanced retention of polar compounds
- Rigorously tested to ensure quality

In comparison to a conventionally endcapped C18, the Synchronis aQ polar end-capped C18 stationary phase exhibits superior stability towards aqueous mobile phase. Synchronis aQ shows no degradation in performance after 100 injections in a buffered 100% aqueous eluent.



### Stability of synchronis aQ in 100% aqueous mobile phase



#### Synchronis aQ, 5µm, 100 x 4.6mm

Mobile Phase:	50mM Aqueous $K_2HPO_4$ (pH 6)
Temperature:	30°C
Flow Rate:	0.7mL/min
Injection Volume:	2µL
Detection:	260nm
Analytes:	1. Cytidine-5'-diphosphate 2. Adenosine-5'-triphosphate 3. Adenosine-5'-diphosphate 4. Adenosine-5'-monophosphate

### Synchronis aQ

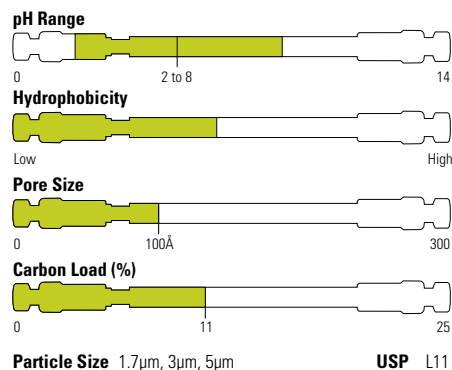
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.7	UHPLC Column	50	97302-052130	-	-	-
		100	97302-102130	97302-103030	-	-
3	HPLC Column	50	97303-052130	-	-	-
		100	-	97303-103030	-	97303-104630
		150	-	-	-	97303-154630
5	Drop-in Guard (4/pk)	10	97305-012101	97305-013001	97305-014001	97305-014001
		50	-	97305-053030	-	-
		100	97305-102130	-	-	97305-104630
		150	-	-	-	97305-154630
		250	-	-	97305-254030	97305-254630
		Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00



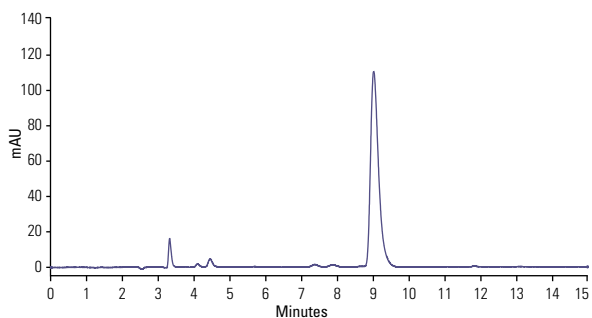
## Synchronis phenyl

Provides an alternative to Synchronis C18 and is particularly useful for retention of aromatic compounds

- Alternative selectivity to Synchronis C18
- Double endcapped for extra surface coverage
- Highly inert towards basic compounds
- Rigorously tested to ensure quality



## Oxacillin sodium (USP)



### Synchronis Phenyl, 5µm, 300 x 4.0mm

Mobile Phase: Phosphate Buffer: MeCN:MeOH (70:30:10)  
 Temperature: 25°C  
 Flow Rate: 1.0mL/min (2mL/min in USP method)  
 Injection Volume: 10µL  
 Detection: UV, 225nm  
 Analytes: 1. Oxacillin Sodium (0.11mg/mL)

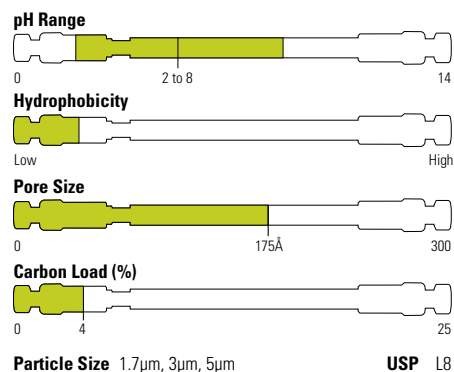
## Synchronis Phenyl

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	50	97902-052130	-	-
		100	97902-102130	-	-
3	HPLC Column	100	-	-	97903-104630
5	Drop-in Guard (4/pk)	10	97905-012101	-	97905-014001
	HPLC Column	50	-	-	97905-054630
		150	97905-152130	-	97905-154630
		250	-	-	97905-254630
Uniguard Drop-in Guard Cartridge Holder		10	852-00	852-00	850-00

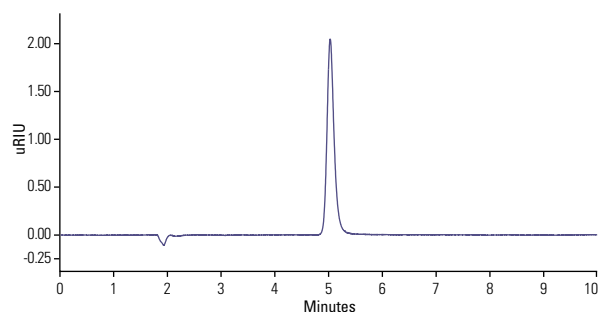
## Synchronis amino

Provides a versatile aminopropyl phase that gives excellent chromatographic properties in four modes: weak anion exchange, reversed-phase, normal phase and HILIC

- Highly pure, high surface area silica
- Double endcapped for extra surface coverage
- Rigorously tested to ensure quality



## Lactulose



### Synchronis Amino 5µm, 150 x 4.6mm

Mobile Phase:	Water: MeCN (30:70)
Temperature:	35°C
Flow Rate:	1.0mL/min
Detection:	RI
Injection Volume:	5µL
Analytes:	1. Lactulose

## Synchronis amino

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.7	UHPLC Column	50	97702-052130	-	-	-
		100	97702-102130	-	-	-
3	HPLC Column	150	-	-	-	97703-154630
5	Drop-in Guard (4/pk)	10	97705-012101	97705-013001	97705-014001	97705-014001
		150	97705-152130	97705-153030	97705-154030	97705-154630
		250	-	-	97705-254030	97705-254630
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00	850-00

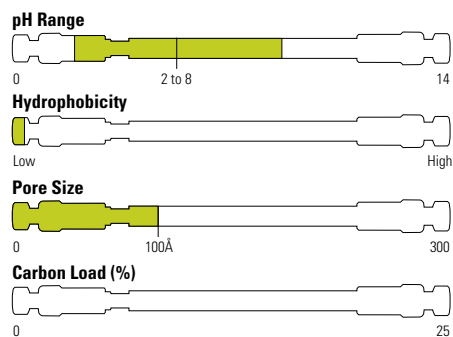
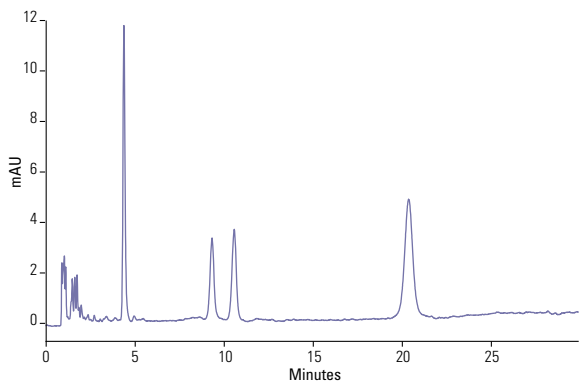
For more information, visit [thermofisher.com/synchronis](http://thermofisher.com/synchronis)

## Synchronis silica

Serves as a powerful and efficient tool for the chromatography of moderately polar organic compounds by normal phase chromatography

- Highly pure, high surface area silica
- Excellent reproducibility for normal phase chromatography
- Rigorously tested to ensure quality

### Tocopherols



Particle Size 1.7µm, 3µm, 5µm **USP** L3

#### Synchronis Silica 5µm, 150 x 4.6mm

Mobile Phase: Hexane +0.2% propan-2-ol (IPA)  
 Temperature: 40°C  
 Flow Rate: 2.0mL/min  
 Injection Volume: 10µL  
 Detection: UV, 254nm  
 Analytes: a-tocopherol  
 b-tocopherol  
 g-tocopherol  
 d-tocopherol

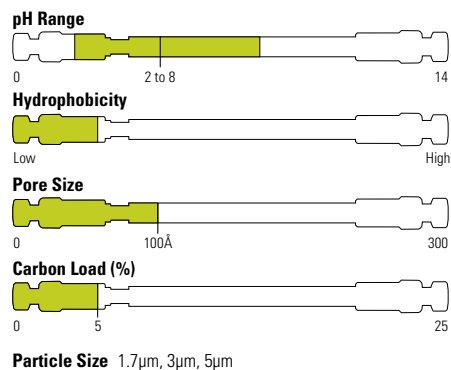
### Synchronis silica

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.7		100	97002-102130	-	-	-
5	Drop-in Guard (4/pk)	10	97005-012101	97005-013001	97005-014001	97005-014001
		50				97005-054630
		100	97005-102130	-	-	-
		150	97005-152130	-	-	97005-154630
		250	-	97005-253030	97005-254030	97005-254630
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00	850-00

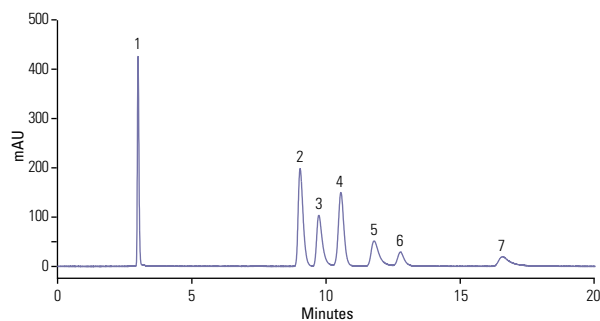
## Synchronis HILIC

Provides enhanced retention of polar and hydrophilic analytes

- Alternative selectivity to Synchronis C18
- Improved sensitivity with MS detection
- No need for ion-pair or derivatization
- Outstanding peak shape and sensitivity
- Highly pure, high surface area silica particles
- Neutral (uncharged), highly polar surface



### Catecholamines



#### Synchronis HILIC, 5µm, 250 x 4.6mm

Mobile Phase:	Water : acetonitrile : 200mM ammonium formate (10.5 : 84.5 : 5)
Temperature:	40°C
Flow Rate:	1.0mL/min
Injection Volume:	5µL
Detection:	UV, 280nm
Analytes:	1. catechol 2. 5-HIAA 3. DOPAC 4. serotonin 5. tyrosine 6. dopamine 7. L-DOPA

### Synchronis HILIC

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	50	97502-052130	-	-
		100	97502-102130	-	-
3	HPLC Column	50	97503-052130	-	-
		100	-	-	97503-104630
		150	-	-	97503-154630
5	Drop-in Guard (4/pk)	10	97505-012101	-	97505-014001
	HPLC Column	50	97505-052130	-	-
		100	97505-102130	-	97505-104630
		150	97505-152130	97505-153030	97505-154630
		250	-	-	97505-254630
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

For more information, visit [thermofisher.com/synchronis](http://thermofisher.com/synchronis)

# Hypersil BDS and Hypersil classical HPLC columns

Exceptionally reliable and reproducible general purpose columns

Exceptionally reliable robust columns that guarantee you have the same results time after time, even after changing your column. Chemistries available for a variety of applications.

## Excellent reproducibility

- Manufactured to the highest standards

## Very robust and rugged

- Rigorous quality control under certified processes

## Long column lifetimes

- Ideal for QA/QC labs



For more information, visit

[thermofisher.com/hypersilclassical](https://thermofisher.com/hypersilclassical)

# Hypersil BDS

A good choice for robust, general purpose columns

## Hypersil BDS

Particle Size (µm)	Format	Length (mm)	ID (mm)	C18	C8	Phenyl	CN		
2.4	Drop-in Guard (4/pk)	10	2.1	28102-012101	28202-012101	-	-		
			4.0/4.6	28102-014001	28202-014001	-	-		
		50	2.1	28102-052130	28202-052130	-	-		
			4.6	28102-054630	-	-	-		
		100	2.1	28102-102130	28202-102130	-	-		
			4.6	28102-104630	28202-104630	-	-		
		150	4.6	-	28202-154630	-	-		
		3	Drop-in Guard (4/pk)	10	2.1	28103-012101	28203-012101	-	-
					3.0	28103-013001	28203-013001	-	-
					4.0/4.6	28103-014001	28203-014001	28903-014001	28803-014001
HPLC Column	30			2.1	28103-032130	-	-	-	
				50	2.1	28103-052130	28203-052130	-	-
				3.0	28103-053030	-	-	-	
	4.6			28103-054630	28203-054630	-	-		
	100			2.1	28103-102130	-	-	-	
				3.0	28103-103030	-	-	-	
4.0				28103-104030	-	-	-		
150	4.6		28103-104630	28203-104630	-	-			
			2.1	28103-152130	-	-	-		
			3.0	28103-153030	28203-153030	-	-		
	4.0		28103-154030	-	-	-			
			4.6	28103-154630	28203-154630	28903-154630	28803-154630		
			2.1	28105-012101	28205-012101	-	-		
	5		Drop-in Guard (4/pk)	10	3.0	28105-013001	28205-013001	-	-
					4.0/4.6	28105-014001	28205-014001	28905-014001	28805-014001
					HPLC Column	50	2.1	28105-052130	28205-052130
3.0				28105-053030			28205-053030	-	-
4.6				28105-054630			28205-054630	-	-
100				2.1		28105-102130	28205-102130	-	-
				3.0		28105-103030	-	-	-
				4.0		28105-104030	-	-	-
125				4.6	28105-104630	28205-104630	-	-	
					3.0	28105-123030	-	-	-
			4.0		28105-124030	-	-	-	
			150	4.6	28105-124630	-	-	-	
				2.1	28105-152130	-	-	-	
				3.0	28105-153030	-	-	-	
250		4.0	28105-154030	28205-154030	-	-			
			4.6	28105-154630	28205-154630	28905-154630	28805-154630		
			2.1	28105-252130	-	-	-		
		3.0	28105-253030	-	-	-			
			4.0	28105-254030	28205-254030	28905-254030	-		
			4.6	28105-254630	28205-254630	28905-254630	28805-254630		

Format	Length (mm)	ID (mm)	Cat. No.
Uniguard Guard Cartridge Holder	10	1.0	851-00
		2.1	852-00
		3.0	852-00
		4.0/4.6	850-00

# Hypersil classical

A global standard for many existing methods

## Hypersil ODS

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.		
3	Drop-in Guard (4/pk)	10	2.1	30103-012101		
			3.0	30103-013001		
			4.0/4.6	30103-014001		
	HPLC Column	50	100	3.0	30103-053030	
				4.6	30103-054630	
				2.1	30103-102130	
			3.0	30103-103030		
			4.0	30103-104030		
			4.6	30103-104630		
		125	4.0	30103-124030		
			4.6	30103-124630		
			2.1	30103-152130		
		150	3.0	30103-153030		
			4.0	30103-154030		
			4.6	30103-154630		
			250	2.1	30103-252130	
				3.0	30103-253030	
				4.0	30103-254030	
		4.6	30103-254630			
		5	Drop-in Guard (4/pk)	10	2.1	30105-012101
					3.0	30105-013001
4.0/4.6	30105-014001					
HPLC Column	50		100	3.0	30105-053030	
				4.6	30105-054630	
				2.1	30105-102130	
			3.0	30105-103030		
			4.0	30105-104030		
			4.6	30105-104630		
	125		3.0	30105-123030		
			4.0	30105-124030		
			4.6	30105-124630		
	150		2.1	30105-152130		
			3.0	30105-153030		
			4.0	30105-154030		
			4.6	30105-154630		
			200	2.1	30105-202130	
				4.0	30105-204030	
	4.6			30105-204630		
	250		2.1	30105-252130		
			3.0	30105-253030		
4.0		30105-254030				
4.6		30105-254630				

## Hypersil ODS-2

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
3	Drop-in Guard (4/pk)	10	4.0/4.6	31603-014001
		50	4.6	31603-054630
	HPLC Column	100	4.0	31603-104030
			4.6	31603-104630
		150	4.6	31603-154630
5	Drop-in Guard (4/pk)	10	4.0/4.6	31605-014001
		50	4.6	31605-054630
	HPLC Column	100	4.6	31605-104630
		150	4.6	31605-154630
		250	4.0	31605-254030
			4.6	31605-254630

## Hypersil MOS (C8)

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.0/4.6	30205-014001
		50	4.6	30205-054630
	HPLC Column	100	4.6	30205-104630
		150	4.6	30205-154630
		250	4.0	30205-254030
	4.6	30205-254630		

## Hypersil MOS-2 (C8)

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.0/4.6	30305-014001
		150	4.6	30305-154630
	HPLC Column	250	4.0	30305-254030
			4.6	30305-254630

## Hypersil SAS (C1)

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.0/4.6	30505-014001
		150	4.6	30505-154630
	HPLC Column	250	4.6	30505-254630

## Hypersil Phenyl

Particle Size (µm)	Format	Length (mm)	3.0 mm ID	4.0 mm ID	4.6 mm ID
3	Drop-in Guard (4/pk)	10mm	-	30903-014001	30903-014001
		50mm	-	-	30903-054630
	HPLC Column	150mm	30903-153030	-	30903-154630
5	Drop-in Guard (4/pk)	10mm	-	30905-014001	-
		50mm	-	-	30905-054630
	HPLC Column	100mm	-	-	30905-104630
		150mm	-	-	30905-154630
		250mm	-	30905-254030	30905-254630
		300mm	-	30905-304030	-

## Hypersil Phenyl-2

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.0/4.6	31905-014001
		150	4.6	31905-154630
	HPLC Column	250	4.6	31905-254630



### Hypersil CPS (Cyano)

Particle Size (µm)	Format	Length (mm)	4.0 mm ID	4.6 mm ID
3	Drop-in Guard (4/pk)	100mm	-	30803-104630
	HPLC Column	150mm	-	30803-154630
5	Drop-in Guard (4/pk)	10mm	30805-014001	30805-014001
	HPLC Column	125mm	30805-124030	30805-124630
		150mm	-	30805-154630
		200mm	30805-204630	-
		250mm	30805-254030	30805-254630
		300mm	-	30805-304630

### Hypersil CPS-2

Particle Size (µm)	Format	Length (mm)	4.0 mm ID	4.6 mm ID
5	Drop-in Guard (4/pk)	150mm		31805-154630
	HPLC Column	250mm	31805-254030	31805-254630

### Hypersil APS-2

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
3	Drop-in Guard (4/pk)	10	2.1	30703-012101
			4.6	30703-014001
	HPLC Column	50	4.6	30703-054630
			2.1	30703-102130
			2.1	30703-152130
			4.6	30703-154630
5	Drop-in Guard (4/pk)	10	3.0	30705-013001
			4.0/4.6	30705-014001
	HPLC Column	100	3.0	30705-103030
			4.6	30705-104630
			4.6	30705-154630
			4.0	30705-254030
		4.6	30705-254630	

### Hypersil silica

Particle Size (µm)	Format	Length (mm)	2.1 mm ID	4.0 mm ID	4.6 mm ID
3	Drop-in Guard (4/pk)	10mm	-	30003-014001	30003-014001
	HPLC Column	50mm	30003-052130	-	30003-054630
		100mm	-	-	30003-104630
		125mm	-	30003-124030	-
		150mm	30003-152130	30003-154030	30003-154630
		250mm	-	-	30003-254630
5	Drop-in Guard (4/pk)	10mm	-	30005-014001	30005-014001
	HPLC Column	50mm	30005-052130	30005-054030	30005-054630
		100mm	30005-102130	-	-
		150mm	-	30005-154030	30005-154630
		200mm	-	-	30005-204630
		250mm	-	30005-254030	30005-254630
		300mm	-	30005-304030	-

## Hypersil Classical continued

### Hypersil SAX

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	3.0	34105-013001
			4.6	34105-014001
	HPLC Column	250	3.0	34105-253030
			4.6	34105-254630

### Hypersil Green PAH

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.	
3	Guard Cartridge	10	2.1	31103-012101	
			3.0	31103-013001	
			4.6	31103-014001	
	HPLC Column	100	2.1	31103-102130	
			3.0	31103-103030	
			4.6	31103-104630	
	HPLC Column	150	2.1	31103-152130	
			4.6	31103-154630	
			5	Guard Cartridge	10
	HPLC Column	100	4.6		
150		4.6	31105-154630		
250		4.6	31105-254630		

## BETASIL columns

	Particle Size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.0 mm ID	4.6 mm ID			
Silica	5	Drop-in Guard (4/pk)	10mm	70005-012101	70005-013001	70005-014001	70005-014001			
		HPLC Column	50mm	70005-052130	70005-053030	-	-			
			100mm	70005-102130	70005-103030	-	-			
			150mm	70005-152130	70005-153030	-	70005-154630			
			250mm	-	70005-253030	-	70005-254630			
C18	3	Drop-in Guard (4/pk)	10mm	70103-012101	70103-013001	70103-014001	70103-014001			
		Javelin Guards (4/pk)	20mm	70105-022106	-	-	-			
		HPLC ColumnS	50mm	70103-052130	70103-053030	-	70103-054630			
			100mm	70103-102130	-	70103-104030	70103-104630			
			150mm	70103-152130	70103-153030	-	70103-154630			
			250mm	-	-	-	70103-254630			
	5	Drop-in Guard (4/pk)	10mm	70105-012101	70105-013001	70105-014001	70105-014001			
		HPLC Column	50mm	70105-052130	70105-053030	-	70105-054630			
			100mm	70105-102130	-	-	70105-104630			
			125mm	-	-	70105-124030	70105-124630			
			150mm	70105-152130	-	70105-154030	70105-154630			
			250mm	70105-252130	70105-253030	70105-254030	70105-254630			
			300mm	-	-	70105-304030	-			
C8	3	HPLC Column	50mm	70203-052130	70203-053030	-	-			
			150mm	-	-	-	70203-154630			
	5	Drop-in Guard (4/pk)	10mm	-	70205-013001	70205-014001	70205-014001			
		HPLC Column	50mm	70205-052130	70205-053030	-	-			
			100mm	70205-102130	-	-	70205-104630			
			125mm	-	-	70205-124030	70205-124630			
			150mm	-	-	70205-154030	70205-154630			
			250mm	-	-	-	70205-254630			
			C6	5	Drop-in Guard (4/pk)	10mm	-	-	70305-014001	70305-014001
			HPLC Column		100mm	-	-	-	70305-104630	
125mm	-	-			-	70305-124630				
150mm	-	-			70305-154030	70305-154630				
250mm	-	-			-	70305-254630				

C1	5		250mm				70505-254030	70505-254630
Phenyl	3	Drop-in Guard (4/pk)	10mm	70603-012101	-	-	-	-
		HPLC Column	150mm	70603-152130	-	-	-	-
	5	Drop-in Guard (4/pk)	10mm	-	-	-	70605-014001	70605-014001
		HPLC Column	100mm	70605-102130	-	-	-	-
			150mm	-	-	-	-	70605-154630
			250mm	-	-	-	-	70605-254630
Cyano	5	HPLC Column	50mm	70805-052130	70805-053030	-	70805-054630	
				-	-	-	70805-104630	
			250mm	-	-	70805-254030	70805-254630	
Diol	5	HPLC Column	50mm	-	-	-	72605-054630	
			150mm	72605-152130	72605-153030	72605-154030	72605-154630	
			250mm	-	-	72605-254030	72605-254630	
Phenyl/ Hexyl	3	Drop-in Guard (4/pk)	10mm	73003-012101	-	-	-	
		HPLC Column	50mm	73003-052130	73003-053030	-	-	
			100mm	-	73003-103030	-	73003-104630	
			150mm	-	73003-153030	-	73003-154630	
	5	Drop-in Guard (4/pk)	10mm	73005-012101	-	-	-	
		HPLC Column	50mm	73005-052130	73005-053030	-	-	
			150mm	73005-152130	-	-	73005-154630	
			250mm	-	-	73005-254030	73005-254630	

## IonPac NS1 and NS2

Polymeric reversed-phase column ideal for the separation of hydrophobic, ionizable compounds

- Excellent resolution
- Good peak shape
- Ideal for separation of large molecules that carry localized charges, such as surfactants
- Compatible with acids, bases, and solvent from pH 0 to 14
- Can also be used for traditional polymeric reversed-phase applications
- Utilize ion-pair chromatography for difficult separations

Thermo Scientific™ Dionex™ IonPac™ NS1-10µm and NS1-5µm columns are packed with a neutral, macroporous, high-surface-area, ethylvinylbenzene polymer crosslinked with 55% divinylbenzene. This resin makes the NS1 resistant to solvents, acids, and bases, and permits the use of eluent from pH 0 to 14. The Dionex IonPac NS1 column is the column of choice for routine ion pair chromatography.

IonPac NS2 is a silica-based column for mobile-phase ion chromatography (MPIC) applications using eluents containing trifluoroacetic acid (TFA), heptafluorobutyric acid (HFBA), or tetrabutylammonium borate (TBAB). It provides high performance analysis for hydrophobic amines and hydrophobic acids using suppressed conductivity detection.

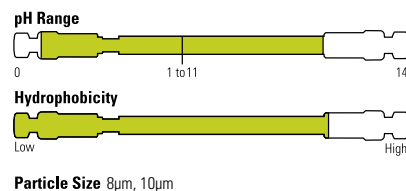
### IonPac NS1 and NS2

Description	Particle Size (µm)	Format	Length (mm)	2.0mm ID	4.0mm ID
IonPac NS1	5	HPLC Column	150	-	039568
		Guard Column	35	-	039567
	HPLC Column	50	088763	-	
		250	088762	035321	
IonPac NS2	5	Guard Column	35	-	088788
		HPLC Column	150	-	088787
			250	-	088786

## HyperREZ XP

Polymer-based columns for carbohydrate analysis

- Designed for the determination of carbohydrates, saccharides, organic acids, and alcohols
- Efficient and reproducible monodisperse particles
- Stable for long column lifetimes even at low pH and high temperatures



### HyperREZ XP

	Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
HyperREZ XP Carbohydrate H+	8	Guard Cartridge (2/pk)	5	3.0	69008-903027
		Guard Column	50	7.7	69008-057726
		HPLC Column	300	7.7	69008-307780
HyperREZ XP Carbohydrate Ca <sup>2+</sup>	8	Guard Cartridge (2/pk)	5	3.0	69208-903027
		Guard Column	50	7.7	69208-057726
		HPLC Column	300	7.7	69208-307780
HyperREZ XP Carbohydrate Pb <sup>2+</sup>	8	Guard Cartridge (2/pk)	5	3.0	69108-903027
		Guard Column	50	7.7	69108-057726
		HPLC Column	300	7.7	69108-307780
HyperREZ XP Carbohydrate Na+	10	Guard Column	50	7.7	69310-057726
		HPLC Column	300	7.7	69310-307780
HyperREZ XP Organic Acids	8	Guard Cartridge (2/pk)	5	3.0	69008-903027
		HPLC Column	100	7.7	69608-107780
HyperREZ XP Sugar Alcohols	8	Guard Cartridge (2/pk)	5	3.0	69208-903027
		HPLC Column	250	4.0	69708-254080

Format	Length (mm)	ID (mm)	Cat. No.
HyperRez Guard Cartridge Holder	5	3	60002-354

Saccharide	H <sup>+</sup>	Ca <sup>2+</sup>	Pb <sup>2+</sup>
Adonitol	11.5	14.9	20.4
Arabinose	11.4	13.6	19.4
Erythritol	12.7	15.6	20.3
Fructose	10.6	13.5	19.3
Fucose	12.2	13.7	17.1
Galactose	1.07	12.2	15.6
Glucose	9.9	11.1	13.9
Glycerol	14.1	16.1	19.5
Lactose	8.6	9.7	12.8
Maltose	8.4	9.5	12.5
Maltotriose	7.7	8.7	11.9
Mannitol	11.0	17.3	28.9
Mannose	1.5	12.5	16.7
Raffinose	8.2	8.6	11.4
Sorbitol	11.1	20.7	N/A
Sucrose	9.8	9.4	11.9
Xylose	10.6	12.0	15.0

**HyperREZ Carbohydrate H+ 300 x 7.7mm**  
**HyperREZ Carbohydrate Ca<sup>2+</sup> 300 x 7.7mm**  
**HyperREZ Carbohydrate Pb<sup>2+</sup> 300 x 7.7mm**  
 Mobile Phase: H<sub>2</sub>O  
 Flow Rate: 0.6mL/min  
 Detection: RI  
 Temperature: 75°C (H<sup>+</sup>)  
 85°C (Ca<sup>2+</sup>)  
 80°C (Pb<sup>2+</sup>)  
 Note: partial hydrolysis may occur with some saccharides using H<sup>+</sup>.

For more information, visit  
[thermofisher.com/LCcolumns](http://thermofisher.com/LCcolumns)

BETASIL columns continue

C6	5	Drop-in Guard (4/pk)	10mm	-	-	70305-014001	70305-014001
		HPLC Column	100mm	-	-	-	70305-104630
			125mm	-	-	-	70305-124630
			150mm	-	-	70305-154030	70305-154630
			250mm	-	-	-	70305-254630
C1	5		250mm			70505-254030	70505-254630
Phenyl	3	Drop-in Guard (4/pk)	10mm	70603-012101	-	-	-
		HPLC Column	150mm	70603-152130	-	-	-
	5	Drop-in Guard (4/pk)	10mm	-	-	70605-014001	70605-014001
		HPLC Column	100mm	70605-102130	-	-	-
			150mm	-	-	-	70605-154630
			250mm	-	-	-	70605-254630
Cyano	5	HPLC Column	50mm	70805-052130	70805-053030	-	70805-054630
			-	-	-	-	70805-104630
			250mm	-	-	70805-254030	70805-254630
Diol	5	HPLC Column	50mm	-	-	-	72605-054630
			150mm	72605-152130	72605-153030	72605-154030	72605-154630
			250mm	-	-	72605-254030	72605-254630
Phenyl/ Hexyl	3	Drop-in Guard (4/pk)	10mm	73003-012101	-	-	-
		HPLC Column	50mm	73003-052130	73003-053030	-	-
100mm	-		73003-103030	-	73003-104630		
150mm	-		73003-153030	-	73003-154630		
	5	Drop-in Guard (4/pk)	10mm	73005-012101	-	-	-
		HPLC Column	50mm	73005-052130	73005-053030	-	-
			150mm	73005-152130	-	-	73005-154630
			250mm	-	-	73005-254030	73005-254630

Thermo Scientific™ HyPURITY™ columns

Particle Size (µm)		Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.0 mm ID	4.6 mm ID
C18	3	Drop-in Guard (4/pk)	10mm	22103-012101	-	22103-014001	22103-014001
		HPLC Column	30mm	22103-032130	-	-	-
			50mm	22103-052130	-	22103-054630	-
			100mm	22103-102130	22103-103030	22103-104630	-
			125mm	-	-	-	22103-124630
			150mm	22103-152130	22103-153030	22103-154030	22103-154630
			250mm	-	-	-	22103-254630
	5	Drop-in Guard (4/pk)	10mm	22105-012101	22105-013001	22105-014001	22105-014001
		HPLC Column	30mm	22105-032130	-	-	-
			50mm	22105-052130	-	-	22105-054630
			100mm	22105-102130	-	22105-104030	22105-104630
			125mm	-	-	22105-124030	22105-124630
			150mm	22105-152130	22105-153030	22105-154030	22105-154630
			250mm	22105-252130	22105-253030	22105-254030	22105-254630
C8	5	HPLC Column	50mm	-	-	-	22205-054630
			100mm	-	-	-	22205-104630
			150mm	22205-152130	22205-153030	-	22205-154630
			250mm	-	-	-	22205-254630

## HyPURITY columns continued

C4	5	Drop-in Guard (4/pk)	10mm	22405-012101	-	-	-
		HPLC Column	50mm	22405-052130	22405-053030	-	-
			100mm	-	-	-	22405-104630
			150mm	-	-	-	22405-154630
			250mm	-	-	-	22405-254630
Aqua- star	3	Drop-in Guard (4/pk)	10mm	22503-012101	22503-013001	-	-
		HPLC Column	100mm	-	-	22503-104030	-
			150mm	-	22503-153030	-	22503-154630
	5	Drop-in Guard (4/pk)	10mm	-	-	22505-014001	-
		HPLC Column	50mm	22505-052130	-	-	-
			100mm	22505-102130	-	-	-
			150mm	-	22505-153030	-	22505-154630
250mm	-		-	-	22505-254630		

## Aquasil columns

Particle Size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.0 mm ID	4.6 mm ID	
5	Drop-in Guard (4/pk)	10mm	77505-012101	77505-013001	77505-014001	-	
	Javelin Guards (4/pk)	10mm	-	-	77505-014006	-	
		20mm	77505-022106	-	-	-	
	HPLC Column	20mm	77505-022130	-	-	-	
		30mm	-	-	77505-034030	-	
		50mm	77505-052130	77505-053030	-	77505-054630	
		100mm	77505-102130	77505-103030	-	77505-104630	
		125mm	-	-	77505-124030	-	
		-	-	77505-152130	77505-153030	77505-154030	77505-154630
		250mm	77505-252130	77505-253030	77505-254030	77505-254630	

## BetaBasic

Particle Size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.0 mm ID	4.6 mm ID
C8	HPLC Column	50mm	71403-052130	-	-	-
		100mm	-	-	-	-
		150mm	-	-	-	71403-154630
5	Drop-in Guard (4/pk)	10mm	71405-012101	-	-	-
	Javelin Guards (4/pk)	10mm	71405-012106	-	71405-014001	-
		20mm	71405-022106	-	-	-
	HPLC Column	50mm	71405-052130	-	-	71405-054630
		100mm	-	-	-	71405-104630
		150mm	-	-	-	71405-154630
		250mm	-	-	-	71405-254630

For more information, visit [thermofisher.com/LCcolumns](https://thermofisher.com/LCcolumns)

C18	3	Drop-in Guard (4/pk)	10mm	71503-012101	71503-013001	71503-014001	71503-014001
		HPLC Column	30mm	-	-	-	71503-034630
			50mm	71503-052130	-	71503-054030	71503-054630
			100mm	71503-102130	-	-	71503-104630
			150mm	71503-152130	71503-153030	-	71503-154630
	250mm	-	-	-	71503-254630		
	5	Drop-in Guard (4/pk)	10mm	71505-012101	-	71505-014001	71505-014001
		Javelin Guards (4/pk)	10mm	71505-012106	-	71505-014006	-
			20mm	71505-022106	-	71505-024006	-
		HPLC Column	30mm	71505-032130	-	-	-
50mm			71505-052130	-	-	71505-054630	
100mm			71505-102130	-	-	71505-104630	
150mm			71505-152130	-	-	71505-154630	
250mm			-	71505-253030	-	71505-254630	
C4		3	HPLC Column	50mm	71603-052130	-	-
	100mm			71603-102130	-	-	-
	5	HPLC Column	50mm	71605-052130	-	-	-
			150mm	-	-	-	71605-154630
Cyano	5	Drop-in Guard (4/pk)	10mm	-	-	71705-014001	-
		Javelin Guards (4/pk)	20mm	71705-022106	-	-	-
		HPLC Column	100mm	71705-102130	-	-	-
			150mm	-	-	-	71705-154630
			250mm	-	-	-	71705-254630
Phenyl	3µm	Drop-in Guard (4/pk)	10mm	71803-012101	-	-	-
		HPLC Column	50mm	71803-052130	-	-	-
	5µm	Drop-in Guard (4/pk)	10mm	-	-	71805-014001	71805-014001
		HPLC Column	150mm	-	-	-	71805-154630
			250mm	71805-252130	-	-	71805-254630
			250mm	71805-252130	-	-	71805-254630

# LC accessories

## Excellence in LC accessories providing optimal performance

Thermo Scientific offers a wide range of accessories to suit your LC needs, ensuring confidence in your analysis and delivery of exceptionally reproducible data and reliable chromatography.

### **Viper fingertight fitting**

- Providing zero dead volume fingertight connections up to 1,250 bar

### **Rheodyne sample injectors**

- Biocompatible and stainless steel versions for highly accurate and precise injections

### **LC syringes**

- Supporting manual and automated injections



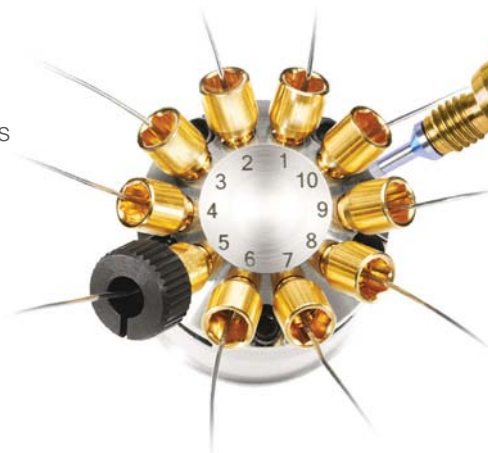
For more information, visit [thermofisher.com/LCaccessories](https://www.thermofisher.com/LCaccessories)



## Viper fingertight fittings

Provides ease of use and dead-volume free plumbing of every conventional HPLC and UHPLC system

- Provides zero-dead volume fingertight connections
- Supports operating pressures up to 1,500 bar (22,000 psi)
- Available in different lengths: 65mm and from 150 to 950mm in 100mm steps
- Available in different inner diameters: 0.1mm (0.004in), 0.13mm (0.005in) or 0.18mm (0.007in)
- Easy to use due to stainless steel or biocompatible MP35N™ capillaries (1/32in OD) and fingertight design
- Works with virtually any valve and column from any manufacturer
- Fits narrow connections such as 10-port valves and enables mixed use with different designs



The Thermo Scientific™ Viper™ fingertight fitting system provides ease of use and dead-volume free plumbing of every conventional HPLC and modern UHPLC system. Together with flexible stainless steel (SST) or biocompatible MP35N™ capillaries, it opens a new dimension in liquid chromatography. The Viper system improves chromatographic results, independent of various different connection geometries and system

backpressures. Connecting LC modules, valves, and columns quickly and easily without tools is simple with the Viper system.

Extra column volumes in HPLC have the most detrimental effects on the separation efficiency of an LC system and must be minimized. Conventional fittings tightened by hand or using tools have considerable drawbacks which can compromise efficiency. The Viper fitting system overcomes these

drawbacks by design, working without ferrules to reduce the dead volume of any fluidic connection to zero. The Viper system unifies robust performance, ease of use, acceptable lifetime, and universal compatibility with virtually all different valves and columns for HPLC system users. All Thermo Scientific™ UltiMate™ 3000 XRS, RS, BioRS and SD systems are equipped with Viper fingertight fitting system as a standard.

### Viper fingertight fitting systems - SST

Length (mm)	0.1mm ID	0.13mm ID	0.18mm ID
65	6040.2207	6040.2307	6040.2357
150	6040.2215	6040.2315	6040.2360
250	6040.2225	6040.2325	6040.2385
350	6040.2235	6040.2335	6040.2375
450	6040.2245	6040.2345	6040.2365
550	6040.2255	6040.2305	6040.2355
650	6040.2265	6040.2310	6040.2395
750	-	6040.2320	6040.2370
850	-	6040.2330	6040.2380
950	-	6040.2340	6040.2390

### Viper fingertight fitting systems - biocompatible

Length (mm)	0.065mm ID, PEEK	0.090mm ID, PEEK	0.1mm ID, MP35N	0.13mm ID, MP35N	0.13mm ID, PEEK	0.18mm ID, MP35N
65	-	6041.9075*	6042.2306	-	-	-
150	6041.5615	-	6042.2320	-	6041.5616	6042.2315
250	6041.5625	6041.9025	6042.2330	-	-	6042.2327
350	-	-	6042.2340	-	-	6042.2337
450	-	-	6042.2350	-	-	6042.2365
550	-	-	6042.2360	-	-	6042.2355
650	6041.5665	-	6042.2370	6042.2363	-	6042.2380
750	6041.5675	-	6042.2390	6042.2373	-	6042.2375
850	6041.5685	-	-	-	-	-
950	-	-	6042.2395	-	-	6042.2385

\* 75mm length

### Viper accessories

Description	Cat. No.	Quantity
Plug, Biocompatible	6040.2303	1 Each
Union, SST	6040.2304	1 Each
Calibration Tool	6040.2312	1 Each
Inline Filter	6036.1045	1 Each

For more information, visit [thermofisher.com/viper](http://thermofisher.com/viper)



## Viper fingertight fitting kits for UltiMate 3000 systems

### Viper fingertight fitting kits for UltiMate 3000 systems

Description	SD Systems	RS Systems
Viper Capillary Kit for ISO, LPG or DGP pumps	6040.2302	6040.2301
Viper Capillary Kit for HPG pumps	6040.2309	6040.2308
Viper Capillary Kit for biocompatible RSLC systems	–	6841.2301
Online SPE Solution Kit for x2 Dual Standard or RSLC systems	6040.2802	6040.2801
Tandem Operation Solution Kit for x2 Dual Standard or RSLC systems	6040.2804	6040.2803
Application Switching Solution Kit for x2 Dual Standard or RSLC systems	6040.2806	6040.2805
Parallel Setup Solution Kit for x2 Dual Standard or RSLC systems	6040.2810	6040.2809
Inverse Gradient Kit for x2 Dual Standard or RSLC systems	6040.2819	6040.2820
Automated Method Scouting Solution Kit for Standard or RSLC systems	6040.2808	6040.2807
MS Connection Kit for MS-frontends with WPS autosampler, excluding UV detection	6720.0355	6720.0370
MS Connection Kit for MS-frontends with WPS autosampler, including UV detection	6720.0365	6720.0375
MS Connection Kit for MS-frontends with HPG-RS pump and OAS autosampler excluding UV detection	–	6720.0372
MS Connection Kit for MS-frontends with HPG-RS pump and OAS autosampler including UV detection	–	6720.0377

Description	XRS Systems
Viper Capillary Kit for standalone system with with WPS autosampler	6043.2301
Viper Capillary Kit for standalone system with with OAS autosampler	6845.2301A
MS Connection Kit for MS-frontends with WPS autosampler excluding UV detection	6720.0380
MS Connection Kit for MS-frontends with WPS autosampler including UV detection	6720.0385
MS Connection Kit for MS-frontends with LPG-XRS pump and OAS autosampler excluding UV detection	6720.0372
MS Connection Kit for MS-frontends with LPG-XRS pump and OAS autosampler including UV detection	6720.0377

## Javelin direct-connection column filters

One-piece filter protects HPLC systems

- Direct-connection design for maximum efficiency
- Replace entire disposable filter unit for easy changes
- Recommended for use as dedicated filters for a column rather than the HPLC system
- 1/16in CPI tip attaches directly to HPLC column inlet without tubing or wrenches
- 0.5µm porosity



### Javelin direct-connection column filter

Description	2.1mm ID	3.0mm ID	4.0/4.6mm ID	Quantity
Javelin Column Filter	88200	88700	88400	4 Pack

## ColumnSaver precolumn filters

Filter mesh size 2µm

### ColumnSaver precolumn filters

Filter Mesh Size (µm)	Cat. No	Quantity
2	60140-412	10 Pack

## UNIFILTER direct-connection HPLC filter systems

Quickly replaced for minimal down time

- Replaceable 0.5µm drop-in filter enhances column lifetime and improved performance
- Holder attached directly to the inlet of your analytical system for maximum convenience



### Thermo Scientific™ UNIFILTER™ direct-connection HPLC filter systems

Description	2.1/3.0mm ID	4.0/4.6mm ID	Quantity
UNIFILTER Direct Connection Holder	27002	27000	1 Each
Replacement Filter, 0.5µm	22017	22155	5 Pack
Replacement Tip, CPI, Standard	850-RT	850-RT	1 Each
Replacement Tip, Waters End-fitting	850-WT	850-WT	1 Each

## UHPLC filter

Column protection for Hypersil GOLD 1.9µm and Synchronis 1.7µm columns without compromising performance

- Low volume filter cartridge design
- Maintain peak shape
- Minimal efficiency loss through dispersion



### UHPLC filter

Description	Cat. No.	Quantity
UHPLC Direct Connect Filter Holder	27006	1 Each
2.1mm ID Replacement Filter Cartridge, 0.2µm	22180	5 Pack
1.0mm ID Replacement Filter Cartridge, 0.2µm	22185	5 Pack

## PTFE one-piece column connector

Excellent for high-throughput screening and quick connection

- Fingertight, leak-free connection of analytical and guard columns with 10-32 threads
- Minimizes dead volume
- Inert and biocompatible material



## PEEK one-piece column connector




Description	Cat. No.	Quantity
One Piece Coupler	60170-370	1 Each



## Solvent filters

- Efficient draw
- 100% PTFE polymer, including 2µm filters
- Built-in helium sparge port and frit

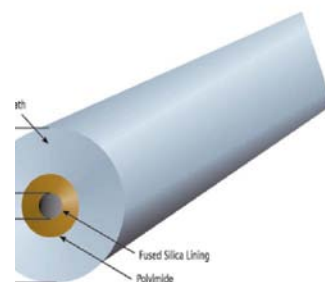
### Solvent filters

	Type	For Use with	Cat. No.	Quantity
	Stainless Steel	Fit 1/16in OD tube to 1/8in OD plastic tubing	A-302	1 Each
	Stainless Steel	Fit to 1/8in OD plastic tubing using 1/8in PP nut	A-302A	1 Each
	Bottom-of-the-Bottle™	3/16in OD plastic tubing	A-436	1 Each
	Bottom-of-the-Bottle	1/8in OD tubing	A-437	1 Each

## PEEKsil capillary tubing

Excellent chemical compatibility and very low carryover

- Precision-bore fused silica tubing coated with 1/16in OD PEEK covering
- Usable in most standard chromatography systems
- Withstands high pressures
- Smooth internal surface for excellent flow characteristics
- Tubing is stiff: not recommended for uses requiring tubing bends
- Precut lengths only: cutting in the lab may damage tubing



### PEEKsil capillary tubing

ID (in)	Length (cm)	Cat. No.	Quantity
0.002	10	60182-500	5 Pack
	20	60182-501	5 Pack
	50	60182-502	2 Pack
0.004	10	60182-503	5 Pack
	20	60182-504	5 Pack
	50	60182-505	2 Pack
0.007	10	60182-506	5 Pack
	20	60182-507	5 Pack
	50	60182-508	2 Pack

### Applications:

- HPLC
- LC-MS

## PEEK sleeves for fused silica capillary tubing

Withstands high pressures

### 1/16in OD PEEK sleeves for fused silica capillary tubing

ID (in)	Color	Cat. No.	Quantity
0.008	Yellow	F-227	1 Each
0.010	Blue	F-228	1 Each
0.012	Natural	F-229	1 Each
0.015	Orange	F-230	1 Each
0.021	Natural	F-231	1 Each
0.030	Natural	F-232	1 Each

For more information, visit [thermofisher.com/LCaccessories](https://www.thermofisher.com/LCaccessories)



## 316 stainless steel capillary tubing

Cleaned, polished, passivated and ready-to-use

- Suitable for ultra high pressure applications
- Wide chemical compatibility
- Prefinished, square, burr-free ends and interiors to minimize dead volume connections
- Not recommended for biological samples
- Rough internal surface may lead to sample carryover



### 316 stainless steel capillary tubing

ID (in)	Length (cm)	Color	Cat. No.	Quantity
<b>1/16in OD Precut Tubing</b>				
0.005	5	Red	U-152	1 Each
	10	Red	U-153	1 Each
	20	Red	U-154	1 Each
	30	Red	U-155	1 Each
	50	Red	U-156	1 Each
	100	Red	U-157	1 Each
0.007	5	Black	U-126	1 Each
	10	Black	U-127	1 Each
	20	Black	U-128	1 Each
	30	Black	U-129	1 Each
	50	Black	U-130	1 Each
	100	Black	U-131	1 Each
0.010	5	Blue	U-111	1 Each
	10	Blue	U-112	1 Each
	20	Blue	U-113	1 Each
	30	Blue	U-114	1 Each
	50	Blue	U-132	1 Each
	100	Blue	U-133	1 Each

### 1/16in 316 stainless steel tubing, 5-foot coil

ID (in)	Cat. No.	Quantity
0.005	U-158	1 Each
0.007	U-108	1 Each
0.010	U-106	1 Each
0.020	U-105	1 Each
0.030	U-107	1 Each
0.040	U-144	1 Each
0.046	U-151	1 Each

### Terry tool tubing cutters

Description	Cat. No.	Quantity
1/16in stainless steel tubing	60182-509	1 Each
1/8in stainless steel tubing	60182-510	1 Each

## PEEK capillary tubing

Pre-cut and color-coded for easy identification and use

- Broad chemical compatibility
- Biocompatible
- Easily cut to desired length
- Appropriate for many HPLC applications
- Resistant to most organic solvents, except for nitric acid, sulfuric acid, dichloromethane, THF and DMSO



### 1/16in OD precut PEEK tubing

ID (in)	Length (cm)	Color	Cat. No.	Quantity
0.003	5	Natural	37003-5	1 Each
	10	Natural	37003-10	1 Each
	20	Natural	37003-20	1 Each
	30	Natural	37003-30	1 Each
	50	Natural	37003-50	1 Each
	100	Natural	37003-100	1 Each
0.005	5	Red	37005-5	1 Each
	10	Red	37005-10	1 Each
	20	Red	37005-20	1 Each
	30	Red	37005-30	1 Each
	50	Red	37005-50	1 Each
0.007	5	Yellow	37007-5	1 Each
	10	Yellow	37007-10	1 Each
	20	Yellow	37007-20	1 Each
	30	Yellow	37007-30	1 Each
	50	Yellow	37007-50	1 Each
	100	Natural	37007-100	1 Each
0.010	5	Blue	37010-5	1 Each
	10	Blue	37010-10	1 Each
	20	Blue	37010-20	1 Each
	30	Blue	37010-30	1 Each
	50	Blue	37010-50	1 Each
	100	Natural	37010-100	1 Each
0.020	5	Orange	37020-5	1 Each
	10	Orange	37020-10	1 Each
	20	Orange	37020-20	1 Each
	30	Orange	37020-30	1 Each
	50	Orange	37020-50	1 Each
	100	Natural	37020-100	1 Each

### 1/16in OD PEEK tubing, 5-foot coil

ID (in)	Cat. No.	Quantity
0.003	37003	1 Each
0.005	37005	1 Each
0.007	37007	1 Each
0.010	37010	1 Each
0.020	37020	1 Each
0.030	37030	1 Each
0.040	37040	1 Each

### Polymer tubing cutter

Description	Cat. No.	Quantity
Polymeric Tubing Cutter	A-327	1 Each
Replacement blades	A-328	5 Pack







## High pressure stainless steel nuts and ferrules

Accommodate a wide range of configurations

- Designed for 10-32 port configurations
- Burr and contaminant free

### High pressure stainless steel nuts and ferrules

Type	Nut Cat. No.	Quantity	Description	Replacement Ferrule Cat. No.	Quantity
 10-32 thread nut with ferrule	F-190	1 Each	Replacement PEEK Ferrules	F-192x	10 Pack
 Male hex nut	U-400x	10 Pack	Universal Ferrules, 0.625in	U-401x	10 Pack
 Valco male hex nut, 10-32 thread	U-320x	10 Pack	Valco ferrules, 0.625in	U-321x	10 Pack
 Male hex nut, Waters compatible	U-410x	10 Pack	Universal Ferrules, 0.625in	U-401x	10 Pack

## Reducing union for preparative columns

Connects 30 to 50mm ID preparative columns to 1/16in tubing

- Stainless steel construction
- 1.0mm bore
- Without frit

### Reducing union for preparative column








Description	Cat. No.	Quantity
1/8in to 1/16in Reducing Union for Preparative Column	60182-357	1 Each

## PEEK Fingertight fittings

Machined for reliability and ease of use

- Resist cracking, breaking, thread stripping and leaking in both low and high pressure applications
- Biocompatible for a broad range of applications

### PEEK fingertight fittings









Type	Cat. No.	Quantity
 One-Piece Fingertight Fitting, 1/16in, 0.37in head	F-120x	10 Pack
 One-Piece Long Fingertight Fitting, 1/16in, 0.37in head	F-130x	10 Pack
 One-Piece PEEK Fingertight Fitting, 1/32in, 0.25in head	M-645	1 Each
 Two-Piece Fingertight Wing Nut with Ferrule, 1/16in	F-300x	10 Pack
 Replacement PEEK Ferrules	F-142x	10 Pack
 Column End Plug, 1/16in, 10-32 coned, Delrin, Red	U-467R	1 Each
 Column End Plug, 1/16in, 10-32 coned, Delrin, Black	U-467BLK	1 Each

## Stainless steel unions, tees and crosses

Well-suited to high-pressure applications

- Absolute zero or low dead volume formats
- Includes two stainless steel nuts and ferrules

### Stainless steel unions, tees and crosses





	Description	Through Hole (in)	Swept Volume (μL)	Cat. No.	Quantity
	Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless steel nuts and ferrules	0.010	0.025	U-435	1 Each
	Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless steel nuts and ferrules	0.020	0.134	U-402	1 Each
	Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless steel nuts and ferrules	0.050	0.836	U-437	1 Each
	Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless steel nuts and ferrules	0.062	~0.0	U-438	1 Each
	Union, stainless steel, Waters fittings compatible, includes 2 stainless steel nuts and ferrules	0.020	0.129	U-412	1 Each
	Union, stainless steel, Valco fittings compatible, includes 2 stainless steel nuts and ferrules	0.020	0.103	U-322	1 Each
	Tee, stainless steel, 10-32 fittings for use with 1/16in OD tubing	0.020	0.57	U-428	1 Each
	Cross, stainless steel, 10-32 fittings for use with 1/16in OD tubing	0.020	0.72	U-430	1 Each

## PEEK unions, tees and crosses

Well-suited to high pressure applications

- Absolute zero or low dead volume formats
- Biocompatible

### PEEK unions, tees and crosses

	Description	Through Hole (in)	Swept Volume (μL)	Cat. No.	Quantity
	Union, PEEK polymer, includes two PEEK 2-piece fittings	0.010	0.070	P-742	1 Each
	Union, PEEK polymer, includes two PEEK 2-piece fittings	0.020	0.28	P-704	1 Each
	Tee, PEEK, 10-32 fittings for use with 1/16in OD tubing, includes three 10-32 PEEK double-winged nuts	0.020	0.57	P-727	1 Each
	PEEK, 10-32 fittings for use with 1/16in OD tubing, includes four 10-32 PEEK double-winged nuts	0.020	0.72	P-729	1 Each

## Rheodyne 7725 and 7725i sample injectors

Allow continuous flow between the load and inject positions to protect against pressure shock

- Stainless steel construction
- Make-Before-Break (MBB) design
- Can use partial filling for zero sample waste or complete filling for better reproducibility
- Inject 1µL to 5mL with high accuracy and precision
- 7725i features a position sensing switch for a reproducible start signal



### Rheodyne 7725 and 7725i sample injectors

Model	Mode	Features	Cat. No.	Quantity
7725	Dual	Continuous flow	7725	1 Each
7725i	Dual	Continuous flow, position sensing switch	7725i	1 Each

### Stainless steel sample loops

Description	Volume	ID (mm / in)	Cat. No.	Quantity
Sample loops for 7725 and 7725i injectors	5µL	0.18 / 0.007	7755-020	1 Each
	10µL	0.30 / 0.012	7755-021	1 Each
	20µL	0.30 / 0.012	7755-022	1 Each
	50µL	0.51 / 0.020	7755-023	1 Each

### RheBuild kits

For Use with Rheodyne Models	Cat. No.	Quantity
7725/7725i	7725-999	1 Each

### Rheodyne stators

For Use with Rheodyne Models	Cat. No.	Quantity
7725	7725-010	1 Each

## Rheodyne 9725 and 9725i sample injectors

Allow continuous flow between the load and inject positions to protect against pressure shock

- Biocompatible PEEK construction
- Make-Before-Break (MBB) design
- Can use partial filling for zero sample waste or complete filling for better reproducibility
- Inject 1µL to 5mL with high accuracy and precision
- 9725i features a position sensing switch for a reproducible start signal

### Rheodyne 9725 and 9725i sample injectors

Model	Mode	Features	Cat. No.	Quantity
9725	Dual	Continuous flow	9725	1 Each
9725i	Dual	Continuous flow, position sensing switch	9725i	1 Each

### PEEK sample loops

Description	Volume	ID (mm / in)	Cat. No.	Quantity
Sample loops for 9725 and 9725i injectors	2µL	Internal	7755-015	1 Each
	5µL	0.18 / 0.007	9055-020	1 Each
	10µL	0.25 / 0.010	9055-021	1 Each
	20µL	0.25 / 0.010	9055-022	1 Each
	50µL	0.51 / 0.020	9055-023	1 Each
	100µL	0.51 / 0.020	9055-024	1 Each
	200µL	0.51 / 0.020	9055-025	1 Each
	500µL	0.76 / 0.030	9055-026	1 Each
	1mL	0.76 / 0.030	9055-027	1 Each
	5mL	0.76 / 0.030	9055-029	1 Each

### Rheodyne suction needle adapter

For Use with	Cat. No.	Quantity
Rheodyne Injector Models 9725 and 9725i	9125-076	1 Each

For more information, visit [thermofisher.com/LCaccessories](https://www.thermofisher.com/LCaccessories)

## Rheodyne 8125 low-dispersion microscale injector

Designed for use with 1 and 2mm ID HPLC columns

- Can use partial filling for zero sample waste or complete filling for better reproducibility
- Position sensing switch provides reproducible start signal
- Suitable for use with 5 to 50 $\mu$ L sample loops



### Rheodyne 8125 low-dispersion microscale injector

Model	Mode	Features	Cat. No.	Quantity
8125	Dual	Continuous flow	8125	1 Each

### Stainless steel sample loops

Description	Volume	ID (mm / in)	Cat. No.	Quantity
Sample loops for 8125 injectors	5 $\mu$ L	0.20 / 0.008	8020	1 Each
	10 $\mu$ L	0.20 / 0.008	8021	1 Each
	20 $\mu$ L	0.25 / 0.010	8022	1 Each
	50 $\mu$ L	0.30 / 0.012	8023	1 Each

### RheBuild kits

For Use with Rheodyne Models	Cat. No.	Quantity
8125	8125-999	1 Each

### Rheodyne replacement rotor seals for injectors

For Use with Rheodyne Models	Cat. No.	Quantity
<b>Vespel Seals</b>		
8125/8126	8125-038	1 Each
<b>Tefzel Seals</b>		
8125	8125-097	1 Each

### Rheodyne stators

For Use with Rheodyne Models	Cat. No.	Quantity
8125/8126	8125-098	1 Each

### Rheodyne stator face assemblies

For Use with Rheodyne Models	Cat. No.	Quantity
8125	8125-074	1 Each

## Rheodyne 7010 sample injector

Single-mode sample injector designed for the complete filling method



### Compatible with:

Sample loop sizes 5µL to 20mL

### Rheodyne 7010 sample injector

Model	Mode	Features	Cat. No.	Quantity
7010	Single	Complete filling method	7010	1 Each

### Rheodyne ports for Rheodyne injectors

For Use with Rheodyne Model	Cat. No.	Quantity
7010 Filler Port, Stainless Steel	7012	1 Each

### Stainless steel sample loops

Description	Volume	ID (mm / in)	Cat. No.	Quantity
Sample loops for 7010 and 7125 injectors	5µL	0.18 / 0.007	7020	1 Each
	10µL	0.30 / 0.012	7021	1 Each
	20µL	0.30 / 0.012	7022	1 Each
	50µL	0.51 / 0.020	7023	1 Each
	100µL	0.51 / 0.020	7024	1 Each
	200µL	0.76 / 0.030	7025	1 Each
	500µL	0.76 / 0.030	7026	1 Each
	1mL	0.76 / 0.030	7027	1 Each
	5mL	1.0 / 0.040	7029	1 Each

### RheBuild kits

For Use with Rheodyne Models	Cat. No.	Quantity
7010/7000	7010-999	1 Each

### Rheodyne replacement rotor seals for injectors

For Use with Rheodyne Models	Cat. No.	Quantity
<b>Vespel Seals</b>		
7010	7010-039	1 Each
<b>Tefzel Seals</b>		
7010	7010-071	1 Each

For more information, visit [thermofisher.com/LCaccessories](https://www.thermofisher.com/LCaccessories)

## Rheodyne 9010 sample injector

Single-mode sample injector designed for the complete filling method

- Compatible with sample loop sizes 5µL to 10mL
- PEEK stator
- Position sensing switch provides a reproducible start signal

### Rheodyne 9010 sample injector

Model	Mode	Features	Cat. No.	Quantity
9010	Single	Continuous flow, position sensing switch	9010	1 Each

### Rheodyne ports for rheodyne injectors

For Use with Rheodyne Model	Cat. No.	Quantity
9010 Filler Port, PEEK	9012	1 Each
9010 Needle Port, PEEK	9013	1 Each

### PEEK Sample Loops

Description	Volume	ID (mm / in)	Cat. No.	Quantity
Sample loops for 9010 injectors	2µL	Internal	7755-015	1 Each
	5µL	0.18 / 0.007	9055-020	1 Each
	10µL	0.25 / 0.010	9055-021	1 Each
	20µL	0.25 / 0.010	9055-022	1 Each
	50µL	0.51 / 0.020	9055-023	1 Each
	100µL	0.51 / 0.020	9055-024	1 Each
	200µL	0.51 / 0.020	9055-025	1 Each
	500µL	0.76 / 0.030	9055-026	1 Each
	1mL	0.76 / 0.030	9055-027	1 Each
	5mL	0.76 / 0.030	9055-029	1 Each

### Rheodyne replacement rotor seals for injectors

For Use with Rheodyne Models	Cat. No.	Quantity
<b>Tefzel Seals</b>		
9010	9010-051	1 Each

### Rheodyne stators

For Use with Rheodyne Models	Cat. No.	Quantity
9010	9125-043	1 Each

### Rheodyne stator face assemblies




For Use with Rheodyne Models	Cat. No.	Quantity
9125	8125-094	1 Each

## RheFlex high-pressure fittings

Precision machined from 316 stainless steel



### RheFlex high pressure fittings

Type	Cat. No.	Quantity	
	Short Fittings Set	6000-109	5 Pack
	Short Fittings Set	6000-209	10 Pack
	Long Fittings Set	6000-111	5 Pack
	Long Fittings Set	6000-211	10 Pack
	Extra Long Fittings Set	6000-162	5 Pack
	Extra Long Fittings Set	6000-262	10 Pack
	1/16in Ferrule	6000-110	5 Pack
	1/16in Ferrule	6000-210	10 Pack

## RheFlex two-piece PEEK fittings

Provide inert, metal-free connections

- Slotted backside of the ferrule is squeezed down onto the tube by the mating conical surface of the nut
- May be used on 1/16in metal or plastic tubing reliably up to 5000psi
- Reusable ferrule and nut



### RheFlex two-piece PEEK fittings

Type	Cat. No.	Quantity
Fitting set, standard length	6000-054	5 Pack
Fitting set, short	6000-055	5 Pack
Fitting set, X-long	6000-066	1 Each
Replacement ferrules	6000-051	5 Pack

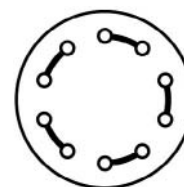
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## Cheminert model C2 microbore injector

Can be used as an injector or switching valve

- 1/16in fittings
- 0.010in ports
- Available in 6-port or 10-port configurations
- Available with manual or microelectric actuator



### Cheminert model C2 microbore injector

Description	Sample Volume	Cat. No.	Quantity
Model C2 injector, N60 stainless stator, 5µL loop, manual	6 ports	C2-1006	1 Each
	10 ports	C2-1000	1 Each
Model C2 injector, N60 stainless stator, 5µL loop, microelectric actuator	6 ports	C2-1006EH	1 Each
	10 ports	C2-1000EP	1 Each
Sample injector loops, stainless steel	5µL	CSL5	1 Each
	10µL	CSL10	1 Each
	20µL	CSL20	1 Each
	50µL	CSL50	1 Each
	100µL	CSL100	1 Each
Model C4 injector, PAEK stator, 5µL loop, microelectric actuator	6 ports	C2-1346EH	1 Each
Sample injector loops, PAEK	5µL	CZSL5PK	1 Each
	10µL	CZSL10PK	1 Each
	50µL	CZSL50PK	1 Each

## Valco injector model C6W

Description	Volume	Cat. No.	Quantity
Model C6W injector, six 0.016in ports, manual	20µL loop	C6W	1 Each
Model EPC6W injector, six 0.016in ports, microelectric actuator	20µL loop	EPC6W	1 Each
Replacement rotor	–	SSAC6W	1 Each
Sample injector loop, stainless steel	2µL	SL2CW	1 Each
Sample injector loop, stainless steel	5µL	SL5CW	1 Each
Sample injector loop, stainless steel	10µL	SL10CW	1 Each
Sample injector loop, stainless steel	20µL	SL20CW	1 Each
Sample injector loop, stainless steel	50µL	SL50CW	1 Each
Sample injector loop, stainless steel	100µL	SL100CW	1 Each

## Valco accessories

Description	Volume	Cat. No.	Quantity
Valco syringe ports	22 ga. needles; 1/16in fittings	VISF-1	1 Each
Valco syringe ports	22 ga. 2in needles	VISF-2	1 Each
Valco Nuts and Ferrules	1/16in standard nut	ZN1-10	10 Pack
Valco Nuts and Ferrules	1/16in long nut	LZN1-10	10 Pack
Valco Nuts and Ferrules	1/16in SS ferrule	ZF1-10	10 Pack

## LC syringes for manual injection valves

Easy, accurate and reproducible manual injection

- Square tip to prevent damage to the injector
- Wide range of volumes
- Precision made from borosilicate glass and stainless steel
- Robust design and easy-to-read markings

### Removable needle, gas tight syringes for Rheodyne / Valco injectors

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
10	50	22	90° Blunt End	365DLG21	1 Each	365RNL15	5 Pack
25	50	22	90° Blunt End	365FLG31	1 Each	365RNL25	5 Pack
50	50	22	90° Blunt End	365GLG41	1 Each	365RNL25	5 Pack
100	50	22	90° Blunt End	365HLG51	1 Each	365RNL25	5 Pack
500	50	22	90° Blunt End	365JLG71	1 Each	365RNL25	5 Pack

### Fixed needle, gas tight syringes for Rheodyne / Valco injectors

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	50	22	90° Blunt End	365DL263	1 Each
25	50	22	90° Blunt End	365F6315	1 Each
50	50	22	90° Blunt End	365G6316	1 Each
100	50	22	90° Blunt End	365H6317	1 Each
500	50	22	90° Blunt End	365J6319	1 Each

### Fixed needle syringes for Rheodyne / Valco injectors

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	50	22	90° Blunt End	365CL221	1 Each
10	50	22	90° Blunt End	365DL231	1 Each
25	50	22	90° Blunt End	365FL241	1 Each
50	50	22	90° Blunt End	365GL251	1 Each
100	50	22	90° Blunt End	365HL261	1 Each
250	50	22	90° Blunt End	365IL271	1 Each
500	50	22	90° Blunt End	365JL281	1 Each

For more information, visit [thermofisher.com/LCaccessories](http://thermofisher.com/LCaccessories)

## HPLC syringes

- Instrument specific syringes
- Luer-Lok syringes ideal for priming
- Macro volume sampling syringes suitable for liquid or gas samples

### Removable needle syringes for Thermo Scientific instruments

Volume (µL)	Length (mm)	Gauge	Instrument	Cat. No.	Quantity
250	50	22	LCQ	365ILT21	1 Each
500	50	22	LCQ	365JLT41	1 Each
250	–	–	AS1000, AS3000	365ILT91	1 Each
500	–	–	AS1000, AS3000	365JLT61	1 Each
2500	–	–	AS3000, AS3500	365LLT81	1 Each

### Mass spectrometry replacement ESI probe needles

Instrument	Cat. No.	Quantity
LCQ, XP, DECA, Advantage	365RNL1	1 Each
LCQ MS	365RNL2	1 Each
LCQ XSQ	365RNL3	1 Each

### Fixed needle syringes for CTC instruments

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	50	22	–	365DL991	1 Each
25	50	22	–	365FL715	1 Each
50	50	22	–	365GL810	1 Each
100	50	22	–	365HL331	1 Each

### PTFE Luer-Lok syringes

Volume (mL)	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
1	365KL531	1 Each	365RNL22	2 Pack
2.5	365LL541	1 Each	365RNL22	2 Pack
5	365ML551	1 Each	365RNL22	2 Pack
10	365NL561	1 Each	365RNL22	2 Pack
25	365PL571	1 Each	365RNL22	2 Pack

### Syringes for Macro volume sampling

Volume (mL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
1	50	22s	Bevel	365K3051	1 Each
2.5	50	22s	Bevel	365LL375	1 Each
5	50	22s	Bevel	365M5212	1 Each
10	50	22s	Bevel	365N5214	1 Each

## Thermo Scientific™ HOT POCKET and COOL POCKET column temperature controllers

Wrap-around column temperature control systems

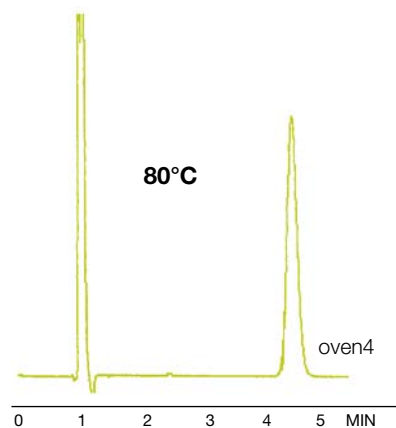
- Easy to install and use with a variety of column lengths
- Dual display of both actual and set point temperature
- HOT POCKET range from just above ambient to 85°C
- COOL POCKET range from 5°C to 55°C
- Explore sample selectivity and stability on both sides of ambient



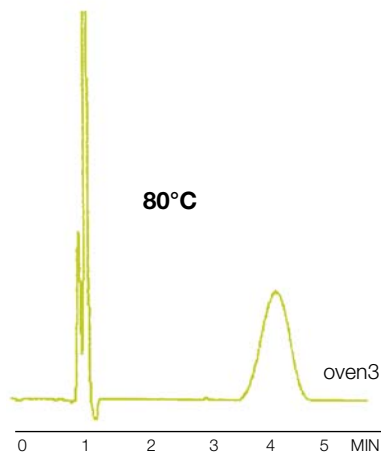
### Product specifications

	HOT POCKET	COOL POCKET
Operating Range	5°C above ambient to 85°C	5°C to 55°C
Display	Dual LED displays of actual and set point temperatures in °C	
Temperature Accuracy	± 2°C over entire range	± 2°C over entire range
Temperature Repeatability	± 1°C	± 1°C
Temperature Stability	± 0.1°C	± 0.1°C
Time to Stabilization (from ambient)	85°C in less than 30 minutes	55°C in 25 minutes, 5°C in 20 minutes

### With eluent pre-heater



### Without eluent pre-heater



Effect of eluent pre-heater on efficiency

Data courtesy of Dr. Richard F. Myer, Quantitative Technologies, Inc., Whitehouse, NJ

### HOT POCKET column heaters, eluent preheater/precooler and COOL POCKET chiller

Description	Cat. No.	Quantity
HOT POCKET Column Heater	92016	1 Each
HOT POCKET Column Heater – short version	92016-150	1 Each
COOL POCKET Column Chiller	92017	1 Each
Eluent Preheater/Precooler	92018	1 Each

Learn more at [thermofisher.com/LCaccessories](http://thermofisher.com/LCaccessories)

# LC reagents

Providing the selectivity needed for high-quality separation of charged compounds

Control selectivity, resolve complex ionic mixtures and improve peak symmetry with the use of our LC reagents.

## By using the correct reagent you achieve:

- Increased or decreased retention, permitting controlled selectivity
- Resolution of complex ionic mixtures without using ion exchange columns
- Improved peak symmetry

## Reagent types:

- High purity pre-column derivatization reagents
- Hydrolysis reagents
- HPLC ion pair reagents
- Derivatization and visualization reagents
- Amino acid detection reagents
- Peptide standards

For more information, visit [thermofisher.com//LCreagents](https://www.thermofisher.com//LCreagents)

# HPLC Ion pair reagents

## Heptafluorobutyric acid

Ion-pair reagent for the reversed-phase HPLC separation of proteins and peptides

- Typical purity is 99.7% by GC; <0.1% water
- Sequencing reagent for classical and automated Edman degradation of peptides and proteins
- Density: 1.645
- B.P. 120°C
- Packaged under nitrogen in amber glass ampules or bottles
- Clear, colorless liquid

### Heptafluorobutyric acid

Description	Quantity	Cat. No.	Quantity
Heptafluorobutyric Acid, Sequencing Grade	100mL	X TS-25003	1 Each
Heptafluorobutyric Acid, HPLC Grade	10 x 1mL ampules	TS-53104	1 Pack

X in the ordering table indicates that hazardous shipping charges apply.

## Triethylamine (TEA)

Ideal for HPLC separation and analysis of peptides

Triethylamine is an ion-pairing reagent that alters selectivity in reversed-phase HPLC separations. By pairing with peptides, it effectively sharpens peaks, resulting in improved peak resolution.

- 99.5% triethylamine purity, allowing sensitive peptide detection at low UV wavelengths in reverse-phase HPLC peptide separation systems
- Packaged in amber glass bottles with protective PTFE-lined fluorocarbon caps for reagent integrity
- Has a low UV absorbance to provide the most sensitive detection across all wavelengths

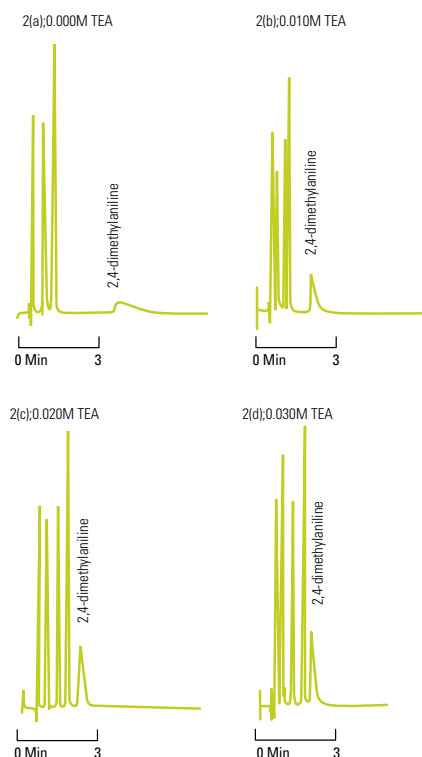
### Properties of triethylamine

- Alternate names TEA, Diethylethanamine
- Molecular formula  $C_6H_{15}N$
- Molecular weight 101.19g/mol
- Density 0.726g/mL

### Triethylamine (TEA)

Description	Quantity	Cat. No.	Quantity
Triethylamine, Sequencing Grade	100g	X TS-25108	1 Each

X in the ordering table indicates that hazardous shipping charges apply.



For more information, visit [thermofisher.com/LCreagents](https://thermofisher.com/LCreagents)

## Formic acid ampules

Well suited for HPLC and mass spectrometry applications

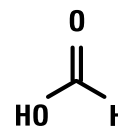
Formic acid is a component found in reverse-phase mobile phases to provide protons for LC-MS analysis. The presence of a low concentration of formic acid in the mobile phase is also known to improve the peak shapes of the resulting separation. Unlike trifluoroacetic acid (TFA), formic acid is not an ion-pairing reagent, and it does not suppress MS ionization of polypeptides when used as a mobile phase component.

- Prescored, nitrogen-flushed, amber glass to protect formic acid from light and moisture
- 99% purity for consistent LC baselines and no interference introduced into LC and mass spectrometry applications
- Convenient format simplifies preparation of gradient and isocratic mobile phases containing 0.1% (v/v) formic acid in water or acetonitrile
- Contents of a single vial in a final volume of 1L solvent yields a mobile phase of the most common formic acid concentration

### Formic acid ampules

Description	Quantity	Cat. No.	Quantity
Formic Acid 99+%	10 x 1mL ampules	TS-28905	1 Each

For complex peptide separations, the key to success can be to vary selectivity. Varying mobile phase composition on the same column can change selectivity enough to resolve peptides that would otherwise overlap. The TFA concentration is usually specified as 0.1% for reverse-phase HPLC of peptides. For reproducible separations from run-to-run or from lab-to-lab, it is essential to make concentrations the same.



**Formic Acid**  
MW 46.03



# Derivatization and visualization reagents for HPLC

## Trifluoroacetic acid (TFA)

Routinely used ion-pairing agent in reversed-phase peptide separations

- Purity: >99.5% TFA and exceptional clarity allows sensitive, non-destructive peptide detection at low UV wavelengths
- High-performance packaging: Packaged under nitrogen in amber glass with protective TFE-lined fluorocarbon caps to ensure TFA integrity
- Choice of formats for convenience: 1mL ampules can prepare 1L of 0.1% v/v TFA solution for the mobile phase in reversed-phase chromatography in moments

### Trifluoroacetic acid (TFA)

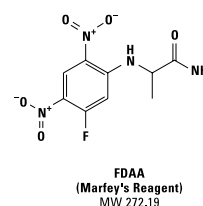
Description	Quantity	Cat. No.	Quantity
Trifluoroacetic Acid, Sequencing Grade	500mL	X TS-28901	1 Each
Trifluoroacetic Acid, Sequencing Grade	100g	X TS-28903	1 Each
Trifluoroacetic Acid, Sequencing Grade	10 × 1mL	X TS-28904	1 Pack
Trifluoroacetic Acid, Sequencing Grade	1g	X TS-28902	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

## FDAA, Marfey's reagent

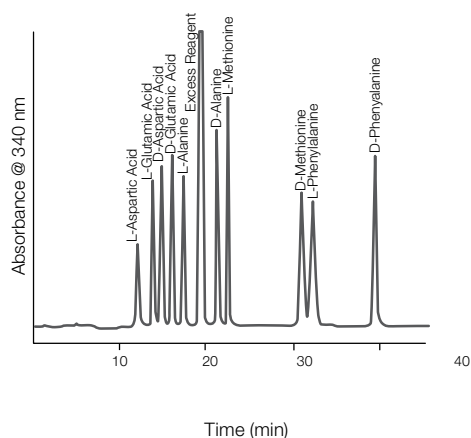
Makes separation and quantitation of optical isomers of amino acids by reversed-phase chromatography quick and easy

- Optical isomers of amino acids derivatization complete in just 90 minutes
- Derivatives have an absorption coefficient of  $\sim 3 \times 10^4$
- Derivatives can be detected by UV at 340nm with picomole sensitivity



### FDAA, marfey's reagent

Description	Quantity	Cat. No.	Quantity
FDAA, Marfey's Reagent	50mg	TS-48895	1 Each

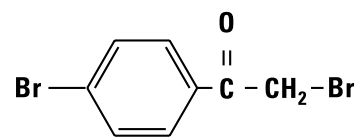




## p-Bromophenacylate reagent

Gives quantitative yields with few or no side reactions

- Premixing of phenacylbromide and crown ether is not necessary
- Derivatization is both rapid and quantitative, with yields of >95% in 15 to 20 minutes at 80°C
- Excess reactants do not interfere
- Large excess of alkylating reagent is not necessary
- Small amounts of water or alcohol do not interfere
- If isolation is desired, products are usually crystalline



**p-Bromophenacylate**  
MW 277.94

### p-bromophenacylate reagent

Description	Quantity	Cat. No.	Quantity
p-Bromophenacylate Reagent	10mL	TS-48891	1 Each

## TNBSA (Trinitrobenzene Sulfonic Acid)

An excellent choice for spectrophotometric detection

- Couples with primary amines, sulfhydryls and hydrazides in aqueous solution at pH 8, without undesirable side reactions
- Excellent for solution or solid phase analysis
- Suitable for qualitative and quantitative estimation of biomolecules; including amino acids, peptides or proteins
- Chromogenic,  $\lambda_{max} = 335\text{nm}$
- Colored derivatives are monitored at 345nm and have extinction coefficients in range of  $1-1.5 \times 10^4$

### TNBSA

Description	Quantity	Cat. No.	Quantity
TNBSA	100mL	X TS-28997	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

## Hydrolysis reagents

### Constant Boiling (6N) Hydrochloric Acid

Sequencing-grade reagent for total protein hydrolysis

- Hydrolyzes peptides in 6 hours at 150°C
- Specially purified to give ninhydrin-negative blank on hydrolysis
- Packaged in prescored ampules to eliminate contamination and ensure product integrity

#### Constant boiling (6N) hydrochloric acid

Description	Quantity	Cat. No.	Quantity
Hydrochloric Acid 6N	10 × 1mL	TS-24308	1 Pack

### Amino Acid Standard H

High-purity calibration standard for protein hydrolysates

- Uses L-form configuration to permit standardization of microbial and other assays
- Molar concentration verified by conventional amino acid analysis methods
- With the exception of cystine, each amino acid is supplied at a concentration of 2.5µmoles/mL in 0.1N HCl

#### The following amino acids are included in amino acid standard H:

L-Alanine, Ammonia [(NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>], L-Arginine, L-Aspartic Acid, L-Cystine, L-Glutamic Acid, Glycine, L-Histidine, L-Isoleucine, L-Leucine, L-Lysine•HCl, L-Methionine, L-Phenylalanine, L-Proline, L-Serine, L-Threonine, L-Tyrosine, L-Valine.

#### Amino acid standard H

Description	Quantity	Cat. No.	Quantity
Amino Acid Standard H	10 × 1mL	TS-20088	1 Pack

When kept frozen, an unopened vial has an indefinite storage life. Once the seal is broken, the reagent has a maximum storage life of six months. Store frozen between uses.

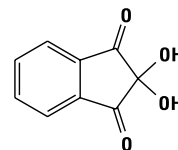
For more information, visit [thermofisher.com/LCreagents](https://www.thermofisher.com/LCreagents)

## Amino acid detection reagents

### Ninhydrin

The reagent of choice for detection of amino acids

- Used in amino acid chromatography
- Offers superb color response and low blank
- Indefinitely stable and requires no refrigeration



**Ninhydrin**  
MW 178.14

#### Ninhydrin

Description	Quantity	Cat. No.	Quantity
Ninhydrin	500g	TS-21003	1 Each

Indefinitely stable. No refrigeration required. Keep bottle tightly sealed. Avoid exposure to direct sunlight and ammonia.

## HPLC and spectrophotometric grade solvents

Ultrapure solvents are carefully packed for thorough protection

- Distilled in glass, filtered through 0.2µm TFE membranes and packed in solvent-rinsed, amber glass bottles
- TFE-lined screw caps seal bottles

#### Acetonitrile, HPLC grade, physical properties

- UV Cutoff: 190nm
- Optical Absorbance: <0.02 at 220nm
- Refractive Index at 25°C: 1.342

#### Water, HPLC grade, physical properties

- UV Cutoff: 190nm
- Optical Absorbance: <0.005 at 220nm
- Refractive Index at 25°C: 1.332

#### Dimethylformamide (DMF), sequencing grade, physical properties

- HCON(CH<sub>3</sub>)<sub>2</sub>
- Purity (GC): ≥99%
- MW: 73.09
- Density: 0.944
- B.P. 153°C
- Water: 0.1%

#### Dimethylsulfoxide (DMSO), sequencing grade, physical properties

- C<sub>2</sub>H<sub>6</sub>OS
- Purity (GC): >99.5%
- MW: 78.13
- Density: 1.101
- Water: ≤0.2%

#### Pyridine, physical properties

- C<sub>5</sub>H<sub>5</sub>N
- Purity (GC): ≥99%
- MW: 79.10
- Density: 0.978
- B.P. 115°C

#### HPLC and spectrophotometric grade solvents

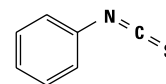
Description	Quantity	Cat. No.	Quantity
Acetonitrile	1L	X TS-51101	1 Each
Water	1L	TS-51140	1 Each
Dimethylformamide (DMF)	50mL	X TS-20673	1 Each
Dimethylsulfoxide (DMSO)	950mL	X TS-20688	1 Each
Pyridine	100g	X TS-25104	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

## High-purity pre-column derivatization reagents

### PITC (Phenylisothiocyanate)

High-purity reagent for pre-column quantitative derivatization of amino acids by reversed-phase HPLC



**PITC**  
**Edman's Reagent**  
MW 135.19

- Also known as Edman's Reagent
- Reacts readily with amino acids in 5 to 10 minutes at room temperature
- Resulting phenylthiocarbamyl derivatives can be separated and quantified in 30 minutes using reverse-phase HPLC to produce stable products with all amino acids including proline

#### **PITC (Phenylisothiocyanate)**

Description	Quantity	Cat. No.	Quantity
PITC (Edman's Reagent)	10 × 1mL	TS-26922	1 Pack

For more information, visit [thermofisher.com/LCreagents](https://www.thermofisher.com/LCreagents)

# Preparative HPLC columns

Scale up to more options.

Columns in every format, media and size

For Prep LC columns, one size does not fit all. Whether you need unique chemistries for difficult separations, XtendedLife columns for longer use, or budget-friendly solutions for routine separations, we deliver. Our full range of column hardware offers robust performance and our wide variety of chemistries makes it easy to scale-up from your current analytical method.

## Expect reproducible results with sample prep, columns and vials

Preparative scale liquid chromatography is used for purification and isolation of molecules, which are of value in the pharmaceutical, biopharmaceutical and associated chemical industries. The production of highly pure compounds in these industries is increasingly important in terms of the chemical activity, toxicity and usefulness for screening in highly defined and costly experimental processes.

These processes start on an analytical scale with only a few micrograms of material (e.g., for enzymes in biopharmaceutical applications) or a few milligrams (e.g., for structural or identification of synthesized or natural products). Further along the process, gram quantities are usually required for standard and reference compounds or compounds targeted for pharmacology and toxicology testing.

Find out more at [thermofisher.com/PrepLC](https://www.thermofisher.com/PrepLC)



## Phase properties

Preparative HPLC columns are available in 40 chemistries\* for maximum flexibility and options to scale up analytical methods with chemistry continuity for easy method transfer.

Phase name	Phase properties
<b>Premium</b>	
Hypersil GOLD	Hypersil GOLD HPLC columns provide excellent peak shape for all analyte types
Hypersil GOLD C8	Hypersil GOLD C8 columns provide similar selectivity to C18 columns, but with reduced retention
Hypersil GOLD aQ	Hypersil GOLD aQ polar endcapped C18 columns are stable in 100% aqueous mobile phase and provide enhanced retention and resolution of polar analytes
Hypersil GOLD C4	Hypersil GOLD C4 columns provide similar selectivity to C18 and C8 columns, but with reduced retention
Hypersil GOLD Phenyl	Hypersil GOLD Phenyl columns offer excellent retention and unique selectivity for aromatic analytes
Hypercarb	Hypercarb columns have unique properties for retention and resolution of polar analytes and resolution of isomers
Synchronis C18	Synchronis C18 columns have highly pure, high surface area silica that is double end-capped for robust and high-resolution separations
Synchronis HILIC	Synchronis HILIC columns provide enhanced retention of polar and hydrophilic analytes that are problematic using reversed phase columns
Accucore XL C18	Thermo Scientific Accucore C18 solid-core particles provide optimal retention of a broad range of nonpolar analytes across multiple applications
Accucore XL C8	Accucore C8 solid-core particles provide optimal retention of analytes with moderate hydrophobicity
DNAPac RP	DNAPac RP is designed for analysis of oligonucleotides and double-stranded (ds) DNA/RNA fragments under a broad range pH, temperature, and mobile phase compositions
DNAPac PA200	DNAPac PA200 is a strong anion exchange resin for high-resolution analysis and purification of synthetic oligonucleotides
MABPac	MABPac columns separate closely-related monoclonal antibody variants for characterization and quality control assessment and offer the highest resolution and exceptionally high efficiency
ProPac	ProPac columns are for high resolution separation of therapeutic proteins, monoclonal antibodies, and associated charge variants; high efficiency with reproducible separations, high recovery with low carry-over
<b>Hypersil PREP</b>	
Hypersil PREP BDS C18	Hypersil PREP C18 BDS offers C18 retention with base deactivation for reduced silanol activity in analytical and preparative scale
Hypersil PREP BDS C8	Hypersil PREP C8 BDS offers selectivity similar to C18 BDS, but with reduced retention in analytical and preparative scale
Hypersil PREP ODS	Hypersil PREP ODS is a general purpose C18 used in a broad range of applications
Hypersil PREP BDS Si	Hypersil PREP Si BDS is a base deactivated Si for normal phase chromatography of nonpolar and moderately polar organic compounds
Hypersil PREP Si	Hypersil PREP Si is for normal phase chromatography of nonpolar and moderately polar organic compounds
Hypersil PREP BDS Phenyl	Hypersil PREP Phenyl BDS is a base-deactivated column with unique selectivity for aromatic and slightly polar compounds
<b>Hypersil PREP HS</b>	
Hypersil PREP HS C18	Hypersil PREP HS C18 phases offers high loading capacity and fully scalable from analytical to prep, suitable for all USP-L1 applications
Hypersil PREP HS C8	Hypersil PREP HS C8 High loading capacity and fully scalable from analytical to pprep, suitable for all USP-L1 applications
Hypersil PREP HS Si	Hypersil PREP HS Si is a pure silica chemistry with high loading capacity that is fully scalable from analytical to prep, suitable for all USP-L3 applications
Hypersil PREP HS Phenyl	Hypersil PREP HS phenyl chemistry with high loading capacity and fully scalable from analytical to prep, suitable for all USP-L11 applications
<b>Hypersil Chiral</b>	
Hypersil Chiral JT	Hypersil Chiral JT columns are a good starting point for method development of chiral separations
Hypersil Chiral AT	Hypersil Chiral AT columns are the highest generality of all chiral phases designed for separations of neutral, acidic and basic racemates in normal phase mode
Hypersil Chiral OT	Hypersil Chiral OT columns are designed for separations of neutral, acidic and basic racemates in normal phase mode

\*Displayed are our most requested phases for preparative HPLC columns. If there is a Thermo Scientific stationary phase you are currently using and would like to obtain it in preparative scale or would like to discuss a specific phase not listed above, please contact your local sales representative to discuss your requirements, including custom orders.

## Column hardware

Options based on column inner diameter (i.d.) and column performance needs:

### Standard threaded and standard flange hardware

- Expertly packed and robustly designed to balance cost and lifetime for routine use
- Made of high quality stainless steel for standard applications up to 200 mm i.d.
- Standard threaded hardware for column i.d. < 40 mm and standard flange hardware for column i.d. ≥ 40 mm
- Can be modified on request to be compatible with supercritical fluid chromatography (SFC)

### XtendedLife hardware

- Extends column lifetime by incorporating an internal Dynamic Axial Compression (DAC) system, ensuring the media bed is continuously packed tightly
- Compatible with SFC and is available in dimensions up to 50 mm i.d.



Column hardware examples:  
 1: Standard threaded hardware  
 2: Standard flange hardware  
 3: XtendedLife hardware

## Phase overview and details

Our wide range of stationary phases\* routinely available in analytical and preparative scale and in a variety of particle sizes that can be packed into our hardware options for maximum flexibility.

Phase name	Pore Size (Å)	Surface Area (m <sup>2</sup> /g)	Carbon Load (%)	USP code	pH Range
<b>Premium</b>					
Hypersil GOLD	175	220	10	L1	2 to 9
Hypersil GOLD C8	175	220	8	L7	2 to 9
Hypersil GOLD aQ	175	220	12	L1	2 to 9
Hypersil GOLD C4	175	220	5	L26	2 to 8
Hypersil GOLD Phenyl	175	220	8	L11	2 to 8
Hypercarb	250	120	100	L109	0 to 14
Syncronis C18	100	320	16	L1	2 to 9
Syncronis HILIC	100	320	5	None	2 to 8
Accucore XL C18	80	90	7	L1	2 to 9
Accucore XL C8	80	90	4	L7	2 to 9
DNAPac RP	Proprietary wide pore	N/A	N/A	None	0 to 14
DNAPac PA200	Nonporous	N/A	N/A	None	4 to 10
MAbPac	Nonporous	N/A	N/A	None	Dependent on chemistry
ProPac	Nonporous	N/A	N/A	None	Dependent on chemistry
<b>Hypersil PREP</b>					
Hypersil PREP BDS C18	145	185	11	L1	2 to 8
Hypersil PREP BDS C8	145	185	7	L7	2 to 8
Hypersil PREP ODS	130	195	10	L1	2 to 8
Hypersil PREP BDS Si	145	185	0	L3	2 to 7
Hypersil PREP Si	130	195	0	L3	2 to 7
Hypersil PREP BDS Phenyl	145	185	5	L11	2 to 8
<b>Hypersil PREP HS</b>					
Hypersil PREP HS C18	100	350	15	L1	2 to 9
Hypersil PREP HS C8	100	350	7	L7	2 to 8
Hypersil PREP HS Si	100	350	0	L3	2 to 7
Hypersil PREP HS Phenyl	100	350	9	L11	2 to 8
<b>Hypersil Chiral</b>					
Hypersil Chiral JT	1000	30	N/A	L80	N/A
Hypersil Chiral AT	1000	30	N/A	L51	N/A
Hypersil Chiral OT	1000	30	N/A	L40	N/A

\*Displayed are our most requested phases for preparative HPLC columns. If you are using a specific Thermo Scientific stationary phase and would like to obtain it in preparative scale or would like to discuss a specific phase not listed above, please contact your local sales representative to discuss your requirements, including custom orders.



# Premium prep columns

Particle size (µm)	Format	i.d. (mm)	Length (mm)	Hypersil GOLD	Hypersil GOLD C8	Hypersil GOLD aQ	Hypersil GOLD C4	Hypersil GOLD Phenyl	Hypercarb	Synchronis C18	Synchronis HILIC		
4	Standard	10	150										
5	Standard	7.8	100										
			10	50	25005-059070A					35005-059070A			
				100	25005-109070A		25305-109070A			35005-109070A			
				150	25005-159070A		25305-159070A			35005-159070A	97105-159070A		
		20	250	25005-259070A	25205-259070A	25305-259070A			25905-259070A	35005-259070A	97105-259070A		
			50	25005-059270A						35005-059270A			
			100	25005-109270A		25305-109270A	25505-109270A			35005-109270A			
			150	25005-159270A		25305-159270A				35005-159270A	97105-159270A		
		22	250	25005-259270A	25205-259270A	25305-259270A	25505-259270A			35005-259270A	97105-259270A	97505-259270A	
			30	100			25305-109370A				35005-109370A		
				150	25005-159370A		25305-159370A				35005-159370A	97105-159370A	
				250	25005-259370A		25305-259370A						97505-259370A
		50	100			25305-109570A							
			150			25305-159570A							
			250			25305-259570A						97505-259570A	
		XtendedLife	10	250						25905-259070XL			
				25	50	25005-059270XL					35005-059270XL		
					100	25005-109270XL		25305-109270XL	25505-109270XL		35005-109270XL		
	150				25005-159270XL		25305-159270XL			35005-159270XL	97105-159270XL		
	30		250	25005-259270XL	25205-259270XL	25305-259270XL	25505-259270XL			35005-259270XL	97105-259270XL	97505-259270XL	
			100			25305-109370XL				35005-109370XL			
			150	25005-159370XL		25305-159370XL				35005-159370XL	97105-159370XL		
	50		250	25005-259370XL		25305-259370XL						97505-259370XL	
			100			25305-109570XL							
			150			25305-159570XL							
	Guard		8	10		25205-018823A	25305-018823A					97105-018823A	
				20		25205-028823A							
			20	10		25205-019023A	25305-019023A					97105-019023A	97505-019023A
				20		25205-029023A	25305-029023A					97105-029023A	97505-029023A
	22	50											
		Guard 1/16"	30	10			25305-019323A				97105-019323A	97505-019323A	
	20				25305-029323A						97505-029323A		
Guard 1/8"	30	10			25305-019323B					97105-019323B	97505-019323B		
	20			25305-029323B						97505-029323B			
7	Standard	30	100						35007-109370A				
	XtendedLife	30	100						35007-109370XL				
	Guard	8	10						35007-018823A				
			20	10					35007-019023A				
	Guard 1/16"	30	10						35007-029023A				
			20						35007-019323A				
	Guard 1/8"	30	10						35007-029323A				
			20						35007-019323B				
	Guard 1/8"	30	10						35007-019323B				
			20						35007-029323B				
8	Standard	22	250										
	10	Standard	9	250									
		12	Standard	10	250	25012-259070A							
				20	150	25012-159270A							
					250	25012-259270A							
					30	150	25012-159370A						
				50	250	25012-259370A							
					250	25012-259570A							
			XtendedLife	25	150	25012-159270XL							
					250	25012-259270XL							
30				150	25012-159370XL								
	250			25012-259370XL									
50	250	25012-259570XL											
	Guard	8	10	25012-018823A									
20			10	25012-019023A									
Guard 1/16"	30	10	25012-029023A										
		20	25012-019323A										
Guard 1/8"	30	10	25012-019323B										
		20	25012-029323B										
13.5	Standard	9	50										
		22	50										
			250										





# Premium prep columns

Format	i.d. (mm)	Length (mm)	Hypersil PREP C18 BDS	Hypersil PREP C8 BDS	Hypersil PREP ODS	Hypersil PREP Si BDS	Hypersil PREP Si	Hypersil PREP Phenyl BDS	
Standard	2	50	40003-052130	40103-052130	40203-052130	40303-052130			
		100	40003-102130	40103-102130	40203-102130	40303-102130			
		150	40003-152130	40103-152130	40203-152130	40303-152130			
		250	40003-252130	40103-252130	40203-252130	40303-252130			
	4.6	50	40003-054630	40103-054630	40203-054630	40303-054630			
		100	40003-104630	40103-104630	40203-104630	40303-104630			
		150	40003-154630	40103-154630	40203-154630	40303-154630			
		250	40003-254630	40103-254630	40203-254630	40303-254630			
Standard	2	50	40005-052130	40105-052130	40205-052130	40305-052130	40405-052130	40505-052130	
		100	40005-102130	40105-102130	40205-102130	40305-102130	40405-102130	40505-102130	
		150	40005-152130	40105-152130	40205-152130	40305-152130	40405-152130	40505-152130	
		250	40005-252130	40105-252130	40205-252130	40305-252130	40405-252130	40505-252130	
	4.6	50	40005-054630	40105-054630	40205-054630	40305-054630	40405-054630	40505-054630	
		100	40005-104630	40105-104630	40205-104630	40305-104630	40405-104630	40505-104630	
		150	40005-154630	40105-154630	40205-154630	40305-154630	40405-154630	40505-154630	
		250	40005-254630	40105-254630	40205-254630	40305-254630	40405-254630	40505-254630	
	10	50	40005-059070A	40105-059070A	40205-059070A	40305-059070A	40405-059070A	40505-059070A	
		100	40005-109070A	40105-109070A	40205-109070A	40305-109070A	40405-109070A	40505-109070A	
		150	40005-159070A	40105-159070A	40205-159070A	40305-159070A	40405-159070A	40505-159070A	
		250	40005-259070A	40105-259070A	40205-259070A	40305-259070A	40405-259070A	40505-259070A	
	20	50	40005-059270A	40105-059270A	40205-059270A	40305-059270A	40405-059270A	40505-059270A	
		100	40005-109270A	40105-109270A	40205-109270A	40305-109270A	40405-109270A	40505-109270A	
		150	40005-159270A	40105-159270A	40205-159270A	40305-159270A	40405-159270A	40505-159270A	
		250	40005-259270A	40105-259270A	40205-259270A	40305-259270A	40405-259270A	40505-259270A	
	30	150	40005-159370A	40105-159370A	40205-159370A	40305-159370A	40405-159370A	40505-159370A	
		250	40005-259370A	40105-259370A	40205-259370A	40305-259370A	40405-259370A	40505-259370A	
	50	150	40005-159570A	40105-159570A	40205-159570A	40305-159570A	40405-159570A	40505-159570A	
		250	40005-259570A	40105-259570A	40205-259570A	40305-259570A	40405-259570A	40505-259570A	
	XtendedLife	25	50	40005-059270XL	40105-059270XL	40205-059270XL	40305-059270XL	40405-059270XL	40505-059270XL
			100	40005-109270XL	40105-109270XL	40205-109270XL	40305-109270XL	40405-109270XL	40505-109270XL
			150	40005-159270XL	40105-159270XL	40205-159270XL	40305-159270XL	40405-159270XL	40505-159270XL
			250	40005-259270XL	40105-259270XL	40205-259270XL	40305-259270XL	40405-259270XL	40505-259270XL
		30	150	40005-159370XL	40105-159370XL	40205-159370XL	40305-159370XL	40405-159370XL	40505-159370XL
			250	40005-259370XL	40105-259370XL	40205-259370XL	40305-259370XL	40405-259370XL	40505-259370XL
		50	150	40005-159570XL	40105-159570XL	40205-159570XL	40305-159570XL	40405-159570XL	40505-159570XL
			250	40005-259570XL	40105-259570XL	40205-259570XL	40305-259570XL	40405-259570XL	40505-259570XL
Guard		8	10					40405-018823A	40505-018823A
			20					40405-019023A	40505-019023A
	20						40405-029023A	40505-029023A	
Guard 1/16"	30	10					40405-019323A	40505-019323A	
		20					40405-029323A	40505-029323A	
Guard 1/8"	30	10					40405-019323B	40505-019323B	
		20					40405-029323B	40505-029323B	
Standard	10	50	40010-059070A	40110-059070A	40210-059070A	40310-059070A			
		100	40010-109070A	40110-109070A	40210-109070A	40310-109070A			
		150	40010-159070A	40110-159070A	40210-159070A	40310-159070A			
		250	40010-259070A	40110-259070A	40210-259070A	40310-259070A			
	20	50	40010-059270A	40110-059270A	40210-059270A	40310-059270A			
		100	40010-109270A	40110-109270A	40210-109270A	40310-109270A			
		150	40010-159270A	40110-159270A	40210-159270A	40310-159270A			
		250	40010-259270A	40110-259270A	40210-259270A	40310-259270A			
	30	150	40010-159370A	40110-159370A	40210-159370A	40310-159370A			
		250	40010-259370A	40110-259370A	40210-259370A	40310-259370A			
	50	150	40010-159570A	40110-159570A	40210-159570A	40310-159570A			
		250	40010-259570A	40110-259570A	40210-259570A	40310-259570A			
	XtendedLife	25	50	40010-059270XL	40110-059270XL	40210-059270XL	40310-059270XL		
			100	40010-109270XL	40110-109270XL	40210-109270XL	40310-109270XL		
			150	40010-159270XL	40110-159270XL	40210-159270XL	40310-159270XL		
			250	40010-259270XL	40110-259270XL	40210-259270XL	40310-259270XL		
30		150	40010-159370XL	40110-159370XL	40210-159370XL	40310-159370XL			
		250	40010-259370XL	40110-259370XL	40210-259370XL	40310-259370XL			
50		150	40010-159570XL	40110-159570XL	40210-159570XL	40310-159570XL			
		250	40010-259570XL	40110-259570XL	40210-259570XL	40310-259570XL			
Guard		8	10	40010-018823A	40110-018823A	40210-018823A	40310-018823A		
			20	40010-019023A	40110-019023A	40210-019023A	40310-019023A		
	20		40010-029023A	40110-029023A	40210-029023A	40310-029023A			
Guard 1/16"	30	10	40010-019323A	40110-019323A	40210-019323A	40310-019323A			
		20	40010-029323A	40110-029323A	40210-029323A	40310-029323A			
Guard 1/8"	30	10	40010-019323B	40110-019323B	40210-019323B	40310-019323B			
		20	40010-029323B	40110-029323B	40210-029323B	40310-029323B			

## Premium prep columns

Particle size (µm)	Format	i.d. (mm)	Length (mm)	Hypersil PREP C18 HS	Hypersil PREP C8 HS	Hypersil PREP Si HS	Hypersil PREP Phenyl HS	Hypersil PREP Phenyl BDS		
3	Standard	2	50	41003-052130	41103-052130					
			100	41003-102130	41103-102130					
			150	41003-152130	41103-152130					
			250	41003-252130	41103-252130					
		4.6	50	41003-054630	41103-054630					
			100	41003-104630	41103-104630					
			150	41003-154630	41103-154630					
			250	41003-254630	41103-254630					
5	Standard	2	50	41005-052130	41105-052130	41405-052130	41505-052130	40505-052130		
			100	41005-102130	41105-102130	41405-102130	41505-102130	40505-102130		
			150	41005-152130	41105-152130	41405-152130	41505-152130	40505-152130		
			250	41005-252130	41105-252130	41405-252130	41505-252130	40505-252130		
		4.6	50	41005-054630	41105-054630	41405-054630	41505-054630	40505-054630		
			100	41005-104630	41105-104630	41405-104630	41505-104630	40505-104630		
			150	41005-154630	41105-154630	41405-154630	41505-154630	40505-154630		
			250	41005-254630	41105-254630	41405-254630	41505-254630	40505-254630		
		10	50	41005-059070A	41105-059070A	41405-059070A	41505-059070A	40505-059070A		
			100	41005-109070A	41105-109070A	41405-109070A	41505-109070A	40505-109070A		
			150	41005-159070A	41105-159070A	41405-159070A	41505-159070A	40505-159070A		
			250	41005-259070A	41105-259070A	41405-259070A	41505-259070A	40505-259070A		
		20	50	41005-059270A	41105-059270A	41405-059270A	41505-059270A	40505-059270A		
			100	41005-109270A	41105-109270A	41405-109270A	41505-109270A	40505-109270A		
			150	41005-159270A	41105-159270A	41405-159270A	41505-159270A	40505-159270A		
			250	41005-259270A	41105-259270A	41405-259270A	41505-259270A	40505-259270A		
		30	150	41005-159370A	41105-159370A	41405-159370A	41505-159370A	40505-159370A		
			250	41005-259370A	41105-259370A	41405-259370A	41505-259370A	40505-259370A		
		50	150	41005-159570A	41105-159570A	41405-159570A	41505-159570A	40505-159570A		
			250	41005-259570A	41105-259570A	41405-259570A	41505-259570A	40505-259570A		
		XtendedLife	25	50	41005-059270XL	41105-059270XL	41405-059270XL	41505-059270XL	40505-059270XL	
				100	41005-109270XL	41105-109270XL	41405-109270XL	41505-109270XL	40505-109270XL	
				150	41005-159270XL	41105-159270XL	41405-159270XL	41505-159270XL	40505-159270XL	
				250	41005-259270XL	41105-259270XL	41405-259270XL	41505-259270XL	40505-259270XL	
			30	150	41005-159370XL	41105-159370XL	41405-159370XL	41505-159370XL	40505-159370XL	
				250	41005-259370XL	41105-259370XL	41405-259370XL	41505-259370XL	40505-259370XL	
			50	150	41005-159570XL	41105-159570XL	41405-159570XL	41505-159570XL	40505-159570XL	
				250	41005-259570XL	41105-259570XL	41405-259570XL	41505-259570XL	40505-259570XL	
		Guard	8	10			41405-018823A	41505-018823A	40505-018823A	
				20			41405-019023A	41505-019023A	40505-019023A	
				20			41405-029023A	41505-029023A	40505-029023A	
		Guard 1/16"	30	10			41405-019323A	41505-019323A	40505-019323A	
				20			41405-029323A	41505-029323A	40505-029323A	
		Guard 1/8"	30	10			41405-019323B	41505-019323B	40505-019323B	
				20			41405-029323B	41505-029323B	40505-029323B	
		10	Standard	10	50	41010-059070A	41110-059070A			
					100	41010-109070A	41110-109070A			
					150	41010-159070A	41110-159070A			
					250	41010-259070A	41110-259070A			
				20	50	41010-059270A	41110-059270A			
100	41010-109270A				41110-109270A					
150	41010-159270A				41110-159270A					
250	41010-259270A				41110-259270A					
30	150			41010-159370A	41110-159370A					
	250			41010-259370A	41110-259370A					
50	150			41010-159570A	41110-159570A					
	250			41010-259570A	41110-259570A					
XtendedLife	25			50	41010-059270XL	41110-059270XL				
				100	41010-109270XL	41110-109270XL				
				150	41010-159270XL	41110-159270XL				
				250	41010-259270XL	41110-259270XL				
	30			150	41010-159370XL	41110-159370XL				
				250	41010-259370XL	41110-259370XL				
	50			150	41010-159570XL	41110-159570XL				
				250	41010-259570XL	41110-259570XL				
Guard	8			10	41010-018823A	41110-018823A				
				20	41010-019023A	41110-019023A				
				20	41010-029023A	41110-029023A				
Guard 1/16"	30			10	41010-019323A	41110-019323A				
				20	41010-029323A	41110-029323A				
Guard 1/8"	30			10	41010-019323B	41110-019323B				
				20	41010-029323B	41110-029323B				

## Chiral columns

Particle size (µm)	Format	i.d. (mm)	Length (mm)	Hypersil Chiral JT	Hypersil Chiral AT	Hypersil Chiral OT	Kit of Three Columns (one in each phase)
3	Standard	4.6	50		42103-054630	42003-054630	
			100	42203-104630	42103-104630	42003-104630	Chiral KIT 3UM 100
			150	42203-154630	42103-154630	42003-154630	Chiral KIT 3UM 150
			250	42203-254630	42103-254630	42003-254630	Chiral KIT 3UM 250
5	Standard	4.6	100	42205-104630	42105-104630	42005-104630	Chiral KIT 5UM 100
			150	42205-154630	42105-154630	42005-154630	Chiral KIT 5UM 150
			250	42205-254630	42105-254630	42005-254630	Chiral KIT 5UM 250
		10	250	42205-259070A	42105-259070A	42005-259070A	
		20	250		42105-259270A	42005-259270A	
10	Standard	4.6	100	42210-104630	42110-104630	42010-104630	Chiral KIT 10UM 100
			150	42210-154630	42110-154630	42010-154630	Chiral KIT 10UM 150
			250	42210-254630	42110-254630	42010-254630	Chiral KIT 10UM 250
		10	250	42210-259070A	42110-259070A	42010-259070A	
		20	250		42110-259270A	42010-259270A	

## Guard holders

Format	i.d. (mm)	Length (mm)	Guard Holder	Guard Holder 1/16"	Guard Holder 1/8"
Stand-alone	10	8	885-010		
	20	10	887-020		
		20	889-020		
	30	10		887-030	887-031
		20		891-030	891-031

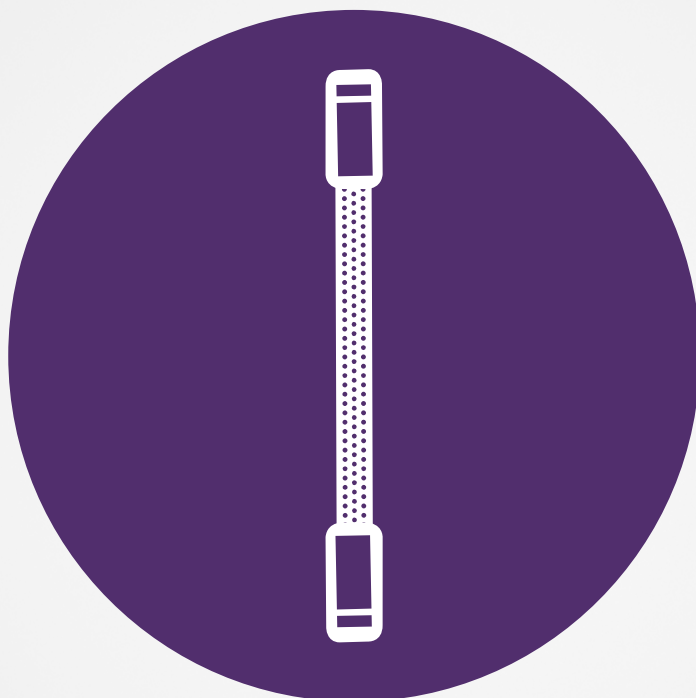


### Preparative LC Method Transfer Tool available

Use our free online tool to determine the best starting conditions for scaling methods between analytical to preparative HPLC columns. The tool calculates the new injection volume, flow rate, gradient table and expected eluent usage so you can get your new method up and running more quickly.

Get started at [thermofisher.com/PrepLCTool](http://thermofisher.com/PrepLCTool)

Find out more at [thermofisher.com/PrepLC](http://thermofisher.com/PrepLC)

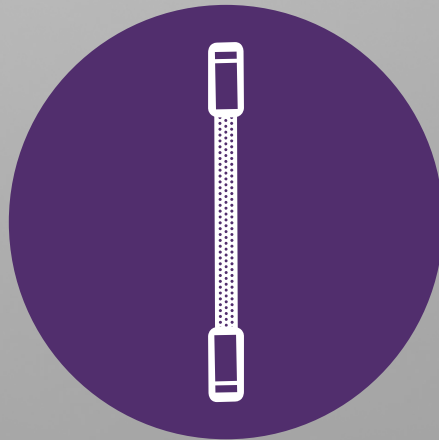
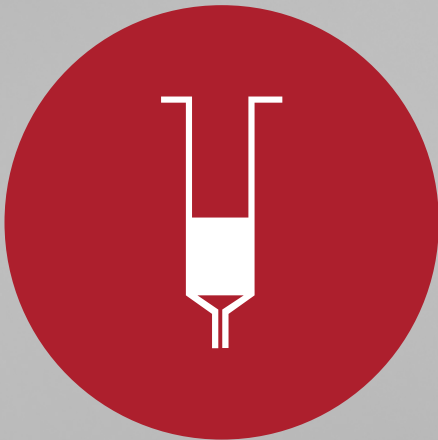


Expect reproducible results with sample prep, columns and vials



Don't see what you need? We would be happy to discuss your specific requirements. Please contact your local sales representative for custom orders.

Learn more at [thermofisher.com/chromatographyconsumables](https://www.thermofisher.com/chromatographyconsumables)



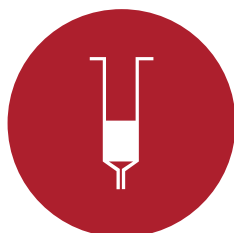
Chromatography consumables

## Connected chromatography solutions

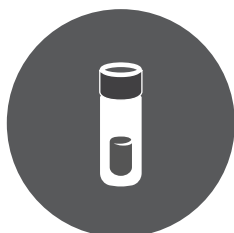
Chromatography consumables catalog

# Comprehensive products to support your chromatography workflows

## Sample preparation solutions



## Sample handling solutions



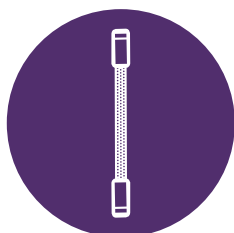
## Low-flow LC columns and accessories



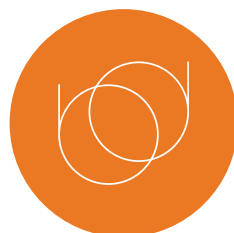
## BioLC columns and accessories



## LC columns and accessories



## GC columns and accessories

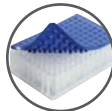


Thermo Scientific™ products:

- SMART Digest™ kits
- SOLA™ SPE products
- HyperSep™ SPE products
- TurboFlow™ and online sample preparation products
- QuEChERS products
- Automated micro solid-phase extraction (μSPE) products
- Syringes and syringe filters



- SureSTART™ AVCS™ closures and SureStop vials
- SureSTART™ Gold grade purity glass vials and vial kits
- SureSTART™ low residual microsampling vials and vial kits
- MS certified vials
- Polyspring vial inserts
- Electronic crimping and decrimping tools
- WebSeal™ well-plates and sealing mats for chromatography



- EASY-Spray™ HPLC columns for top-down and bottom-up proteomics
- Double nanoViper PepMap™ Neo HPLC columns for top-down and bottom-up proteomics
- μPAC™ HPLC columns for bottom-up proteomics



- MAbPac™ size exclusion chromatography
- MAbPac™ and ProPac™ charged variant profiling
- MAbPac™ intact and subunit analysis
- HILIC and mixed-mode glycan analysis
- DNAPac™ oligonucleotide and gene therapy analysis
- Vanquish™ UHPLC peptide analysis



- Accucore™ U/HPLC columns
- Acclaim™ U/HPLC columns
- Hypersil GOLD™ U/HPLC columns
- Hypercarb™ HPLC columns
- Application specific HPLC columns
- Hypersil™ BDS and Hypersil™ classical HPLC columns
- LC accessories
- Preparative HPLC columns



- TracePLOT™ GC columns
- TraceGOLD™ packed GC columns
- GuardGOLD™ capillary GC columns
- LinerGOLD™ liners
- Super Clean™ gas cartridge filters
- GC consumables
- Gas management
- GC equipment
- GC reagents



# Our portfolio

## Sample preparation solutions

Save time, improve reproducibility, and extend the lifetime of your High/Ultra High Performance Liquid Chromatography (HPLC/UHPLC) and gas chromatography (GC) columns with our comprehensive range of sample preparation products. Achieve high sensitivity, selectivity, and recovery with advanced solid-phase extraction (SPE) consumables.



## Sample handling solutions

We provide a broad selection of sample handling and containment solutions from all your chromatography requirements. Our vials, closures and well plates, come with the lowest levels of extractables and leachables, are made from glass that has low compound adsorption, and the highest level of standards and certification available in the marketplace. Whether you have routine and robust samples, or you need to ensure the highest level of confidence and compliance, our market leading portfolio of storage and autosampler vials and closure, well plates and sample handling accessories has everything you'll need.



## Low-flow LC columns and accessories

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.



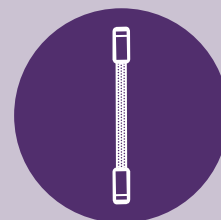
## BioLC columns and accessories

Achieve ultrahigh resolution and high efficiency separations of proteins, peptides, monoclonal antibodies, biosimilars, carbohydrates, oligonucleotides and more. Our unique column chemistries for biological samples have a long-standing reputation for providing excellent reproducibility and durability under a broad range of pH, temperature, and mobile phase compositions.



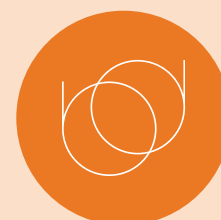
## LC columns and accessories

As a leader in LC column technology including silica, polymer and porous graphitic carbon manufacturing, bonded phase production and column packing for 40 years, you can rely on the quality of Thermo Scientific high performance liquid chromatography (HPLC) products: a comprehensive range of innovative columns, accessories and equipment for fast and reproducible analytical and prep HPLC and ultra-high performance liquid chromatography (UHPLC) analysis.



## GC columns and accessories

We offer a broad portfolio of GC columns and accessories designed to give optimal system performance for today's challenging analyses. Our range of GC accessories include all the tools needed by today's gas chromatographers.





# Product selection tools and additional resources

## Sample handling selection guide

### ? Need a quick answer?

Why not use our online product selector guide that includes our entire SureSTART Collection of vials, caps, well plates and mats.



SureSTART™ Selection Guide

Selecting your vial and well plate has never been easier.

**About this guide**

Have you ever struggled with finding the right sample handling solution for your application? You will struggle no longer! This simple guide will find the perfect solution product for you in just a few clicks.

[Get started](#)

- Application specific vials**  
Ensure what goes into the lab comes out... and that the vial you choose is fit for purpose for your application set up. This guide will take you right to your vial.
- Plates for high-throughput**  
If you use a high-throughput lab, you may be interested in finding a plate rather than a vial to speed up your throughput. As plate compatibility is dependent on your instrument this guide will find the plate that works with your instrument type.
- Low cost vials at your fingertips**  
Find the correct vial for your application - and budget. If cost is a key purchasing criteria for you then we've got you covered as this guide takes all your lab requirements into consideration.

## Sample handling cross reference tool

### ? Already purchasing an existing product from us or someone else?

Let our cross-reference tool find the equivalent SureSTART product/catalog number for you.



SureSTART Cross Reference Tool

Designed for cross-referencing chromatography vials, caps and inserts, finding an equivalent product is easy. Using this cross-reference tool, there are 2 easy options for you to find an equivalent Thermo Scientific SureSTART™ product. All you need to know is your current catalog number part number.

**Option 1: Input SKUs Directly**

Either type or copy/paste a list of SKUs into the text field below.

**Option 2: Upload CSV**

File to upload:  [Choose file](#) [Don't have a data file? Download a sample .csv file](#)

[Search](#)

# Product selection tools and additional resources

## Septa selection tool



### Choosing the right septa can be complex!

There are a number of factors that should be considered including: needle type, vial type, solvents and temperature that the septa will be exposed to. Let us help you find the right septa with this easy-to-use tool.



The screenshot shows the 'Septa Selection Tool' webpage. The header features the title 'Septa Selection Tool' and a subtitle 'An easy-to-use tool that ensures you find the right septa for your experimental requirements.' Below this is a white box titled 'About this tool' with a 'Get Started' button. The main content area is titled 'Why use the Septa Selection Guide?' and contains three columns of text, each with a red circular icon: 'Needle / autosampler issues', 'Septa compatibility with solvents', and 'New experimental parameters'. The background is red with a pattern of colorful septa.

## LC columns selection guide



### Find your columns with ease!

Finding the correct column can be a challenge, so we have made it easy for you. This guide will take you directly to the right product for you, so that you can start your method today.



The screenshot shows the 'LC Column Selection Guide' webpage. The header features the title 'LC Column Selection Guide' and a subtitle 'An easy-to-use tool that ensures you find the right LC column for your experimental requirements.' Below this is a white box titled 'Find your column with ease!' with a 'Get started' button. The main content area is titled 'Find your column with ease!' and contains three columns of text, each with a red circular icon: 'Need an equivalent column?', 'Setting up a USP method?', and 'Brand new method?'. The background is grey with a molecular structure graphic on the right.

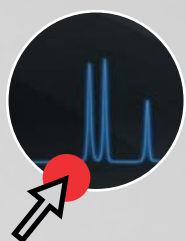
# More information



## Chromatography columns and consumables

For more information on our range of chromatography columns and consumables, including the latest applications, educational resources, selection guides and product literature, please visit

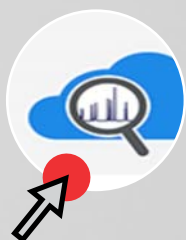
[thermofisher.com/chromatographyconsumables](https://thermofisher.com/chromatographyconsumables)



## Instrumentation and key applications

For more information on our instrumentation and key applications, please visit

[thermofisher.com/chromatography](https://thermofisher.com/chromatography)



## AppsLab

Gain access to our applications expertise on cloud-based Thermo Scientific™ AppsLab library of analytical applications for a comprehensive fully searchable method repository

[appslab.thermofisher.com](https://appslab.thermofisher.com)



## Webinars

Analytical and life science webinars live and on-demand



## NIBRT collaboration information

A collaboration built for Biopharma between the National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific

[thermofisher.com/nibr](https://thermofisher.com/nibr)



# Connected chromatography solutions

GC columns and accessories

# GC columns and accessories

Thermo Scientific GC columns and accessories are designed to give optimum system performance for today's challenging analyses.

Thermo Scientific™ TraceGOLD™, Thermo Scientific™ TRACE™ and Thermo Scientific™ TracePLOT™ columns provide excellent quality and performance. Our range of GC accessories include all the tools needed by today's gas chromatographers.



## LinerGOLD GC liners

The GOLD standard in GC liner performance, providing enhanced inertness, leading to increased accuracy and precision in analysis.



## TraceGOLD GC columns

The premium standard in GC column performance, delivering low bleed, excellent reproducibility and high levels of inertness.



## GC derivatization reagents

Making the undetectable detectable. Thermo Scientific GC Derivatization reagents provide high levels of purity and reproducibility in analysis.



## Reacti-Therm sample derivatization system

Heating, stirring and evaporation in a single system, offering a complete solution for derivatization and other small-scale reactions.

## Section contents

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# GC columns and accessories

## Product selection guide

Selection of the correct GC columns and accessories is critical to ensure optimum system performance. The selection guide below is designed to simplify this process



Thermo Scientific GC consumables are available for both Thermo Scientific and Agilent instruments.




## Vials and closures

Nature of sample	Vial Type Recommended
Routine samples	Clear glass (with or without patch) as SureStop 9mm screw thread or 11mm crimp vial
Light sensitive samples	Amber glass (with or without patch) as SureStop 9mm screw thread or 11mm crimp vial
Low volume samples	Micro-Inserts or Microsampling and High Recovery vials with fixed inserts or reduced internal volume
Trace levels	Silanized glass and/or Certified Kits
Ultra Trace MS analysis	MSCERT kits: The first low particle, low background chromatography vials, pre-cleaned to provide unmatched consistency; tested and certified for up to 15 critical physical characteristics affecting vial performance for mass spectrometry

## GC septa

Material	Max Operating Temperature	Key Features
BTO	400 °C (330 °C for 17 mm size)	Low bleed
TR-Green	350 °C	Long lifetime
Marathon	350 °C	High mechanical durability
TR-Blue	200–250 °C	Easy to penetrate for routine applications

## GC liners






Injection Method	Injection Requirements	Liner Requirements
 Split	Enables rapid vaporization and effective mixing of sample	<ul style="list-style-type: none"> <li>Typically open-ended</li> <li>Large surface area &amp; volume</li> <li>Design to aid mixing</li> <li>Low activity</li> </ul>
 Splitless	Sample focused onto column – minimizes sample contact with reactive metal components	<ul style="list-style-type: none"> <li>Typically tapered</li> <li>Small volume to aid transfer</li> <li>Low activity</li> </ul>
 PTV	Rapid heating and cooling, fast transfer to column-used for active compounds such as pesticides and large volume injections	<ul style="list-style-type: none"> <li>Small to aid sample transfer</li> <li>Good thermal properties for rapid heating &amp; cooling</li> <li>Siltek coating provides highly inert surface</li> </ul>

## GC columns

Column Parameter	Parameters Affecting Resolution			Performance Changes
	Efficiency	Retention	Selectivity	
Column Length (m)	✓			Doubling column length increases resolution by ~ 40%
Internal Diameter (mm)	✓	✓		The smaller the column ID, the greater the efficiency and better the resolution
Film Thickness (µm)		✓		The thicker the film, the greater the retention, e.g. ideal for highly volatile compounds. The thinner the film, the sharper the peaks and lower the bleed
Stationary Phase Chemistry			✓	Altering the stationary phase can affect elution order and help separate closely, or co-eluting peaks

## GC syringes

### Syringe selection by needle tip style

Needle Tip Style	Features / Applications
Cone (Tapered tip) 	Most versatile needle for autosampler use and resist coring of vial and inlet septa
Bevel (Sharp tip) 	Typically used for manual injections. The tip shape helps reduce septa coring
Side Hole (Dome tip with a side hole for sample exit) 	Usually used for headspace and large volume injections
Blunt End or 90° (flat top) 	Used for injectors that do not contain an inlet septa such as Merlin MicroSeal™
Dual Gauge 	Narrow gauge part suitable for megabore on-column injection. Wider part suitable for autosampler use

### Syringe selection by needle gauge size

- Gauge is a measure of the “thickness” of the needle
- The higher the gauge number, the thinner the needle e.g. a 23 gauge is thicker than a 26 gauge
- Suffix “s” e.g. 23s refers to a needle with a narrower internal diameter
- For on-column injection ensure that the column ID is greater than the needle gauge

## GC ferrules

Material	Uses	Advantages	Limitations
100% Graphite	FID, NPD, high temperature	<ul style="list-style-type: none"> <li>Easy-to-use stable seal</li> <li>Higher temperature limit</li> <li>Can be easily removed</li> <li>Can be re-used</li> </ul>	<ul style="list-style-type: none"> <li>Not for MS or oxygen-sensitive detectors</li> <li>Soft, easily deformed or destroyed</li> <li>Possible system contamination</li> </ul>
85% Vespel / 15% Graphite	MS and oxygen-sensitive detectors	<ul style="list-style-type: none"> <li>Long lifetime</li> <li>High temperature limit</li> <li>MS compatible</li> </ul>	<ul style="list-style-type: none"> <li>Cannot be re-used</li> <li>Must be re-tightened after initial temperature cycles</li> </ul>
Thermo Scientific™ SilTite™	MS and oxygen-sensitive detectors	<ul style="list-style-type: none"> <li>Long lifetime</li> <li>High temperature limit</li> <li>MS compatible</li> </ul>	<ul style="list-style-type: none"> <li>Cannot be re-used</li> </ul>



# Gas management

## Thermo Scientific™ Click-On™ inline filters

Easy-to-use format eliminates contamination

- Pure gas output 99.9999% or 6.0 grade
- No carrier gas line contamination during filter change
- Easy and fast replacement without the need for tools
- TUEV approved
- Maximum pressure 11 bar (160 psi)
- Maximum flow 25L/min



Filters	For Gas	Indicator Change	Filter Capacity (Click-On Inline)	Filter Capacity (Super Clean)
Moisture	Inert carrier, He, H <sub>2</sub> , N <sub>2</sub> , AR, Air		21g H <sub>2</sub> O	7.2g H <sub>2</sub> O
Oxygen	Inert carrier, He, H <sub>2</sub> , N <sub>2</sub> , AR		3L O <sub>2</sub>	1L O <sub>2</sub>
Hydrocarbon	Inert carrier, He, H <sub>2</sub> , N <sub>2</sub> , AR, Air		36g (as n-butane)	24g (as n-butane)
Combi – Moisture, Oxygen	Inert carrier, He, H <sub>2</sub> , N <sub>2</sub> , AR		10g H <sub>2</sub> O, 1.5L O <sub>2</sub>	–
Combi – Moisture, Hydrocarbons	Inert carrier, He, H <sub>2</sub> , N <sub>2</sub> , AR, Air		10g H <sub>2</sub> O, 18g HCs (as n-butane)	3.5g H <sub>2</sub> O, 12g HCs (as n-butane)
Triple – Moisture, Oxygen, Hydrocarbons	Inert carrier, He, H <sub>2</sub> , N <sub>2</sub> , AR		6g H <sub>2</sub> O, 1L O <sub>2</sub> , 12g HCs (as n-butane)	1.8g H <sub>2</sub> O, 500mL O <sub>2</sub> , 7g HCs (as n-butane)
Triple– Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	He		6g H <sub>2</sub> O, 1L O <sub>2</sub> , 12g HCs (as n-butane)	–
Indicating Triple – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	He	Moisture: Yellow to Clear Oxygen: Green to Gray	0.1g H <sub>2</sub> O, 100mL O <sub>2</sub> , 0.07g HCs (as n-butane)	–

### Click-on inline filters

Type	Cat No.	Quantity
Moisture Filter	60180-801	1 Each
Oxygen Filter	60180-802	1 Each
Hydrocarbon Filter	60180-803	1 Each
Combi – Moisture, Oxygen	60180-804	1 Each
Combi – Moisture, Hydrocarbons	60180-843	1 Each
Triple – Moisture, Oxygen, Hydrocarbons	60180-805	1 Each
Triple – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	60180-806	1 Each
Indicating Triple – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	60180-808	1 Each

### Connectors and accessories

Description	Cat No.	Quantity
Brass End Fitting, 0.125in.	60180-809	2 Pack
Steel End Fitting, 0.125in.	60180-810	2 Pack
Brass End Fitting, 0.25in.	60180-811	2 Pack
Steel End Fitting, 0.25in.	60180-812	2 Pack
Double Ended Connector to connect Filter to Indicator	60180-813	1 Each
Replacement O-Rings	60180-833	1 Each
Wall Mounting Clamp	60180-834	4 Pack

## Super clean cartridge filters

Replace easily without tools

- 99.9999% pure gas (or 6.0 grade) output
- No carrier gas line contamination during cartridge change
- Cost effective
- TUEV approved
- Max. pressure 11 bar (160 psi)
- Max. flow 7L/min



### Super clean cartridge filters

Type	Base Included	Cat. No.	Quantity
Indicating Moisture Cartridge Filter	No	60180-819	1 Each
Indicating Oxygen Cartridge Filter	No	60180-820	1 Each
Hydrocarbon Cartridge Filter	No	60180-821	1 Each
Indicating Combi Filter – Moisture, Hydrocarbons	No	60180-826	1 Each
Indicating Triple Filter – Moisture, Oxygen, Hydrocarbons	No	60180-824	1 Each
Indicating Triple Filter – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC-MS	No	60180-825	1 Each
Triple Filter – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC-MS	Yes	60180-830	1 Each
Indicating Triple Filter – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC-MS	Yes	60180-829	1 Each
3 Cartridge Pack – contains 1 x Triple Filter and 2 x Combi Filter (Moisture, Hydrocarbons)	No	60180-822	1 Each
4 Cartridge Pack – contains 1 x Moisture Filter, 1 x O <sub>2</sub> Filter and 2 x Hydrocarbon Filter	Yes	60180-827	1 Each
3 Cartridge Pack – contains 1 x Triple Filter and 2 x Combi Filter (Moisture, Hydrocarbons)	Yes	60180-828	1 Each
High Flow Pack of 2 x Hydrocarbon Filters for LC-MS – no Indicator	No	60180-839	1 Each
High Flow Pack of 2 x Moisture Filters for LC-MS – with Indicator	No	60180-841	1 Each

## Super clean cartridge filter baseplates

One-time installation procedure

- Can be configured to the individual user requirements
- Needle valves ensure gas line is not contaminated during cartridge change

*Filters are not included*



Type	For Use With	For Gas
Single Base	Triple Filter	Carrier Gas Only
Dual Base	2 x Combi Filter	Air and Fuel Gas
Triple Base	Triple and 2 x Combi Filter	Carrier, Make-Up, and Fuel Gas
Four-position Base	Moisture, Oxygen, 2 x Hydrocarbon	High Capacity Carrier, Fuel, Make Up
Two-position, High-flow Base	N <sub>2</sub> in LC/MS, H <sub>2</sub> O in H <sub>2</sub> /air generators	Carrier, Make Up and Fuel

### Super clean cartridge filter baseplates

Type	Cat. No.	Quantity
Single Base	60180-814	1 Each
Dual Base	60180-815	1 Each
Triple Base	60180-817	1 Each
Four-position Base	60180-818	1 Each
O-rings for Base Plates	60180-837	20 Pack
Flush Cap	60180-838	2 Pack

## eVol XR dispensing system

Allows precise and accurate, operator-independent dispensing for better deployment of laboratory staff

- Can be calibrated easily by user to ensure validity of results
- Intuitive interface with touch wheel and full-color screen
- Complies to GLP and GMP protocols
- Improves confidence in reported results
- Unifies two precision devices, a digitally controlled electronic drive and an Thermo Scientific™ eVol™ XCHANGE™ analytical syringe
- Integrated XCHANGE coupling allows syringes to be quickly and easily changed
- XCHANGE syringes offer exceptional versatility and functionality



### eVol XR dispensing system

Description	Cat. No.	Quantity
Sample Dispensing System	66002-020	1 Each
eVol XCHANGE Syringe 5µL	66002-021	1 Each
eVol XCHANGE Syringe 50µL	66002-022	1 Each
eVol XCHANGE Syringe 100µL	66002-038	1 Each
eVol XCHANGE Syringe 500µL	66002-023	1 Each
eVol XCHANGE Syringe 1000µL	66002-039	1 Each
Sample Dispensing System Kit*	66002-024	1 Each
eVol Stand	66002-025	1 Each
Charger for eVol System	66002-026	1 Each
Charging Stand for eVol System	66002-027	1 Each
Replacement Battery for eVol System	66002-028	1 Each
Replacement Plunger for 5µL eVol Syringe	66002-029	1 Each
Replacement Plunger for 500µL eVol Syringe	66002-031	1 Each
Replacement Plunger for 1000µL eVol Syringe	66002-041	1 Each

\* Sample Dispensing Kit contains 1 eVol XR unit, 1x5µL, 1x50µL and 1x500µL syringe.

### Applications:

- Routine dispensing of volatile solvents, hazardous, corrosive or viscous chemicals



# Syringes for GC instruments

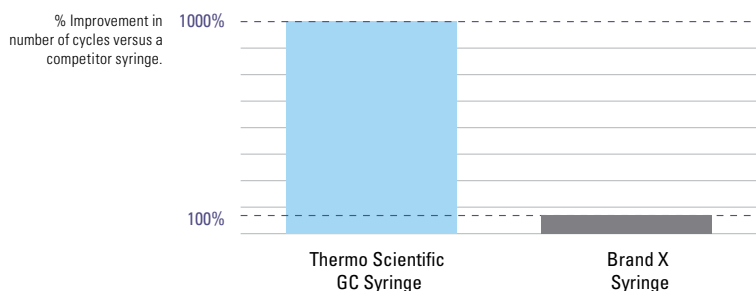
## Providing durability, clarity and accuracy for your sample

Thermo Scientific syringes for GC instruments are designed to provide enhanced durability, clarity and accuracy in sample introduction. This gives confidence in analytical results, time-after-time.

### Durability in your GC syringe

The enhanced design of the syringes delivers:

- Improved solvent resistance
- Greater temperature range
- Increased operational smoothness
- Longer lifetime and improved cycle life



### Clarity in your GC syringe

Syringes are provided with a clear, easy-to-read black scale, which aids in consistent delivery of samples for manual syringes and easy identification of installed autosampler syringes.

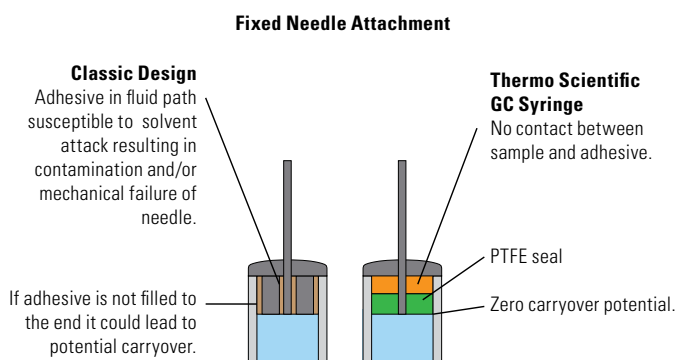


### Accuracy in your GC syringe

The enhanced design of the syringe has eliminated areas where the sample can become trapped and potentially cause carryover:

- Closer fit between the plunger tip and PTFE insert at the zero position
- Tighter fit between PTFE insert and glass barrel
- Improved fixed needle attachment

In addition, the reduction in adhesive from the fluid path enhances durability and reduces the risk of sample interaction with the adhesive.



## GC syringes for Thermo Scientific TriPlus RSH Autosampler

### Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat. No.	Quantity	Repair Kit Cat. No.	Quantity
0.5	57	23	Cone	Split	365A0241*	1 Each	365RN617	1 Each
1	57	23	Cone	Split	365B0251*	1 Each	365RN656	1 Each

### Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat. No.	Quantity
5	85	23s	Cone	Merlin Valve SSL Injector: Splitless	365C0221	1 Each
	57	23s	Cone	SSL, PTV and Merlin Adapter	365C0231*	1 Each
	85	26s	Cone	Splitless and OC	365C0241	1 Each
	57	26s	Cone	SSL and PTV	365C0251*	1 Each
10	85	23s	Cone	Merlin Valve SSL Injector: Splitless	365D0261	1 Each
	57	23s	Cone	SSL, PTV and Merlin Adapter	365D0271*	1 Each
	85	26s	Cone	Splitless and OC	365D0281	1 Each
	57	26s	Cone	SSL and PTV	365D0291*	1 Each

### Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat. No.	Quantity
10	85	23s	Cone	Merlin Valve SSL Injector: Splitless	365D0301	1 Each
	57	23s	Cone	SSL, PTV and Merlin Adapter, especially suitable for volatile solvents or corrosive samples	365D0311*	1 Each
	85	26s	Cone	Splitless and OC	365D0321	1 Each
	57	26s	Cone	SSL, PTV and Merlin Adapter, especially suitable for volatile solvents or corrosive samples	365D0331*	1 Each
25	57	23s	Cone	SSL, PTV and Merlin Adapter	365F2441*	1 Each
	85	26s	Cone	Splitless and OC	365F2451	1 Each
	57	26s	Cone	SSL and PTV	365F2461*	1 Each
50	57	23s	Cone	Large Volume Injection, SSL	365G2311*	1 Each
	85	26s	Cone	LV OC	365G2321	1 Each
100	57	23s	Cone	Large Volume Injection, SSL	365H2141*	1 Each
	85	26s	Cone	LV OC	365H2151	1 Each
	57	26s	Cone	Large Volume Injection, SSL w/o Merlin Adapter	365H2161*	1 Each
	85	23	Side Hole	Variable depth LV PTV (w & w/o Merlin)	365H2171	1 Each
250	57	23	Side Hole	Large Volume Injection, PTV	365H2181*	1 Each
	85	26	Cone	LV OC	365I2321	1 Each
	57	26	Cone	LV Splitless	365I2331	1 Each
500	85	23	Side Hole	Variable depth LV PTV (w & w/o Merlin)	365I2341	1 Each
	57	23	Side Hole	LV PTV (with or without Merlin valve)	365I2351	1 Each
	85	26	Cone	LV OC	365J2411	1 Each
	57	26	Cone	Sample Preparation, i.e. dilution, derivatization	365J2421	1 Each
1000	57	23	Side Hole	LV PTV (with or without Merlin valve)	365J2441	1 Each
	65	23	Side Hole	Headspace, up to 115 deg.	365Q2121	1 Each
	57	22	LC	Sample Preparation, i.e. dilution, derivatization	365K2811	1 Each
2500	65	23	Side Hole	Headspace, up to 115 deg.	365Q2131	1 Each
	65	23	Side Hole	Headspace, up to 150 deg.	365L2321	1 Each
5000	65	22	Side Hole	Headspace up to 115 deg.	365Q2141	1 Each
10000	57	19	LC	Sample Preparation, i.e. dilution, derivatization	365N2721	1 Each

\* Also suitable for use with the Thermo Scientific™ TriPlus™ 100LS Autosampler

## GC syringes for Thermo Scientific instruments

### Removable needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Replacement Needle Cat. No.	Quantity	Instrument Compatibility
10	75	31	Cone	Manual OC	36500520	1 Each	36550046	2 Pack	
100	50	23	Side hole	See Note	36520050	1 Each	36550040	2 Pack	TriPlus, AS200/AS800
100	50	23	Cone	LV Splitless	36500495	1 Each	36566485	5 Pack	TriPlus, AS2000, AS200/AS800
250	80	26	Cone	LVOC	36500490	1 Each	36566480	5 Pack	TriPlus, AS2000
250	50	23	Side hole	See Note	36520051	1 Each	36550040	2 Pack	TriPlus, AS2000, AS200/AS800
1000	50	23	Bevel		365K3041	1 Each	365RN235	5 Pack	AS200/AS800

### Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Replacement Needle Cat. No.	Quantity	Instrument Compatibility
5	75	31	Cone	Manual OC	36500510	1 Each	36550045	2 Pack	
10	50	26	Cone		365D1841	1 Each	365RN362	2 Pack	AS3000, AS2000
10	50	23	Cone		365D3731	1 Each	365RN372	2 Pack	AS3000, AS2000, AS200/AS800
50	50	23	Cone	LV Splitless	36503015	1 Each	36566485	5 Pack	AS2000

Syringe 36520051 is to be used when performing PTV/LVI injections with a dedicated liner for thermal labile compounds (liner 45352060). Compatible with Merlin Microseal device installed on BEST PTV and with AS2000 and TriPlus autosamplers for liquids.

### Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
10	50	23	Cone		365D3741	1 Each	AS2000
100	50	25	Bevel		365H2321	1 Each	AS200/AS800
250	50	25	Bevel		365I2561	1 Each	AS200/AS800

### Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
5	50	26	Cone	Split/PTV	36504047	1 Each	TriPlus
5	50	23	Cone		365C3701	1 Each	AS3000, AS2000, AS200/AS800 AI/AS1310
5	50	26	Cone	Split/PTV	36500505	1 Each	AS3000, AS2000 AI/AS1310
5	80	26	Cone	Splitless and OC	36502025	1 Each	TriPlus
10	50	26	Cone		365D3711	1 Each	AS3000, AS200, AS200/AS800
10	50	26	Cone		365D1856	6 Pack	AS300, AS2000, AS200/AS800
10	50	25	Cone	Split/PTV	36500525	1 Each	TriPlus, AS3000, AS2000, AS200/AS800, AI/AS1310

### Fixed needle syringes (Continued)

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
10	50	23	Cone	PTV/SSL Split	36520060	1 Each	AI/AS1310, TriPlus, AS300, AS2000, AS200/AS800
10	80	23	Cone	Merlin Valve SSL Splitless	36520061	1 Each	TriPlus, AS2000
10	50	23-26	Cone	OC in PTV Merlin Valve	36500580	1 Each	TriPlus, AS2000
10	80	26	Cone	OC and Splitless	36502019	1 Each	TriPlus, AS2000

### Plunger-in-needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
0.5	50	23	Cone	Split/PTV	36504045	1 Each	AI/AS1310, TriPlus, AS3000
0.5	75	31	Cone	Manual OC	36500500	1 Each	
0.5	80	26	Cone	Splitless and OC	36504046	1 Each	TriPlus

## GC syringes for Agilent instruments

### Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	42	23	Cone	365D1611	6 Pack

### Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	42	23-26	Cone	365D0621	1 Each
		23-26	Cone	365D0626	6 Pack

### Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	42	23	Cone	365C0951	1 Each
		23	Cone	365C0956	6 pack
		23-26s	Cone	365C0971	1 Each
		23-26s	Cone	365C0976	6 pack
10	42	23	Cone	365D1571	1 Each
		23	Cone	365D1576	6 pack
		23-26s	Cone	365D1621	1 Each
		23-26s	Cone	365D1636	6 pack

### Fixed needle, super-elastic plunger syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	42	23-26s	Cone	365D5416	1 Each

## GC syringes for Shimadzu instruments

## Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
5	42	26s	Cone	365C6610	1 Each		
		23s	Cone			365RN661	2 Pack
	42	26s	Cone	365D6610	1 Each	365RN272	2 Pack
		23s	Cone	365D6620	1 Each		

## GC syringes for CTC instruments

## Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
10	50	23	Cone	365D3731	1 Each	365RN372	2 Pack
		26	Cone	365D1841	1 Each	365RN362	2 Pack

## Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	50	23	Cone	365D2976	6 Pack
		26	Cone	365D2977	1 Each
		23	Cone	365D3741	1 Each
25	50	23	Cone	365F3761	1 Each
100	50	23	Cone	365H3771	1 Each
250	50	26	Cone	365H6700	1 Each
1000	50	26	Side Hole	365K8135	1 Each
2500	50	26	Side Hole	365L8635	1 Each

## Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	50	23	Cone	365C3701	1 Each
		26	Cone	36500505	1 Each
10	50	26	Cone	365D3711	1 Each
		23	Cone	36520060	1 Each
		26	Cone	365D1856	6 Pack
		23	Cone	365D2971	6 Pack

Learn more at [thermofisher.com/GCparts](https://thermofisher.com/GCparts)



## Manual GC syringes

### Removable needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
10	50	26s	Bevel	365D0811	1 Each	365RN215	5 Pack
25	50	25	Bevel	365F1931	1 Each	365RN225	5 Pack
		22s	Blunt End	365FLG31	1 Each	365RNL25	5 Pack
50	50	22s	Blunt End	365GLG41	1 Each	365RNL25	5 Pack
500	50	25	Bevel	365J2881	1 Each	365RN225	5 Pack
		22s	Blunt End	365JLG71	1 Each	365RNL25	5 Pack
1000	50	23	Bevel	365K3041	1 Each	365RN235	5 Pack
		22s	Blunt End	365KLG81	1 Each	-	
		22	Bevel	365M5212	1 Each	-	
5000	50	22s	Blunt End	365M6322	1 Each	-	
		22s	Side Hole	365M8922	1 Each	-	
10000	50	22	Bevel	365N5214	1 Each		
		22s	Side Hole	365N8923	1 Each	365RN465	2 Pack

### Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
10	50	26	Bevel	365D1171	1 Each	365RN215	5 Pack
25	50	25	Bevel	365F1901	1 Each	365RN225	5 Pack
50	50	25	Bevel	365G2091	1 Each	365RN225	5 Pack

### Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	50	26	Bevel	365D4433	1 Each
		26s	Blunt End	365D6314	1 Each
25	50	22s	Blunt End	365F6315	1 Each
50	50	25	Bevel	365G2111	1 Each
		22s	Blunt End	365G6316	1 Each
100	50	25	Bevel	365H2321	1 Each
		22s	Blunt End	365H6317	1 Each
250	50	25	Bevel	365I2561	1 Each
500	50	25	Bevel	365J2831	1 Each
		22s	Blunt End	365J6319	1 Each
1000	50	22	Bevel	365K3051	1 Each

### Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	50	26	Bevel	365C0741	1 Each
10	50	26	Bevel	365D1091	1 Each
		26	Bevel	365D1096	6 Pack
25	50	25	Bevel	365F1891	1 Each
100	50	25	Bevel	365H2291	1 Each

**PTFE Luer-Lok, gas tight syringes**

Volume ( $\mu\text{L}$ )	Cat. No.	Quantity	Needle Cat. No.	Quantity
25	365F7655	1 Each	365RNL22	2 Pack
50	365G7656	1 Each	365RNL22	2 Pack
100	365H7657	1 Each	365RNL22	2 Pack
250	365I7658	1 Each	365RNL22	2 Pack
500	365J7659	1 Each	365RNL22	2 Pack
1000	365KL531	1 Each	365RNL22	2 Pack
2500	365LL541	1 Each	365RNL22	2 Pack
5000	365ML551	1 Each	365RNL22	2 Pack
10000	365NL561	1 Each	365RNL22	2 Pack
25000	365PL571	1 Each	365RNL22	2 Pack

Please note that the Luer-Lok syringes do not come with a needle and therefore the needle part number needs to be ordered separately

**Luer tip, gas tight syringes**

Volume ( $\mu\text{L}$ )	Cat. No.	Quantity
100	365H7814	1 Each
1000	365K7817	1 Each
2500	365L7818	1 Each
5000	365M7819	1 Each
10000	365N7820	1 Each



# Injection port septa

Quality materials for all applications

## BTO septa

- Low bleed septa - ideal for MS applications
- Excellent mechanical properties
- Maximum temperature 400°C

## TR-Green septa

- Long injection lifetime
- Low injection port adhesion
- Maximum temperature 350°C

## Marathon septa

- Pre-pierced for reliable performance
- Up to 400 injections per septa
- Maximum temperature 350°C

## TR-Blue septa

- General purpose septa
- Easy to penetrate
- Maximum temperature 200-250°C

## Septa

Material	ID (mm)	Cat. No. (Blister Pack)	Quantity (Blister Pack)	Cat. No. (Glass Jar)	Quantity (Glass Jar)
BTO	9	31303240-BP	50 Pack	31303240	50 Pack
BTO	11	31303233-BP	50 Pack	31303233	50 Pack
BTO	11.5	31303230-BP	50 Pack	31303230	50 Pack
BTO	12.7	31303250-BP	48 Pack	31303228	50 Pack
BTO	17	31303215-BP	48 Pack	31303211	50 Pack
TR-Green	9	313G3240-BP	50 Pack	313G3240	50 Pack
TR-Green	11	313G3230-BP	50 Pack	313G3230	50 Pack
TR-Green	12.7	-	48 Pack	313G3228	50 Pack
TR-Green	17	313G3215-BP	48 Pack	313G3211	50 Pack
Marathon	9	313P3240-BP	50 Pack	313P3240	50 Pack
Marathon	11	313P3233-BP	50 Pack	313P3233	50 Pack
Marathon	11.5	313P3230-BP	50 Pack	313P3230	50 Pack
Marathon	17	313P3215-BP	48 Pack	313P3211	50 Pack
TR-Blue	9	N/A	N/A	313B3240	50 Pack
TR-Blue	11	N/A	N/A	313B3233	50 Pack
TR-Blue	11.5	N/A	N/A	313B3230	50 Pack
TR-Blue	17	N/A	N/A	313B3211	50 Pack

Learn more at [thermofisher.com/GCparts](https://thermofisher.com/GCparts)



## Gold and siltek inlet base seals

- Precision machined to provide exceptional sealing properties
- Gold plating and Siltek coatings provide a surface with exceptional inertness for analysis of highly active compounds
- High grade stainless steel providing reproducible seal
- Compatible with Thermo Scientific TRACE 1300 Series GC & Agilent split/splitless injection ports

### Gold inlet base seals

For Use With	ID (mm)	Cat. No.	Quantity
Single Column Installation	0.8	290GA081	10 Pack
Single Column Installation	0.8	290GA082	2 Pack
Single Column Installation (Cross Version)	0.8	290GA084	10 Pack
Single Column Installation (Cross Version)	0.8	290GA083	2 Pack
Dual Column Installation	1.2	290GA121	10 Pack
Dual Column Installation	1.2	290GA122	2 Pack

### Siltek inlet base seals

For Use With	ID (mm)	Cat. No.	Quantity
Single Column Installation	0.8	290GA091	10 Pack
Single Column Installation	0.8	290GA092	2 Pack
Single Column Installation (Cross Version)	0.8	290GA094	10 Pack
Single Column Installation (Cross Version)	0.8	290GA093	2 Pack



# Injection port liners

## LinerGOLD GC liners

The GOLD standard in GC liner performance

- **Increased accuracy and sensitivity in analysis** – LinerGOLD prevents the loss of sensitive compounds in analysis
- **Lower detection limits** – when analyzing active and sensitive compounds
- **Excellent reproducibility** – gives confidence in your results from liner to liner – setting the GOLD standard

### The GOLD standard in liner consistency

Consistency in your GC liner is of paramount importance – you expect to see a consistently high level of performance time after time. Thermo Scientific™ LinerGOLD™ GC liners are manufactured and tested to ensure that you have confidence with every liner that it installed onto your GC system.

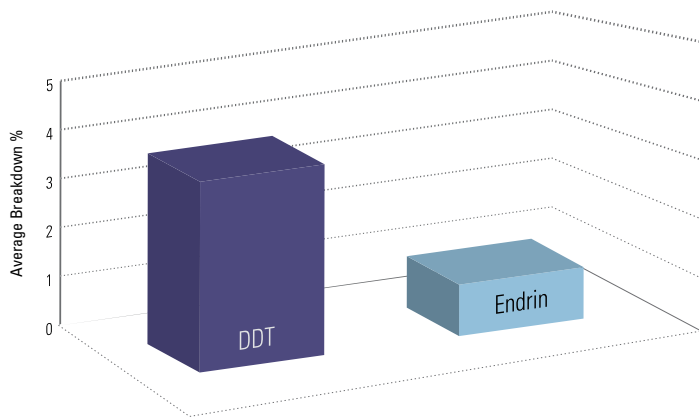


Figure 1: Endrin and DDT breakdown test results showing the lot-to-lot reproducibility and low levels of inertness of LinerGOLD

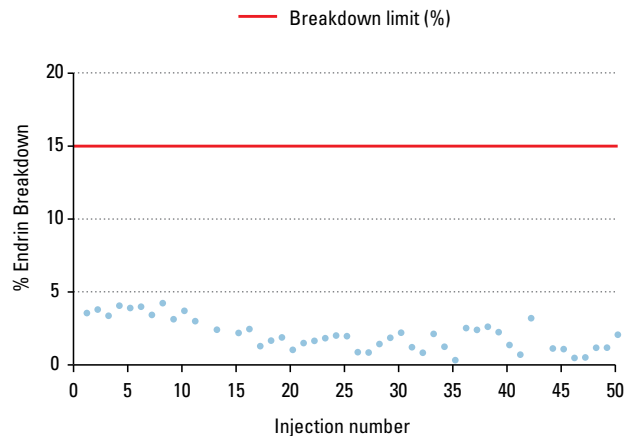
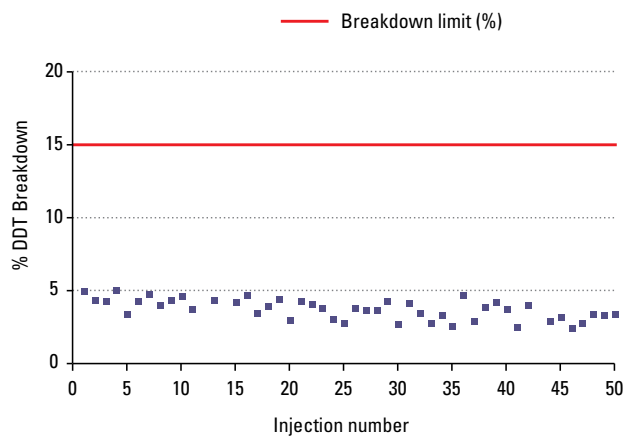


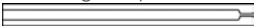









Figure 2: Compound degradation after 50 injections – LinerGOLD exhibits minimal breakdown

Learn more at [thermofisher.com/GCparts](https://thermofisher.com/GCparts)

### LinerGOLD GC liners for Thermo Scientific TRACE 1300 series and Agilent instruments, SSL injector

Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat. No. 25 Pack
Split/Splitless Liner 	4 x 6.3	78.5	Quartz Wool	453A2265-UI	453A1262-UI
Split/Splitless Straight Liner 	4 x 6.3	78.5	No	453A1295-UI	453A2292-UI
Splitless/Split Liner with Single Taper 	4 x 6.3	78.5	No	453A1345-UI	453A2342-UI
Splitless/Split Liner with Single Taper 	4 x 6.3	78.5	Quartz Wool	453A1925-UI	453A2922-UI
Splitless Liner with Double Taper 	4 x 6.3	78.5	No	453A1355-UI	453A2352-UI
Precision Split/Splitless Liner 	4 x 6.3	78.5	Quartz Wool	453A1255-UI	453A1252-UI
Direct Straight Liner 	1 x 6.3	78.5	No	453A1335-UI	453A2332-UI
LinerGOLD Mixed Liner Pack	1 x 6.3	Mixed	Mixed	453TH002-UI	N/A

### LinerGOLD GC liners for Thermo Scientific TRACE Ultra and FOCUS instruments







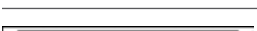

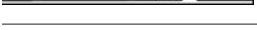


Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat. No. 25 Pack
Direct Straight Liner 	5 x 8	105	No	45350030-UI	45354030-UI
Split Straight Liner 	3 x 8	105	No	45350031-UI	45354031-UI
Splitless Liner 	3 x 8	105	No	45350032-UI	45354032-UI
Splitless Liner 	5 x 8	105	No	45350033-UI	45354033-UI
Precision Liner 	5 x 8	105	Quartz Wool	453T1905-UI	453T4905-UI
Splitless Precision Liner 	5 x 8	105	Quartz Wool	453T2999-UI	453T4999-UI
Baffled PTV Liner	2 x 2.75	120	No	453T2845-UI	453T4845-UI




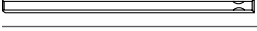







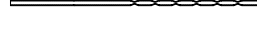

## Injection port liners for Thermo Scientific instruments

Highly deactivated and produced to exacting tolerances to ensure a high degree of reproducibility

### Liners for Thermo Scientific TRACE 1300 series SSL instruments and Agilent instruments, SSL injector

	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat. No. 25 Pack
	Direct Straight Liner	1.2 x 6.3	78.5	No	453A1335	453A2332
	Split Straight Liner	4 x 6.3	78.5	Quartz Wool	453A2265	453A1262
	Split Straight Liner	4 x 6.3	78.5	No	453A1295	453A2292
	Split/Splitless FocusLiner	4 x 6.3	78.5	Quartz Wool	453A1255	453A1252
	Split/Splitless FocusLiner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1315	453A1312
	Split/Splitless Liner with Single Taper	4 x 6.3	78.5	No	453A1345	453A2342
	Split/Splitless Liner with Double Taper	4 x 6.3	78.5	No	453A1355	453A2352
	Split/Splitless Liner w/ Recessed Gooseneck	4 x 6.3	78.5	Quartz Wool	453A1305	N/A
	Splitless Liner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1925	N/A
	Split/Splitless Mini-Lam Liner	4 x 6.3	78.5	No	453A2009	N/A
	Split/Splitless Mixed Liner Sample Pack	Mixed	Mixed	Mixed	453TH002	N/A

### Liners for Thermo Scientific TRACE 1300 series and TRACE ULTRA PTV instruments, PTV injector







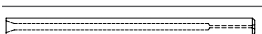




	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 2 Pack	Cat. No. 5 Pack	Cat. No. 25 Pack
	PTV Straight Liner	1 x 2.75	120	No	N/A	45352054	N/A
	PTV Straight Liner	2 x 2.75	120	No	N/A	45352057	45354057
	PTV Straight Liner (deactivated)	2 x 2.75	120	No	45322045	N/A	N/A
	PTV Liner with Sintered Lining	1 x 2.75	120	No	N/A	45352060	N/A
	PTV Liner with Three Baffles	1 x 2.75	120	No	N/A	45352062	N/A
	PTV Siltek Metal Liner	1 x 2.75	120	No	45322046	N/A	N/A
	PTV Siltek Metal Liner	2 x 2.75	120	No	45322044	N/A	N/A
	PTV Siltek Metal Liner	2 x 2.75	120	Wool	45322056	N/A	N/A
	PTV Baffle Liner (Siltek)	2 x 2.75	120	No	N/A	453T2120	N/A
	PTV Split Liner with Recessed Gooseneck	2 x 2.75	120	Quartz Wool	N/A	45352070	N/A
	PTV Silcosteel Liner for OC	1 x 2.75	120	No	45322052	N/A	N/A

Learn more at [thermofisher.com/GCparts](https://thermofisher.com/GCparts)

## Liner sealing rings for Thermo Scientific instruments

Description	Cat. No.	Quantity
Liner Sealing Ring for TRACE 1300 Series GC SSL Injector	29001320	5 Each
Liner Sealing Ring for TRACE 1300 Series GC PTV Injector	29001318	1 Each
Liner sealing Ring for TRACE and FOCUS GC SSL Injector	29033406	10 Pack
Liner sealing Ring for TRACE PTV Injector	29013417	2 Pack

## Liners for Thermo Scientific TRACE ULTRA and FOCUS SSL instruments, SSL injector









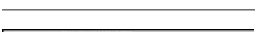




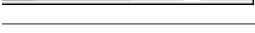



	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat No. 25 Pack
	Split Straight Liner	5 x 8	105	No	45350030	45354030
	Split Straight Liner	3 x 8	105	No	45350031	45354031
	Split Straight Liner	5 x 8	105	CarboFrit	453T2131	N/A
	Splitless Straight Liner	3 x 8	105	No	45350032	45354032
	Splitless Straight Liner	5 x 8	105	No	45350033	45354033
	Splitless Straight Liner	5 x 8	105	CarboFrit	453T2130	N/A
	Splitless Straight Liner (Siltek)	3 x 8	105	No	453T2121	N/A
	Split FocusLiner for 50mm Needle	5 x 8	105	Quartz Wool	453T1905	453T4905
	Splitless FocusLiner for 50mm Needle	5 x 8	105	Quartz Wool	453T2999	453T4999
	Splitless FocusLiner for 70mm Needle	5 x 8	105	Quartz Wool	453T2895	453T4895
	Split/Splitless Straight Liner	0.75 x 2.75	105	No	45352083	N/A





## Injection port liners for Agilent instruments

### Liners for Agilent instruments

	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat No. 25 Pack
	Direct Straight Liner	1.2 x 6.3	78.5	No	453A1335	453A2332
	Split Straight Liner	4 x 6.3	78.5	Quartz Wool	453A2265	453A1262
	Split Straight Liner	4 x 6.3	78.5	No	453A1295	453A2292
	Split/Splitless FocusLiner	4 x 6.3	78.5	Quartz Wool	453A1255	453A1252
	Split/Splitless FocusLiner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1315	453A1312
	Split/Splitless Liner with Single Taper	4 x 6.3	78.5	No	453A1345	453A2342
	Split/Splitless Liner with Double Taper	4 x 6.3	78.5	No	453A1355	453A2352
	Split/Splitless Liner w/ Recessed Gooseneck	4 x 6.3	78.5	Quartz Wool	453A1305	N/A
	Split/Splitless FAST FocusLiner	2.3 x 6.3	78.5	Quartz Wool	453A1285	453A2282
	Split/Splitless FAST FocusLiner with Single Taper	2.3 x 6.3	78.5	Quartz Wool	453A2375	453A1372
	Splitless Liner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1925	N/A
	Splitless Straight Liner	2.0 x 6.3	78.5	No	453A2275	N/A
	Splitless Liner with Recessed Gooseneck	2.0 x 6.3	78.5	No	453A2325	N/A
	Single Gooseneck (Deactivated Metal)	5.2 x 6.3	78.5	No	453A2001	N/A
	Cyclosplitter Liner (Deactivated Metal)	5.2 x 6.3	78.5	No	453A2002	N/A
	Split/Splitless Liner with Wool (Deactivated Metal)	5.2 x 6.3	78.5	No	453A2003	N/A
	Split/Splitless Mixed Liner Sample Pack	Mixed	Mixed	No	453AG001	N/A

### Liner sealing rings for Agilent instrument

Description	Cat. No.	Quantity
Graphite Liner Sealing Ring for Agilent Direct Straight Liners	290GA242	10 Pack
Graphite Liner Sealing Ring for Agilent SSL Liners	290GA243	10 Pack
Graphite Liner Sealing Ring for Agilent 2.0mm Liners	290GA244	10 Pack
Viton Liner Sealing Ring for Agilent SSL Injector	290OA241	10 Pack

Thermo Scientific GC consumables are suitable for use with Agilent GC systems

Learn more at [thermofisher.com/GCparts](https://thermofisher.com/GCparts)



# Ferrules

Wide range of choices for a wide range of instruments and applications

Thermo Scientific ferrules are available in three different materials and various dimensions to match the instrument and capillary column ID. The choice of material is dependent upon the use; guidelines are given in the table.

Material Type	Suitable for GC-MS	Temp Limit (°C)	Re-usable
Graphite	No	450	Yes
Graphite/Vespel	Yes	350	No
Stainless Steel (SiTite)	Yes	500	No



## 100% Graphite Ferrules

Thermo Scientific 100% graphite ferrules are a soft material that is

porous to oxygen, making them suitable for most applications except GC-MS interface connections. These easy-to-use ferrules form a soft grip with the column and provide a stable seal.



## 15% Graphite / 85% Vespel Ferrules

The mechanically robust 15% Graphite/

85% Vespel ferrules have a long lifetime and are compatible with GC-MS. These ferrules form a strong grip with the column and cannot be reused as they form a permanent seal with the column. They have a temperature limit of 350°C, but must be re-tightened after initial temperature cycles.



## SiTite Metal Ferrules

The SiTite ferrule forms a strong, permanent, airtight seal

around the capillary column, eliminating leaks. The base of the ferrule is flat and forms a perfect seal with the MS interface. The ferrule's temperature tolerance is well above the limit of the injector, MS interface or GC oven. Unlike other ferrules, SiTite Ferrules do not need re-tightening after installation.

Please also see syringes on page 5-008.

All varieties of ferrules are supplied in contaminant-free, individual blister packs, allowing removal of an individual item without risk of contamination to the other supplied items.

To select the most appropriate ferrule for your GC system, refer to the table below:

	100% Graphite	15% Graphite/ 85% Vespel	SiTite
Suitable for Thermo Scientific TRACE ULTRA SSL Injector	•	•	
Suitable for Thermo Scientific TRACE 1300/1310 & Agilent SSL Injectors	•	•	•
Suitable for Thermo Scientific TRACE ULTRA non-MS detectors	•	•	
Suitable for Thermo Scientific TRACE 1300/1310 & Agilent non-MS detectors	•	•	
Suitable for all Thermo Scientific & Agilent MS Detectors		•	•
Suitable for Thermo Scientific PTV Injector	•	•	

## Ferrules for Thermo Scientific instruments

For Use with	Material Type	Ferrule Size (Column ID) (mm)	Cat. No.	Quantity
Thermo Scientific TRACE 1300/1310 SSL injectors and non-MS detectors	100 % Graphite	0.1-0.32	290GA139	10 Pack
		0.45-0.53	290GA140	10 Pack
	15% Graphite/85% Vespel	0.1-0.25	290VA191	10 Pack
		0.32	290VA192	10 Pack
		0.53	290VA193	10 Pack
Capillary Column Nut for injectors and non-MS Detectors	Stainless Steel		35050458	5 Pack
Thermo Scientific TRACE Ultra SSL injectors and non-MS detectors	100 % Graphite	0.1-0.25	29053488	10 Pack
		0.32	29053487	10 Pack
		0.53	29053486	10 Pack
	15% Graphite/85% Vespel	0.1-0.25	29033461	10 Pack
		0.32	29033460	10 Pack
		0.53	29033471	10 Pack
		Packed Column 1/8" OD	290VT168	10 Pack
		Packed Column 1/4" OD	290VT165	10 Pack
15% Graphite/85% Vespel (3.4mm length)	0.1-0.25	290VT186	10 Pack*	
	0.32	290VT187	10 Pack*	
	0.53	290VT188	10 Pack*	
Capillary Column Nut for Graphite/Vespel Ferrules	Brass		290BT239	2 Pack
All Thermo Scientific PTV injectors	100 % Graphite	0.1-0.25	29053488	10 Pack
		0.32	29053487	10 Pack
		0.53	29053486	10 Pack
Thermo Scientific MS detectors	15% Graphite/85% Vespel	0.1-0.25	29033496	10 Pack
		0.32	29033497	10 Pack
Capillary Column Nut for MS Detector	Brass		290BT240	5 Pack
	Stainless Steel		290BT241	5 Pack
Thermo Scientific MS detectors	VESPEL SCP-5000	0.1-0.25	290VT221	5 Pack
Capillary Column Spring Loaded Nut for MS Detectors	Stainless Steel for ISQ/TSQ		1R120434-0010	1 Pack
	Stainless Steel for QE GC/Exactive GC		1R120434-0020	1 Pack
SilTite Kit for Thermo Scientific TRACE 1300/1310 GC SSL injectors	SilTite Metal	0.1-0.25	290MA215	1 Each**
		0.32	290MA216	1 Each**
		0.53	290MA217	1 Each**
SilTite Kit for Thermo Scientific ISQ GC-MS interface	SilTite Metal	0.1-0.25	290MA194	1 Each**
		0.32	290MA195	1 Each**
		0.53	290MA196	1 Each**
Replacement SilTite Ferrules for Thermo Scientific TRACE 1300/1310 SSL and ISQ GC-MS interface kits	SilTite Metal	0.1-0.25	290MA201	10 Pack
		0.32	290MA202	10 Pack
		0.53	290MA203	10 Pack
SilTite Nuts for MS interface			290MA205	5 Pack
SilTite Nuts for SSL injectors			290MA207	5 Pack
SilTite Kits for Thermo Scientific DSQ GC-MS interface	SilTite Metal	0.1-0.25	290MT229	1 Each**
		0.32	290MT230	1 Each**
		0.53	290MT231	1 Each**
		Replacement SilTite Nuts	290MT211	5 Pack
Replacement SilTite Ferrules for Thermo Scientific DSQ GC-MS interface kits	SilTite Metal	0.1-0.25	290MT221	10 Pack
		0.32	290MT222	10 Pack
		0.53	290MT223	10 Pack

\* Vespel Ferrules must be used in conjunction with brass nut part number 290BT239

\*\* SilTite Kits contain 2 SilTite nuts and 10 ferrules

## Ferrules for Agilent instruments

For Use with	Material Type	Ferrule Size (Column ID) (mm)	Cat. No.	Quantity
Agilent injectors and non-MS detectors	100 % Graphite	0.1-0.32	290GA139	10 Pack
		0.45-0.53	290GA140	10 Pack
		Packed Column 1/8" OD	290GA108	10 Pack
		Packed Column 1/4" OD	290GA107	10 Pack
	15% Graphite/85% Vespel	0.1-0.25	290VA191	10 Pack
		0.32	290VA192	10 Pack
		0.53	290VA193	10 Pack
		Packed Column 1/8" OD	290VT168	10 Pack
Packed Column 1/4" OD		290VT165	10 Pack	
Capillary Column Nut for injectors and non-MS Detectors	Stainless Steel		35050458	5 Pack
Agilent MS detectors	15% Graphite/85% Vespel	0.1-0.25	29033496	10 Pack
		0.32	29033497	10 Pack
		0.53	290VP144	10 Pack
SilTite Kits for Agilent SSL injectors	SilTite Metal	0.1-0.25	290MA215	1 Each*
		0.32	290MA216	1 Each*
		0.53	290MA217	1 Each*
SilTite Nuts for MS interface			290MA205	5 Pack
SilTite Kit for Agilent MS detectors	SilTite Metal	0.1-0.25	290MA194	1 Each**
		0.32	290MA195	1 Each**
		0.53	290MA196	1 Each**
Replacement SilTite Ferrules for all SilTite Kits	SilTite Metal	0.1-0.25	290MA201	10 Pack
		0.32	290MA202	10 Pack
		0.53	290MA203	10 Pack
SilTite Nuts for SSL injectors			290MA207	5 Pack
Replacement Baseplate Seals			290MA227	2 Pack
			290MA228	10 Pack

Thermo Scientific GC consumables are suitable for use with Agilent GC systems

\* Kit contains 2 nuts, 10 ferrules and 2 base seals

\*\* Kit contains 2 nuts and 10 ferrules



# Capillary accessories

## SilTite $\mu$ -Union

The tiny connection for GC Columns

The SilTite  $\mu$ -Union is a connector for GC capillary columns, giving zero dead volume. The product has low thermal mass – it is only 9mm in length and has a mass <0.5g. It is available in kits to connect columns from 0.1mm ID to 0.53mm ID.

- Zero dead volume – giving optimized peak shapes
- FingerTite technology – easy to install and leak-free
- Highly inert and robust

Each SilTite  $\mu$ -Union kit contains the following:

- 5 x ferrules
- 2 x union fittings
- Installation jigs
- Installation instructions



### SilTite $\mu$ -Union kits, ferrules and replacement unions

Column ID (mm)	2nd Column ID (mm)	SilTite $\mu$ -Union Kit Cat. No. (1 Each)	SilTite $\mu$ -Union Ferrules Cat. No. (10 Pack)	SilTite $\mu$ -Union Replacement Union Cat. No. (1 Each)
0.1 – 0.25	0.1-0.25	290SM301	290SM401	290SM321
	0.32	290SM302	290SM402	290SM321
	0.53	290SM303	290SM403	290SM322
0.32	0.32	290SM304	290SM404	290SM321
	0.53	290SM305	290SM405	290SM322

## SilTite capillary column connectors

For use with capillary GC columns

- For fused silica capillary columns
- Glass lined for inertness
- Low thermal mass
- Each pack contains 1 Connector, 2 Nuts and 5 Ferrules

### SilTite capillary column connectors and ferrules

Column ID (mm)	2nd Column ID (mm)	SilTite Column Connector Kit Cat. No. (1 Each)	SilTite Ferrules Cat. No. (10 Pack)	Replacement SilTite Connector Nuts* Cat. No. (5 Pack)
0.1-0.25	0.1-0.25	290MU498	290MF229	290MN211
0.32	0.32-0.53	290MU499	290MF230	290MN211
0.53	0.45-0.53	290MU500	290MF231	290MN211

\* SilTite nuts must be used with SilTite ferrules

### GC capillary connectors

Description	Cat. No.	Quantity
Universal Capillary Connector	64000-001	1 Each
Y Capillary Connector	64000-002	1 Each

## Finger tite connectors

Easier fit, reliability and leak-free connections

- No need to re-tighten ferrules as they expand and contract with the fitting
- Easy to handle with the nut touchable even with a hot injector/detector
- No tools required



### Finger tite connectors for TRACE 1300 series GC and Agilent GCs

Description	Cat. No.	Quantity
Split/Splitless and MS Starter Kit	290SA131	1 Each
Split/Splitless and FID Starter Kit	290SA132	1 Each
Split/Splitless Injector Base Seal	290SA133	2 Pack
Ferrules for 0.1-0.25mm ID Columns	290S1132	10 Pack
Ferrules for 0.32mm ID Columns	290S1131	10 Pack

### Finger tite connectors for TRACE GC Ultra and FOCUS GCs

Description	Cat. No.	Quantity
Female Nut	290ST130	5 Pack
Split/Splitless and MS Starter Kit	290ST131	1 Each
Split/Splitless and FID Starter Kit	290ST132	1 Each
Ferrules for 0.1-0.25mm ID Columns	290S1132	10 Pack
Ferrules for 0.32mm ID Columns	290S1131	10 Pack

## Retention gap kits

Support Thermo Scientific gas chromatography consumables

- Kit contains one union and five ferrules
- Length of deactivated fused silica tubing



### Retention gap kits

Description	Cat. No.	Quantity	Replacement Union Cat. No.	Quantity
Retention Gap Kit, 0.22 – 0.32mm ID, 2m	260RG497	1 Each	290GU498	1 Each
Retention Gap Kit, 0.53mm ID, 2m	260RG499	1 Each	290GU499	1 Each
Retention Gap Kit, 0.53mm ID, 5m	260RG500	1 Each	290GU499	1 Each

### Deactivated silica tubing

Description	Cat. No.	Quantity
Deactivated silica tubing, 0.32mm ID; 2m Length	260G498P	1 Each
Deactivated silica tubing, 0.53mm ID; 2m Length	260G499P	1 Each
Deactivated silica tubing, 0.25mm ID; 5m Length	260G495P	1 Each
Deactivated silica tubing, 0.32mm ID; 5m Length	260G496P	1 Each
Deactivated silica tubing, 0.53mm ID; 5m Length	260G500P	1 Each
Deactivated silica tubing, 0.53mm ID; 1m Length (Siltek)	260G401P	1 Each

## Capillary GuardGOLD and HydroGOLD columns

Providing protection to the analytical column

- Protects against column contamination caused by non-volatile materials, extending the column lifetime
- Focuses target analytes at the head of the analytical column, leading to better chromatographic peak shape
- Highly deactivated to provide superior inertness, essential for analysis of active compounds
- HydroGOLD extends column lifetime by preventing degradation from harsh “steam-cleaning” water injections

### Capillary Thermo Scientific™ GuardGOLD™ and HydroGOLD columns

ID (mm)	Length (m)	GuardGOLD Cat. No.	Quantity	HydroGOLD Cat. No.	Quantity
0.18	2	26050-0218	1 Each	26H50-0218	1 Each
0.25	2	26050-0225	1 Each	26H50-0225	1 Each
0.32	2	26050-0232	1 Each	26H50-0232	1 Each
0.53	2	26050-0253	1 Each	26H50-0253	1 Each
0.18	5	26050-0518	1 Each	26H50-0518	1 Each
0.25	5	26050-0525	1 Each	26H50-0525	1 Each
0.32	5	26050-0532	1 Each	26H50-0532	1 Each
0.53	5	26050-0553	1 Each	26H50-0553	1 Each
0.18	10	26050-1018	1 Each	26H50-1018	1 Each
0.25	10	26050-1025	1 Each	26H50-1025	1 Each
0.32	10	26050-1032	1 Each	26H50-1032	1 Each
0.53	10	26050-1053	1 Each	26H50-1053	1 Each

## Capillary column end caps

Feature a universal fit to all GC capillary columns

- Eliminate column contamination caused by leaving a column unsealed or sealed with a septum
- Color-coordinated fittings ensure that the column is reinstalled the same way it came out
- Reusable



### Capillary column end caps

Description	Cat No.	Quantity
Capillary Column End Caps, Paired	260EC111	10 Pack

Learn more at [thermo.com/GCparts](https://thermo.com/GCparts)

## SWAP-IT GC-MS interface system

Easy to install for quick column changeovers

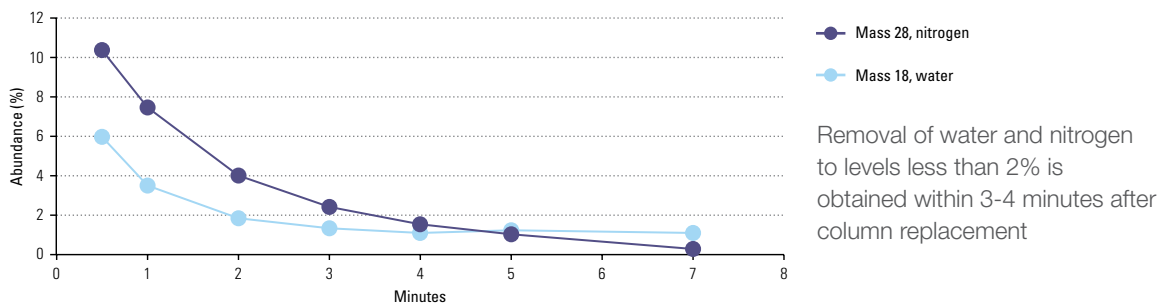
The SWAP-IT GC-MS Interface provides a powerful tool for switching capillary columns without the need to vent the MS

- Specially deactivated, robust stainless steel transfer capillary provides an interface between the analytical column and the MS detector
- Small ID of transfer capillary ensures exposure to air and water is reduced to a minimum during disconnection of the analytical column
- The system works without the requirement for additional He-purge
- Finger-tight connections make exchanging the analytical column quick and easy without the need for tools



### SWAP-IT GC-MS Interface system

Description	Cat. No.	Quantity
<b>For Thermo Scientific Instruments (ISQ GC-MS, TSQ 8000 GC-MS/MS)</b>		
SWAP-IT GC-MS Interface Kit: SWAP-IT GC-MS Interface, Nuts, Ferrules, Accessories	60180-791	1 Each
<b>For Thermo Scientific Instruments (DSQ GC-MS, DSQ II GC-MS, PolarisQ GC-MS, ITQ GC-MS only)</b>		
SWAP-IT GC-MS Interface Kit: SWAP-IT GC-MS Interface, Nuts, Ferrules, Accessories	60180-790	1 Each
SWAP-IT GC-MS Interface, SWAP-IT only	60180-792	1 Each
Transfer Line Nut	290SG001	1 Each
Graphite/Vespel Ferrule for Transfer Line	290SG020	10 Pack
<b>For Agilent Instruments</b>		
SWAP-IT GC-MS Interface Kit: SWAP-IT GC-MS Interface, Nuts, Ferrules, Accessories	60180-794	1 Each
SWAP-IT GC-MS Interface, SWAP-IT Only	60180-796	1 Each
Transfer Line Nut	290SG004	1 Each
Graphite/Vespel Ferrule for Transfer Line	290SG021	10 Pack
SWAP-Tight Nut and Adaptor for S/SL Injector	290SG003	1 Each
<b>Accessories</b>		
SWAP-Tight Nut	290SG002	1 Each
SWAP-Tight Ferrules, Blank	290SG000	10 Pack
SWAP-Tight Ferrules, 0.1 – 0.25mm	290SG025	10 Pack
SWAP-Tight Ferrules, 0.32mm	290SG032	10 Pack





## 3-Port SilFlow device

Switch your GC column without the need to vent

- Allows column switching in GC-MS without the need to vent
- Utilizes a make up gas module and a microfluidic device
- SilTite FingerTite fittings for easy set up and a reliable seal



### 3-Port SilFlow device

Description	Cat. No.	Quantity
3 Port SilFlow MCD (0.25/0.32)	60201-398	1 Each

### 3-Port SilFlow replacement parts

Description	Cat. No.	Quantity
SilFlow Fingertight Ferrules for 0.25mm ID Columns	29063466	10 Pack
SilFlow Fingertight Ferrules for 0.32mm ID Columns	29063467	10 Pack
SilFlow Fingertight Tool	60201-401	1 Each
SilFlow Nuts	290SF302	10 Pack
Blanking Ferrule	290ST414	5 Pack
170µm Deactivated Tubing 0.363mm OD 60cm Length	60201-390	1 Each
75µm Untreated Fused Silica Tubing 0.363mm OD 30cm Length	60201-391	1 Each
170µm Deactivated Tubing 0.363mm OD 120cm Length	60201-394	1 Each
75µm Untreated Fused Silica Tubing 0.363mm OD 80cm Length	60201-395	1 Each

## GC tubing

GC tubing for plumbing GC systems

### GC tubing

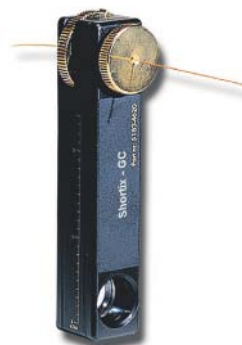
Material	OD (in)	ID (in)	Length (ft)	Cat. No.	Quantity
Copper	1/8	0.065	50	60181-632	1 Each
	1/4	0.19	50	60181-633	1 Each
Stainless Steel	1/16	0.01	25	60181-634	1 Each
		0.02	25	60181-635	1 Each
		0.03	25	60181-636	1 Each
		0.04	25	60181-637	1 Each
	1/8	0.085	25	60181-638	1 Each
	1/4	0.21	25	60181-639	1 Each

# GC tools

Support GC applications

## GC tools

Description	Cat. No.	Quantity
Straight-Tipped Forceps	60180-770	1 Each
Angle-Tipped Forceps	60180-771	1 Each
0.35mm Drill Bit	60180-779	1 Each
0.45mm Drill Bit	60180-780	1 Each
0.70mm Drill Bit	60180-781	1 Each
Adjustable Spanner	60180-782	1 Each
Shortix Capillary Column Cutter	60180-835	1 Each
Shortix Capillary Column Cutter Repair Kit	60180-836	1 Each
Ceramic Column Cutter	60201-318	1 Each



## GC tool kits

Includes: Wrench sets, flashlight, brushes, mini-drill set and other tools for maintaining your GC system performance

## GC tool kits

Description	Cat. No.	Quantity
Capillary Tool Kit for Thermo Scientific GCs	60180-784	1 Each
Capillary Tool Kit for Agilent GCs	60180-786	1 Each

## GC installation kit

Includes:

- Tubing cutter
- 1/8 x 1/4in. reamer
- 7/16in. wrench
- 1/2in. wrench
- 1/8in. brass tees, 4
- 1/8in. brass nuts, 10
- Brass front and back ferrules, 10
- 15.2m instrument-grade, cleaned 1/8in. copper tubing



## GC installation kit

Description	Cat. No.	Quantity
GC Installation Kit	60180-888	1 Each

## GLD pro gas leak detector

Aids in quickly locating and identifying gas leaks

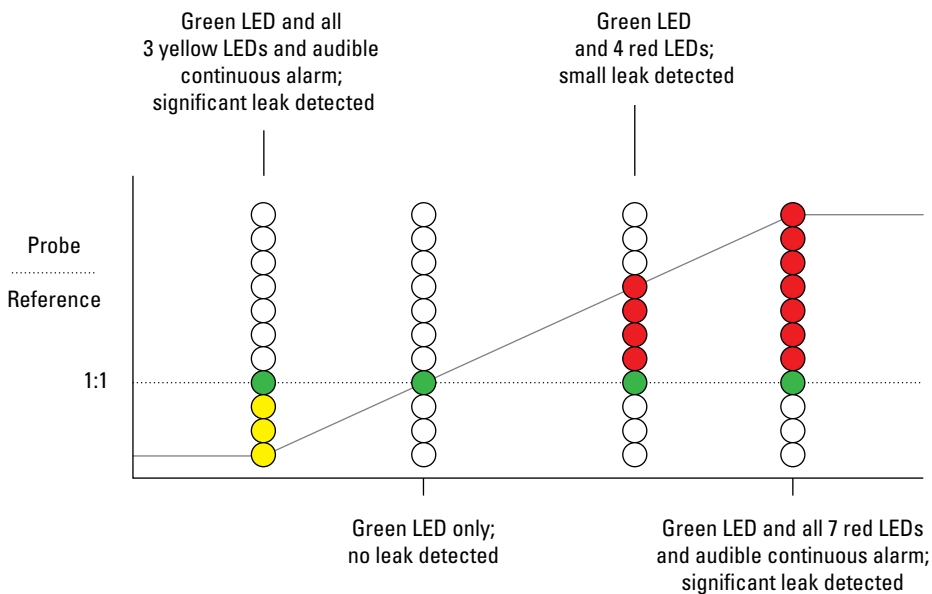
The Thermo Scientific™ GLD Pro Gas Leak Detector is specifically designed for use with gas chromatography instruments. Detection of leaks allows the user to reduce detector noise, provide a stable baseline, reduce carrier gas by minimizing waste, and maximize the lifetime of the analytical column by minimizing the presence of oxygen and other impurities in the carrier gas.

- Suitable for detection of a wide range of laboratory gases
- Push button on/off switch
- Push button zero function
- Automatic shutoff (5 minutes)
- LED light indicator for intensity of leak
- Rechargeable battery (up to 6 hrs. operation)
- Durable storage case
- Probe holder
- One year warranty



### GLD Pro gas leak detector

Description	Cat. No.	Quantity
GLD Pro Leak Detector	66002-001	1 Each
Small Probe Adaptor	66002-003	1 Each
Soft-Sided Carry Case (Leak Detector not included)	66002-002	1 Each



Learn more at [thermofisher.com/GCtools](https://www.thermofisher.com/GCtools)

## GFM pro electronic flowmeter

Measure and monitor flow quickly and efficiently

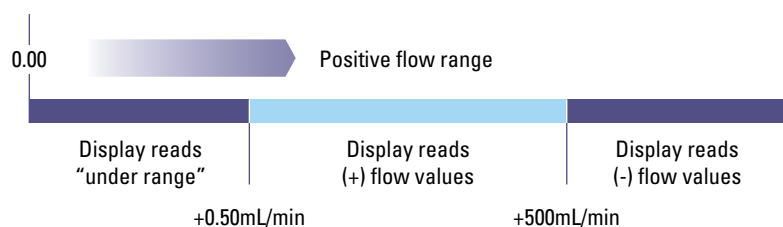
The Thermo Scientific™ GFM Pro Flowmeter is specifically designed for use with gas chromatography instruments. This versatile product is an electronic device capable of measuring volumetric flow for all types of gases. Real-time measurements can be made for various types of flow paths including continually changing gas types. The unit is portable so it can be hand-held or it also has an optional stand for bench-top convenience.

- Compact ergonomic design features side grips for added durability
- Easy-to-use interface features over-range warning indicator and auto-shutoff
- Measurement range of 0.5-500mL/min
- Accuracy of +/- 2% of flow or +/- 0.2mL/min, whichever is greater
- Data output via USB port
- Calibration: traceable to NIST primary standards
- Explosion-proof rating for flammable and explosive gases
- CE certified
- Uses 2-AA batteries
- Re-calibration service available



### GFM Pro electronic flowmeter

Description	Cat. No.	Quantity
GFM Pro Flowmeter	66002-010	1 Each
Soft-Sided Carry Case (Flowmeter not included)	66002-002	1 Each
GFM Pro Flowmeter Re-Calibration	66002-GFMCAL	1 Each



# GC columns

A comprehensive column range providing excellent quality and performance, with guaranteed reproducibility

Get reliable, reproducible results for GC and GC-MS with our comprehensive portfolio of GC columns that meet all of your analytical needs.

## TraceGOLD

- Offering a leap forward in column performance delivering low bleed and superior inertness

## TRACE

- For excellent quality and reproducibility for a wide range of applications

## UltraFast

- Short, narrow-bore columns for use with the Thermo Scientific™ UltraFast™ instrument

## TracePLOT

- Providing reproducible analyses of permanent gases, hydrocarbons and solvents

For more information visit  
[thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)

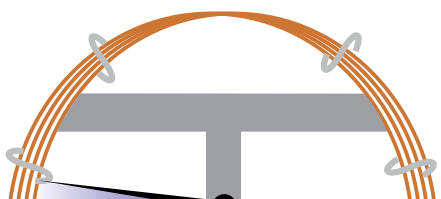


# TraceGOLD GC columns

## TraceGOLD TG-1MS GC columns

Exceptionally low bleed for optimal signal-to-noise ratio, sensitivity and MS integrity

- Non-polar
- Equivalent to USP G2



Phase:	100% dimethyl polysiloxane
Max. Temps.:	330°C/350°C for Standard Columns 430°C for Metal Columns
USP Listing:	G2

### TraceGOLD TG-1MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.10	10	0.1	26099-0200	1 Each
0.20	12	0.33	26099-5820	1 Each
0.15	20	0.15	26099-2760	1 Each
	40	0.15	26099-2940	1 Each
0.18	20	0.18	26099-5780	1 Each
0.25	15	0.25	26099-1300	1 Each
		0.5	26099-2110	1 Each
		1.0	26099-2840	1 Each
	30	0.25	26099-1420	1 Each
		0.5	26099-2230	1 Each
		1.0	26099-2960	1 Each
		30 with 5m SafeGuard	0.25	26099-1425
60	0.25	26099-1540	1 Each	
0.32	15	0.5	26099-2350	1 Each
		1.0	26099-3080	1 Each
		0.25	26099-1310	1 Each
	30	1.0	26099-2850	1 Each
		0.25	26099-1430	1 Each
		0.5	26099-2240	1 Each
		1.0	26099-2970	1 Each
60	3.0	26099-4840	1 Each	
0.53	15	0.25	26099-1550	1 Each
		0.5	26099-2360	1 Each
		1.0	26099-3090	1 Each
	30	0.5	26099-2130	1 Each
		1.0	26099-2860	1 Each
		1.5	26099-3340	1 Each
		0.5	26099-2250	1 Each
1.0	26099-2980	1 Each		
1.5	26099-3360	1 Each		
30 with 5m SafeGuard	1.0	26099-2985	1 Each	

### Applications:

- Hydrocarbons
- Solvent impurities
- PCB congeners
- Aroclor mixes
- Simulated distillation
- Drugs of abuse
- Natural gas odorants
- Essential oils
- Pesticides

### Similar to:

- Rxi-1ms
- DB-1
- DB-1ms
- HP-1
- HP-1ms
- Ultra-1
- SPB-1
- Equity-1
- VF-1ms
- CP-Sil 5 CB Low Bleed/MS

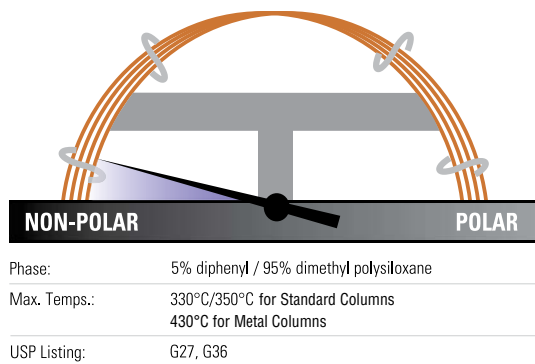
### TraceGOLD TG-1MT Metal GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26M99-1300	1 Each
	30	0.25	26M99-1420	1 Each
0.53	5	0.1	26M99-4130	1 Each
		0.88	26M99-4120	1 Each
	6	0.15	26M99-4100	1 Each

## TraceGOLD TG-5MS GC columns

The most widely used MS phase in gas chromatography

- Low polarity phase
- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Exceptional inertness ideal for analysis of active compounds
- Equivalent to USP G27 phase



### TraceGOLD TG-5MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity	
0.10	10	0.1	26098-0200	1 Each	
0.15	20	0.15	26098-2760	1 Each	
	40	0.15	26098-2940	1 Each	
0.18	20	0.18	26098-5780	1 Each	
	20 with 5m SafeGuard	0.18	26098-5785	1 Each	
0.25	15	0.25	26098-1300	1 Each	
	15 with 5m SafeGuard	0.25	26098-1305	1 Each	
	30	0.25	26098-1420	1 Each	
		0.5	26098-2230	1 Each	
		1.0	26098-2960	1 Each	
	30 with 5m SafeGuard	0.1	26098-0475	1 Each	
		0.25	26098-1425	1 Each	
60	0.25	26098-1540	1 Each		
	0.5	26098-2350	1 Each		
	1.0	26098-3080	1 Each		
	0.32	15	1.0	26098-2850	1 Each
		30	0.25	26098-1430	1 Each
0.5			26098-2240	1 Each	
1.0			26098-2970	1 Each	
30 with 5m SafeGuard	0.25	26098-1435	1 Each		
60	0.25	26098-1550	1 Each		
	0.5	26098-2360	1 Each		
	1.0	26098-3090	1 Each		
	0.53	0.5	26098-2130	1 Each	
		1.0	26098-2860	1 Each	
		1.5	26098-3340	1 Each	
		30	0.25	26098-1440	1 Each
0.5	26098-2250		1 Each		
1.0	26098-2980		1 Each		
1.5	26098-3360		1 Each		
60	5.0		26098-4100	1 Each	

### Applications:

- Semi-volatiles
- Phenols
- Amines
- Residual solvents and solvent impurities
- Drugs of abuse
- Pesticides
- PCB congeners
- Aroclor mixes

### Similar to:

- Rxi-5ms
- DB-5
- HP-5
- HP-5ms
- Ultra-2
- SPB-5
- Equity-5
- CP-Sil 8

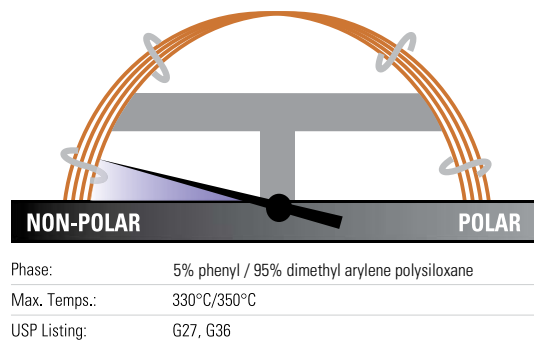
### TraceGOLD TG-5MT Metal GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.1	26M98-0350	1 Each
		0.25	26M98-1300	1 Each
	30	0.25	26M98-1420	1 Each
		0.25	26M98-1540	1 Each

## TraceGOLD TG-5SiIMS GC columns

Incorporate phenyl groups in the polymer backbone for improved thermal stability, reduced bleed and reduced susceptibility to oxidation

- Low polarity, silarylene phase
- Designed for low bleed and outstanding inertness



### TraceGOLD TG-5SiIMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.15	20	0.15	26096-2760	1 Each
0.18	20	0.18	26096-5780	1 Each
0.25	15	0.25	26096-1300	1 Each
	15 with 10m SafeGuard	0.25	26096-1301	1 Each
	30	0.25	26096-1420	1 Each
		0.5	26096-2230	1 Each
		1.0	26096-2960	1 Each
	30 with 5m SafeGuard	0.25	26096-1425	1 Each
		0.5	26096-2235	1 Each
	30 with 10m SafeGuard	0.25	26096-1421	1 Each
	60	0.25	26096-1540	1 Each
		1.0	26096-3080	1 Each
0.32	30	0.25	26096-1430	1 Each
		0.5	26096-2240	1 Each
		1.0	26096-2970	1 Each
0.53	30	1.5	26096-3360	1 Each

#### Applications:

- GC-MS applications using ion-trap systems
- Polycyclic aromatics
- Hydrocarbons including chlorinated hydrocarbons
- Phthalates
- Phenols
- Amines
- Organophosphate

#### Similar to:

- DB-5ms Ultra Inert
- VF-5ms
- CP-Sil 8 Low-Bleed/MS
- Rxi-5SiIMS
- BPX5
- ZB-5ms
- Optima-5MS
- SLB-5

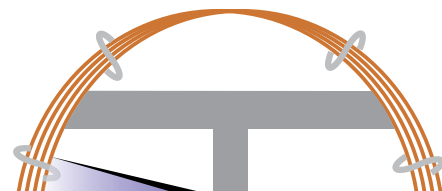
Learn more at [thermofisher.com/GCcolumns](http://thermofisher.com/GCcolumns)



## TraceGOLD TG-5MS AMINE GC columns

Analysis of ppm levels of amines without column priming

- Low polarity phase, base optimized
- Tubing surface is chemically altered to reduce tailing of active basic compounds
- Also allows analysis of neutral or weakly acidic compounds (e.g. phenols) and compounds susceptible to hydrogen bonding
- Low bleed at maximum operating temperature



NON-POLAR		POLAR	
Phase:	Modified 5% diphenyl / 95% dimethyl polysiloxane for basic compounds		
Max. Temps.:	300°C / 315°C		
USP Listing:	N/A		

### TraceGOLD TG-5MS AMINE GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26097-1300	1 Each
		1.0	26097-2840	1 Each
	30	0.25	26097-1420	1 Each
		0.5	26097-2230	1 Each
		1.0	26097-2960	1 Each
0.32	30	1.0	26097-2970	1 Each
0.53	30	1.0	26097-2980	1 Each
		3.0	26097-3960	1 Each

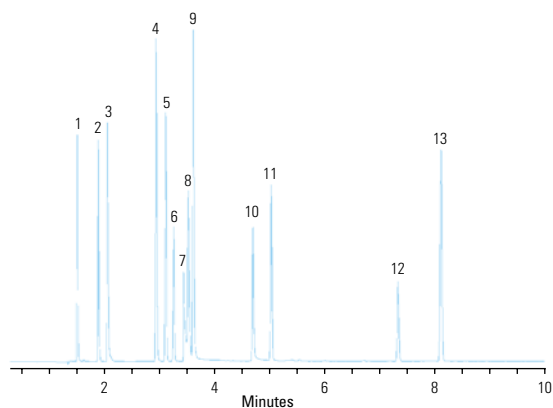
#### Applications:

- Amines and other basic compounds, including alkylamines, diamines, triamines, ethanolamines
- Nitrogen-containing heterocyclics

#### Similar to:

- Rtx-5 Amine

### Amines and phenols



#### TG-5MS Amine 30m x 0.32mm x 1.0µm

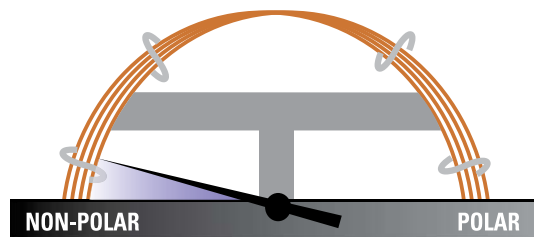
Temperature:	120°C to 220°C at 10°C/minute
Detector Type:	FID
Carrier Gas:	Hydrogen
Flow Rate:	40cm/min
Injection Volume:	1.0µL
Injection Mode:	Split 25:1, 300°C

1. diethylamine	8. octylamine
2. pyridine	9. 1-methyl-2-pyrrolidone
3. morpholine	10. 2-nitrophenol
4. phenol	11. 2,6-dimethylaniline
5. aniline	12. nicotine
6. 2-chlorophenol	13. 2-nitroaniline
7. diethylenetriamine	

## TraceGOLD TG-5HT GC columns

Offers extended operation up to 400°C, ideal for high temperature extended GC applications

- Low polarity
- Lower bleed and better inertness than comparable high-temperature columns
- Special design of fused silica tubing extends column lifetime by up to 40%



	NON-POLAR	POLAR
Phase:	5% diphenyl / 95% dimethyl polysiloxane	
Max. Temps.:	380°C/400°C	
USP Listing:	G27, G36	

### TraceGOLD TG-5HT GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.1	26095-0350	1 Each
		0.25	26095-1300	1 Each
	30	0.1	26095-0470	1 Each
		0.25	26095-1420	1 Each
0.32	15	0.1	26095-0360	1 Each
		0.1	26095-0480	1 Each
			0.25	26095-1430
0.53	10	0.15	26095-1640	1 Each
	30	0.15	26095-0620	1 Each

#### Applications:

- Phenols
- Residual solvents
- Solvents
- Semivolatiles
- Pesticides
- PCBs
- Solvent impurities

#### Similar to:

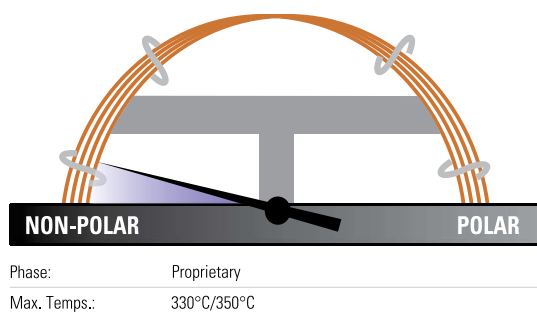
- Rxi-5HT
- BP-5HT
- VF-5HT
- ZB-5HT

Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)

## TraceGOLD TG-SQC GC columns

Ensure the quality of a Thermo Scientific instrument when installed on site

- Optimized for system qualification tests for new GC-MS installations or during service/maintenance of an existing instrument
- We recommend reserving this column for benchmark testing only



### TraceGOLD TG-SQC GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26070-1300	1 Each
	30	0.25	26070-1420	1 Each

### Applications:

- System Qualification Tests (Thermo Scientific GC-MS)



## TraceGOLD TG-35MS GC columns

Higher phenyl content for useful elution order and retention time changes

- Mid-polarity phase
- Equivalent to USP G42 phase

Phase:	35% diphenyl / 65% dimethyl polysiloxane
Max. Temps.:	300°C/320°C
USP Listing:	G42

### TraceGOLD TG-35MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26094-1300	1 Each
		0.25	26094-1420	1 Each
	30	0.5	26094-2230	1 Each
0.32	30	0.25	26094-1430	1 Each
		0.5	26094-2240	1 Each
0.53	15	0.5	26094-2130	1 Each
		30	1.0	26094-2980
	30	1.5	26094-3360	1 Each

#### Applications:

- Organochlorine pesticides and herbicides
- Pharmaceuticals
- PCB congeners
- Aroclor mixes
- Sterols
- Rosin acids
- Phthalate esters

#### Similar to:

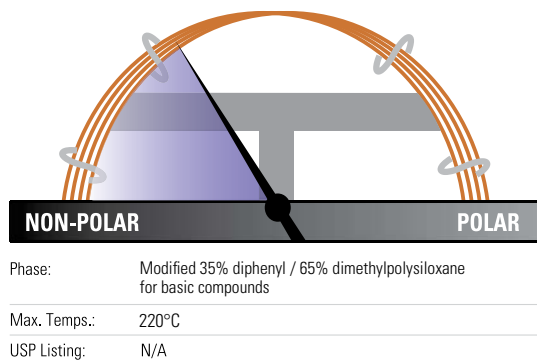
- Rtx-35
- BP-35
- HP-35
- SPB-35
- SPB-608

Learn more at [thermofisher.com/GCcolumns](https://www.thermofisher.com/GCcolumns)

## TraceGOLD TG-35MS AMINE GC columns

Chemically altered tubing surface reduces tailing and eliminates the need for column priming

- Mid-polarity phase, base optimized
- Developed for analysis of active basic compounds without derivatization
- Also allows analysis of neutral compounds and adsorptive compounds with oxygen groups susceptible to hydrogen bonding
- Low bleed at maximum operating temperature



### TraceGOLD TG-35MS AMINE GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.5	26092-2230	1 Each
		1.0	26092-2960	1 Each
0.32	30	1.0	26092-2970	1 Each
		1.5	26092-3350	1 Each
0.53	15	1.0	26092-2860	1 Each
	30	1.0	26092-2980	1 Each

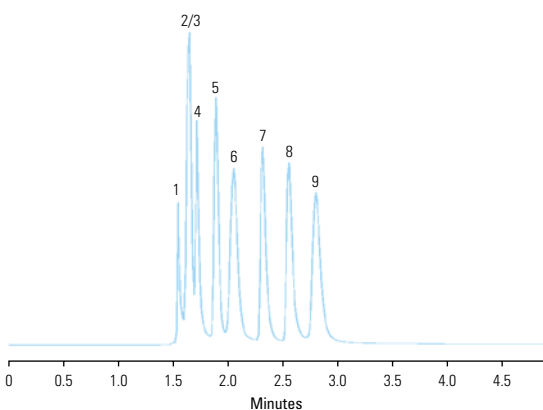
#### Applications:

- Amines including alkylamines, diamines, triamines and ethanolamines
- Nitrogen-containing heterocyclics

#### Similar to:

- Rtx-35 Amine

### Primary amines



#### TG-35MS AMINE 30m x 0.53mm x 1.0µm

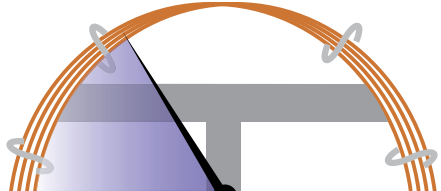
Temperature: 35°C (5 minute hold) Isothermal  
 Detector Type: FID  
 Carrier Gas: He  
 Flow Rate: 35cm/sec  
 Injection Volume: 1.0µL  
 Injection Mode: Split (10:1), 250°C

- |                   |                    |
|-------------------|--------------------|
| 1. methylamine    | 6. tert-butylamine |
| 2. dimethylamine  | 7. n-propylamine   |
| 3. trimethylamine | 8. diethylamine    |
| 4. ethylamine     | 9. sec-butylamine  |
| 5. isopropylamine |                    |

## TraceGOLD TG-1301MS GC columns

Low bleed, excellent reproducibility and column-to-column consistency even with sensitive detectors like ECD and MS

- Mid-polarity phase
- Long lifetime
- Excellent inertness
- Equivalent to USP G43 phase



<b>NON-POLAR</b>	<b>POLAR</b>
Phase: 6% cyanopropyl phenyl / 94% dimethyl polysiloxane	
Max. Temps.: 260°C/280°C	
USP Listing: G43	

### TraceGOLD TG-1301MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26091-1420	1 Each
		1.0	26091-2960	1 Each
	60	0.25	26091-1540	1 Each
		1.0	26091-3080	1 Each
0.32	30	0.25	26091-1430	1 Each
		1.0	26091-2970	1 Each
		1.5	26091-3350	1 Each
	60	1.8	26091-3390	1 Each
		1.8	26091-3410	1 Each
		3.0	26091-2980	1 Each
0.53	30	1.0	26091-2980	1 Each
		3.0	26091-3960	1 Each
	60	3.0	26091-4080	1 Each

#### Applications:

- Alcohols
- Volatile organics
- Oxygenates
- Residual solvents

#### Similar to:

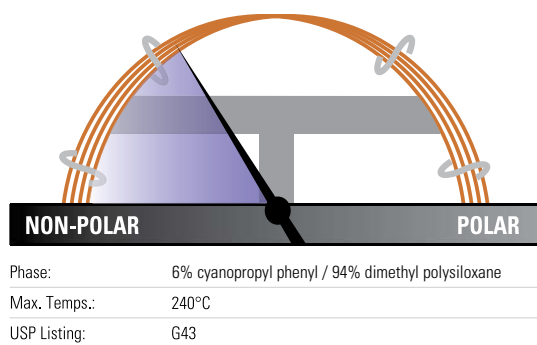
- Rtx-1301
- DB-1301
- BP-624
- HP-1301
- HP-624
- SPB-1301
- SPB-624
- VP-1301
- BF-624ms
- CP-1301
- CP-Select™ 624 CB

Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)

## TraceGOLD TG-624 GC columns

Offers 90+% resolution of the first six gases in EPA Method 8260 and EPA Method 524.2 for volatile organics analysis

- Mid-polarity phase
- Ideal for EPA methods 624 and 608
- Allows resolution of 2-nitropropane from 1,1-dichloropropanone under EPA Method 524.2 revision IV



### TraceGOLD TG-624 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	26085-4950	1 Each
	40	1.0	26085-4960	1 Each
0.25	30	1.4	26085-3320	1 Each
	60	1.4	26085-3330	1 Each
0.32	30	1.8	26085-3390	1 Each
	60	1.8	26085-3410	1 Each
0.53	30	3.0	26085-3960	1 Each
	60	3.0	26085-4080	1 Each
	75	3.0	26085-4900	1 Each
	105	3.0	26085-4090	1 Each

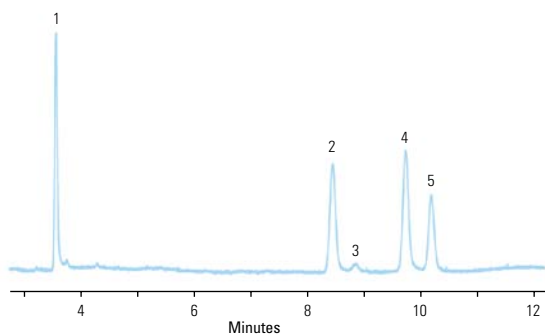
### Applications:

- Residual Solvents
- Volatile Organic Compounds
- Alcohols
- Oxygenates

### Similar to:

- DB-1301
- DB-624
- HP-1301
- HP-624
- SPB-1301
- SPB-624
- VF-1301
- VF-624ms
- CP-1301
- CP-Select 624 CB
- Rtx-624
- BP-624
- ZB-624
- Optima-1301
- Optima-624
- AT-624
- 007-1301

### Residual solvents class 1



#### TG-624 30m x 0.32mm x 1.80µm

Temperature: 40°C (20 minute hold) to 240°C at 10°C/min (20 minute hold)

Detector Type: FID  
 Carrier Gas: He  
 Flow Rate: 2.15mL/min  
 Injection Volume: 1mL  
 Injection Mode: Headspace, Split (1:5), 140°C

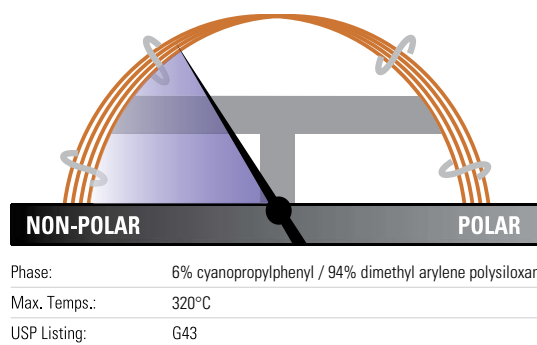
- 1,1-dichloroethane
- 1,1,1-trichloroethane
- carbon tetrachloride
- benzene
- 1,2-dichloroethane



## TraceGOLD TG-624SiIMS GC Columns

High thermal stability column ideal for volatile organics analysis

- Mid-polarity phase
- High thermal stability – maximum temperatures up to 320°C
- Highly inert – excellent peak shape for a wide range of compounds



### TraceGOLD TG-624SiIMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	26059-4950	1 Each
0.25	30	1.4	26059-3320	1 Each
	60	1.4	26059-3330	1 Each
0.32	30	1.8	26059-3390	1 Each
	60	1.8	26059-3410	1 Each
0.53	30	3.0	26059-3960	1 Each
	60	3.0	26059-4080	1 Each

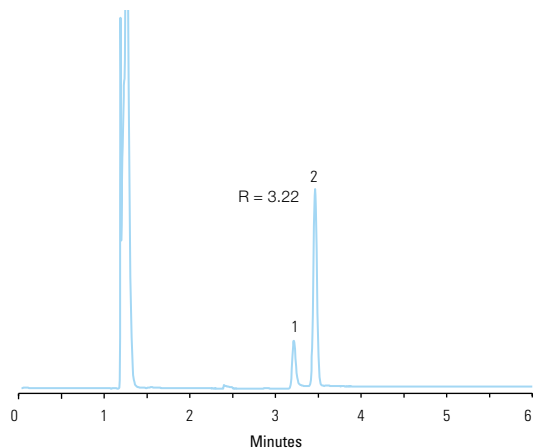
#### Applications:

- Residual Solvents
- Volatile Organic Compounds
- Alcohols
- Oxygenates

#### Similar to:

- DB-624 Ultra Inert
- VF-624ms
- CP-Select 624 CB
- ZB-624

### Acetonitrile and Dichloromethane



#### TG-624SiIMS 30m x 0.32mm x 1.8µm

Temperature: 40°C for 6 minutes  
 Detector Type: MS (ISQ); m/z 40,41 for Acetonitrile (1), m/z 49, 84 for Dichloromethane (2)  
 Carrier Gas: Helium  
 Flow Rate: 1.5 mL/min  
 Injection Volume: 500µL  
 Injection Mode: Headspace, Split (20:1) 220°C

1. Acetonitrile
2. Dichloromethane

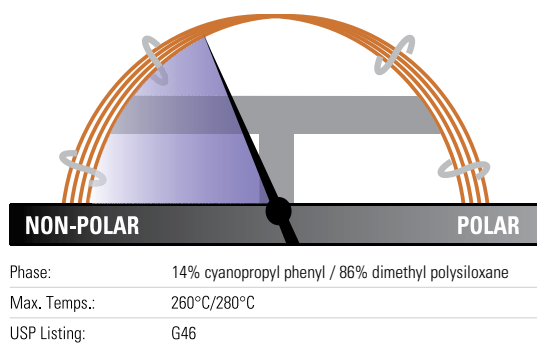
Learn more at [thermofisher.com/GCcolumns](http://thermofisher.com/GCcolumns)



## TraceGOLD TG-1701MS GC columns

Feature a mix of cyano and phenyl groups for increased polarity and a different elution order relative to less polar columns

- Mid-polarity phase, 14% cyanopropylphenyl methylpolysiloxane
- Fully characterized for long-term reproducibility, column-to-column consistency and low bleed
- Optimal for confirmation analysis
- Equivalent to USP G46 phase



### TraceGOLD TG-1701MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26090-1420	1 Each
		0.5	26090-2230	1 Each
		1.0	26090-2960	1 Each
	60	0.25	26090-1540	1 Each
		1.0	26090-3080	1 Each
		0.25	26090-1310	1 Each
0.32	15	0.25	26090-1310	1 Each
		0.5	26090-2240	1 Each
		1.0	26090-2970	1 Each
	30	0.25	26090-1430	1 Each
		0.5	26090-2240	1 Each
		1.0	26090-2970	1 Each
0.53	60	0.25	26090-1550	1 Each
		1.0	26090-3090	1 Each
		0.25	26090-1440	1 Each
	30	1.0	26090-2980	1 Each
		0.25	26090-1440	1 Each
		3.0	26090-3960	1 Each

### Applications:

- Alcohols
- Pesticides
- Oxygenates
- PCB congeners
- Aroclor mixes

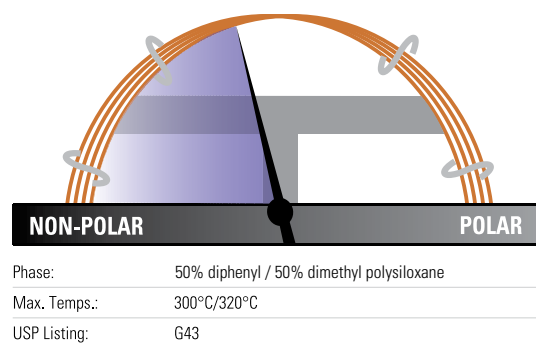
### Similar to:

- Rtx-1701
- DB-1701
- HP-1701
- SPB-1701
- VF-1701
- CP-Sil™ 19 CB

## TraceGOLD TG-17MS GC columns

Particularly suited to GC-MS applications that require more polarity than a 5% phenyl phase

- Mid-polarity phase
- Ideal for confirmational analysis
- Excellent inertness for active compounds such as pesticides
- Very low bleed ideal for analysis by GC-MS



### TraceGOLD TG-17MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26089-1300	1 Each
	30	0.25	26089-1420	1 Each
		0.5	26089-2230	1 Each
		1.0	26089-2960	1 Each
	60	0.25	26089-1540	1 Each
0.32	30	0.25	26089-1430	1 Each
		0.5	26089-2240	1 Each
		1.0	26089-2970	1 Each
0.53	30	0.25	26089-1440	1 Each
		1.0	26089-2980	1 Each
		1.5	26089-3360	1 Each

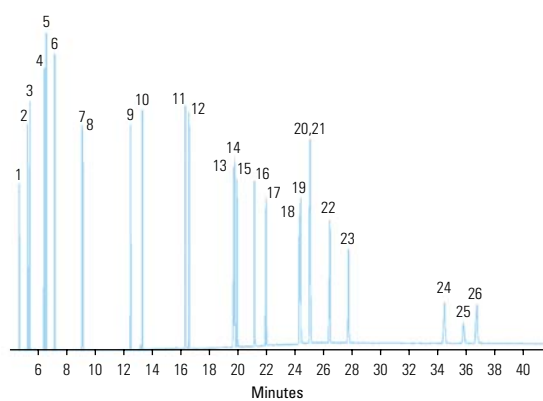
### Applications:

- Pesticides and herbicides
- Rosin acids
- Phthalate esters
- Triglycerides
- Sterols

### Similar to:

- Rxi-17
- DB-17
- DB-608
- VF-17ms
- CP-Sil 24 CB

### Polycyclic aromatic hydrocarbons



#### TG-17MS 30m x 0.25mm x 0.25µm

Temperature: 90°C (1.0 minute hold) to 215°C (0.5 minute hold) at 25°C/minute to 235°C at 4°C/minute to 280°C/minute at 15°C/minute to 320°C (20 minute hold) at 4°C/minute

Detector Type: MS  
Carrier Gas: He  
Flow Rate: 1.2mL/min  
Injection Volume: 1.0µL  
Injection Mode: Splitless, 300°C

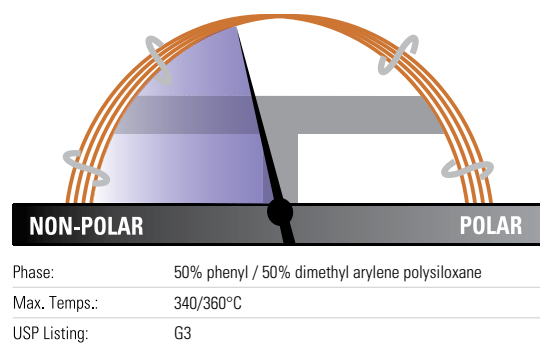
- |                          |                              |
|--------------------------|------------------------------|
| 1. naphthalene           | 15. benzo(j)fluoranthene     |
| 2. 1-methylnaphthalene   | 16. benzo(a)pyrene           |
| 3. 2-methylnaphthalene   | 17. 3-methylcholanthrene     |
| 4. acenaphthylene        | 18. dibenzo(a,h)acridine     |
| 5. acenaphthene          | 19. dibenzo(a,j)acridine     |
| 6. fluorene              | 20. indeno(1,2,3-cd)pyrene   |
| 7. phenanthrene          | 21. dibenzo(a,h)anthracene   |
| 8. anthracene            | 22. benzo(ghi)perylene       |
| 9. fluoranthene          | 23. 7H-dibenzo(c,g)carbazole |
| 10. pyrene               | 24. dibenzo(a,e)pyrene       |
| 11. benzo(a)anthracene   | 25. dibenzo(a,i)pyrene       |
| 12. chrysene             | 26. dibenzo(a,h)pyrene       |
| 13. benzo(b)fluoranthene |                              |
| 14. benzo(k)fluoranthene |                              |

Learn more at [thermofisher.com/GCcolumns](http://thermofisher.com/GCcolumns)

## TraceGOLD TG-17SiIMS GC columns

Excellent separation of active environmental compounds

- Mid-polarity phase
- High thermal stability – maximum temperatures up to 340/360°C
- Excellent inertness for active environmental compounds such as PAHs



### TraceGOLD TG-17SiIMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.15	10	0.15	26072-2750	1 Each
0.18	20	0.18	26072-5780	1 Each
0.25	30	0.25	26072-1420	1 Each
0.32	30	0.25	26072-1430	1 Each

#### Applications:

- PAHs
- Pesticides and herbicides
- Phthalate esters
- Triglycerides

#### Similar to:

- DB-1 7ms
- VF-17ms
- CP-Sil 24 CB
- ZB-50
- BPX-50

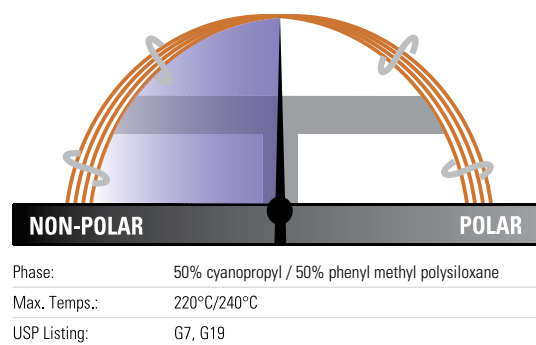
Learn more at [thermofisher.com/GCcolumns](http://thermofisher.com/GCcolumns)



## TraceGOLD TG-225MS GC columns

Offers better thermal stability than comparable columns

- Polar phase
- Innovative deactivation process for siloxane reduces tailing and improves efficiency over comparable columns
- Equivalent to USP G7, G19 phases



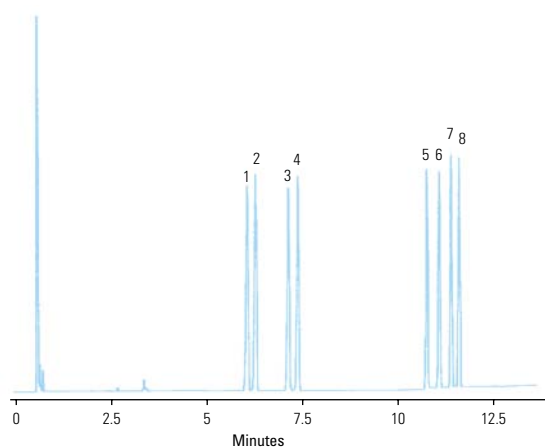
### TraceGOLD TG-225MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26083-1420	1 Each
	60	0.25	26083-1540	1 Each
0.32	30	0.25	26083-1430	1 Each

#### Applications:

- FAMES
- Carbohydrates
- Sterols
- Flavor compounds

#### Sugars



#### TG-225MS 15m x 0.25mm x 0.25µm

Temperature: 190°C (5 minute hold) to 250°C at 8°C/min (5 minute hold)

Detector Type: FID  
 Carrier Gas: Hydrogen  
 Flow Rate: 45cm/sec  
 Injection Volume: 0.5µL  
 Injection Mode: Split (35:1), 260°C

- |               |               |
|---------------|---------------|
| 1. rhamnitol  | 5. mannitol   |
| 2. fucitol    | 6. galactitol |
| 3. ribitol    | 7. glucitol   |
| 4. arabinitol | 8. inositol   |

#### Similar to:

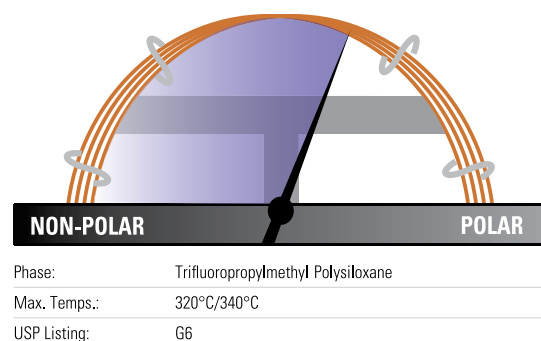
- Rtx-225
- DB-225
- HP-225
- SPB-225

Learn more at [thermofisher.com/GCcolumns](http://thermofisher.com/GCcolumns)

## TraceGOLD TG-200MS GC columns

Exceptionally inert mid-polarity columns with selectivity and elution order optimized for difficult separations

- Polar phase, trifluoropropyl methylpolysiloxane solid phase resolves compounds that phenyl and cyano phases cannot
- Outstanding thermal stability and low bleed
- Suitable for use with sensitive detectors including ECD, NPD and MS
- Confirmation column in combination with another GC column



### TraceGOLD TG-200MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.15	20	0.15	26084-2760	1 Each
0.25	30	0.25	26084-1420	1 Each
		1.0	26084-2960	1 Each
0.32	30	0.25	26084-1430	1 Each
		0.5	26084-2240	1 Each
		1.0	26084-2970	1 Each

#### Applications:

- Solvents
- Fluorocarbons
- Alcohols and ketones
- Silanes
- Glycols

#### Similar to:

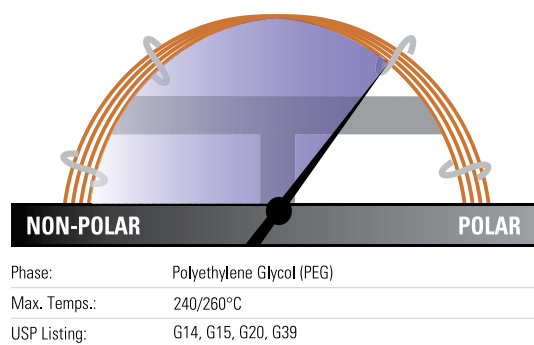
- Rtx-200MS
- DB-200
- DB-210



## TraceGOLD TG-WaxMS GC columns

Manufactured for better column-to-column reproducibility

- Polar phase, polyethylene glycol
- Polar-deactivated surface tightly binds polymer for excellent thermal stability
- Resists oxidative damage, damage from strongly acidic or basic volatiles better than silicone solid phases



### TraceGOLD TG-WaxMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity	
0.1	10	0.1	26088-0200	1 Each	
0.25	15	0.25	26088-1300	1 Each	
	30	0.25	26088-1420	1 Each	
		0.5	26088-2230	1 Each	
	30 with 5m SafeGuard	0.25	26088-1421	1 Each	
	60	0.25	26088-1540	1 Each	
		0.5	26088-2350	1 Each	
0.32	15	0.5	26088-2120	1 Each	
		0.25	26088-1430	1 Each	
	30	0.5	26088-2240	1 Each	
		1.0	26088-2970	1 Each	
		0.25	26088-1435	1 Each	
	60	0.25	26088-1550	1 Each	
0.5			26088-2360	1 Each	
1.0		26088-3090	1 Each		
		0.5	26088-2130	1 Each	
0.53		15	1.0	26088-2860	1 Each
			0.25	26088-1440	1 Each
	30	0.5	26088-2250	1 Each	
		1.0	26088-2980	1 Each	
		1.5	26088-3360	1 Each	
		0.25	26088-1560	1 Each	
	60	0.5	26088-2370	1 Each	
		1.0	26088-3100	1 Each	

### Applications:

- FAMES
- Flavor compounds and essential oils
- Solvents
- Xylene isomers
- EPA Method 603 for Acrolein/ Acrylonitrile

### Similar to:

- DB-WAX
- DB-WAXetr
- HP-Wax
- HP-Innowax
- Supelcowax 10
- CP-Wax 52 CB
- Stabilwax
- Rtx-Wax
- BP20
- ZB-Wax
- Optima Wax
- AT-Wax

### TraceGOLD TG-WaxMT Metal GC columns

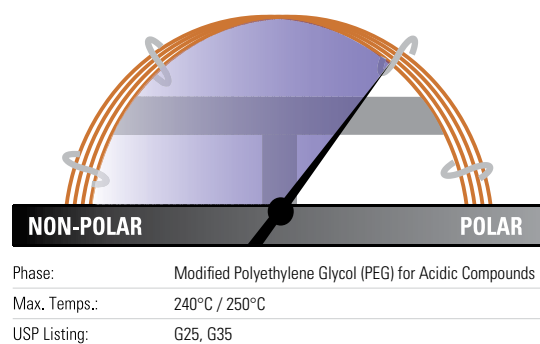
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26M88-1420	1 Each
	60	0.25	26M88-1540	1 Each

Learn more at [thermofisher.com/GCcolumns](https://www.thermofisher.com/GCcolumns)

## TraceGOLD TG-WaxMS A GC columns

Acidic functionality in the polymer structure allows analysis of acidic compounds without derivatization

- Polar phase, acid-deactivated polyethylene glycol
- Resists oxidative damage and adsorption of acids
- Excellent peak shapes for high MW acids
- Equivalent to USP G25, G35 phases



### TraceGOLD TG-WaxMS A GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26087-1300	1 Each
	30	0.25	26087-1420	1 Each
		0.5	26087-2230	1 Each
	60	0.25	26087-1540	1 Each
0.32	15	0.25	26087-1310	1 Each
	30	0.25	26087-1430	1 Each
		0.5	26087-2240	1 Each
		1.0	26087-2970	1 Each
0.53	15	1.0	26087-2860	1 Each
	30	0.25	26087-1440	1 Each
		1.0	26087-2980	1 Each

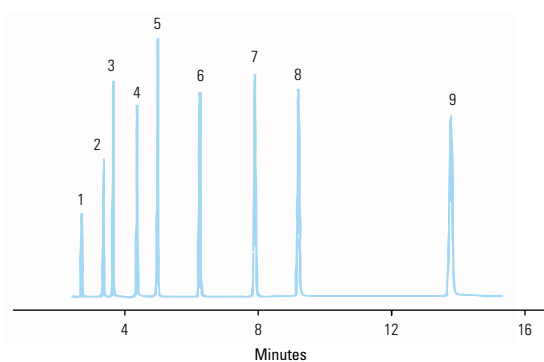
#### Applications:

- Organic acids
- Free fatty acids
- Alcohols

#### Similar to:

- DB-FFAP
- HP-FFAP
- NUKOL
- OV-351
- CP-Wax 58 CB
- FFAP
- Stabilwax-DA
- BP-21
- Optima FFAP

### Free fatty acids



#### TG-WaxMS A 30m x 0.25mm x 0.25µm

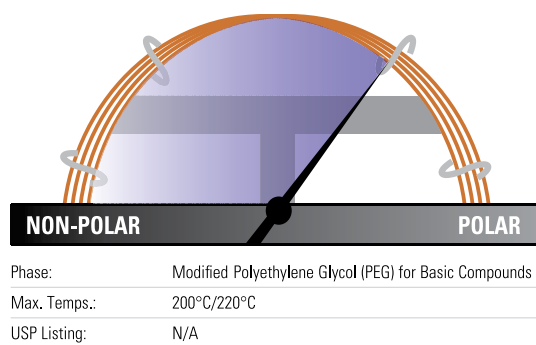
Temperature: 145°C Isothermal  
 Detector Type: FID  
 Carrier Gas: Hydrogen  
 Flow Rate: 40cm/sec  
 Injection Volume: 1.0µL  
 Injection Mode: Split (50:1), 250°C

- |                    |                    |
|--------------------|--------------------|
| 1. acetic acid     | 7. isocaproic acid |
| 2. propionic acid  | 8. caproic acid    |
| 3. isobutyric acid | 9. heptanoic acid  |
| 4. n-butyric acid  |                    |
| 5. isovaleric acid |                    |
| 6. n-valeric acid  |                    |

## TraceGOLD TG-WaxMS B GC columns

Base deactivation allows analysis of basic analytes without derivatization or column priming

- Polar phase, base deactivated polyethylene glycol
- Reduced absorption and improved responsiveness for basic compounds
- Not suitable for use with water or alcohols



### TraceGOLD TG-WaxMS B GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26086-1420	1 Each
		0.5	26086-2230	1 Each
0.32	30	0.25	26086-1430	1 Each
0.53	30	1.0	26086-2980	1 Each

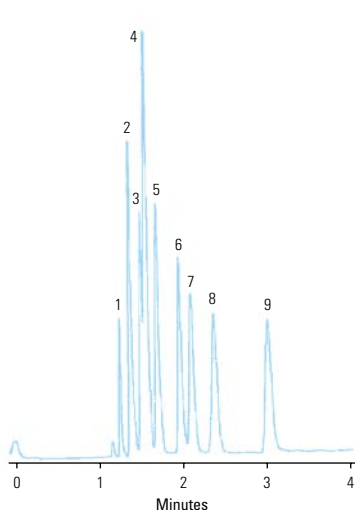
#### Applications:

- Amines
- Alkylamines
- Diamines
- Other basic compounds

#### Similar to:

- CAM
- Carbowax™ Amine
- CP Wax51
- Stabilwax-DB

### Amines



#### TG-WaxMS B 30m x 0.53mm x 1.0µm

Temperature: 45°C Isothermal  
 Detector Type: FID  
 Carrier Gas: Hydrogen  
 Flow Rate: 40cm/sec  
 Injection Volume: 1µL  
 Injection Mode: Direct Injection, 250°C

- |                   |                    |
|-------------------|--------------------|
| 1. trimethylamine | 7. tert-butylamine |
| 2. dimethylamine  | 8. diethylamine    |
| 3. ethylamine     | 9. sec-butylamine  |
| 4. methylamine    |                    |
| 5. isopropylamine |                    |
| 6. n-propylamine  |                    |

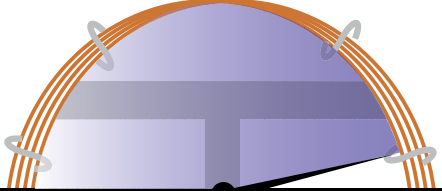
Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)



## TraceGOLD TG-POLAR GC columns

Specifically designed polymer and surface treatment overcome traditional problems with high-polarity columns

- Highly polar phase
- Strong dipole moment and high selectivity for cis/trans compounds or compounds with conjugated double bonds
- Equivalent to USP G8 and G48



<b>NON-POLAR</b>	<b>POLAR</b>
Phase:	90% biscyanopropyl / 10% cyanopropyl phenyl polysiloxane
Max. Temps.:	260°C/275°C
USP Listing:	G8, G48

### TraceGOLD TG-POLAR GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.1	26082-0470	1 Each
		0.2	26082-5010	1 Each
	60	0.1	26082-0590	1 Each
		0.2	26082-5020	1 Each
	105	0.1	26082-5000	1 Each
		0.2	26082-5030	1 Each
0.32	30	0.2	26082-5040	1 Each
	60	0.2	26082-5050	1 Each

#### Applications:

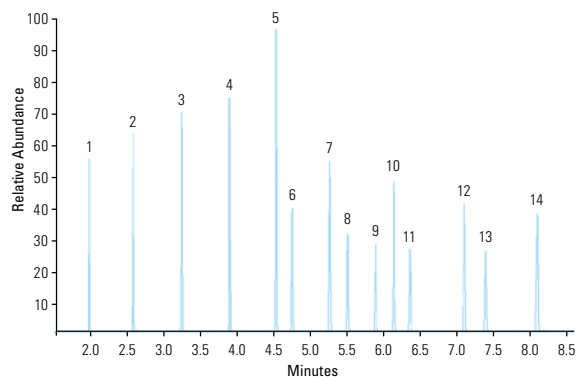
- Cis/Trans FAMES
- Dioxins

#### Similar to:

- DB-23
- HP-23
- Rtx-2330
- SP-2330
- SP-2380
- SPB-2560
- HP-88

- Silar 10c
- CP-Sil 88 FAME
- CP-Sil 88
- BPX 70
- BPX 90

### FAMES C8-C24



#### TG-POLAR 30m x 0.25mm x 0.2µm

Temperature: 100°C (0.5 minute hold) to 195°C at 25°C/minute (1 minute hold) to 250°C at 10°C/minute (3 minute hold)

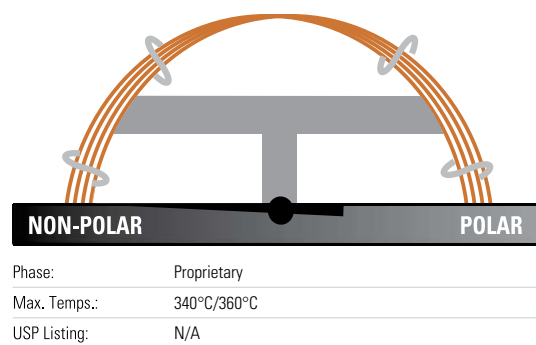
Detector Type: MS  
 Carrier Gas: He  
 Flow Rate: 1.2mL/min  
 Injection Volume: 0.1µL  
 Injection Mode: Split (100:1), 250°C

- |                        |                               |
|------------------------|-------------------------------|
| 1. Methyl octanoate    | 10. Methyl linolenate         |
| 2. Methyl decanoate    | 11. Methyl arachidate         |
| 3. Methyl decanoate    | 12. Methyl behenate           |
| 4. Methyl myristate    | 13. Methyl cis-13-docosanoate |
| 5. Methyl palmitate    | 14. Methyl tetracosanoate     |
| 6. Methyl palmitoleate |                               |
| 7. Methyl stearate     |                               |
| 8. Methyl oleate       |                               |
| 9. Methyl linoleate    |                               |

## TraceGOLD TG-XLBMS GC columns

General purpose columns exhibiting extremely low bleed

- Low polarity phase, proprietary
- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Ideal for analysis of active, high molecular weight compounds with sensitive GC-MS systems



### TraceGOLD TG-XLBMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	0.18	26079-5780	1 Each
	15	0.25	26079-1300	1 Each
0.25	30	0.25	26079-1420	1 Each
		0.5	26079-2230	1 Each
	60	0.25	26079-1540	1 Each
0.32	30	0.25	26079-1430	1 Each

#### Applications

- Pesticides
- PCB congeners
- PAHs
- Aroclor mixes

#### Similar to:

- Rxi-XLB
- DB-XLB
- VF-Xms

### Semi-Volatile organic compounds (SVOC) application kit

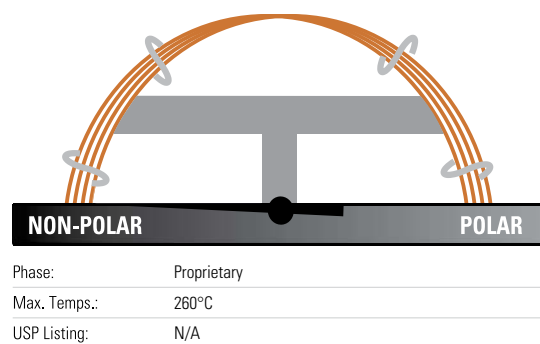
Description	Cat. No	Quantity
Semi-Volatile Organic Compounds (SVOC) Application kit	60181-736	1 Each
<b>Contains the following:</b>		
TG-5MS GC COLUMN 30MX0.25MMX 0.50MM	26098-2230	1 Each
BTO Septa 11mm Diameter (Blister Pack)	31303233-BP	50 Pack
LINERGOLD PRECISION LINER, WOOL, 4X6.3X78.5MM 5PK	453A1255-UI	5 Pack
LinerGOLD Splitless Liner, Single Taper, Wool 4x6.5x78.5mm	453A1925-UI	5 Pack
Gold Plated Inlet Seals, 0.8mm	290GA082	2 Pack
Liner Sealing Ring for SSL / 5pk	29001320	5 Pack
Column Nut for SSL & SSLBackflush	35050458	5 Pack
15/85 GRAPH/VESP Ferrule for 0.1-0.25mmID column	290VA191	10 Pack
SILANIZED AMB TARGET DP-IDVIAL, 100/PK	c4000-s2w	100 Pack
AVCS BLUE CAP&TS SEPTA100/PK,1000/CS	c5000-54b	100 Pack
10UL FN SYRINGE, 50MM LENGTH23 GAUGE, CONE 1/PK	36520060	1 Each

Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)

## TraceGOLD TG-VRX GC columns

Application specific column for volatile organic pollutants

- Highly stable polymer phase
- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Excellent resolution for analysis of volatile compounds
- Fast analysis times for volatile compounds



### TraceGOLD TG-VRX GC columns

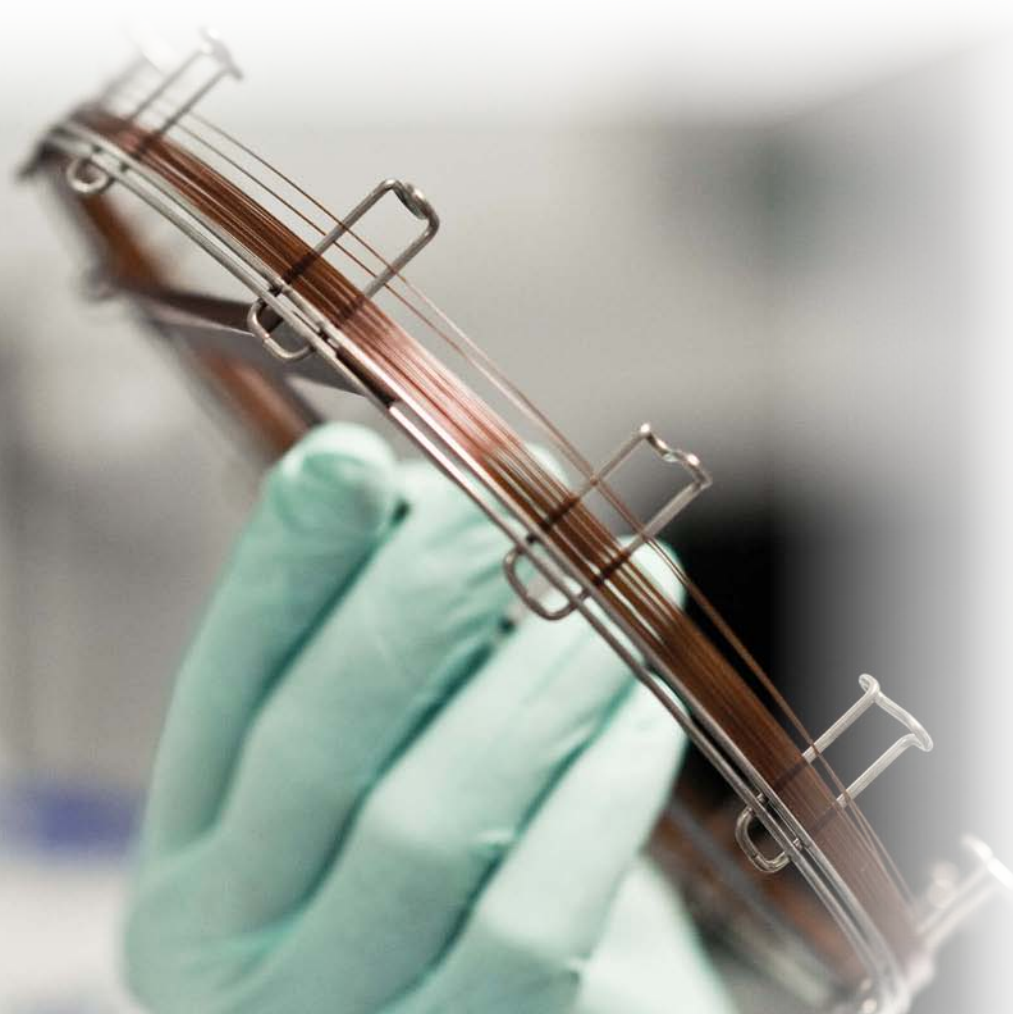
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	26081-4950	1 Each
	40	1.0	26081-4960	1 Each
0.25	30	1.4	26081-3320	1 Each
	60	1.4	26081-3330	1 Each
0.32	30	1.8	26081-3390	1 Each
	60	1.8	26081-3410	1 Each

#### Applications:

- Volatile organic pollutants
- US EPA Method 8021 compounds

#### Similar to:

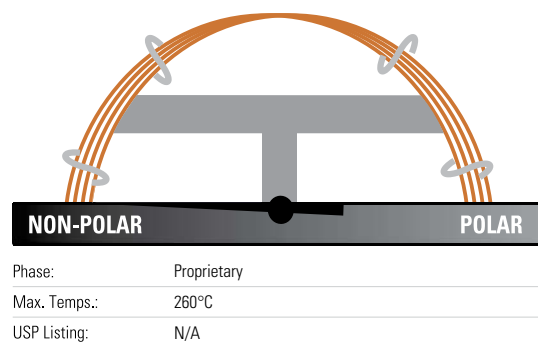
- Rtx-VRX
- DB-VRX



## TraceGOLD TG-VMS GC columns

Application specific column for volatile organic pollutants

- Highly stable polymer phase
- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Excellent resolution for analysis of volatile compounds
- Fast analysis times for volatile compounds



### TraceGOLD TG-VMS GC columns

ID (mm)	Length (m)	Film Thickness (μm)	Cat. No.	Quantity
0.18	20	1.0	26080-4950	1 Each
0.25	30	1.4	26080-3320	1 Each
	60	1.4	26080-3330	1 Each
0.32	60	1.8	26080-3410	1 Each

#### Applications:

- Volatile organic pollutants
- US EPA Method 8260B compounds

#### Similar to:

- Rtx-VMS

### Volatile organic compound (VOC) application kit

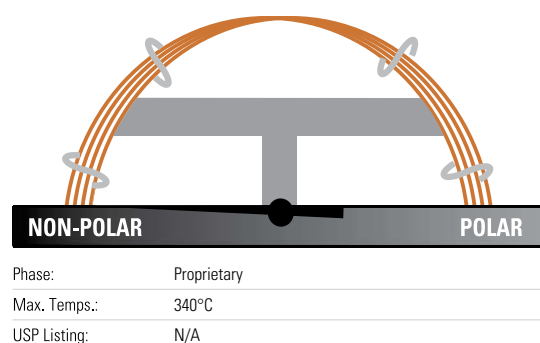
Description	Cat. No.	Quantity
Volatile Organic Compound(VOC) Apps Kit	60181-734	1 Each
<b>Contains the following:</b>		
TG-VMS GC Column, 20m x 0.18mm x 1.00 μm	26080-4950	1 Each
BTO Septa 11mm Diameter (Blister Pack)	31303233-BP	50 Pack
LinerGOLD Split Liner 1x6.3x78.5mm	453A1335-UI	5 Pack
LinerGOLD Splitless Liner, Single Taper, Wool 4x6.5x78.5mm	453A1925-UI	5 Pack
Gold Plated Inlet Seals, 0.8mm	290GA082	2 Pack
Liner Sealing Ring for SSL	29001320	5 Pack
Column Nut for SSL & SSL Backflush	35050458	5 Pack
15/85 GRAPH/VESP Ferrule for 0.1-0.25mm ID column	290VA191	10 Pack
SILANIZED AMB TARGET DP-IDVIAL,	c4000-s2w	100 Pack
AVCS BLUE CAP&TS SEPTA	c5000-54b	100 Pack
CLR 40ML EPA ASM VIAL KIT, 1000 CLASS,	B7950	100 Pack

Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)

## TraceGOLD TG-OCP I / TG-OCP II GC columns

Application-specific columns for organochlorine pesticides and herbicides

- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Fast analysis time giving full separation of chlorinated pesticides
- Ideal for US EPA methods 8081, 608 and CLP



### TraceGOLD TG-OCP I GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26078-1420	1 Each
0.32	30	0.32	26078-5760	1 Each

#### Applications:

- Organochlorine pesticides
- Herbicides

#### Similar to:

- Rtx-CLPesticides/  
Rtx-CLPesticides2

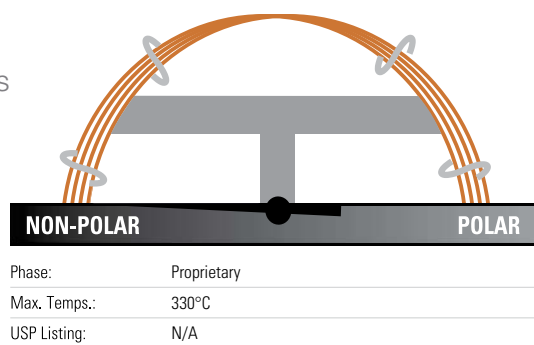
### TraceGOLD TG-OCP II GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	0.14	26077-5690	1 Each
0.25	30	0.2	26077-5720	1 Each
0.32	30	0.25	26077-1430	1 Each

## TraceGOLD TG-OPP I / TG-OPP II GC columns

Application-specific columns for organophosphorus pesticides

- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Fast analysis time giving full separation of organophosphorus pesticides
- Ideal for US EPA methods 8141A



### TraceGOLD TG-OPP I GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26076-1420	1 Each
0.32	30	0.5	26076-2240	1 Each

### TraceGOLD TG-OPP II GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26075-1420	1 Each
0.32	30	0.32	26075-5760	1 Each
0.53	30	0.5	26075-2250	1 Each

### Applications:

- Organophosphorus pesticides

### Similar to:

- Rtx-OPPesticides/  
Rtx-OPPesticides2

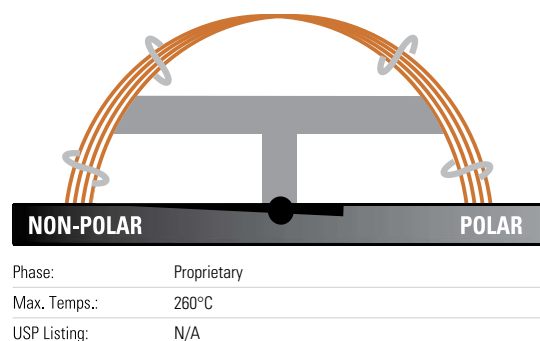
Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)



## TraceGOLD TG-ALC Plus I / TG-ALC Plus II GC columns

Application-specific columns for blood alcohol analysis

- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Fast analysis time giving full separation of blood alcohols



### TraceGOLD TG-ALC Plus I GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	30	1.8	26063-3390	1 Each
0.53	30	3.0	26063-3960	1 Each

### TraceGOLD TG-ALC Plus II GC columns

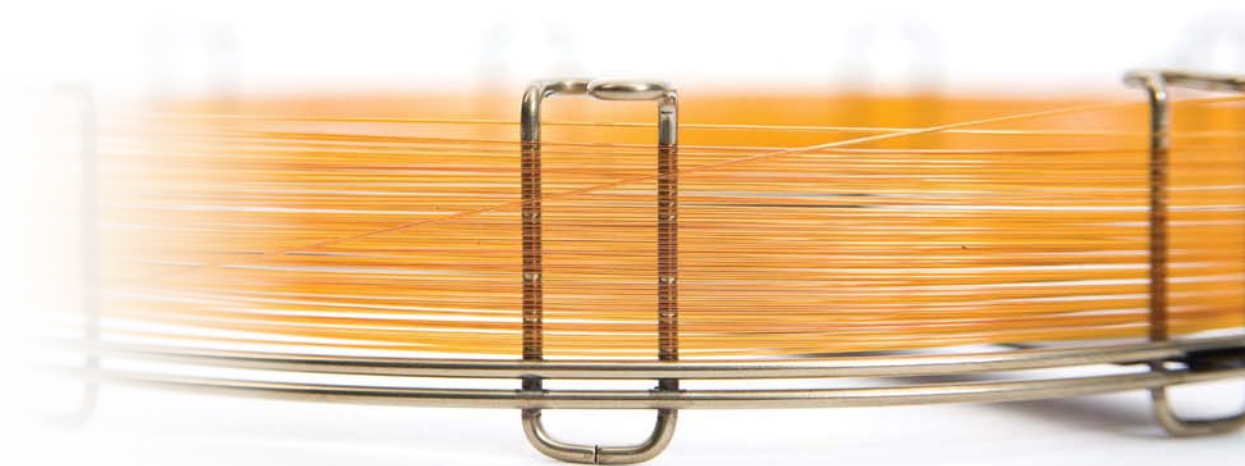
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	30	0.5	26063-2240	1 Each
0.53	30	1.0	26063-2980	1 Each

### Applications:

- Blood alcohol analysis
- Abused inhalent anesthetics
- γ-hydroxybutyrate (GHB)
- γ-butyrolactone (GBL)
- Glycols
- Common industrial solvents

### Similar to:

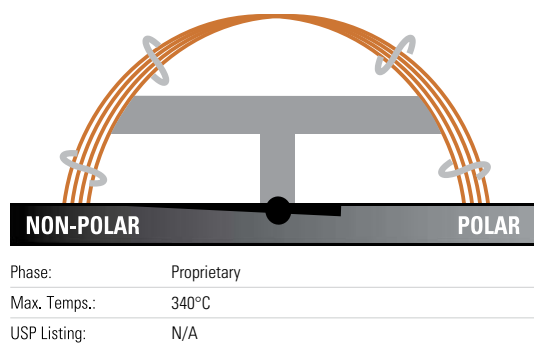
- Rtx BAC Plus 1 / Rtx BAC Plus 2



## TraceGOLD TG-Dioxin GC columns

Excellent separation of toxic dioxin and furan congeners

- Isomer specificity for 2,3,7,8-TCDD and 2,3,7,8-TCDF achieved with a single GC column
- High thermal stability – maximum temperatures up to 340°C
- Unique selectivity for toxic dioxin and furan congeners allows use as a confirmation GC column



### TraceGOLD TG-Dioxin GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	40	0.18	26066-4800	1 Each
0.25	60	0.25	26066-1540	1 Each

#### Applications:

- Dioxins
- Furans

#### Similar to:

- Rtx-Dioxin2
- DB-Dioxin

### Persistent organic pollutants (POPs) confirmation kit

Description	Cat. No	Quantity
Persistent Organic Pollutants (POPs) Confirmation kit	TS-MKITG503	1 Each
<b>Contains the following:</b>		
TG-Dioxin GC Column 60m x0.25mmx0.25µm	26066-1540	1 Each
BTO Septa 11mm Diameter (Blister Pack)	31303233-BP	50 Pack
LINERGOLD PRECISION LINER, WOOL, 4X6.3X78.5MM 5PK	453A1255-UI	5 Pack
LinerGOLD Splitless Liner, Single Taper, Wool 4x6.5x78.5mm	453A1925-UI	5 Pack
GOLD PLATED INLET SEALS, FORAGILENT GC'S, 0.8MM, 2PK	290GA082	2 Pack
Liner Sealing Ring for SSL	29001320	5 Pack
Column Nut for SSL & SSLBackflush	35050458	5 Pack
15/85 GRAPH/VESP Ferrule for 0.1-0.25mmID column	290VA191	10 Pack
1.1ML SCREW VIAL 500/PK CLR TAPERED 12x32MM	1.1-STVG	500 Pack
8mm SCREW CAP 500/PK PREFI WITH SILICONE/TEFLON LINER	8-SC-ST15	500 Pack
10UL FN SYRINGE, 57MM LENGTH23S GAUGE, CONE 1/PK	365D0271	1 Each

Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)




# TRACE GC columns

## TRACE TR-1 GC columns

Designed for method development

- Non-polar phase, 100% dimethyl polysiloxane
- High operating temperature



Phase:	100% Dimethyl Polysiloxane
Max. Temps.:	340°C/360°C
USP Listing:	G1, G2, G38

### TRACE TR-1 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260A130P	1 Each
	30	0.1	260A047P	1 Each
		0.25	260A142P	1 Each
	60	0.25	260A154P	1 Each
0.32	15	0.25	260A131P	1 Each
	30	0.25	260A143P	1 Each

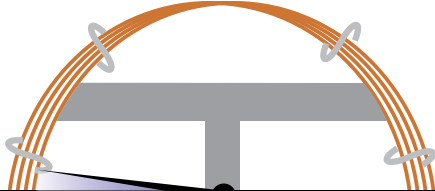
#### Applications:

- Chlorinated and nitroaromatic compounds
- Environmental analyses

## TRACE TR-1MS GC columns

Extremely low-bleed non-polar columns suitable for GC-MS applications

- Non-polar phase, 100% dimethyl polysiloxane
- High operating temperature
- Inert phase suited for environmental analyses



Phase:	100% Dimethyl Polysiloxane
Max. Temps.:	340°C/360°C
USP Listing:	G1, G2, G38

### TRACE TR-1MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.1	260B047P	1 Each
		0.25	260B142P	1 Each
		0.25	260B154P	1 Each
0.32	30	0.25	260B143P	1 Each
	60	0.25	260B155P	1 Each
		1.0	260B309P	1 Each

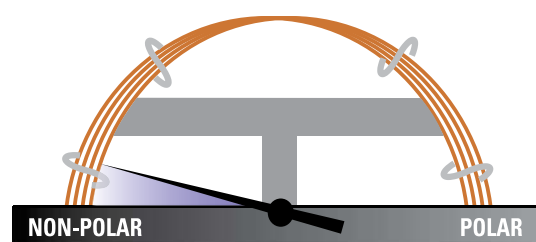
#### Applications:

- Chlorinated and nitroaromatic compounds
- GC-MS environmental analyses

## TRACE TR-5 GC columns

Excellent starting columns for method development, capable of performing most required separations

- Non-polar phase, 5% phenyl methyl polysiloxane
- High operating temperature and extremely low bleed
- Widely used in a variety of applications



Phase:	5% Phenyl Methylpolysiloxane
Max. Temps.:	320°C/340°C for films ≤1.5µm 280°C/300°C for films >1.5µm
USP Listing:	G27, G36

### TRACE TR-5 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260E130P	1 Each
	30	0.25	260E142P	1 Each
		0.5	260E223P	1 Each
		0.25	260E154P	1 Each
0.32	7	0.25	260E113P	1 Each
	15	0.25	260E131P	1 Each
		0.25	260E143P	1 Each
	30	0.5	260E224P	1 Each
		1.0	260E297P	1 Each
		0.25	260E155P	1 Each
	100	0.5	260E242P	1 Each
0.53	30	0.5	260E225P	1 Each
		1.0	260E298P	1 Each
		1.5	260E336P	1 Each
		5.0	260E470P	1 Each

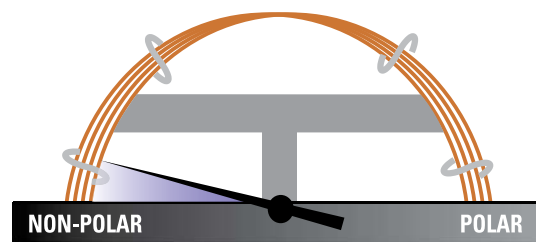
#### Applications:

- Alcohols
- Free fatty acids
- Aromatics
- Flavors
- Low polarity pesticides

## TRACE TR-5HT GC columns

Feature upper temperature limits as high as 400°C

- Non-polar phase, 5% phenyl polycarborane siloxane
- Allow the elution of higher-boiling hydrocarbons up to C100
- Low bleed even at elevated temperatures



Phase:	5% Phenyl Polycarborane Siloxane
Max. Temps.:	380°C/400°C
USP Listing:	G27, G36

### TRACE TR-5HT GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.1	260H035P	1 Each
	30	0.1	260H047P	1 Each
		0.25	260H142P	1 Each
0.32	12	0.1	260H030P	1 Each

#### Applications:

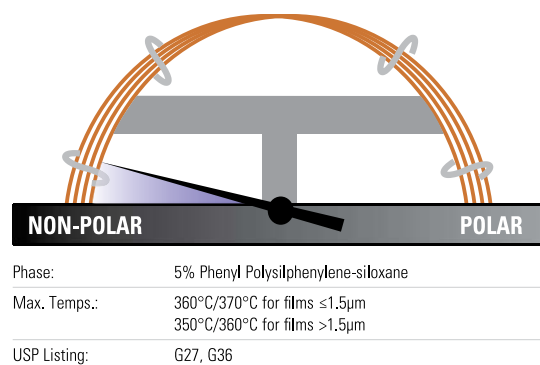
- Hydrocarbons
- Solvents
- Pesticides
- Herbicides
- Phenols
- Amines

Learn more at [thermofisher.com/GCcolumns](http://thermofisher.com/GCcolumns)

## TRACE TR-5MS GC columns

Features a popular GC-MS phase for many applications

- Non-polar phase, 5% phenyl polysilphenylene-siloxane
- Low bleed and high stability
- High signal-to-noise ratio for increased sensitivity
- High robustness to oxygen and water contamination



### TRACE TR-5MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity	
0.10	10	0.1	260F020P	1 Each	
0.18	20	0.18	260F578P	1 Each	
0.25	15	0.1	260F035P	1 Each	
		0.25	260F130P	1 Each	
	30	0.1	260F047P	1 Each	
		0.25	260F142P	1 Each	
		0.25	260F142J	1 Each	
	60	30	0.5	260F223P	1 Each
			1.0	260F296P	1 Each
60		0.25	260F154P	1 Each	
		1.0	260F308P	1 Each	
0.32	15	1.0	260F285P	1 Each	
	30	0.25	260F143P	1 Each	
		0.5	260F224P	1 Each	
		1.0	260F297P	1 Each	
0.53	30	0.5	260F225P	1 Each	
		1.0	260F298P	1 Each	
		1.5	260F336P	1 Each	
		3.0	260F396P	1 Each	

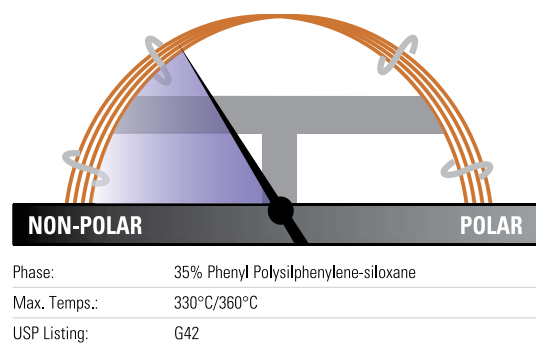
### Applications:

- Hydrocarbons
- Solvents
- Pesticides
- Herbicides
- Phenols
- Amines

## TRACE TR-35MS GC columns

Mid-polarity columns excellent for many applications

- Mid-polarity phase, 35% phenyl polysilphenylene-siloxane
- Exceptionally low surface activity
- Low bleed even at elevated temperatures



### TRACE TR-35MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260C130P	1 Each
	30	0.25	260C142P	1 Each
	60	0.25	260C154P	1 Each
0.32	30	0.25	260C143P	1 Each
	0.53	15	260C286P	1 Each
	30	1.0	260C298P	1 Each

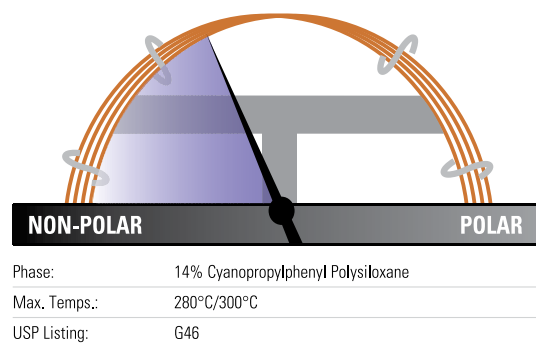
#### Applications:

- Pesticides
- Herbicides
- Drugs of abuse
- PAHs
- Pharmaceuticals

## TRACE TR-1701 GC columns

Mid-polarity column with alternative selectivity

- Mid-polarity phase, 14% cyanopropylphenyl polysiloxane
- Low bleed even at a high operating temperature
- Excellent starting point for method development
- Suitable for a wide variety of applications



### TRACE TR-1701 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260Q142P	1 Each
	60	0.25	260Q154P	1 Each
0.32	15	0.25	260Q131P	1 Each
	30	0.25	260Q143P	1 Each
	60	1.0	260Q309P	1 Each
		0.25	260Q155P	1 Each
0.53	30	1.0	260Q298P	1 Each

#### Applications:

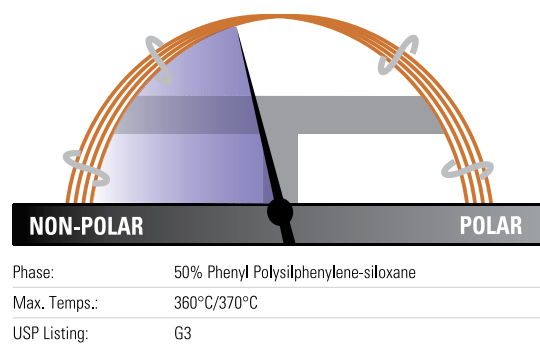
- Pesticides
- PCBs
- PAHs
- Organic acids
- Drugs
- Steroids
- EPA 608, 8081

Learn more at [thermofisher/GCcolumns](https://thermofisher.com/GCcolumns)

## TRACE TR-50MS GC columns

Mid-polarity columns well-suited to GC-MS applications

- Mid-polarity phase, 50% phenyl polysilphenylene-siloxane
- Low bleed decreases MS contamination
- Particularly useful for applications requiring a higher temperature and more polarity than a 5% phenyl column
- Column inertness results in minimal peak tailing and decreased breakdown of sensitive samples



### TRACE TR-50MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260R142P	1 Each
0.32	30	0.25	260R143P	1 Each

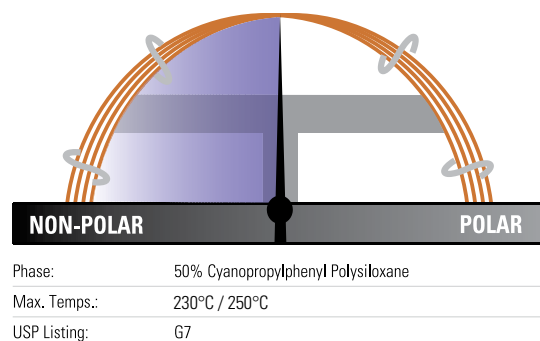
#### Applications:

- Herbicides
- Drugs of abuse
- EPA 604, 608, 8060, 8081
- Pharmaceuticals

## TRACE TR-225 GC columns

Reliable and reproducible performance

- Mid-polarity phase, 50% cyanopropylphenyl polysiloxane
- Low bleed even at elevated temperatures
- Outstanding robustness for difficult separations
- Manufactured to minimize risk of damage from contaminated carrier gas



### TRACE TR-225 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260Y142P	1 Each

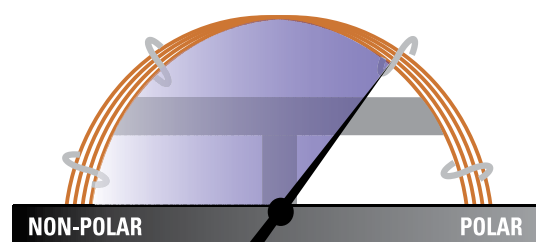
#### Applications:

- Fatty Acid Methyl Esters (FAMEs)
- Carbohydrates
- Neutral sterols

## TRACE TR-Wax GC columns

General purpose, high-polarity columns

- Polar phase, polyethylene glycol
- Highly crosslinked and fully deactivated
- Solvent washable



Phase:	Polyethylene Glycol (PEG)
Max. Temps.:	260°C/280°C for films <1.0µm 240°C/260°C for 1.0µm films
USP Listing:	G16, G20

### TRACE TR-Wax GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity	
0.25	30	0.25	260W142P	1 Each	
		0.5	260W223P	1 Each	
		1.0	260W296P	1 Each	
0.25	60	0.25	260W154P	1 Each	
	0.32	15	0.25	260W131P	1 Each
		30	0.25	260W143P	1 Each
0.5			260W224P	1 Each	
1.0	260W297P		1 Each		
0.32	60	0.25	260W155P	1 Each	
	0.53	15	1.0	260W309P	1 Each
		30	1.0	260W286P	1 Each
0.5			260W225P	1 Each	
1.0	260W298P		1 Each		
0.53	60	1.0	260W310P	1 Each	

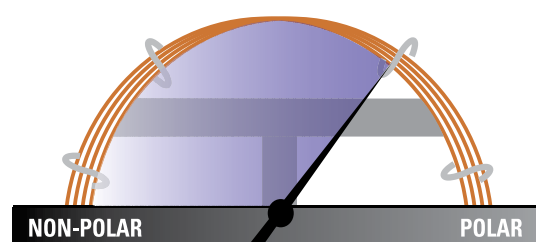
#### Applications:

- Esters
- Alcohols
- Ketones
- Glycols
- Aromatic isomers

## TRACE TR-WaxMS GC columns

Feature a high-polarity phase designed for mass spectrometry detectors

- Polar phase, polyethylene glycol
- Proprietary bonding method expands operating temperatures
- Extremely low bleed improves sensitivity and library matches
- High stability with oxygen and water



Phase:	Polyethylene Glycol (PEG)
Max. Temps.:	260°C/280°C
USP Listing:	G16

### TRACE TR-WaxMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity	
0.25	30	0.25	260X142P	1 Each	
		0.5	260X223P	1 Each	
		1.0	260X296P	1 Each	
0.25	60	0.25	260X154P	1 Each	
	0.32	30	0.25	260X143P	1 Each
		60	0.5	260X224P	1 Each
0.25			260X155P	1 Each	

#### Applications:

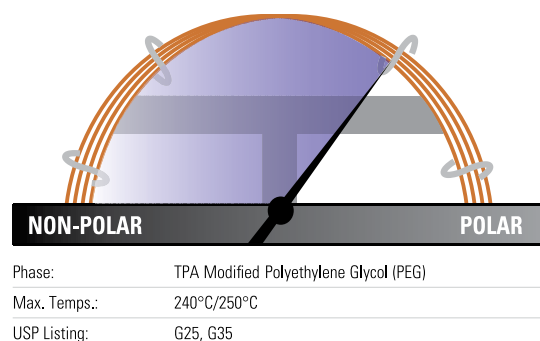
- Aromatic hydrocarbons
- Food additives
- Essential oils
- Alcohols
- Esters
- Aldehydes
- Ketones

Learn more at [thermofisher.com/GCcolumns](http://thermofisher.com/GCcolumns)

## TRACE TR-FFAP GC columns

High-polarity phase optimized for FFAP analysis

- Polar phase, TPA modified polyethylene glycol
- Bonded FFAP phase
- Quality tested for acidic compound analysis



### TRACE TR-FFAP GC Columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260N130P	1 Each
	30	0.25	260N142P	1 Each
	60	0.25	260N154P	1 Each
0.32	30	0.25	260N143P	1 Each
	50	0.5	260N230P	1 Each
0.53	30	0.5	260N225P	1 Each
		1.0	260N298P	1 Each

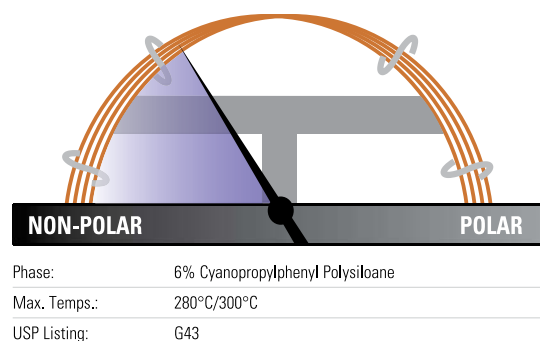
#### Applications:

- FFAP analysis
- Acidic compound analysis

## TRACE TR-V1 GC columns

Mid-polarity, thick-film columns

- Mid-polarity phase, 6% cyanopropylphenyl polysiloxane
- Thick films for the analysis of volatile analytes
- Low bleed suitable for MS detection



### TRACE TR-V1 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	260V495P	1 Each
0.25	30	1.4	260V332P	1 Each
	60	1.4	260V333P	1 Each
0.32	30	1.8	260V339P	1 Each
	60	1.8	260V341P	1 Each
0.53	30	3.0	260V396P	1 Each

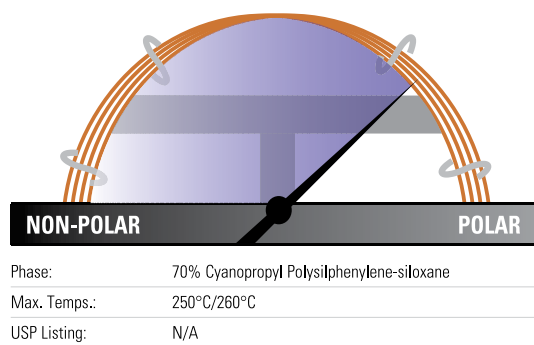
#### Applications:

- Volatile organics
- Alcohols
- EPA 502.2, 608 and 624

## TRACE TR-FAME GC columns

High-polarity phase optimized for FAME analysis

- Polar phase, 70% cyanopropyl polysilphenylene-siloxane
- High operating temperature compared to competitor columns
- Low bleed for mass spectrometry use



### TRACE TR-FAME GC columns

ID (mm)	Length (m)	Film Thickness (μm)	Cat. No.	Quantity
0.10	10	0.2	260M096P	1 Each
0.22	25	0.25	260M135P	1 Each
	30	0.25	260M141P	1 Each
	50	0.25	260M147P	1 Each
	60	0.25	260M153P	1 Each
0.25	30	0.25	260M142P	1 Each
	60	0.25	260M154P	1 Each
	100	0.20	260M154P	1 Each
	100	0.20	260M238P	
	120	0.25	260M166L	1 Each
0.32	25	0.25	260M137P	1 Each
	30	0.25	260M143P	1 Each
	60	0.25	260M155P	1 Each

#### Applications:

- Fatty Acid Methyl Esters (FAMES)
- FAMES Cis/Trans Isomers

Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)



## TRACE GC columns for EPA methods

Low bleed and temperature-stable performance tailored to specific EPA methodologies

- TRACE TR-524 and TRACE TR-525 Columns: US EPA Drinking Water Test Methods 524 or 525
- TRACE TR-527 Columns: US EPA Drinking Water Test Method 527, features the robust, low-bleed performance required for analysis of pesticides and flame retardants
- TRACE TR-8270 Columns: US EPA Solid Waste Test Method 8270
- TRACE TR-8095 Columns: US EPA Method 8095 for Explosives Testing featuring high max temperature and low surface activity

### TRACE GC columns for EPA methods

Phase	ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
TR-524	0.18	20	1.0	26RV495P	1 Each
TR-525	0.25	30	0.25	26RX142P	1 Each
TR-8095	0.32	12	0.25	260P123P	1 Each
TR-8270	0.25	30	0.5	26RF223P	1 Each

#### Applications:

- Volatile Organic Compounds (VOCs)
- Pesticides
- Flame retardants
- Explosives

## TRACE GC columns for pesticides

Specifically designed and tested for analysis of pesticides

- Low bleed decreases MS contamination
- Particularly useful for applications requiring a higher temperature
- Column inertness results in minimal peak tailing and decreased breakdown of sensitive samples

#### Applications:

- Organophosphate pesticides
- Organochlorine pesticides
- Pyrethroid pesticides
- Herbicides

### TRACE GC columns for pesticides

Phase	ID (mm)	Length (m)	Film Thickness (µm)	Guard	Cat. No.	Quantity
TR-Pesticide	0.25	30	0.25	5m guard column attached	26RF142F	1 Each
TR-Pesticide II	0.25	30	0.25	5m guard column attached	26RD142F	1 Each
TR-Pesticide III	0.25	30	0.25	5m guard column attached	26RC142F	1 Each
TR-Pesticide IV	0.25	30	0.25	–	26RC142P	1 Each

## TRACE GC columns for dioxin and PCB analysis

Designed to meet the requirements of high resolution GC-MS methods

- TRACE TR-Dioxin 5MS Columns; Specifically designed for Dioxin and Furan testing
- Wide coverage of the 17 congeners with the highest toxicological significance
- TRACE TR-PCB 8MS Columns; meets the requirements for HR GC-MS analysis of PCBs
- Low bleed

### TRACE GC Columns for dioxin and PCB analysis

Phase	ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
TR-PCB 8MS	0.25	50	0.25	26AJ148P	1 Each
TR-Dioxin 5MS	0.25	60	0.25	26AF154P	1 Each
TR-Dioxin 5MS	0.25	30	0.1	26AF047P	1 Each
TR-Dioxin 5MS	0.25	60	0.1	26AF059P	1 Each

#### Applications:

- Dioxins (PCDDs)
- Furans (PCDFs)
- PCB congeners

## TRACE GC columns for biodiesel analysis

Designed for use in carbon neutral fuels development applications

- GC columns designed for specific EN methods and ASTM methods
- Specific columns for the determination of methanol, FAMES or glycerides

#### Applications:

- Biodiesel
- ASTM D-6584
- EN14214

### TRACE GC Columns for biodiesel analysis

Phase	Method	ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
TR-BioDiesel (M)	EN 14110	0.32	30	3.0	26AA395P	1 Each
TR-BioDiesel (G)	EN 14105	0.32	10	0.1	26AF024P	1 Each
TR-BioDiesel (F)	EN 14103	0.25	30	0.25	26AX142P	1 Each
TR-BioDiesel (G) ASTM	ASTM D-6584	0.32	10	0.1	26RF024P	1 Each

## TRACE GC columns for drugs of abuse

Specifically designed for the analysis of common drugs of abuse

- TRACE TR-DoA 5MS Columns; widely used for the analysis and determination of a range of toxicological target compounds including amphetamines, codeine and morphine
- TRACE TR-DoA 35MS Columns; the recommended column for use in drug testing labs for the confirmation of THC

### TRACE GC columns for drugs of abuse

Phase	ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
TR-DoA35	0.20	15	0.33	26AC497P	1 Each
TR-DoA5	0.25	15	0.25	26AF130P	1 Each

#### Applications:

- Amphetamines, codeine and morphine

Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)

## UltraFast GC columns

The huge demand of samples to be analyzed every day by labs in industries such as environmental and petrochemical requires an increased speed of analysis

A significant gain in analysis speed compared to conventional GC procedures is obtained through UltraFast Gas Chromatography. UltraFast GC utilizes short (2-10m) narrow bore capillaries and temperature programming conditions usually faster than 2°C/s. This leads to peak widths in the 50-200ms range. The analysis times are in the range of 1 minute or even less.

### Benefits of Thermo Scientific™ UltraFast™ GC columns

- Dramatically shorter analysis times – typically a minute or less
- Ideal for applications in petrochemical and environmental markets
- Long column lifetimes

#### UFC-1 10m x 0.32mm x 3µm

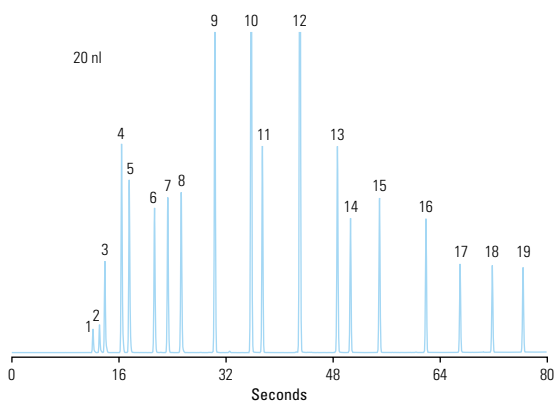
Temperature: 40°C (6 sec hold) to 300°C  
(6 sec hold) at 180°C/min

Detector Type: FID

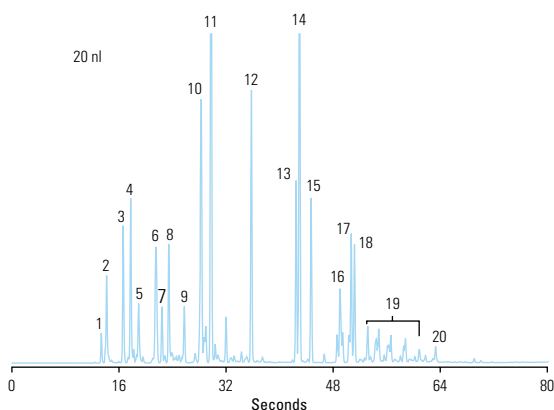
Carrier Gas: Helium

Flow Rate: 0.5mL/min

Injection Mode: Split/Splitless



- |                     |                    |
|---------------------|--------------------|
| 1. propane          | 11. octane         |
| 2. methyl-propane   | 12. p-xylene       |
| 3. butane           | 13. propyl-benzene |
| 4. methyl-butane    | 14. n-decane       |
| 5. pentane          | 15. butyl-benzene  |
| 6. methyl-pentane   | 16. n-dodecane     |
| 7. hexane           | 17. n-tridecane    |
| 8. dimethyl-pentane | 18. n-tetradecane  |
| 9. heptane          | 19. n-pentadecane  |
| 10. toluene         |                    |



- |                      |                                     |
|----------------------|-------------------------------------|
| 1. methyl-propane    | 12. toluene                         |
| 2. butane            | 13. ethyl-benzene                   |
| 3. 2-methyl-butane   | 14. p-xylene                        |
| 4. pentane           | 15. m-xylene                        |
| 5. ter-butyl alcohol | 16. propyl-benzene                  |
| 6. methyl-pentane    | 17. tetramethyl-octane              |
| 7. 3-methyl-pentane  | 18. 1,2,4-trimethyl-benzene         |
| 8. hexane            | 19. tri/tetramethyl-benzene isomers |
| 9. dimethyl-pentane  | 20. naphthalene                     |
| 10. cyclohexane      |                                     |
| 11. dimethyl-hexane  |                                     |

### Application – UltraFast Analysis of Pure Petroleum Products through Nanovolumes Injection

The analyses were performed in the UltraFast GC mode using a TRACE GC Ultra System equipped with a Split/Splitless injector (SSL) and a Digital Pressure and Flow Controller, as well as a FAST FID detector. The GC System was also equipped with an UltraFast Module (UFM).

Split injections were performed with a AS3000 Autosampler using a 0.5µL plunger-in-needle syringe p/n 36504045. A minimum penetration depth in the injector (cold needle mode) was set, and 0.3µL of air was automatically withdrawn after the sample to ensure that the part of the needle inserted into the injector was empty. A 3mm ID upper-tapered empty liner with an 8mm long and 1mm wide restriction at the top was installed. The SSL injector was set to 225°C and the FID to 320°C.

## UltraFast GC columns

Short, narrow-bore columns for use with the Thermo Scientific TRACE GC UltraFast instrument

- Dramatically shorter analysis times
- Increase sample throughput by a factor of 20
- Lengthen column lifetimes

### Applications:

- Chemical
- Petrochemical
- Environmental
- Flavors and fragrances

### UltraFast GC columns

Phase	ID (mm)	Length (m)	Film Thickness ( $\mu\text{m}$ )	Uses	Cat. No.	Quantity
UFC-1	0.10	5	0.1	General	UFMC00001010401	1 Each
	0.32	5	0.25	ISO 9377-2	UFMC00001070404	1 Each
UFC-5	0.10	5	0.4	General	UFMC00200000000	1 Each
		5	0.1	General	UFMC00300000000	1 Each
		10	0.4	General	UFMC00502010006	1 Each
UFC-WAX	0.10	5	0.1	FAMES, Essential Oils	UFMC00001010501	1 Each
		5	0.2	General	UFMC00001010503	1 Each
UFC-264	0.10	10	0.5	Volatiles	UFMC00002010207	1 Each
UFC-M1	0.32	5	0.25	General	UFMC00001070904	1 Each



Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)

# TracePLOT GC columns

## Thermo Scientific™ TracePLOT™ TG-BOND Alumina GC columns: Na<sub>2</sub>SO<sub>4</sub> and KCl deactivation

Optimized for linear and quantitative analysis of polar unsaturated hydrocarbons

- Strong bonding to prevent particle generation suits these columns in valve-switching operations without damage to injection and detection systems from particle release
- Columns to which water has adsorbed may be regenerated to restore full efficiency and selectivity
- Each column has been tested to ensure proper film thickness (1,3-butadiene), selectivity (propadiene and methyl acetylene), resolution (trans-2-butene and 1-butene) and coating efficiency (1,3-butadiene)

### TracePLOT TG-BOND Alumina GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
<b>Na<sub>2</sub>SO<sub>4</sub> Deactivation</b>				
0.32	30	5	26001-6020	1 Each
	50	5	26001-6050	1 Each
0.53	30	10	26001-6080	1 Each
	50	10	26001-6110	1 Each
<b>KCl Deactivation</b>				
0.32	30	5	26002-6020	1 Each
	50	5	26002-6050	1 Each
0.53	30	10	26002-6080	1 Each
	50	10	26002-6110	1 Each

#### Applications:

- C1-C5 hydrocarbons
- Unsaturated hydrocarbon isomers

## TracePLOT TG-BOND Sieve 5A GC columns

Designed for separation of Ar/O<sub>2</sub> and other permanent gases

- Specially designed coating and deactivation procedures for chromatographic efficiency and the integrity of the coating porous layer
- Deactivation process yields a sharp peak for CO elution rather than the tailing commonly seen in other columns
- High retention of molecular sieve permits separation of permanent gases at temperatures above ambient
- Uniform particles remain adherent to the tubing even following continuous valve-cycling

### TracePLOT TG-BOND Sieve 5A GC Columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	30	26003-6010	1 Each
	30	30	26003-6040	1 Each
0.53	15	50	26003-6070	1 Each
	30	50	26003-6100	1 Each
	50	50	26003-1630	1 Each

#### Applications:

- Permanent gases
- Refinery or natural gases

## TracePLOT TG-BOND Q GC Columns

Non-polar columns for oxygenated compounds and solvents

- Non-polar 100q% divinyl benzene phase
- Particles incorporated into the walls of the tubing for essentially no particle release

### TracePLOT TG-BOND Q GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	10	26004-6000	1 Each
	30	10	26004-6030	1 Each
0.53	15	20	26004-6060	1 Each
	30	20	26004-6090	1 Each

### Applications:

- C1 to C3 isomers and alkanes up to C12
- Separation of CO<sub>2</sub>, methane and O<sub>2</sub>/N<sub>2</sub>/CO
- Analysis of oxygenated compounds and solvents

## TracePLOT TG-BOND Q+ GC columns

Intermediate polarity columns for baseline separation of ethane, ethylene and acetylene

- Intermediate polarity, porous divinyl benzene homopolymer
- Particles incorporated into the walls of the tubing for essentially no particle release

### TracePLOT TG-BOND Q+ GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	10	26005-6000	1 Each
	30	10	26005-6030	1 Each
0.53	15	20	26005-6060	1 Each
	30	20	26005-6090	1 Each

### Applications:

- Separation of ethane, ethylene and acetylene to baseline

Learn more at [thermofisher.com/GCcolumns](https://thermofisher.com/GCcolumns)

## TracePLOT TG-BOND S GC columns

Columns for analysis of non-polar and mid-polar compounds

- Mid-polarity, divinylbenzene 4-vinylpyridine solid phase
- Particles incorporated into the walls of the tubing for essentially no particle release

### TracePLOT TG-BOND S GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	10	26006-6000	1 Each
	30	10	26006-6030	1 Each
0.53	30	20	26006-6090	1 Each

### Applications:

- Non-polar and mid-polar compounds

## TracePLOT TG-BOND U GC columns

Columns for analysis of polar compounds

- Polar, divinylbenzene ethylene glycol/dimethylacrylate phase
- Particles incorporated into the walls of the tubing for essentially no particle release

### TracePLOT TG-BOND U GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	10	26007-6000	1 Each
	30	10	26007-6030	1 Each
0.53	30	20	26007-6090	1 Each

### Applications:

- Analysis of polar compounds

## TracePLOT particle traps for GC instruments

Provides a safeguard from dislodged particles entering the detector

- Provides a safeguard from dislodged particles entering the detector

### TracePLOT particle traps for GC instruments

Description	ID (mm)	Cat. No.	Quantity
PLOT Particle Trap 2.5m x 0.25mm	0.25	60180-862	1 Each
PLOT Particle Trap 2.5m x 0.32mm	0.32	60180-860	1 Each
PLOT Particle Trap 2.5m x 0.53mm	0.53	60180-861	1 Each

# GC reagents

## Making the undetectable, detectable

Improve separation and detection for GC and GC-MS applications with our selection of derivatization reagents.



### The ideal derivatization procedure will:

- Accomplish the desired modification.
- Proceed quantitatively, or at least reproducibly.
- Produce products that are readily distinguishable and separable from the starting materials.
- Proceed rapidly with simple and straightforward laboratory techniques that will be both selective and applicable to a number of similar compounds.
- Involve reagents and reactions that present no unusual hazards.

### Why derivatize:

- To make a compound that otherwise could not be analyzed by a particular method suitable for analysis.
- To improve the analytical efficiency of the compound.
- To improve the detectability of the compound.

For more information visit [thermofisher.com/GCreagents](https://thermofisher.com/GCreagents)

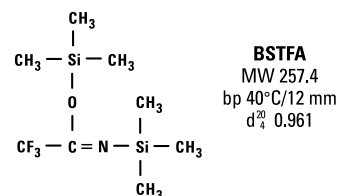


## Silylation reagents

### BSTFA and BSTFA + TMCS

For excellent chromatographic separations and difficult-to-silylate compounds

- Increased volatility makes it possible to derivatize smaller molecules with which the TMS derivatives elute with the byproducts from BSTFA
- Excellent for derivatizing fatty acid amides, slightly hindered hydroxyls and other compounds
- Catalyzed formulation is stronger than BSTFA alone



#### BSTFA and BSTFA + TMCS

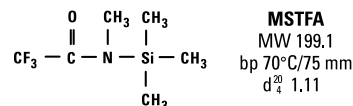
Description	Quantity	Cat. No.	Quantity
BSTFA	10 × 1mL ampules	TS-38830	1 Pack
	25g	TS-38828	1 Each
	100g	X TS-38829	1 Each
BSTFA + 1% TMCS	10 × 1mL ampules	TS-38831	1 Pack
	10g	TS-38832	1 Each
	25g	TS-38833	1 Each
	100g	X TS-38834	1 Each
BSTFA + 10% TMCS	10 × 1mL ampules	TS-38840	1 Pack

X in the ordering table indicates that hazardous shipping charges apply.

### MSTFA and MSTFA + 1% TMCS

Offers maximum volatility

- Trimethylsilyl donor strength comparable to BSA and BSTFA
- Reacts to replace labile hydrogens on a wide range of polar compounds with a Si(CH<sub>3</sub>)<sub>3</sub> group
- Used to prepare volatile and thermally stable derivatives for GC and GC-MS
- Addition of Thermo Scientific TMCS aids derivatization of amides, secondary amines and hindered hydroxyls not derivatized by MSTFA alone



#### MSTFA and MSTFA + 1% TMCS

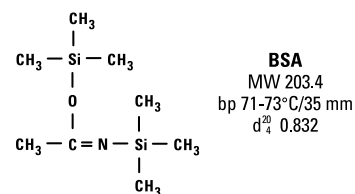
Description	Quantity	Cat. No.	Quantity
MSTFA	10 × 1mL ampules	TS-48910	1 Pack
	10g	TS-48911	1 Each
	25mL	TS-48913	1 Each
	100mL	X TS-48914	1 Each
MSTFA + 1% TMCS	10 × 1mL ampules	TS-48915	1 Pack

X in the ordering table indicates that hazardous shipping charges apply.

## BSA

The perfect reagent for rapid silylation reactions

- Highly reactive trimethylsilyl donor that reacts quantitatively to form volatile, stable TMS derivatives
- Reacts quickly and quantitatively under mild conditions with a variety of compounds
- Derivatizes alcohols, amines, amides, carboxylic acids, phenols, steroids, biogenic amines and alkaloids



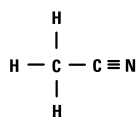
### BSA

Description	Quantity	Cat. No.	Quantity
BSA	10 x 1mL	TS-38836	1 Pack

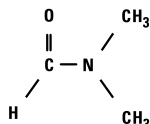
## Silylation grade solvents

Manufactured to meet your exact silylation needs

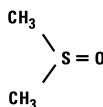
- Purified, dried and packaged under nitrogen in convenient 50mL Hypo-Vial Sample Storage Vials
- Supplied with elastomer septa, allowing immediate access to the sample without exposure to moisture and oxygen
- Use polar solvents (acetonitrile, dimethylformamide, dimethylsulfoxide, pyridine, tetrahydrofuran) to facilitate reactions; nonpolar organic solvents may be used, but they will not accelerate the rate of reaction



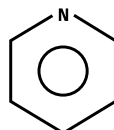
**Acetonitrile**  
 MW 41.05  
 bp 81.6°C



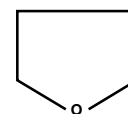
**Dimethylformamide**  
 MW 73.09  
 bp 153°C



**Dimethylsulfoxide**  
 MW 78.13  
 bp 189°C



**Pyridine**  
 MW 79.10  
 bp 115.2°C



**Tetrahydrofuran**  
 MW 72.10  
 bp 66°C

### Silylation grade solvents

Description	Quantity	Cat. No.	Quantity
Acetonitrile	50mL	X TS-20062	1 Each
Dimethylformamide (DMF)	50mL	X TS-20672	1 Each
Dimethylsulfoxide (DMSO)	50mL	X TS-20684	1 Each
Pyridine	50mL	X TS-27530	1 Each
Tetrahydrofuran (THF)	50mL	X TS-27860	1 Each

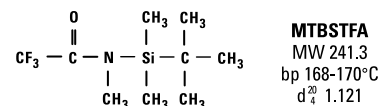
X in the ordering table indicates that hazardous shipping charges apply.

Learn more at [thermofisher.com/GCsreagents](http://thermofisher.com/GCsreagents)

## MTBSTFA and MTBSTFA + 1% TBDMCS

Offers stable TBDMS (tert-butyldimethylsilyl) derivatization

- Derivatizes hydroxyl, carboxyl, thiol and primary and secondary amines
- Typical yields are >96%
- Reaction byproducts are neutral and volatile
- Silylating potential increased by adding 1% TBDMCS



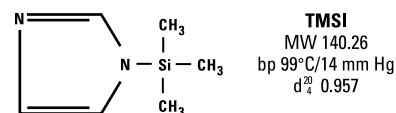
### MTBSTFA and MTBSTFA + 1% TBDMCS

Description	Quantity	Cat. No.	Quantity
MTBSTFA	5mL ampules	TS-48920	1 Each
MTBSTFA + 1% TBDMCS	10 x 1mL	TS-48927	1 Pack

## TMSI (N-Trimethylsilylimidazole)

The strongest silylator available for carbohydrates and steroids

- Reacts quickly and smoothly with hydroxyls and carboxylic acids, but not with amines
- Used in the derivatization of alcohols, phenols, organic acids, steroids, hormones, glycols, nucleotides and narcotics
- Excellent for C1 through C5 fatty acids in serum and urine



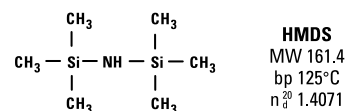
### TMSI

Description	Quantity	Cat. No.	Quantity
TMSI (N-Trimethylsilylimidazole)	10 x 1mL ampules	TS-88623	1 Pack
	25g	TS-88625	1 Each
	100g	TS-88626	1 Each

## HMDS (Hexamethyldisilazane)

The popular choice for silylation of sugars and related substances

- Greatly extends the practical range of GC, improving chromatographic results
- Suitable for deactivating and coating chromatographic supports
- Monofunctional, making polymerization not possible and eliminating surface moisture



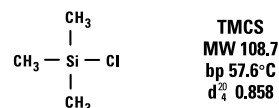
### HMDS

Description	Quantity	Cat. No.	Quantity
HMDS (Hexamethyldisilazane)	25g	TS-84770	1 Each

## TMCS (Trimethylchlorosilane)

An excellent catalyst for difficult-to-silylate compounds

- Excellent adjunct for forming trimethylsilyl ethers for GC determinations
- Used to prepare TMS derivatives of organic acids



### TMCS

Description	Quantity	Cat. No.	Quantity
TMCS	25g	TS-88530	1 Each

## MOX (Methoxyamine) reagent

Useful for preparing oximes of steroids and ketoacids prior to silylation

- 2% methoxyamine HCl (M.W. 83.51) in pyridine
- Prevents formation of multiple derivatives when enols are present during silylation

### MOX Reagent

Description	Quantity	Cat. No.	Quantity
MOX (Methoxyamine) Reagent (2% methoxyamine HCl in pyridine)	10mL	TS-45950	1 Each

Learn more at [thermofisher.com/GCsreagents](https://thermofisher.com/GCsreagents)

## Tri-Sil HTP (HMDS:TMCS:Pyridine) reagent

Reagent-catalyst mixture for one-step derivatization

- Derivatizes carbohydrates, phenols, steroids, sterols, organic acids, alcohols and some amines
- Useful for rapid production of TMS derivatives of polar compounds for gas chromatographic determination and biochemical synthesis
- The versatility, speed and ease of use of Tri-Sil HTP Reagent has made it the most widely used silylation formulation available

### Tri-Sil HTP reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil HTP Reagent HMDS:TMCS:Pyridine (2:1:10)	10 × 1mL ampules	TS-48999	1 Pack
Tri-Sil HTP Reagent HMDS:TMCS:Pyridine (2:1:10)	50mL	X TS-49001	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

## Tri-Sil BP (BSA:Pyridine) reagent

Derivatizes alcohols, phenols, organic acids, aromatic amides and amines

Tri-Sil BP Reagent reacts with:

- Alcohols, phenols, some enols and other hydroxyl and polyhydroxyl compounds to form trimethylsilyl esters
- Organic acids to form trimethylsilyl esters
- Aromatic amides to form N-trimethylsilyl derivatives
- Amino acids to form both N- and O-trimethylsilyl derivatives
- Amines to form N-trimethylsilyl derivatives

### Tri-Sil BP reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil BP Reagent (2.5mEq/mL BSA in pyridine)	25mL	TS-49012	1 Each

## Tri-Sil TBT (TMSI:BSA:TMCS) reagent

A catalyzed silylation reagent formulation containing three parts TMSI, three parts BSA and two parts TMCS

- Converts all classes of hydroxyl groups to TMS ethers
- Under usual conditions, the reaction is complete in a short period of time at 60 to 80°C, although very hindered hydroxyls may require several hours

### Tri-Sil TBT reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil TBT Reagent TMSI:BSA:TMCS (3:3:2)	10 × 1mL ampules	TS-49016	1 Pack

## Tri-Sil TP (TMSI:Pyridine) reagent

Derivatizes hydroxyl compounds, particularly carbohydrates

- Silylates alcohols and phenols, organic acids, hydroxylamines, amino acids, carbohydrates, flavonoids, glycols and polyglycols, nucleotides, steroids, hydroxyl acids, barbiturates, narcotics, indoles and vitamins
- Does not react with amines
- May be used with water as long as there is enough reagent present to react with both the water and the sample

### Tri-Sil TP reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil TP Reagent TMSI: Pyridine (1:4)	10 × 1mL ampules	TS-49230	1 Pack
Tri-Sil TP Reagent TMSI: Pyridine (1:4)	25mL	TS-49231	1 Each

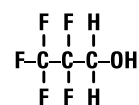
Learn more at [thermofisher.com/GCsreagents](https://thermofisher.com/GCsreagents)

## Acylation reagents

### Pentafluoropropanol

Purified for GC-MS applications

- Addition of fluorine atoms into compounds greatly enhances the sensitivity of certain detectors for all those materials
- Carboxylic acids can be derivatized using a two-step reaction involving reaction with anhydride, followed by a fluorinated alcohol



#### Pentafluoropropanol

MW 150.05  
bp 80.6°C  
d<sub>4</sub><sup>20</sup> 1.2880

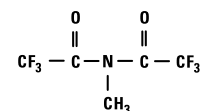
#### Pentafluoropropanol

Description	Quantity	Cat. No.	Quantity
Pentafluoropropanol	10 x 1mL ampules	TS-65195	1 Pack

### MBTFA

For trifluoroacetylating primary and secondary amines, hydroxyl and thiol groups and carbohydrates

- Reacts under non-acidic conditions
- Principle byproduct from the derivatization reaction is N-methyltrifluoroacetamide, which is stable, volatile and does not present problems in subsequent GC
- Produces very volatile derivatives of carbohydrates
- Can be used to selectively acylate amines in the presence of hydroxyl and carboxyl groups that have been protected by silylation



**MBTFA**  
MW 223.08  
bp 123-124°C  
d<sub>4</sub><sup>20</sup> 1.55

#### MBTFA

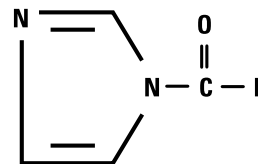
Description	Quantity	Cat. No.	Quantity
MBTFA [N-Methyl- bis(trifluoroacetamide)]	10 x 1mL ampules	TS-49700	1 Pack
	25mL	TS-49703	1 Each
	100mL	X TS-49704	1 Each
	5g	TS-49701	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

## Perfluoroacylimidazoles (HFBI and TFAI)

Offer effective acylation of hydroxyl groups and primary and secondary amines

- Reactions are smooth, quantitative and produce no acid byproducts
- Excellent for FID and ECD techniques
- Derivatives are volatile, despite size of group
- Closely bound fluorines contribute to stability



R	Name	M.W.	Boiling Point
C <sub>3</sub> F <sub>7</sub>	HFBI	264.10	57 to 58°C/10mm
CF <sub>3</sub>	TFAI	164.08	38 to 40°C/14mm

### Perfluoroacylimidazoles (HFBI and TFAI)

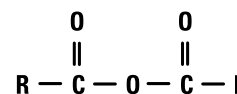
Description	Quantity	Cat. No.	Quantity
HFBI	5g	* TS-44211	1 Each
TFAI	10 x 1mL ampules	TS-48882	1 Pack

\* indicates that additional dry ice and/or freight charges apply.

## Perfluoro acid anhydrides (TFAA, PFAA and HFAA)

Highly purified for optimal preparation of fluoracyl derivatives

- Used to prepare fluoracyl derivatives for GC-MS
- Produce stable volatile derivatives for FID and ECD techniques



### Perfluoro acid anhydrides

Description	Quantity	Cat. No.	Quantity
TFAA (Trifluoroacetic Acid Anhydride)	100g	X TS-67363	1 Each
PFAA (Pentafluoropropionic Acid Anhydride)	10 x 1mL ampules	TS-65193	1 Pack
PFAA	25g	X TS-65192	1 Each
PFAA	100g	X TS-65191	1 Each
HFAA (Heptafluorobutyric Acid Anhydride)	10 x 1mL ampules	TS-63164	1 Pack
HFAA	25g	X TS-63163	1 Each
HFAA	100g	X TS-63162	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

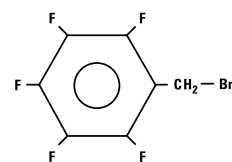


## Alkylation reagents

### Pentafluorobenzyl bromide (PFBBr)

For electron capture GC analysis of carboxyl acids, phenols and sulfonamides

- Fast reaction times for extraction alkylation technique: ~20 minutes
- Derivatives are highly EC-sensitive
- Analysis of trace organics in asphalt



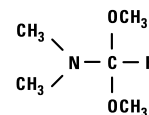
**PFBBr**  
MW 260.9  
bp 174-175°C  
d<sub>4</sub><sup>20</sup> 1.86

### Methylate reagent (DMFDMA)

For easy, effective preparation of methyl esters from fatty acids and amino acids

Advantages for preparation of methyl esters for gas chromatography:

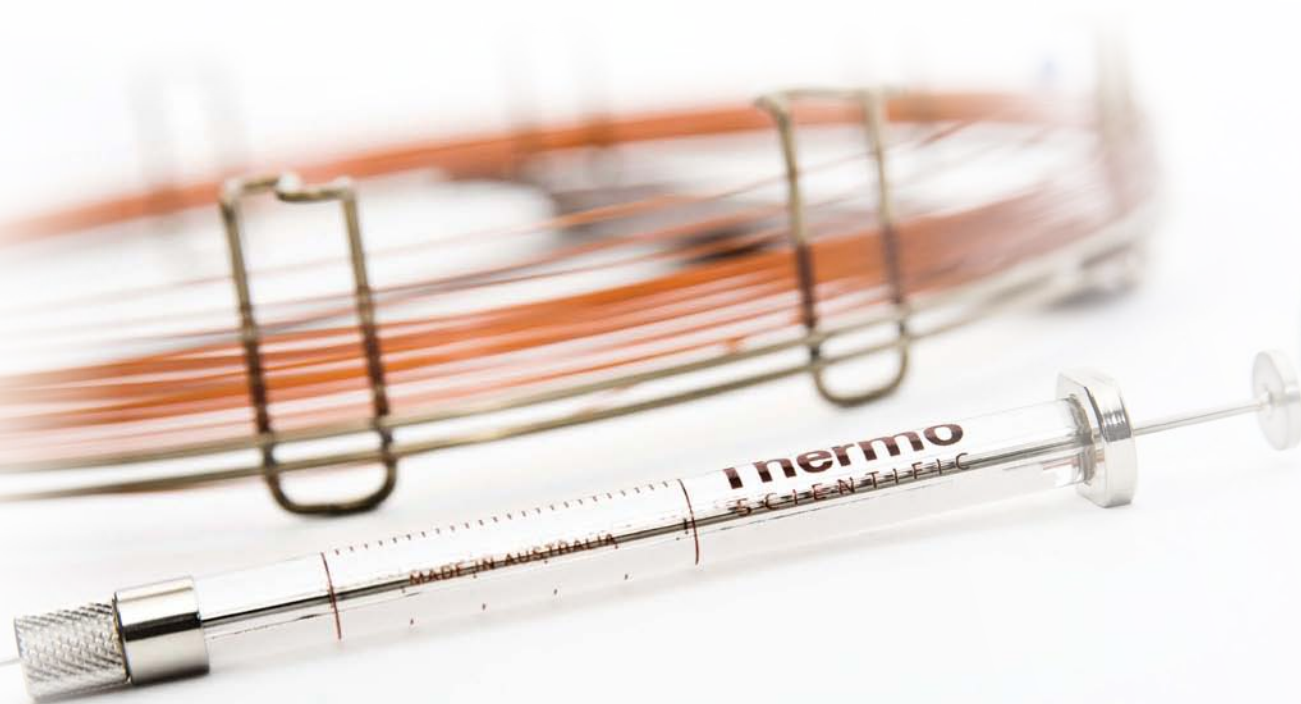
- Speed: the reaction is complete upon dissolution (except long chain solid acids)
- No water washing, extraction or concentration of derivatives required
- No water formed
- Convenient: ready-to-use reagent contains 2mEq/mL pyridine



**Methylate Reagent**  
MW 119.17  
bp 102-104°C  
d<sub>4</sub><sup>20</sup> 0.897

#### Methylate reagent

Description	Quantity	Cat. No.	Quantity
Methylate Reagent (N, N-Dimethylformamide dimethyl acetal)	25mL	TS-49350	1 Each



## MethElute reagent (TMPAH)

Provides accurate sensitive on-column methylation

- 0.2M trimethylanilinium hydroxide (TMPAH) in methanol solution
- For quantitative methylation and detection of barbiturates, sedatives, xanthine bases, phenolic alkaloids and phenytoin by gas chromatography
- Single quantitative peak for each substance
- Comparable to or better than UV/TLC method (when phenobarbital and phenytoin are present, GC is superior to UV/TLC)
- Coefficient of variation is 5% or less
- Detects barbiturates to 0.2mg/dL

### MethElute reagent

Description	Quantity	Cat. No.	Quantity
MethElute Reagent (TMPAH)	10mL	TS-49300	1 Each
MethElute Reagent (TMPAH)	12 × 1mL ampules	TS-49301	1 Pack

Learn more at [thermofisher.com/GCsreagents](https://thermofisher.com/GCsreagents)



## Siliconizing fluids

### Water-soluble siliconizing fluid

Attaches the silane polymer, octadecyltrialkylsilane, to make the surface inert or polymerizes to create an inert film

- Easy-to-use silane monomer solution that is supplied as a 20% solid solution in a mixture of diacetone alcohol and tertiary butyl alcohol
- Greater resistance to base hydrolysis than other surface treatments
- Can be used on plastic surfaces

#### Water-soluble siliconizing fluid

Description	Quantity	Cat. No.	Quantity
Siliconizing Fluid-Water Soluble	120mL	X TS-42799	1 Each

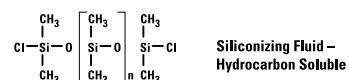
X in the ordering table indicates that hazardous shipping charges apply.

### Hydrocarbon-soluble siliconizing fluid

Attaches a short-chain silane polymer to make the surface inert or polymerizes to create an inert film

When applied to glass, quartz or similar materials, the unhydrolyzed chlorines present on the chain react with surface silanols to form a neutral, hydrophobic and tightly bonded film over the entire surface.

- Soluble in organic solvents
- Excellent for modifying metals, glass, ceramics and fiber optics
- Can be used for certain plastic surfaces
- Well-suited for treatment of GC injection port liners



#### Hydrocarbon-soluble siliconizing fluid

Description	Quantity	Cat. No.	Quantity
Siliconizing Fluid-Hydrocarbon Soluble	120mL	X TS-42800	1 Each
Siliconizing Fluid-Hydrocarbon Soluble	480mL	X TS-42801	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

# Reacti-Therm heating and stirring modules

## Reliable and easy-to-use for constant temperatures

- Uniform, stable heating: steady temperature incubation between ambient plus 10°C to 200°C
- LED display: match digital display to in-block thermometer to calibrate temperature set-point
- Modular design: switch aluminum blocks and vials; attach compatible evaporator manifold
- In-block temperature control option by Remote Temperature Probe, an optional accessory to allow temperature regulation from block wells or actual sample vials
- Magnetic stirrers for heating / stirring module for simultaneous stirring of samples in multiple vials

### Applications:

- General sample incubation and evaporation in a variety of tube and vial sizes
- Silylation, alkylation and acylation derivatization reactions for GC sample preparation
- Protein hydrolysis and vacuum hydrolysis reactions for amino acid analysis by HPLC

### Thermo Scientific™ Reacti-Therm™ Heating Modules

Type	Size of Unit	Cat. No.	Quantity
Heating Function	Single-block	TS-18822	1 Each
	Triple-block	TS-18824	1 Each
Remote Temperature Probe		TS-18820	1 Each

### Reacti-Therm heating and stirring modules

Type	Size of Unit	Cat. No.	Quantity
Heating and Stirring Function	Single block	TS-18821	1 Each
	Triple-block	TS-18823	1 Each
Magnetic Stirrers for 3.0, 5.0 & 10.0mL Thermo Scientific™ Reacti-Vial™		TS-16000	6 Pack
Magnetic Stirrers for 0.3 and 1mL Small Reaction Vials		TS-16010	6 Pack

## Reacti-Vap evaporators

Manifolds for easy sample evaporation

- Integrated pressure-relief valve protects against excessive gas-flow and dangerous pressure build up
- Easy set-up: attach to corresponding Reacti-Therm Module, attach tubing from gas supply, and lower into position over samples and start gas flow
- Choose 9-port or 27-port model for compatibility with single-block and triple-block Reacti-Therm Modules, respectively

### Thermo Scientific™ Reacti-Vap™ Evaporators

No. of Ports	For Use With	Cat. No.	Quantity
9	Single-block Reacti-Therm Module	TS-18825	1 Each
27	Triple-block Reacti-Therm Module	TS-18826	1 Each

### Gas regulators

Description	Cat. No.	Quantity
1/8" tube fitting	60181-625	1 Each
1/4" tube fitting	60181-626	1 Each



### Applications:

- General sample incubation and evaporation in a variety of tube and vial sizes
- Silylation, alkylation and acylation derivatization reactions for GC sample preparation

## Reacti-Block aluminum blocks

Optimal thermal conductivity

- Constructed of an aluminum alloy for optimal thermal conductivity
- Each Thermo Scientific™ Reacti-Block™ aluminium block contains a thermometer well
- Block dimensions are 9.4 L x 7.5 W x 5.1cm H for all blocks except for F, G, J and M which have a depth (height) of 7.6cm



### Thermo Scientific™ Reacti-Block™ aluminum blocks

Description		Cat. No
Reacti-Block A-1 Holds 13 x 0.3mL or 1mL Reacti-Vials; 13 holes/14mm dia. x 23mm deep		TS-18801
Reacti-Block B-1 Holds 9 x 3mL or 5mL Reacti-Vials; 9 holes/21mm dia. x 32mm deep		TS-18802
Reacti-Block C-1 Holds 13 x 3.5mL Screw Cap Septum Vials; 13 holes/15mm dia. x 34mm deep		TS-18803
Reacti-Block Z-1 Holds 9 x 0.1mL Reacti-Vials; 9 holes/12mm dia. x 21mm deep		TS-18804
Reacti-Block M-1 Holds 6 x 27.5mL Reacti-Vials; 6 holes/28.5mm dia. x 70mm deep		TS-18811
Reacti-Block S-1 Holds 13 x 13mm dia. Test Tubes; 13 holes/14mm dia. x 45mm deep		TS-18816
Reacti-Block T-1 Holds 9 x 16mm dia. Test Tubes; 9 holes/17mm dia. x 45mm deep		TS-18817
Reacti-Block U-1 Holds 8 x 20mm dia. Test Tubes; 8 holes/21mm dia. x 45mm deep		TS-18818
Reacti-Block V-1 Holds 17 Microcentrifuge Test Tubes; 17 holes/11mm dia. x 45mm deep		TS-18819

The Reacti-Block aluminium blocks below are designed to be used exclusively with the Reacti-Therm modules. The hole patterns do not match the needle configuration of Thermo Scientific™ Reacti-Vap™ Evaporators.

Description		Cat. No
Reacti-Block F Holds 8 x 6mL Vacuum Hydrolysis Tubes; 8 holes/10mm dia. x 64mm deep		TS-18806
Reacti-Block G Holds 4 x 18mL Vacuum Hydrolysis Tubes; 4 holes/19mm dia. x 64mm deep		TS-18807
Reacti-Block J Blank/no holes (for custom drilling) 7.6cm tall		TS-18809
Reacti-Block K Blank/no holes (for custom drilling) 5.1cm tall		TS-18810
Reacti-Block L Holds 16 x 0.1mL Reacti-Vials; 16 holes/12mm dia. x 21mm deep		TS-18812

## Reacti-Therm thermometers

Thermometers specially designed for use in dry block heaters

- Mercury-free: alcohol-filled for greater safety
- PTFE coating ensures that glass is impervious to corrosive materials
- Shock-resistant glass and coatings
- Standard laboratory size: 225mm length x 8mm diameter
- Compatible for use in Thermo Scientific™ Reacti-Therm™ Heating Modules and other laboratory equipment



### Reacti-Therm thermometers

Min. Temperature (°C)	Max. Temperature (°C)	Cat. No.	Quantity
0	100	TS-18914	1 Each
0	200	TS-18915	1 Each

## Reacti-Vap replacement parts

### Reacti-Vap replacement parts

Description	Cat. No.	Quantity
Reacti-Vap Replacement Tube Kit 2.5 inch (64mm) (Tubes and Plugs)	TS-18782	9 Pack
Reacti-Vap PTFE-Coated Needles 102mm (4in) Length	TS-18784	9 Pack
Reacti-Vap PTFE-Coated Needles 152mm (6in) Length	TS-18786	9 Pack
Replacement Luer-Lok Fitting	TS-18827	1 Each
Replacement Height Adjustment Knob	TS-18829	1 Each
Replacement Metal Rod	TS-18831	1 Each



## Vacuum hydrolysis tubes

For fast, effective protein and peptide hydrolysis

- The upper temperature limit of the Vacuum Hydrolysis Tubes is 260°C; however, do not heat the tubes greater than 100°C in an oven
- Vacuum hydrolysis tubes fit conveniently into Reacti-Block aluminium heating blocks



### Vacuum hydrolysis tubes

Volume (mL)	OD (mm)	Length (mm)	Cat. No.	Quantity
1	8	60	TS-29570	1 Each
6	10	150	TS-29571	1 Each
18	19	100	TS-29572	1 Each

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## Reacti-Vial small reaction vials

An internal cone makes small sample handling easy and convenient

- Extra thick glass wall magnifies the sample, making these vials ideal for observing chemical reactions
- Amber vials available for light-sensitive compounds
- Supplied complete with Open-Top Screw Caps and PTFE/Rubber Discs



### Thermo Scientific™ Reacti-Vial™ small reaction vials

Capacity	Cat. No.	Quantity
<b>Amber</b>		
1mL	TS-13097	12 Pack
5mL	TS-13099	12 Pack
<b>Clear</b>		
100µL	TS-13100	12 Pack
300µL	TS-13220	12 Pack
1mL	TS-13221	12 Pack
3mL	TS-13222	12 Pack
5mL	TS-13223	12 Pack
10mL	TS-13225	12 Pack

### Applications:

- Residue isolation, derivative preparation, maximum sample retrieval, moisture protection, sample storage, precipitations, centrifugations, solvent evaporation

## Thermo Scientific Tuf-Bond PTFE/Silicone discs

Discs that combine the inertness of PTFE with the resealability of silicone

- Structurally bonded PTFE to silicone; no cement to leak out of your sample after needle penetration
- Reseals instantly, puncture after puncture
- Autoclavable
- Compresses to maintain a tight seal forcing the PTFE to conform to the sealing surface
- Standard syringe and GC needles penetrate the entire disc with ease

### Thermo Scientific Tuf-Bond PTFE/Silicone discs

Diameter (mm)	Fits	Cat. No.	Quantity
8	100µL Reacti-Vial Small Reaction Vials, 1.5mL Screw Cap Septum Vials	TS-12708	72 Pack
12	0.3 and 1mL Reacti-Vial Small Reaction Vials, 3.5mL Screw Cap Septum Vials	TS-12712	72 Pack
13	7mL Screw Cap Septum Vials	TS-12713	72 Pack
16	14mL Screw Cap Septum Vials; 15mL (0.5 oz.) Screw Cap Bottles	TS-12716	72 Pack
18	3 and 5mL Reacti-Vial Small Reaction Vials	TS-12718	72 Pack
22	25 and 40mL Screw Cap Septum Vials, 240mL (8 oz.) Screw Cap Bottles, 10mL Reacti-Vial	TS-12722	72 Pack

## PTFE/Rubber laminated discs

Provides a highly inert and unreactive seal

- Constructed of white pharmaceutical rubber with PTFE bonded to one side
- Discs are autoclavable with no loss of integrity after heating above 100°C for 5 hours



### PTFE/Rubber laminated discs

Diameter (mm)	Fits	Cat. No.	Quantity
12	0.3 and 1mL Reacti-Vial Small Reaction Vials, 2 and 3.5mL Screw Cap Septum Vial	TS-12412	72 Pack
18	3 and 5mL Reacti-Vial Small Reaction Vials; 10 and 25mL Reacti-Flask	TS-12418	72 Pack

## Open-Top screw caps

Provide inert, air-tight seal and direct puncture-access to sample with a syringe needle

- Fits into Reacti-Vial Small reaction vials
- Used with PTFE/Rubber laminated discs



### Open-Top screw caps

Fits	Cat. No.	Quantity
3 and 5mL Reacti-Vials	TS-13218	72 Pack
0.3 and 1.0mL Reacti-Vials, 3.5mL Screw Cap Septum Vial	TS-13215	72 Pack
10mL Reacti-Vials, 40mL Screw Cap Septum Vials	TS-13219	72 Pack

## Screw cap septum vials

Economy, convenience and versatility in a vial and closure system

- Flat bottom vials
- Heavy-duty flip-top divider box provides easy access to vials, caps and septa and offers a convenient sample storage center
- Storage of reagents and standards under complete seal with instant syringe access



### Screw cap septum vials

Capacity (mL)	Cat. No.	Quantity
Clear		
3.5	TS-13019	72 Pack
7	TS-13028	72 Pack

**Ordering Alerts:** Septa not included with vials; must be ordered separately.

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## Mininert valves

Excellent closures for chemicals that deteriorate or evaporate through conventional vial caps and seals

Thermo Scientific™ Mininert Valves are screw caps that have integrated resealable valves to allow repeated and unlimited syringe-needle access to samples. Slide the valve one way to open the needle-port. Slide the valve back to close and completely seal the close.



- Available in two sizes – 20mm (thread size 20/400) and 27mm (thread size 24/400) to fit 3 and 5mL Reacti-Vial Small Reaction Vials and 40mL Screw Cap Septum Vials, respectively
- Precision crafted from PTFE plastic for repeated use and chemical resistance
- Valve design eliminates the septum-boring that occurs with repeated puncture of traditional septa

### Mininert valves

Size (mm)	Fits	Cat. No.	Quantity
20	Fits 3 and 5mL Reacti-Vial Small Reaction Vials	TS-10135	12 Pack
27	Fits 40mL Screw Cap Septum Vials	TS-10130	12 Pack

# GC and GC-MS instruments

Our gas chromatography and mass spectrometry instruments offer solutions to food, environmental, pharmaceutical laboratories and industrial customers. Our instruments stimulate to advance scientific knowledge, enable drug discovery and to improve manufacturing processes. Using our GC and GC-MS you can expect the best results and highest level of productivity to keep your research or processes moving smoothly.

## TRACE 1300 Series GC

- User-installable injectors and detectors
- Easy adoption of standard GC methods
- Unmatched detector sensitivity in trace analysis
- Increased robustness of injector technology
- Shorter sample cycle time

For routine GC and GC-MS laboratories that need flexibility for a wide range of applications, the Thermo Scientific™ TRACE™ 1300 Series GC Gas Chromatograph is the latest technology to simplify workflow and increase analytical performance.

The TRACE 1300 Series offers the most versatile GC platform in the market, with unique instant connect modularity for ground-breaking ease of use and performance, setting a new era in GC technology. GC users now have the unique ability to easily configure the system themselves, to increase throughput or for a rapid exchange of configurations, with the added benefit of continuous operation since modules can be swapped and routine maintenance performed offline to fit laboratory's schedule.

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## TriPlus RSH autosampler

- Reliable GC and GC-MS automation
- Liquid injection/headspace/SPME, all-in-one unattended sequence
- Enhanced productivity and powerful versatility in sample preparation

The Thermo Scientific™ TriPlus™ RSH Autosampler offers scalable flexibility from simple liquid injection to extended sample preparation. An innovative Automated Tool Change (ATC) station addresses sampling demand and selects the most suitable syringe during a sequence. Up to 6 different syringes can be programmed in a sequence for extended sample preparation capabilities and different sampling modes (liquid, HS, SPME).

Unsurpassed sample handling flexibility combined with high sample capacity, places no limits even to more stringent productivity requirements. Multiple sample trays increase unattended operation up to 972 x 2mL vials. The unique Bottom Vial Sensing feature secured syringe depth positioning in your vial for the last  $\mu\text{L}$  sample. Even nanovolume injections through the use of plunger-in-needle syringes can be programmed in a flexible sequence. All these, combined with large volume injections deliver unsurpassed sample handling flexibility.



## AI/AS 1310 autosampler

- Automated liquid injection systems for all Thermo Scientific GC and GC-MS systems
- Performance and simplicity in liquid sampling
- “Tool-Free” upgradability from 8 to 155 vial positions

Engineered to meet the highest level requirements of ruggedness and ease-of-use, the AI/AS 1310 automatic sampling system is ideal for high throughput and QA/QC control on the Thermo Scientific GC and GC/MS product portfolio. Utmost precision and ease-of-use of the plug and inject concept are combined in the available configurations: 8-position single module system for small batches of samples; 155 position tray system for high sample throughput. Boost productivity further with the Gemini configuration, which allows two autosamplers to be mounted on the same GC, serving two injection ports simultaneously.



*AI 1310 mounted onto a TRACE 1310 GC*



*AS 1310 155-vial Autosampler mounted on a TRACE 1300 GC with ISQ Mass Spectrometer*

## TriPlus 300 Headspace autosampler

- Unprecedented productivity and accelerated analytical results
- High throughput operations with expanded sample capacity
- Ideal for organic volatiles analysis

The Thermo Scientific™ TriPlus™ 300 Headspace valve-and-loop autosampler offers a quick start-up and enables reliable, unattended and high throughput operations with expanded sample capacity. Its ability to fully comply with existing methods in pharmaceutical, forensic and environmental laboratories makes TriPlus 300 HS the product of choice for automated and dependable organic volatiles determinations.

Combined with the user-configurable TRACE 1300 Series GC and supported by a range of chromatography data systems that offer comprehensive system control, TriPlus 300 HS delivers unprecedented productivity and accelerated analytical results within the laboratory workflow.



## ISQ Series Single Quadrupole GC-MS

- Unique Full Source Removal™ capability delivers maximum uptime and unstoppable productivity
- ExtractaBrite™ solid, inert ion source provides robust operations and low detection limits
- Versatile and flexible for a broad range of applications

The Thermo Scientific™ ISQ™ Series single quadrupole GC-MS system features time-proven technology developed with the accumulation of almost 50 years of mass spectrometry innovation, offering an affordable and robust solution. This GC-MS series offers operational simplicity, proven dependability, and unstoppable productivity.

The ISQ QD GC-MS offers quality design, MS operational simplicity, and proven dependability for QA/QC and low-to medium-throughput production environments, as well as in teaching and academic facilities.

For analytically-demanding, high-throughput laboratories, requiring utmost sensitivity and unstoppable productivity, the ISQ LT GC-MS does not need to be vented to exchange the source, and it boasts the lowest detection limits and unlimited flexibility.

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## TSQ 9000 Triple Quadrupole GC-MS/MS system

Satisfy your routine laboratory's current and future analytical needs for truly unstoppable performance with the Thermo Scientific™ TSQ™ 9000 triple quadrupole GC-MS/MS system. Deliver high sensitivity for more routine analysis. Minimize maintenance intervals with routine-grade robustness. Operate with technology, flexible method development and powerful reporting tools designed for optimal productivity. Achieve quality results on time, every time with easy-to-use routine workflows. Fully upgrade from base to advanced configurations to boost flexibility and performance when you need it.

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Satisfy your routine laboratory's current and future analytical needs for truly unstoppable performance with the Thermo Scientific TSQ 9000 triple quadrupole GC-MS/MS system. Deliver high sensitivity for more routine analysis. Minimize maintenance intervals with routine-grade robustness. Operate with technology, flexible method development and powerful reporting tools designed for optimal productivity. Achieve quality results on time, every time with easy-to-use routine workflows. Fully upgrade from base to advanced configurations to boost flexibility and performance when you need it.

## Q Exactive GC Orbitrap GC-MS/MS

Bring the power of the first-ever combination of high-resolution gas chromatography (GC) and high-resolution/accurate-mass (HR/AM) Orbitrap mass spectrometry to your laboratory. The Thermo Scientific™ Q Exactive™ GC Orbitrap™ GC-MS/MS system provides comprehensive characterization of samples in a single analysis for the highest confidence in compound discovery, identification, and quantitation. Q Exactive GC offers the quantitative power of a GC triple quadrupole MS combined with the high performance, full scan HR/AM capabilities that are only possible with Orbitrap MS technology.

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