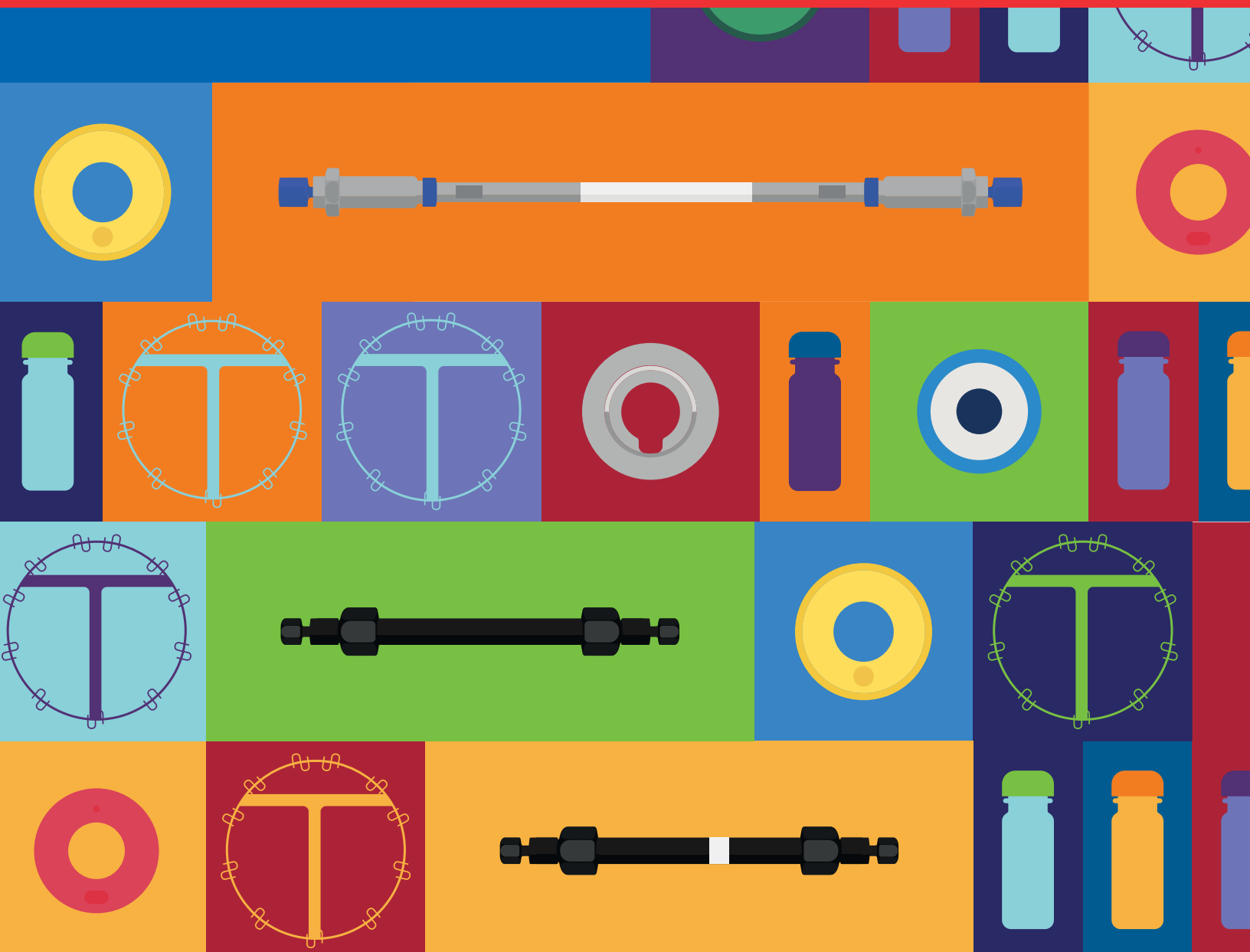


thermo scientific



# Connected chromatography solutions

2019/2021 Chromatography Consumables Catalog

**ThermoFisher**  
SCIENTIFIC

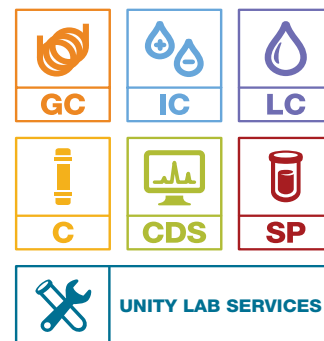


# The collective power of chromatography

Expect reproducible results with sample prep, columns and vials

Maximizing your chromatography productivity and achieving reproducible results requires optimizing the whole workflow from sample to knowledge. By choosing the right tools, from your sample preparation (manual or automated) to the highest selectivity column chemistry and cleanest vials, you maintain sample integrity and achieve the highest instrument efficiency and reduce the need for costly reanalysis. With the largest portfolio of sample handling; vials, plates and closures, column chemistries in a broad range of dimensions and sample preparation, we remain a steadfast and committed partner in your endeavor to improve the world around us.

Find out more at [thermofisher.com/chromatographyconsumables](https://thermofisher.com/chromatographyconsumables)



**ThermoFisher**  
SCIENTIFIC

# 2019/2021 Chromatography Consumables Catalog

This PDF catalogue is designed to familiarise you with our comprehensive portfolio of Chromatography consumables, columns and accessories, designed to deliver connected chromatography solutions across Biopharma/Pharma, Food & Beverage, Environmental and Clinical workflows. We have included key workflows in the next few pages to help with your product selection.

## How to use this PDF catalog

You can use the 'ctrl F' function to search for products, applications, brands or part numbers, or you can navigate by section using the contents page to guide you.

## More information

For more information on Chromatography consumables, to access application notes, educational resources, selection guides and product literature, please visit [thermofisher.com/chromatographyconsumables](https://thermofisher.com/chromatographyconsumables)

Or, 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.

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

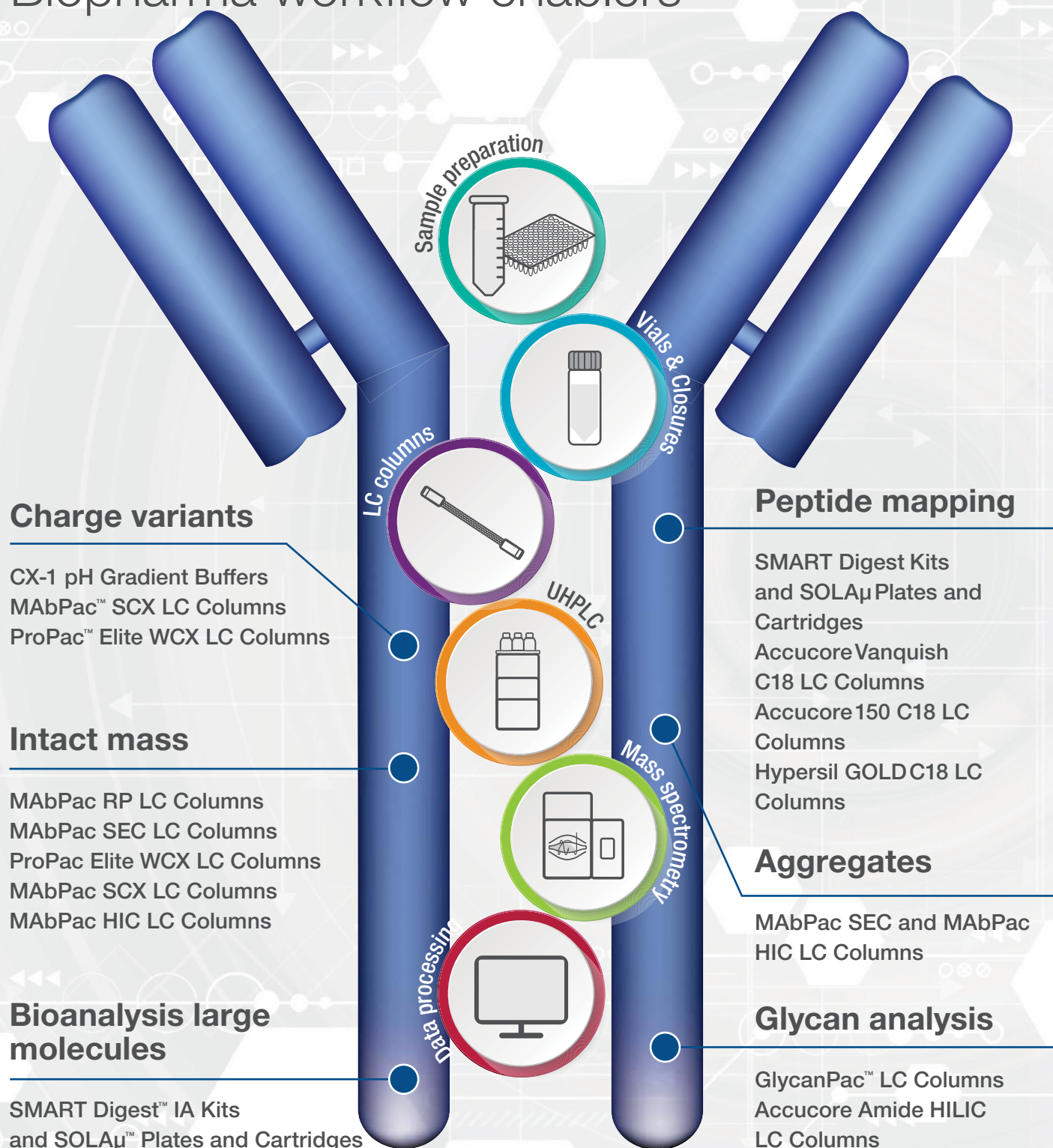
## A collaboration built for Biopharma

The National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific are developing workflows using Thermo Fisher Scientific technology including the latest biomolecule columns.

For more information on collaboration built for BioPharma visit

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

# Thermo Scientific™ Biopharma workflow enablers



## Charge variants

CX-1 pH Gradient Buffers  
MAbPac™ SCX LC Columns  
ProPac™ Elite WCX LC Columns

## Intact mass

MAbPac RP LC Columns  
MAbPac SEC LC Columns  
ProPac Elite WCX LC Columns  
MAbPac SCX LC Columns  
MAbPac HIC LC Columns

## Bioanalysis large molecules

SMART Digest™ IA Kits  
and SOLAμ™ Plates and Cartridges  
Accucore™ Vanquish™ C18 LC Columns  
Acclaim™ LC Columns  
Hypersil GOLD™ C18 LC Columns

Find out more about consumables for your Biopharma workflow [here](#)

## Peptide mapping

SMART Digest Kits  
and SOLAμ Plates and  
Cartridges  
Accucore Vanquish  
C18 LC Columns  
Accucore 150 C18 LC  
Columns  
Hypersil GOLD C18 LC  
Columns

## Aggregates

MAbPac SEC and MAbPac  
HIC LC Columns

## Glycan analysis

GlycanPac™ LC Columns  
Accucore Amide HILIC  
LC Columns

# Thermo Scientific™ Pharmaceutical workflow enablers

## Small molecules

### Discovery DMPK

HyperSep™ SPE Cartridges and Plates  
WebSeal™ Well Plates and Mats  
Accucore™ RP-MS LC Columns  
Accucore Biphenyl LC Columns  
Acclaim™ VANQUISH™ C18 UHPLC Columns  
Titan3™ Syringe Filters

### Development DMPK / Pre Clinical

SOLA™/SOLAμ™ SPE Plates and Cartridges  
WebSeal Well Plates and Mats  
HyperSep SPE Cartridges and Plates  
Accucore C18 LC Columns  
Accucore Biphenyl LC Columns  
Hypersil GOLD™ VANQUISH™ C18 UHPLC Columns

### Clinical

SOLA/SOLAμ SPE Plates and Cartridges  
WebSeal Well Plates and Mats  
Hypersil GOLD VANQUISH C18 UHPLC Columns  
Accucore C18 LC Columns  
Accucore Biphenyl LC Columns

### QA/QC

Titan3 Syringe Filters  
Hypersil GOLD C18 UHPLC Columns  
Accucore RP-MS LC Columns  
Accucore Biphenyl LC Columns  
TraceGOLD™ GC Columns

## Large molecules

### Discovery DMPK

SMART Digest™ Kits  
WebSeal Well Plates and Mats  
MAbPac™ LC Columns  
ProPac™ Elite WCX LC Column  
GlycanPac™ LC Columns  
Acclaim 120 C18 Columns  
CX-1 pH Gradient Buffers

### Development DMPK / Pre Clinical

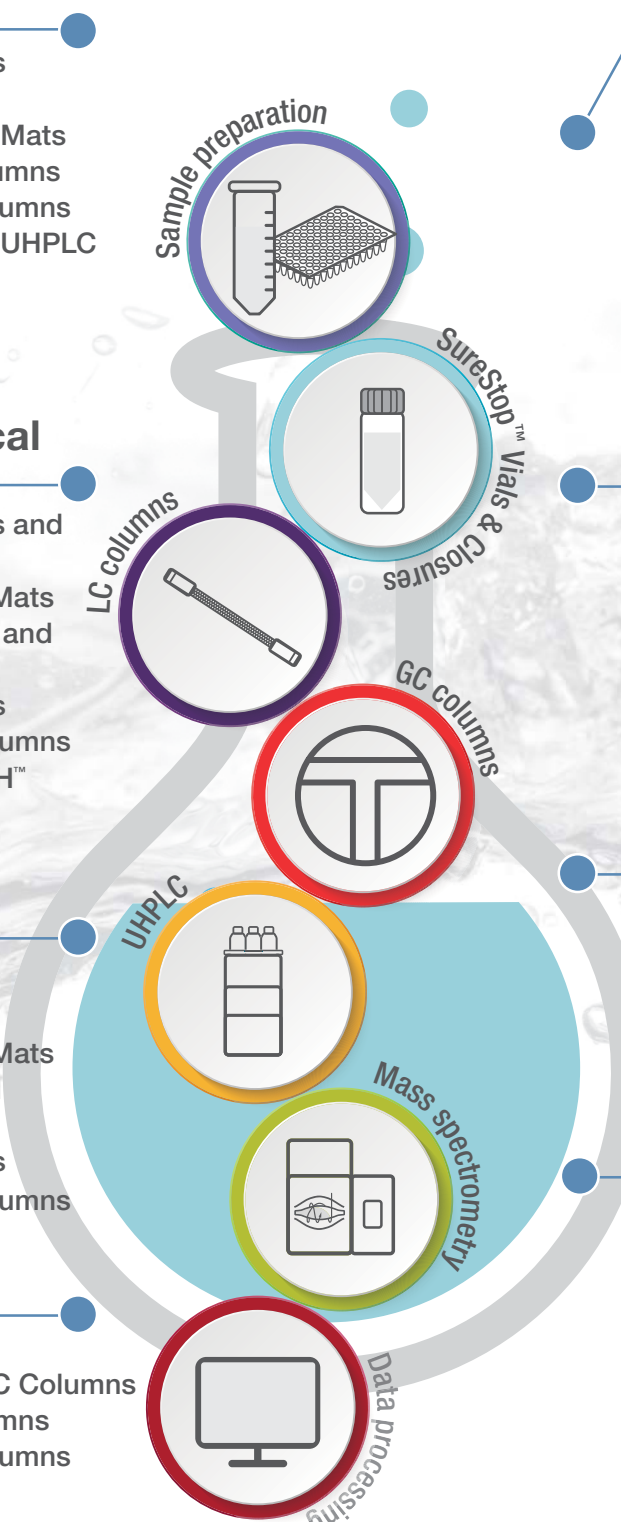
SMART Digest & SMART Digest ImmunoAffinity Kit  
SOLA/SOLAμ SPE Plates and Cartridges  
WebSeal Well Plates and Mats  
Acclaim 120 C18 Columns

### Clinical

SOLA/SOLAμ SPE Plates and Cartridges  
WebSeal Well Plates and Mats  
Acclaim 120 C18 Columns

### QA/QC

Titan3 Syringe Filters  
SMART Digest Kits  
ProPac LC Columns  
MAbPac LC Columns  
CX-1 pH Gradient Buffers  
Acclaim 120 C18 Columns



# Thermo Scientific™ Food and Beverage workflow enablers

## Pesticides

HyperSep™ SPE Cartridges  
 QuEChERS  
 TraceGOLD™ GC Columns  
 GC Consumables  
 and Accessories  
 Accucore™ aQ LC Columns  
 Acclaim™ Carbamate  
 LC Columns  
 Acclaim Trinity Q1 LC Columns

## Mycotoxins

HyperSep Retain Cartridges  
 Accucore aQ LC Columns  
 Hypersil GOLD™ LC Columns

## Contaminants by GC-MS

HyperSep SPE Cartridges  
 TraceGOLD GC Columns  
 GC Consumables and  
 Accessories



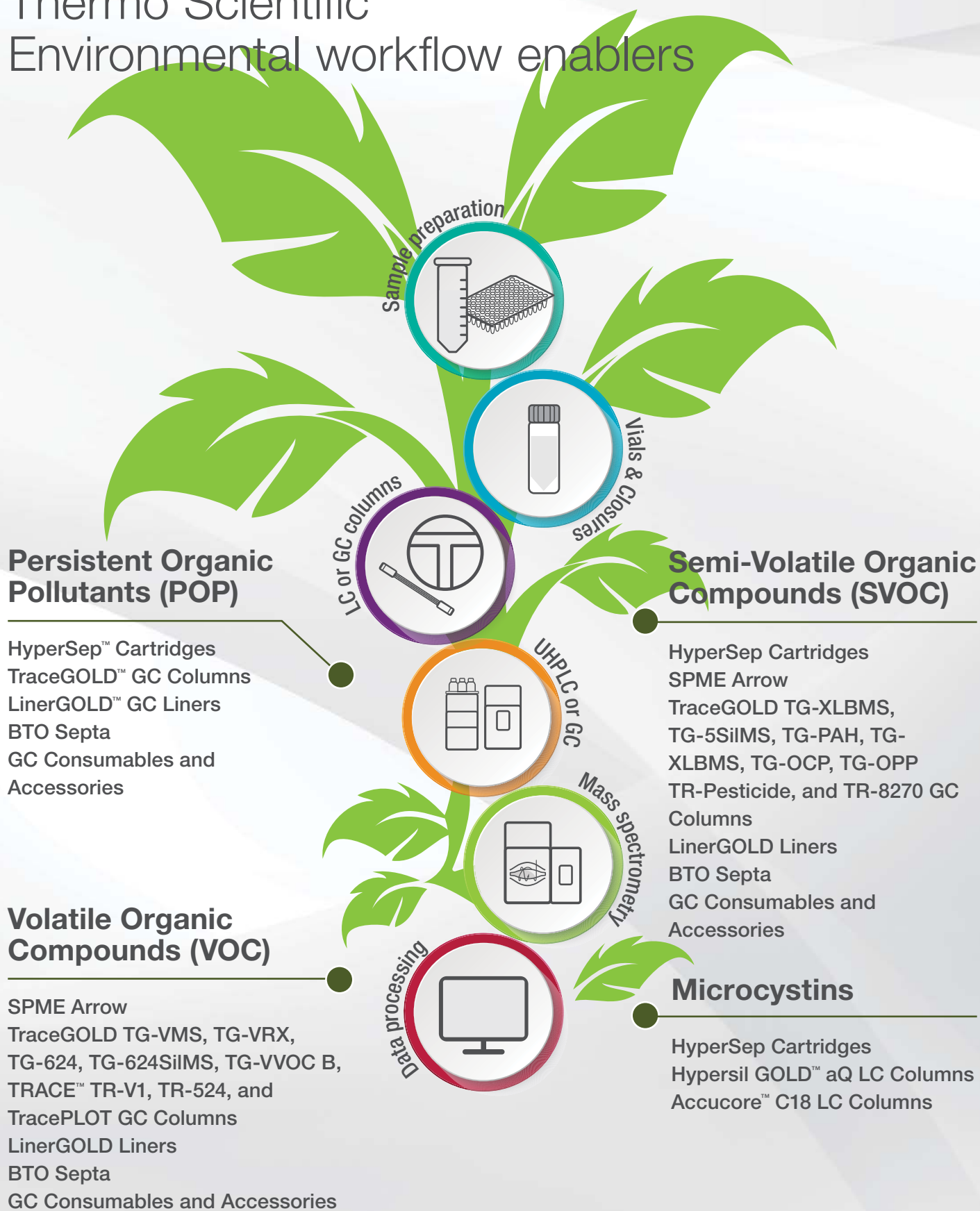
## Veterinary drug residues

QuEChERS  
 Target2™ PTFE Syringe  
 Filters  
 Accucore VDX LC Columns

## Food quality/ Food labelling / Food fraud

HyperSep Retain Cartridges  
 HyperSep SPE Cartridges  
 Acclaim LC Columns  
 Accucore LC Columns  
 HyperREX™ LC Columns  
 GC Columns and  
 Consumables

# Thermo Scientific™ Environmental workflow enablers



# Thermo Scientific™ Clinical research workflow enablers

## Forensic toxicology

SOLA™/SOLA $\mu$ ™ SPE Plates and Cartridges  
HyperSep™ SPE Cartridges and Plates  
HyperSep™ Retain Cartridges  
Accucore™ Biphenyl LC Columns  
Accucore RP-MS LC Columns  
TraceGOLD™ GC Columns and Guard Columns

## Drugs of abuse research

SOLA/SOLA $\mu$  SPE Plates and Cartridges  
HyperSep Verify CX Cartridges  
Accucore Biphenyl LC Columns  
Hypersil GOLD™ LC Columns  
TraceGOLD GC Columns

## Supplement analysis

HyperSep Retain Cartridges and Plates  
Hypercarb™ HPLC and UHPLC Columns  
Hypersil GOLD PFP LC Columns  
Accucore aQ C18 LC Columns

## Amino acids, acylcarnitines, and succinylacetone research

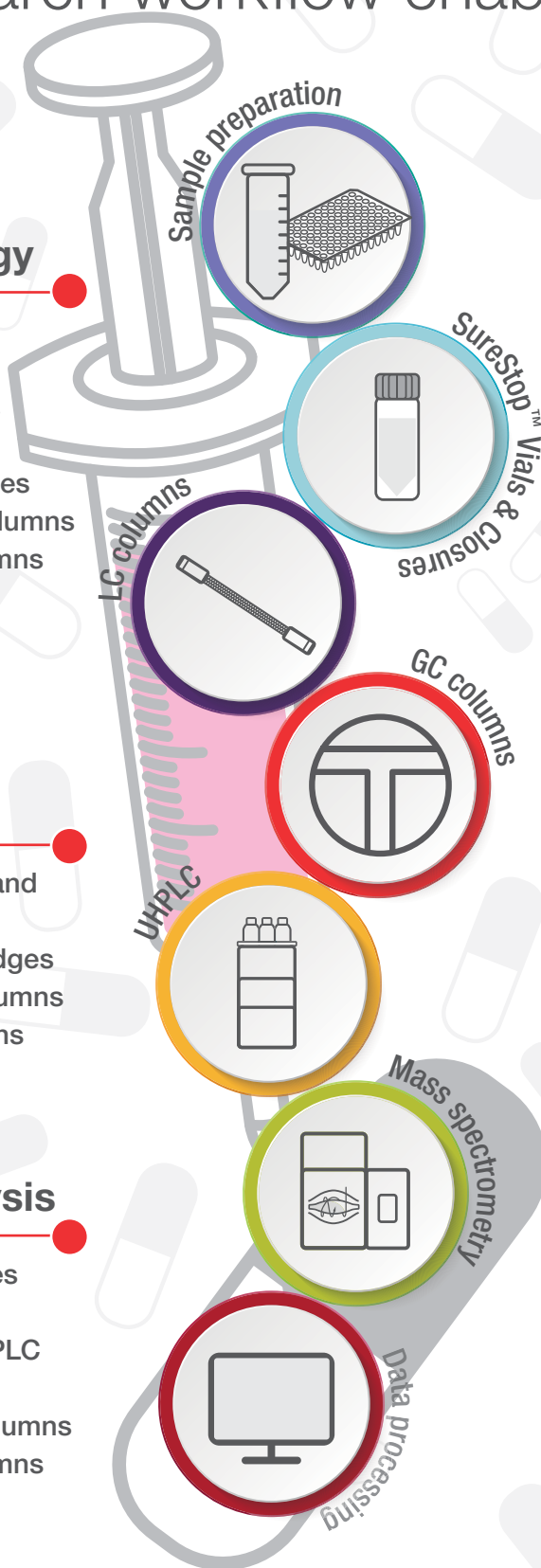
Hypersil GOLD C18 LC Columns  
Accucore aQ C18 LC Columns  
Acclaim™ HILIC LC Columns  
Titan3™ Syringe Filters  
HyperSep SLE Plates and Cartridges  
TraceGOLD GC Columns

## Translational proteomics

SMART Digest™ Kits  
SOLA $\mu$  SPE Plates and Cartridges  
EASY-Spray™ LC Columns  
PepMap™ RSLC Columns  
WebSeal™ Well Plates and Mats

## Drug monitoring research

SOLA/SOLA $\mu$  SPE Plates and Cartridges  
WebSeal Well Plates and Mats  
Acclaim 120 C18 Columns





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# Sample preparation products

Your sample is precious and you cannot afford failures. We have a comprehensive range of products delivering clean and consistent extractions using innovative sample preparation technologies for your analytical needs.

## Featured products



### 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 products

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

## Section contents

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### QuEChERS products

A quick and easy sample preparation approach for pesticide analysis. Convenient extraction and clean-up of pesticides in food and other complex matrices.

Page 1-035



### Syringe filters

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

Page 1-031

# SMART Digest and SMART Digest ImmunoAffinity (IA) kits

## Facilitating perfect digestion

The Thermo Scientific™ SMART Digest™ and the SMART Digest™ ImmunoAffinity (IA) kits are designed for biomarker and bio-therapeutic characterization and quantitation. The kits deliver sample preparation of proteins that are:

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



## SMART Digest kits

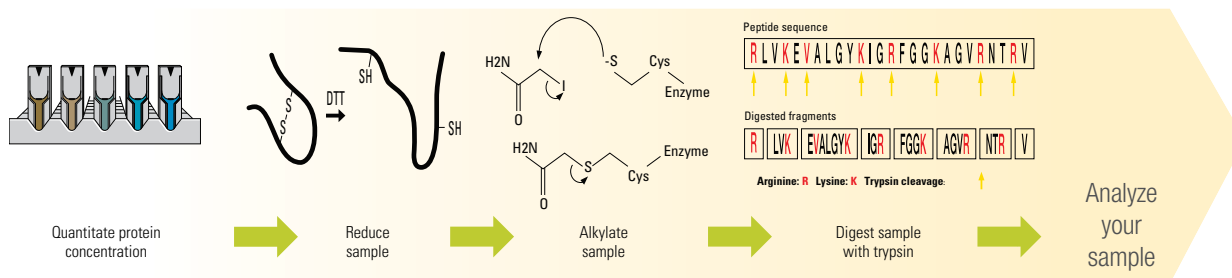
The SMART Digest kits improve workflows by quickly and efficiently digesting proteins for characterization and quantitation applications, achieved due to the heat-stable immobilized trypsin design.

### Simplicity of use with SMART Digest kits

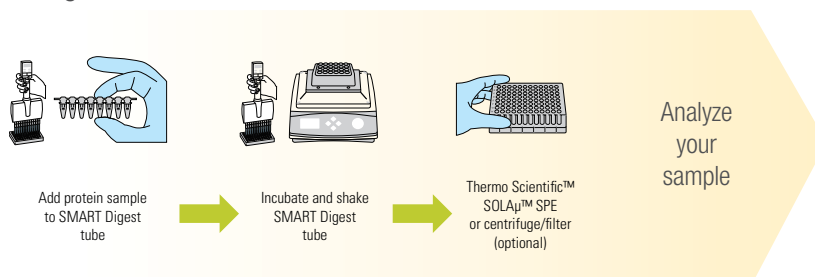
Current sample preparation protocols for the digestion of proteins are multifaceted and laborious. Without a single source solution, errors are far more likely to occur. Therefore, the overall protocol is subject to irreproducibility and significant sample processing time.

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

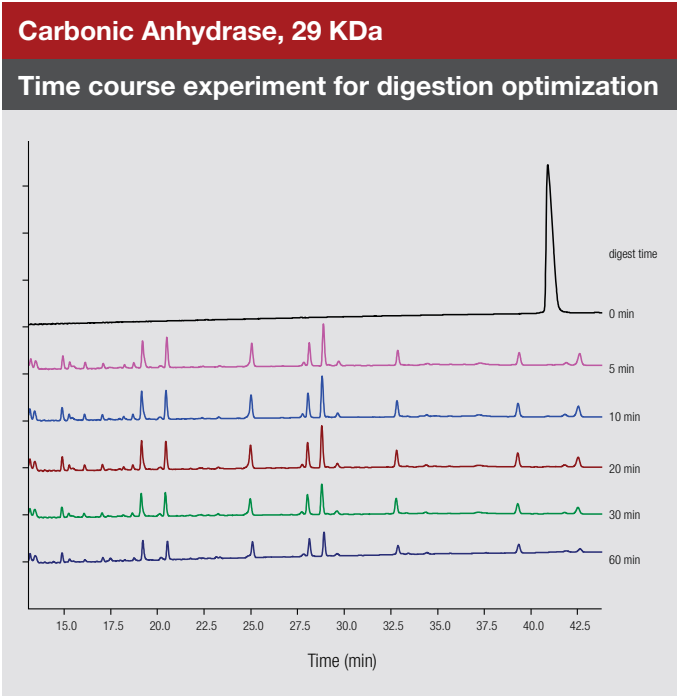


### SMART Digest



### Fast digestion with SMART Digest kits

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 as can be seen in the IgG example below with full digestion achieved in 60 minutes.

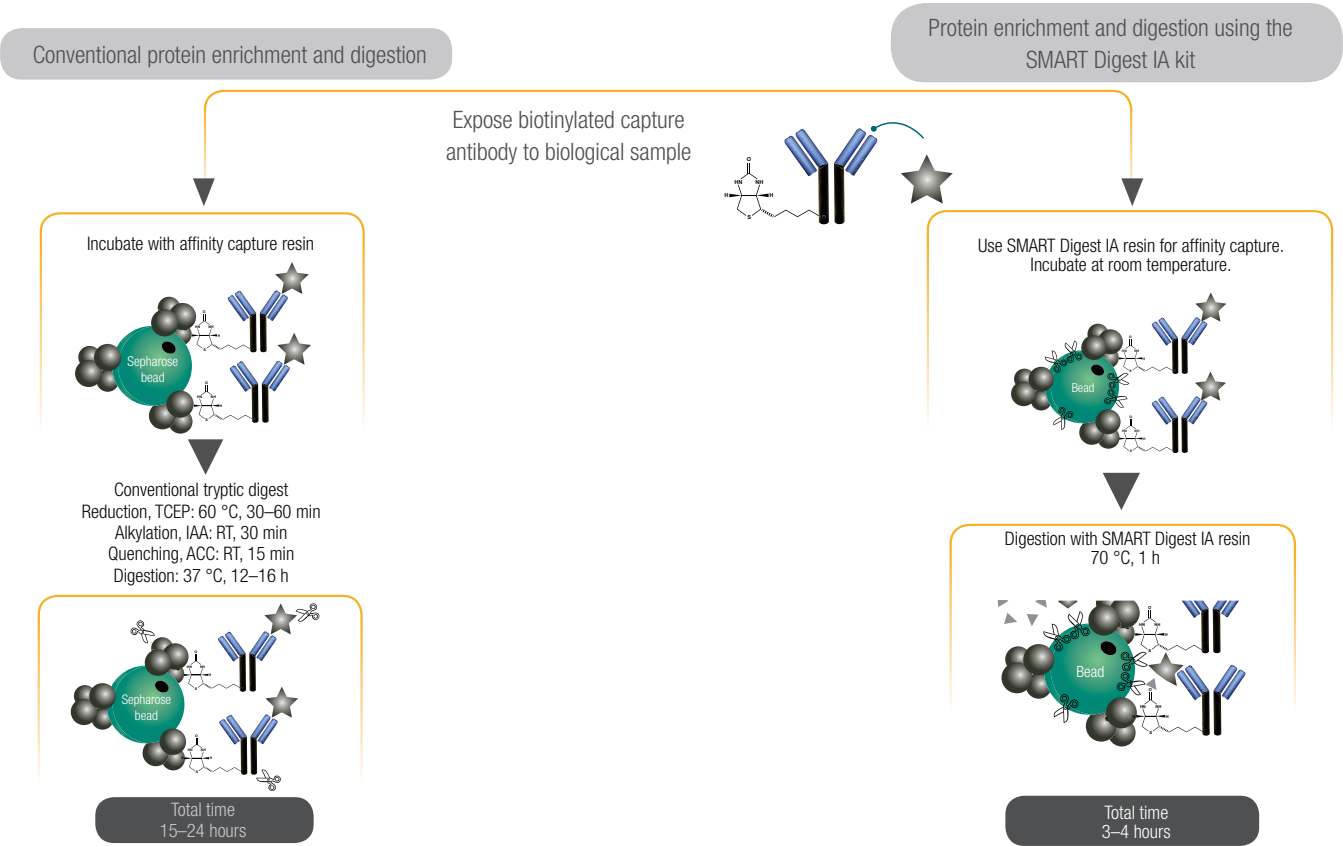


**Typical Digestion Times**

| 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 °C  
 \*IgG in plasma (17.5 mg/mL total protein) at 70 °C

### How does the SMART Digest IA kit work?



## SMART Digest IA kits

| Part Number | Description  |
|-------------|--|
| 60110-101   | SMART Digest IA Kit, Streptavidin (Av) non-magnetic                                  |
| 60110-102   | SMART Digest IA Kit, Av non-magnetic with SOLA $\mu$ SPE and collection plate        |
| 60110-103   | SMART Digest IA Kit, Av magnetic with SOLA $\mu$ SPE and collection plate            |
| 60110-104   | SMART Digest IA Kit, Av magnetic   |
| 60111-101   | SMART Digest IA Kit, Protein A non-magnetic  |
| 60111-102   | SMART Digest IA Kit, Protein A non-magnetic with SOLA $\mu$ SPE and collection plate |
| 60111-103   | SMART Digest IA Kit, Protein A magnetic with SOLA $\mu$ SPE and collection plate     |
| 60111-104   | SMART Digest IA Kit, Protein A magnetic  |
| 60112-101   | SMART Digest IA Kit, Protein G non-magnetic  |
| 60112-102   | SMART Digest IA Kit, Protein G non-magnetic with SOLA $\mu$ SPE and collection plate |
| 60112-103   | SMART Digest IA Kit, Protein G magnetic with SOLA $\mu$ SPE and collection plate     |
| 60112-104   | SMART Digest IA Kit, Protein G magnetic  |

### Automation

Due 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



### A step change in protein affinity capture and digestion

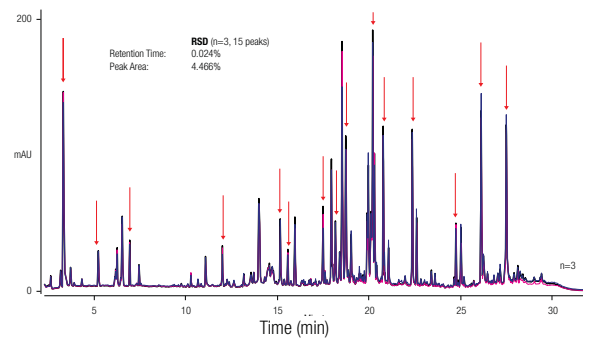
SMART Digest and SMART Digest IA kits provide a significant change in protein sample preparation, by delivering workflows that are:

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

### Reproducibility of digestion with the SMART Digest kits

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 UV chromatogram on the right shows overlay from three separate SMART digestions from the same mAb, conducted by three individual operators, with retention time RSD's of 0.024%.



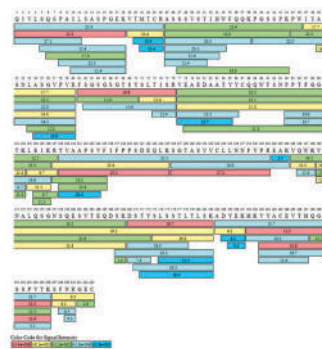
### Characterization

The SMART Digest kit, in combination with the High Resolution Accurate Mass (HRAM) capabilities of the Thermo Scientific™ Q Exactive™ mass spectrometers, and high resolution chromatographic separation with the Thermo Scientific™ Vanquish™ UHPLC family provides us with high-quality data sets that can be more effectively interrogated with Thermo Scientific™ BioPharma Finder™ Software.

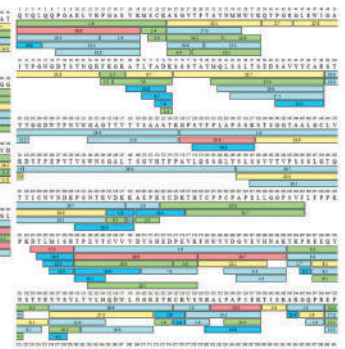
### Quantitation

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.

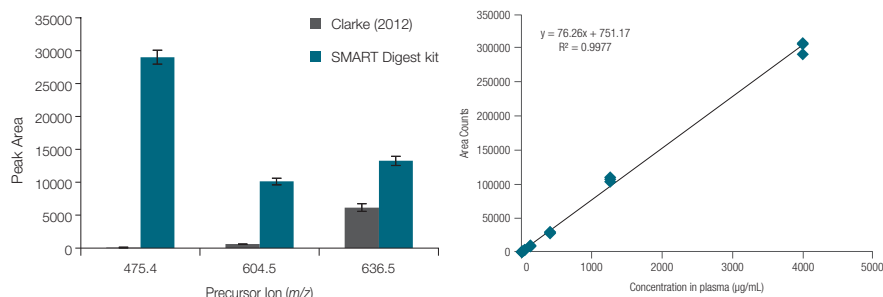
#### Rituximab light chain



#### Rituximab heavy chain



Sequence coverage ~100%



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

| Description                                       | Cat. No.  |
|---|-----------|
| SMART Digest Kit Trypsin and collection plate     | 60109-101 |
| SMART Digest Kit Trypsin, filter/collection plate | 60109-102 |
| SMART Digest Kit Trypsin, SOLAµ/collection plate  | 60109-103 |

## SMART Digest ImmunoAffinity (IA) kits

The 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.

The SMART Digest IA kits achieve this due to their unique design where the immunoaffinity reagents (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.

## Ordering information

| Part Number              | Description   |
|--------------------------|---|
| <b>SMART Digest Kits</b> |   |
| 60109-101                | SMART Digest Kit Trypsin and collection plate                                     |
| 60109-101-B              | SMART Digest Kit Trypsin, bulk resin option                                       |
| 60109-101-MB             | SMART Digest Kit Trypsin, magnetic bulk resin option                              |
| 60109-102                | SMART Digest Kit Trypsin, filter/collection plate                                 |
| 60109-102-B              | SMART Digest Kit Trypsin, bulk resin option with filter/collection plate          |
| 60109-102-MB             | SMART Digest Kit Trypsin, magnetic bulk resin option with filter/collection plate |
| 60109-103                | SMART Digest Kit Trypsin, SOLAµ/collection plate                                  |
| 60109-103-B              | SMART Digest Kit Trypsin, bulk resin option with SOLAµ/collection plate           |
| 60109-103-MB             | SMART Digest Kit Trypsin, magnetic bulk resin option with SOLAµ/collection plate  |
| 60113-101                | SMART Digest Kit Soluble Trypsin and collection plate                             |
| 60109-104                | SMART Digest Kit Chymotrypsin and collection plate                                |
| 60109-104-B              | SMART Digest Kit Chymotrypsin, bulk resin option                                  |
| 60109-104-MB             | SMART Digest Kit Chymotrypsin, magnetic bulk resin option                         |
| 60109-105                | SMART Digest Kit Chymotrypsin, filter/collection plate                            |
| 60109-105-B              | SMART Digest Kit Chymotrypsin, bulk resin option with filter/collection plate     |

## Ordering information (continued)

| Part Number              | Description   |
|--------------------------|---|
| <b>SMART Digest Kits</b> |   |
| 60109-105-MB             | SMART Digest Kit Chymotrypsin, magnetic bulk resin option with filter/collection plate      |
| 60109-106                | SMART Digest Kit Chymotrypsin, SOLA $\mu$ /collection plate                                 |
| 60109-106-B              | SMART Digest Kit Chymotrypsin, bulk resin option with SOLA $\mu$ /collection plate          |
| 60109-106-MB             | SMART Digest Kit Chymotrypsin, magnetic bulk resin option with SOLA $\mu$ /collection plate |
| 60109-107                | SMART Digest Kit Proteinase K and collection plate  |
| 60109-107-B              | SMART Digest Kit Proteinase K, bulk resin option  |
| 60109-107-MB             | SMART Digest Kit Proteinase K, magnetic bulk resin option                                   |
| 60109-108                | SMART Digest Kit Proteinase K, filter/collection plate                                      |
| 60109-108-B              | SMART Digest Kit Proteinase K, bulk resin option with filter/collection plate               |
| 60109-108-MB             | SMART Digest Kit Proteinase K, magnetic bulk resin option with filter/collection plate      |
| 60109-109                | SMART Digest Kit Proteinase K, SOLA $\mu$ /collection plate                                 |
| 60109-109-B              | SMART Digest Kit Proteinase K, bulk resin option with SOLA $\mu$ /collection plate          |
| 60109-109-MB             | SMART Digest Kit Proteinase K, magnetic bulk resin option with SOLA $\mu$ /collection plate |

| Part Number                 | Description  |
|-----------------------------|--|
| <b>SMART Digest IA Kits</b> |  |
| 60110-101                   | SMART Digest IA Kit, Streptavidin (Av) non-magnetic                                  |
| 60110-102                   | SMART Digest IA Kit, Av non-magnetic with SOLA $\mu$ SPE and collection plate        |
| 60110-103                   | SMART Digest IA Kit, Av magnetic with SOLA $\mu$ SPE and collection plate            |
| 60110-104                   | SMART Digest IA Kit, Av magnetic   |
| 60111-101                   | SMART Digest IA Kit, Protein A non-magnetic  |
| 60111-102                   | SMART Digest IA Kit, Protein A non-magnetic with SOLA $\mu$ SPE and collection plate |
| 60111-103                   | SMART Digest IA Kit, Protein A magnetic with SOLA $\mu$ SPE and collection plate     |
| 60111-104                   | SMART Digest IA Kit, Protein A magnetic  |
| 60112-101                   | SMART Digest IA Kit, Protein G non-magnetic  |
| 60112-102                   | SMART Digest IA Kit, Protein G non-magnetic with SOLA $\mu$ SPE and collection plate |
| 60112-103                   | SMART Digest IA Kit, Protein G magnetic with SOLA $\mu$ SPE and collection plate     |
| 60112-104                   | SMART Digest IA Kit, Protein G magnetic  |

## Complementary products

| Part Number | Description  |
|-------------|--|
| 60103-351   | HyperSep Vacuum Manifolds, for HyperSep 96-Well Plates |
| 60104-243   | HyperSep Glass Block Vacuum Manifold Pumps (NA)        |
| 60104-241   | HyperSep Glass Block Vacuum Manifold Pumps (EU)        |
| 60209-001   | SOLA $\mu$ HRP SPE Plate                               |
| 60109-102-F | SMART Digest Filter Plate                              |
| 5400110     | KingFisher Duo Prime Purification System               |
| 5400630     | KingFisher Flex Purification System                    |

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



# SOLA SPE products

## Consistent excellence for bioanalysis

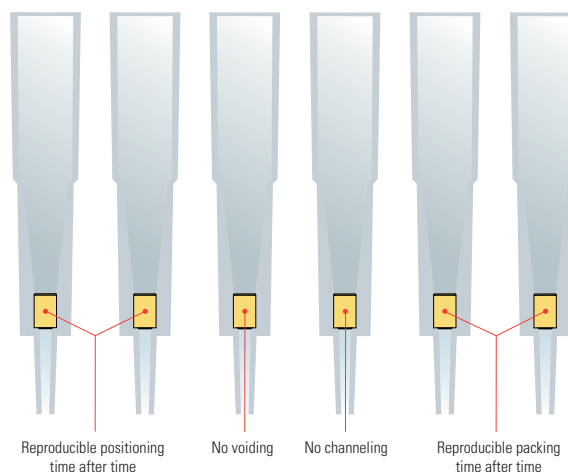


Thermo Scientific™ SOLA™ products are designed for bioanalytical and clinical research analysts who are tasked with providing high quality analytical results from complex biological samples in a high throughput environment, while complying with strict legislation. These demands are compounded by the 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

The SOLA SPE range meets these demands due to the unique and innovative frit-less SPE technology which eliminates the issues with traditional loose-packed SPE formats (see figure to the right). Combining the support material and active media components into a solid, uniform sorbent bed provides stable and controllable flow through characteristics and has an added advantage when dealing with viscous biological samples, as it prevents blocking and enables high throughput processing.

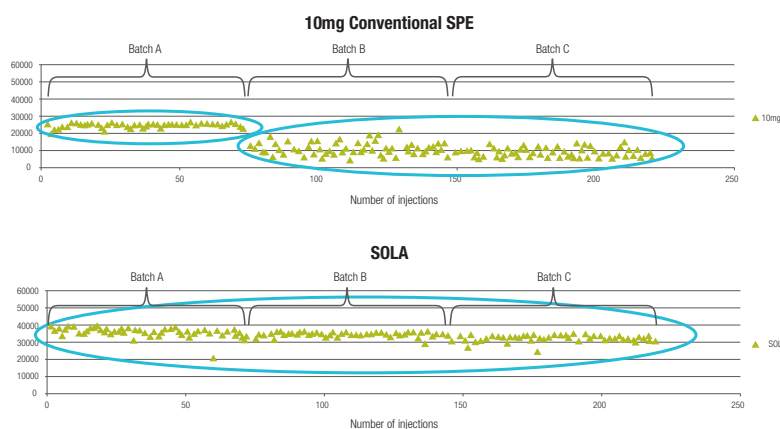


SOLAμ SPE fritless design – limiting issues associated with conventional SPE formats

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 (see figure to the right).

The Thermo Scientific™ SOLAμ™ 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

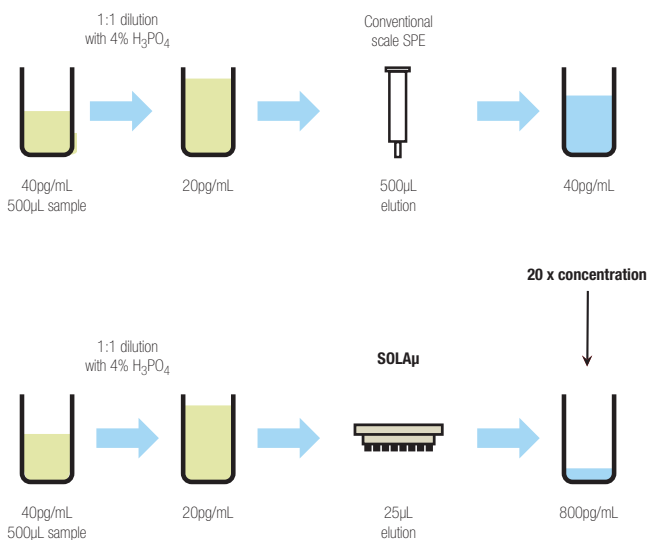


Batch to batch reproducibility of SOLA compared to a conventional SPE product

## Increase your MS sensitivity

Up to 20 times increase in sensitivity can be achieved by loading a large volume of sample and eluting in a low volume.

In the following example 500 $\mu$ L of human plasma was loaded onto the SOLA $\mu$  plate for the analysis of niflumic acid. The compound was eluted in 25 $\mu$ L, providing a 20 times increase in concentration whilst maintaining excellent precision.

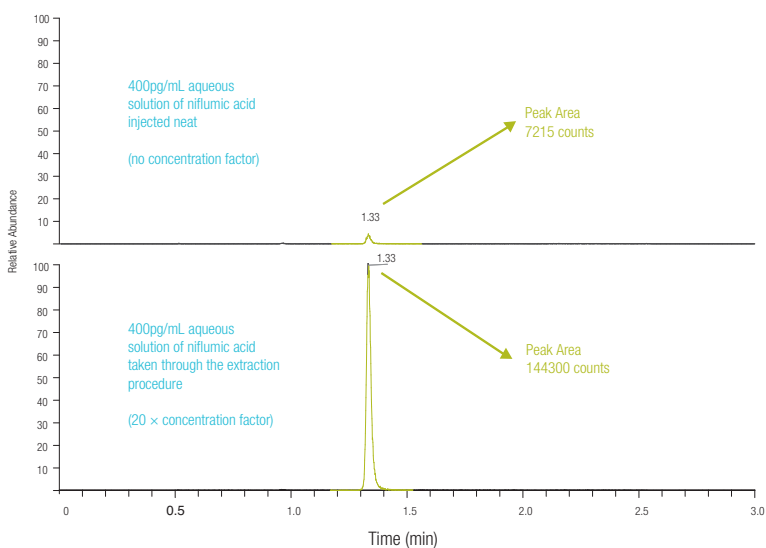


### The problem:

Improvement in assay sensitivity required

### SOLA $\mu$ solution:

SOLA $\mu$  for up to 20 times increase in concentration of sample without changes to workflow

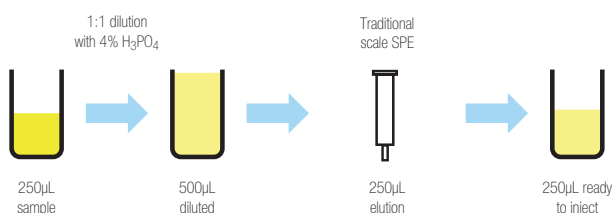


|                   | Precision Data for Niflumic Acid Peak Area Ratio (%RSD) n = 18 | Recovery of Niflumic Acid (%) | Matrix Effects (%) |
|-------------------|--|-------------------------------|--------------------|
| QC Low (0.4ng/mL) | 1.31   | 89.9                          | 8.63               |
| QC High (30ng/mL) | 1.06   | 94.0                          | 3.21               |

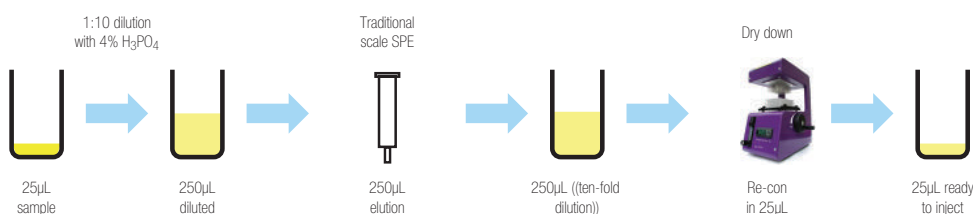
## Sample limited assays

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.

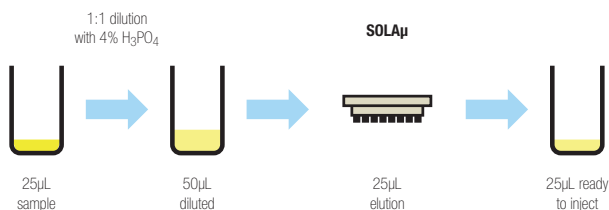
The following example shows that by loading 25 $\mu$ L of niflumic acid sample onto the SOLA $\mu$  plate and eluting in a total volume of 25 $\mu$ L, a ten-fold decrease in sample volume was achieved when compared to a traditional scale higher bed weight product. Equivalent method performance and high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



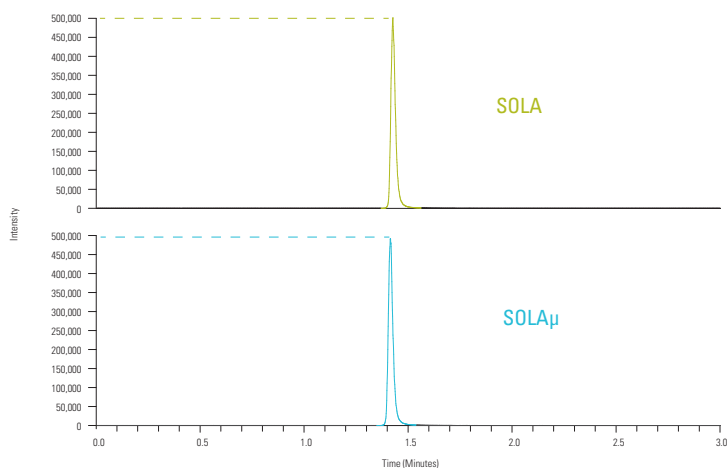
**Problem:**  
Large sample volume requires reduction



**Option 1:**  
Introduce additional steps with associated issues



**Option 2:**  
Scale volumes directly with no other method changes



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 10x11 SOLA SPE device

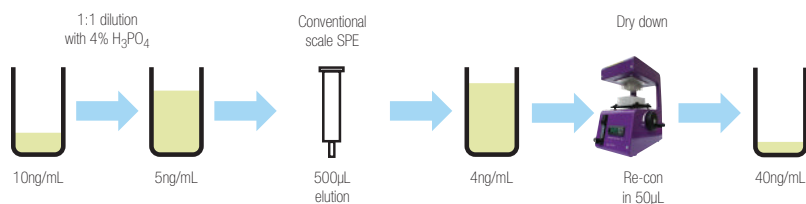
| Precision Data for Niflumic Acid |                          |                        |
|----------------------------------|--------------------------|------------------------|
|                                  | Analyte Peak Area (%RSD) | Peak Area Ratio (%RSD) |
| Low QC                           | 7.32                     | 0.356                  |
| High QC                          | 5.33                     | 0.195                  |

## Increased workflow efficiency

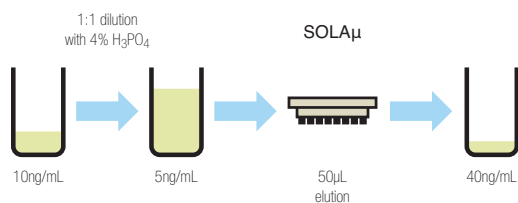
With traditional SPE the eluted sample is typically dried down to increase the concentration of the sample and thus improve the sensitivity. This causes an issue for certain compound types which can be lost during this step, resulting in reduced sensitivity.

SOLA $\mu$  allows 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.

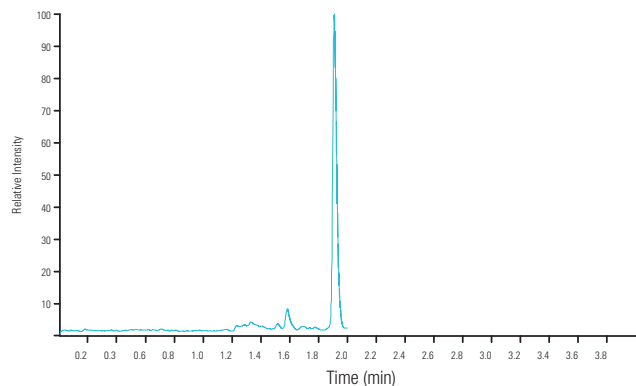
In the case of extraction of ibuprofen a four-fold pre-concentration was achieved without the need for dry down by loading 200 $\mu$ L of sample onto the SOLA $\mu$  plate and eluting in a total of 50 $\mu$ L. The results demonstrate that even with this low elution volume, excellent reproducibility was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



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



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



Peak response for ibuprofen

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

**SOLA and SOLA $\mu$  meet bioanalytical needs by providing:**

- A robust low sample volume preparation platform
- Sample enrichment (20 times)
- Reproducibility at low sample and solvent levels
- Mitigation against solvation and non-specific binding issues
- Increased workflow efficiency and throughput

**SOLA $\mu$  96 Well Plates**

| Description    | Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|----------------|-----------------|--------------------|-----------|----------|
| SOLA $\mu$ HRP | 2               | 1                  | 60209-001 | 1 Each   |
| SOLA $\mu$ SCX | 2               | 1                  | 60209-002 | 1 Each   |
| SOLA $\mu$ SAX | 2               | 1                  | 60209-003 | 1 Each   |
| SOLA $\mu$ WCX | 2               | 1                  | 60209-004 | 1 Each   |
| SOLA $\mu$ WAX | 2               | 1                  | 60209-005 | 1 Each   |

**SOLA SPE cartridges**

| Description | Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-------------|-----------------|--------------------|-----------|----------|
| SOLA HRP    | 10              | 1                  | 60109-001 | 100 Pack |
| SOLA SCX    | 10              | 1                  | 60109-002 | 100 Pack |
| SOLA SAX    | 10              | 1                  | 60109-003 | 100 Pack |
| SOLA WCX    | 10              | 1                  | 60109-004 | 100 Pack |
| SOLA WAX    | 10              | 1                  | 60109-005 | 100 Pack |

**SOLA 96 well plates**

| Description | Bed Weight (mg) | Well Volume (mL) | Cat. No.  | Quantity |
|-------------|-----------------|------------------|-----------|----------|
| SOLA HRP    | 10              | 2                | 60309-001 | 1 Each   |
| SOLA SCX    | 10              | 2                | 60309-002 | 1 Each   |
| SOLA SAX    | 10              | 2                | 60309-003 | 1 Each   |
| SOLA WCX    | 10              | 2                | 60309-004 | 1 Each   |
| SOLA WAX    | 10              | 2                | 60309-005 | 1 Each   |

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

## HyperSep SLE cartridges and plates

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
- Reduced solvent requirements compared to LLE
- Can be completely automated unlike LLE
- Improved cleanliness of sample extract compared to protein precipitation techniques
- Improved sensitivity compared to protein precipitation techniques



Thermo Scientific™ HyperSep™ SLE is available in cartridge and 96 well plate formats and in acidified or basified formats to help simplify the protocol when acidic or basic mobile phases are used.

### HyperSep SLE cartridges

| Special treated diatomite SLE | Bed Weight (mg) | Column Volume (mL) | Cat. No.         | Quantity |
|-------------------------------|-----------------|--------------------|------------------|----------|
| pH=7                          | 200             | 3                  | 60109-200-3-7    | 50 Pack  |
|                               | 500             | 3                  | 60109-500-3-7    | 50 Pack  |
|                               | 500             | 6                  | 60109-500-6-7    | 30 Pack  |
|                               | 1,000           | 6                  | 60109-1000-6-7   | 30 Pack  |
|                               | 2,000           | 12                 | 60109-2000-12-7  | 20 Pack  |
|                               | 4,000           | 25                 | 60109-4000-25-7  | 15 Pack  |
|                               | 20,000          | 60                 | 60109-20000-60-7 | 10 Pack  |
| pH=9                          | 200             | 3                  | 60109-200-3-9    | 50 Pack  |
|                               | 500             | 3                  | 60109-500-3-9    | 50 Pack  |
|                               | 500             | 6                  | 60109-500-6-9    | 30 Pack  |
|                               | 1,000           | 6                  | 60109-1000-6-9   | 30 Pack  |
|                               | 2,000           | 12                 | 60109-2000-12-9  | 20 Pack  |
|                               | 4,000           | 25                 | 60109-4000-25-9  | 15 Pack  |
|                               | 20,000          | 60                 | 60109-20000-60-9 | 10 Pack  |

### HyperSep SLE 96 well plates

| Special treated diatomite SLE | Bed Weight (mg) | Column Volume (mL) | Cat. No.       | Quantity |
|-------------------------------|-----------------|--------------------|----------------|----------|
| pH=7                          | 200             | 2                  | 60109-200-2-7W | 1 Each   |
|                               | 300             | 2                  | 60109-300-2-7W | 1 Each   |
|                               | 400             | 2                  | 60109-400-2-7W | 1 Each   |
|                               | 500             | 2                  | 60109-500-2-7W | 1 Each   |
| pH=9                          | 200             | 2                  | 60109-200-2-9W | 1 Each   |
|                               | 300             | 2                  | 60109-300-2-9W | 1 Each   |
|                               | 400             | 2                  | 60109-400-2-9W | 1 Each   |
|                               | 500             | 2                  | 60109-500-2-9W | 1 Each   |

# HyperSep protein precipitation plate

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

## HyperSep protein precipitation plate

| Description                 | Cat. No.  | Quantity |
|-----------------------------|-----------|----------|
| Protein Precipitation Plate | 60304-201 | 1 Each   |

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



# Microscale SPE plates and tips

## HyperSep Lab Plates

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 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

### HyperSep lab plates

| Description                    | Cat. No. (Polystyrene) | Cat. No. (Polypropylene) | Quantity |
|--------------------------------|------------------------|--------------------------|----------|
| C18                            | 60110-201              | 60110-301                | 5 Pack   |
| C8                             | 60110-202              | 60110-302                | 5 Pack   |
| C4                             | 60110-203              | 60110-303                | 5 Pack   |
| Hypercarb                      | 60110-204              | 60110-304                | 5 Pack   |
| Hypercarb and C18 (Mixed Mode) | 60110-205              | 60110-305                | 5 Pack   |
| Zirconium Dioxide              | 60110-206              | 60110-306                | 5 Pack   |
| Titanium Dioxide               | 60110-207              | 60110-307                | 5 Pack   |
| SCX                            | 60110-208              | 60110-308                | 5 Pack   |
| SAX                            | 60110-209              | 60110-309                | 5 Pack   |

## HyperSep filter plates

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

### HyperSep filter plates

| Description                  | Cat. No. (5-7 $\mu$ L Bed Volume) | Cat. No. (40 $\mu$ L Bed Volume) | Quantity |
|------------------------------|-----------------------------------|----------------------------------|----------|
| C18                          | 60110-401                         | 60110-501                        | 1 Each   |
| C8                           | 60110-402                         | 60110-502                        | 1 Each   |
| C4                           | 60110-403                         | 60110-503                        | 1 Each   |
| Hypercarb                    | 60110-404                         | 60110-504                        | 1 Each   |
| Hypercarb and C18 (Mix Mode) | 60110-405                         | 60110-505                        | 1 Each   |
| Zirconium Dioxide            | 60110-406                         | 60110-506                        | 1 Each   |
| Titanium Dioxide             | 60110-407                         | 60110-507                        | 1 Each   |
| SCX                          | 60110-408                         | 60110-508                        | 1 Each   |
| SAX                          | 60110-409                         | 60110-509                        | 1 Each   |



## HyperSep Microscale solid phase extraction tips

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 100nL
- Applications include mass spectrometry, desalting, protein purification and electrophoresis



### HyperSep Tip Microscale solid phase extraction tips

| Description                     | Cat. No.<br>(1-10 $\mu$ L Capacity) | Cat. No.<br>(10-200 $\mu$ L Capacity) | Quantity |
|---------------------------------|-------------------------------------|---------------------------------------|----------|
| Thermo Scientific™ BioBasic™ 18 | 60109-201                           | 60109-209                             | 96 Pack  |
| BioBasic 8                      | 60109-202                           | 60109-210                             | 96 Pack  |
| BioBasic 4                      | 60109-203                           | 60109-211                             | 96 Pack  |
| Hypercarb                       | 60109-204                           | 60109-212                             | 96 Pack  |
| Hypercarb and C18 (mix mode)    | 60109-205                           | 60109-213                             | 96 Pack  |
| HILIC                           | 60109-206                           | 60109-214                             | 96 Pack  |
| Trypsin                         | 60109-207                           | 60109-215                             | 96 Pack  |
| Titanium Dioxide                | 60109-208                           | 60109-216                             | 96 Pack  |
| Zirconium Dioxide               | 60109-217                           | 60109-218                             | 96 Pack  |

## HyperSep SpinTip microscale solid phase extraction tips

Revolutionary micropipette tip for sample preparation

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



### HyperSep SpinTip Microscale solid phase extraction tips

| Description                   | Cat. No.<br>(1-10 $\mu$ L Capacity) | Cat. No.<br>(10-200 $\mu$ L Capacity) | Quantity |
|-------------------------------|-------------------------------------|---------------------------------------|----------|
| C18                           | 60109-401                           | 60109-412                             | 96 Pack  |
| C8                            | 60109-402                           | 60109-413                             | 96 Pack  |
| C4                            | 60109-403                           | 60109-414                             | 96 Pack  |
| Hypercarb                     | 60109-404                           | 60109-415                             | 96 Pack  |
| Hypercarb and C18 (mix mode)  | 60109-405                           | 60109-416                             | 96 Pack  |
| HILIC                         | 60109-406                           | 60109-417                             | 96 Pack  |
| Trypsin                       | 60109-407                           | 60109-418                             | 96 Pack  |
| POROS Weak Anion Exchanger    | 60109-408                           | 60109-419                             | 96 Pack  |
| POROS Strong Anion Exchanger  | 60109-409                           | 60109-420                             | 96 Pack  |
| POROS Strong Cation Exchanger | 60109-410                           | 60109-421                             | 96 Pack  |
| Titanium Dioxide              | 60109-411                           | 60109-422                             | 96 Pack  |
| Zirconium Dioxide             | 60109-424                           | 60109-425                             | 96 Pack  |

# HyperSep SPE cartridges and plates

## HyperSep Retain SPE Cartridges and Plates

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 - Sulfonic acid for basic analytes
  - AX - Quaternary amine for acidic analytes
- Fast and easy sample preparation and method development
- pH stable 0 to 14



### HyperSep Retain PEP/CX/AX SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Retain PEP Cat No. | Retain CX Cat No. | Retain AX Cat No. | Quantity |
|-----------------|--------------------|--------------------|-------------------|-------------------|----------|
| 30              | 1                  | 60107-201          | 60107-301         | 60107-401         | 100 Pack |
| 30              | 3                  | 60107-202          | 60107-302         | 60107-402         | 50 Pack  |
| 60              | 3                  | 60107-203          | 60107-303         | 60107-403         | 50 Pack  |
| 60              | 6                  | 60107-208          | 60107-308         | 60107-408         | 30 Pack  |
| 100             | 3                  | 60107-217          | 60107-317         | 60107-417         | 50 Pack  |
| 100             | 6                  | 60107-207          | 60107-307         | 60107-407         | 30 Pack  |
| 150             | 3                  | 60107-209          | 60107-309         | 60107-413         | 30 Pack  |
| 150             | 6                  | 60107-211          | 60107-311         | 60107-411         | 30 Pack  |
| 200             | 3                  | 60107-204          | 60107-304         | 60107-404         | 50 Pack  |
| 200             | 6                  | 60107-212          | 60107-314         | 60107-412         | 30 Pack  |
| 500             | 3                  | 60107-205          | 60107-305         | 60107-405         | 50 Pack  |
| 500             | 6                  | 60107-206          | 60107-306         | 60107-406         | 30 Pack  |
| 500             | 15                 | 60107-219          | 60107-319         | 60107-419         | 20 Pack  |
| 1,000           | 25                 | 60107-215          | 60107-315         | 60107-415         | 20 Pack  |
| 1,000           | 6                  | 60107-218          | 60107-318         | 60107-418         | 30 Pack  |
| 2,000           | 25                 | 60107-214          | 60107-312         | 60107-414         | 20 Pack  |

Note: For bed weights less than 30mg please refer to SOLA SPE products on page 1-008.

### HyperSep Retain PEP/CX/AX 96 fixed well plates

| Bed Weight (mg) | Well Volume (mL) | Retain PEP Cat No. | Retain CX Cat No. | Retain AX Cat No. | Quantity |
|-----------------|------------------|--------------------|-------------------|-------------------|----------|
| 30              | 1                | 60306-207          | 60306-303         | 60306-403         | 1 Each   |
| 60              | 1                | 60306-208          | 60306-304         | 60306-404         | 1 Each   |

Note: For bed weights less than 30mg please refer to SOLA SPE products on page 1-008.

### HyperSep Retain PEP/CX/AX 96 removable well plate

| Bed Weight (mg) | Volume (mL) | Retain PEP Cat No. | Retain CX Cat No. | Retain AX Cat No. | Quantity |
|-----------------|-------------|--------------------|-------------------|-------------------|----------|
| 30              | 1           | 60303-207          | 60303-307         | 60303-407         | 1 Each   |
| 60              | 1           | 60303-208          | 60303-308         | 60303-408         | 1 Each   |

Note: For bed weights less than 30mg please refer to SOLA SPE products on page 1-008.

### 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

## HyperSep Hypercarb SPE cartridges and plates

Unique material for retention of highly polar compounds

- Thermo Scientific™ 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



### HyperSep Hypercarb SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 25              | 1                  | 60106-304 | 50 Pack  |
| 50              | 1                  | 60106-303 | 50 Pack  |
| 100             | 1                  | 60106-302 | 30 Pack  |
| 200             | 3                  | 60106-301 | 30 Pack  |
| 500             | 6                  | 60106-402 | 20 Pack  |
| 1,000           | 6                  | 60106-403 | 10 Pack  |
| 2,000           | 15                 | 60106-404 | 10 Pack  |

### HyperSep Hypercarb 96 fixed well plates

| Bed Weight (mg) | Well Volume (mL) | Cat. No.  | Quantity |
|-----------------|------------------|-----------|----------|
| 10              | 1                | 60306-501 | 1 Each   |
| 25              | 1                | 60306-502 | 1 Each   |
| 50              | 1                | 60306-503 | 1 Each   |

### HyperSep Hypercarb 96 removable well plates

| Bed Weight (mg) | Well Volume (mL) | Cat. No.  | Quantity |
|-----------------|------------------|-----------|----------|
| 10              | 1                | 60302-606 | 1 Each   |
| 25              | 1                | 60302-607 | 1 Each   |
| 50              | 1                | 60302-608 | 1 Each   |

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

## HyperSep C18 SPE cartridges and plates

Feature a highly retentive alkyl-bonded phase for extraction of non-polar to moderately polar compounds

### HyperSep C18 SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 25              | 1                  | 60108-376 | 100 Pack |
| 50              | 1                  | 60108-390 | 100 Pack |
| 100             | 1                  | 60108-302 | 100 Pack |
| 100             | 3                  | 60108-765 | 50 Pack  |
| 200             | 3                  | 60108-303 | 50 Pack  |
| 500             | 3                  | 60108-304 | 50 Pack  |
| 500             | 6                  | 60108-305 | 30 Pack  |
| 500             | 10                 | 60108-786 | 50 Pack  |
| 1,000           | 6                  | 60108-301 | 30 Pack  |
| 1,000           | 15                 | 60108-776 | 20 Pack  |
| 2,000           | 15                 | 60108-701 | 20 Pack  |
| 2000            | 25                 | 60108-780 | 20 Pack  |
| 5,000           | 25                 | 60108-702 | 20 Pack  |
| 10,000          | 75                 | 60108-703 | 10 Pack  |

#### Applications:

- Retentive for non-polar compounds
- Retains most organic analytes from aqueous matrices

### HyperSep C18 96 fixed/removable well plates

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-201      | 60300-425          | 1 Each   |
| 25              | 1                | 60307-202      | 60300-426          | 1 Each   |
| 50              | 1                | 60307-203      | 60300-427          | 1 Each   |
| 100             | 1                | 60307-204      | 60300-428          | 1 Each   |

## HyperSep C8 SPE cartridges and plates

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

### HyperSep C8 SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-391 | 100 Pack |
| 100             | 1                  | 60108-392 | 100 Pack |
| 200             | 3                  | 60108-393 | 50 Pack  |
| 500             | 3                  | 60108-309 | 50 Pack  |
| 500             | 6                  | 60108-394 | 30 Pack  |
| 1,000           | 6                  | 60108-427 | 30 Pack  |
| 2,000           | 15                 | 60108-704 | 20 Pack  |
| 5,000           | 25                 | 60108-705 | 20 Pack  |
| 10,000          | 75                 | 60108-706 | 10 Pack  |

#### Applications:

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

### HyperSep C8 96 fixed/removable well plates

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-211      | 60300-445          | 1 Each   |
| 25              | 1                | 60307-212      | 60300-446          | 1 Each   |
| 50              | 1                | 60307-213      | 60300-447          | 1 Each   |
| 100             | 1                | 60307-214      | 60300-448          | 1 Each   |

## HyperSep Silica SPE cartridges and plates

A polar sorbent primarily used to retain analytes in non-polar matrices

### HyperSep Silica SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-409 | 100 Pack |
| 100             | 1                  | 60108-317 | 100 Pack |
| 200             | 3                  | 60108-410 | 50 Pack  |
| 500             | 3                  | 60108-315 | 50 Pack  |
| 500             | 6                  | 60108-411 | 30 Pack  |
| 500             | 10                 | 60108-793 | 50 Pack  |
| 1,000           | 6                  | 60108-426 | 30 Pack  |
| 2,000           | 15                 | 60108-710 | 20 Pack  |
| 5,000           | 25                 | 60108-711 | 20 Pack  |
| 10,000          | 25                 | 60108-853 | 20 Pack  |
| 10,000          | 75                 | 60108-712 | 10 Pack  |
| 50,000          | 150                | 60108-850 | 10 Pack  |
| 20,000          | 75                 | 60108-851 | 10 Pack  |
| 70,000          | 150                | 60108-852 | 10 Pack  |

### Applications:

- Extraction of polar compounds including aldehydes, amines, drugs, pesticides and herbicides
- Extraction of carotenoids, fat-soluble vitamins, aflatoxins in food matrices
- Extraction of fatty acids and phospholipids

### HyperSep Silica 96 fixed/removable well plates

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-231      | 60300-485          | 1 Each   |
| 25              | 1                | 60307-232      | 60300-486          | 1 Each   |
| 50              | 1                | 60307-233      | 60300-487          | 1 Each   |
| 100             | 1                | 60307-234      | 60300-488          | 1 Each   |

## HyperSep acid wash silica SPE cartridges and plates

### HyperSep acid wash silica SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-901 | 100 Pack |
| 100             | 1                  | 60108-902 | 100 Pack |
| 100             | 10                 | 60108-903 | 50 Pack  |
| 200             | 3                  | 60108-904 | 50 Pack  |
| 200             | 10                 | 60108-905 | 50 Pack  |
| 500             | 3                  | 60108-906 | 50 Pack  |
| 500             | 6                  | 60108-907 | 30 Pack  |
| 500             | 10                 | 60108-908 | 50 Pack  |
| 1,000           | 6                  | 60108-909 | 30 Pack  |
| 2,000           | 15                 | 60108-910 | 20 Pack  |
| 5,000           | 25                 | 60108-911 | 20 Pack  |
| 10,000          | 75                 | 60108-912 | 10 Pack  |

### Applications:

- Extraction of polar compounds from ground, waste and drinking water
- Extraction of polar compounds from food and beverages

### HyperSep acid wash silica 96 fixed/removable well plates

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-321      | 60300-831          | 1 Each   |
| 25              | 1                | 60307-322      | 60300-832          | 1 Each   |
| 50              | 1                | 60307-323      | 60300-833          | 1 Each   |
| 100             | 1                | 60307-324      | 60300-834          | 1 Each   |

## HyperSep phenyl SPE cartridges and plates

Offer alternative selectivity for retention of basic compounds

### HyperSep phenyl SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-516 | 100 Pack |
| 100             | 1                  | 60108-386 | 100 Pack |
| 200             | 3                  | 60108-387 | 50 Pack  |
| 500             | 3                  | 60108-388 | 50 Pack  |
| 500             | 6                  | 60108-389 | 30 Pack  |
| 1,000           | 6                  | 60108-517 | 30 Pack  |
| 2,000           | 15                 | 60108-707 | 20 Pack  |
| 5,000           | 25                 | 60108-708 | 20 Pack  |
| 10,000          | 75                 | 60108-709 | 10 Pack  |

#### Applications:

- Extraction of aromatic compounds
- Extraction of basic analytes

### HyperSep phenyl 96 fixed/removable well plates

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-221      | 60300-685          | 1 Each   |
| 25              | 1                | 60307-222      | 60300-686          | 1 Each   |
| 50              | 1                | 60307-223      | 60300-687          | 1 Each   |
| 100             | 1                | 60307-224      | 60300-688          | 1 Each   |

## HyperSep Diol SPE cartridges and plates

Ideal for the extraction of polar compounds

### HyperSep Diol SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-571 | 100 Pack |
| 100             | 1                  | 60108-572 | 100 Pack |
| 200             | 3                  | 60108-573 | 50 Pack  |
| 500             | 3                  | 60108-574 | 50 Pack  |
| 500             | 6                  | 60108-575 | 30 Pack  |
| 1,000           | 6                  | 60108-576 | 30 Pack  |
| 2,000           | 15                 | 60108-755 | 20 Pack  |
| 5,000           | 25                 | 60108-756 | 20 Pack  |
| 10,000          | 75                 | 60108-757 | 10 Pack  |

#### Applications:

- Normal phase extraction of polar compounds
- Purification of polar compounds

### HyperSep Diol 96 fixed/removable well plates

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-311      | 60300-630          | 1 Each   |
| 25              | 1                | 60307-312      | 60300-631          | 1 Each   |
| 50              | 1                | 60307-313      | 60300-632          | 1 Each   |
| 100             | 1                | 60307-314      | 60300-633          | 1 Each   |

## HyperSep Verify CX SPE cartridges and plates

Features non-polar and ionic characteristics for improved analysis of drugs of abuse

### HyperSep Verify CX SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-741 | 100 Pack |
| 130             | 1                  | 60108-719 | 100 Pack |
| 130             | 10                 | 60108-769 | 50 Pack  |
| 200             | 3                  | 60108-777 | 50 Pack  |
| 200             | 6                  | 60108-722 | 50 Pack  |
| 200             | 10                 | 60108-742 | 50 Pack  |
| 300             | 3                  | 60108-720 | 50 Pack  |
| 500             | 3                  | 60108-721 | 50 Pack  |
| 500             | 6                  | 60108-723 | 30 Pack  |
| 1,000           | 6                  | 60108-724 | 30 Pack  |

#### Applications:

- Analysis of a wide range of drugs of abuse from biological matrices, including basic and neutral drugs

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

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-261      | 60300-805          | 1 Each   |
| 25              | 1                | 60307-262      | 60300-806          | 1 Each   |
| 50              | 1                | 60307-263      | 60300-807          | 1 Each   |
| 100             | 1                | 60307-264      | 60300-808          | 1 Each   |

## HyperSep Verify AX SPE cartridges and plates

Features non-polar and ionic characteristics for improved analysis of acidic drugs and metabolites

### HyperSep Verify AX SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 130             | 1                  | 60108-727 | 100 Pack |
| 130             | 10                 | 60108-767 | 50 Pack  |
| 200             | 3                  | 60108-768 | 30 Pack  |
| 200             | 6                  | 60108-730 | 50 Pack  |
| 200             | 10                 | 60108-764 | 50 Pack  |
| 300             | 3                  | 60108-728 | 50 Pack  |
| 500             | 3                  | 60108-729 | 50 Pack  |
| 500             | 6                  | 60108-731 | 30 Pack  |
| 1,000           | 6                  | 60108-732 | 30 Pack  |

#### Applications:

- Analysis of THC and its metabolites

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

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-271      | 60300-813          | 1 Each   |
| 25              | 1                | 60307-272      | 60300-814          | 1 Each   |
| 50              | 1                | 60307-273      | 60300-815          | 1 Each   |
| 100             | 1                | 60307-274      | 60300-816          | 1 Each   |

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

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

A strong cation exchange sorbent for extraction of charged basic compounds

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

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-420 | 100 Pack |
| 100             | 1                  | 60108-421 | 100 Pack |
| 200             | 3                  | 60108-422 | 50 Pack  |
| 500             | 3                  | 60108-423 | 50 Pack  |
| 500             | 6                  | 60108-520 | 30 Pack  |
| 1,000           | 6                  | 60108-433 | 30 Pack  |
| 2,000           | 15                 | 60108-716 | 20 Pack  |
| 5,000           | 25                 | 60108-717 | 20 Pack  |
| 10,000          | 75                 | 60108-718 | 10 Pack  |
| 20,000          | 75                 | 60108-857 | 10 Pack  |
| 50,000          | 150                | 60108-858 | 10 Pack  |

#### Applications:

- Isolation of cationic compounds from complex samples
- Removal of basic drugs
- Organic bases
- Nucleic acid bases, nucleotides and surfactants

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

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-251      | 60300-585          | 1 Each   |
| 25              | 1                | 60307-252      | 60300-586          | 1 Each   |
| 50              | 1                | 60307-253      | 60300-587          | 1 Each   |
| 100             | 1                | 60307-254      | 60300-588          | 1 Each   |

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

Strong anion exchange sorbent for extraction of weak acids

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

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-417 | 100 Pack |
| 100             | 1                  | 60108-418 | 100 Pack |
| 200             | 3                  | 60108-419 | 50 Pack  |
| 500             | 3                  | 60108-521 | 50 Pack  |
| 500             | 6                  | 60108-360 | 30 Pack  |
| 1,000           | 6                  | 60108-434 | 30 Pack  |
| 2,000           | 15                 | 60108-713 | 20 Pack  |
| 5,000           | 25                 | 60108-714 | 20 Pack  |
| 10,000          | 75                 | 60108-715 | 10 Pack  |

#### Applications:

- Isolation of anionic compounds from complex samples
- Removal of acidic food pigments
- Isolation of phenolic compounds
- Nucleic acids, nucleotides and surfactants

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

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-241      | 60300-565          | 1 Each   |
| 25              | 1                | 60307-242      | 60300-566          | 1 Each   |
| 50              | 1                | 60307-243      | 60300-567          | 1 Each   |
| 100             | 1                | 60307-244      | 60300-568          | 1 Each   |



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

Weak cation exchange sorbent for extraction of strong bases

### HyperSep Carboxylic Acid (WCX) SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-201 | 100 Pack |
| 100             | 1                  | 60108-202 | 100 Pack |
| 200             | 3                  | 60108-203 | 50 Pack  |
| 200             | 10                 | 60108-207 | 50 Pack  |
| 500             | 3                  | 60108-204 | 50 Pack  |
| 500             | 6                  | 60108-205 | 30 Pack  |
| 1,000           | 6                  | 60108-206 | 30 Pack  |
| 2,000           | 15                 | 60108-208 | 20 Pack  |
| 5,000           | 25                 | 60108-209 | 20 Pack  |

#### Applications:

- Drugs and metabolites in biological fluids
- Peptides in serum, plasma or biological fluids
- Pesticides in water, food and beverages
- Nucleic acids, nucleotides and surfactants

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

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-331      | 60300-841          | 1 Each   |
| 25              | 1                | 60307-332      | 60300-842          | 1 Each   |
| 50              | 1                | 60307-333      | 60300-843          | 1 Each   |
| 100             | 1                | 60307-334      | 60300-844          | 1 Each   |

## HyperSep Aminopropyl (WAX) SPE cartridges and plates

Weak anion exchange sorbent for extraction of strong acids

### HyperSep Aminopropyl (WAX) SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-424 | 100 Pack |
| 50              | 3                  | 60108-429 | 50 Pack  |
| 100             | 1                  | 60108-364 | 100 Pack |
| 200             | 3                  | 60108-425 | 50 Pack  |
| 500             | 3                  | 60108-518 | 50 Pack  |
| 500             | 6                  | 60108-519 | 30 Pack  |
| 1,000           | 6                  | 60108-432 | 30 Pack  |
| 2,000           | 15                 | 60108-738 | 20 Pack  |
| 5,000           | 25                 | 60108-739 | 20 Pack  |
| 10,000          | 75                 | 60108-740 | 10 Pack  |

#### Applications:

- Separation of structural isomers
- Drugs and metabolites in biological fluids
- Separation of saccharides, phenols and petroleum products

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

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-291      | 60300-505          | 1 Each   |
| 25              | 1                | 60307-292      | 60300-506          | 1 Each   |
| 50              | 1                | 60307-293      | 60300-507          | 1 Each   |
| 100             | 1                | 60307-294      | 60300-508          | 1 Each   |

## HyperSep Florisil SPE cartridges and plates

Ideal for the isolation of polar compounds from non-polar matrices



### HyperSep Florisil SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-402 | 100 Pack |
| 100             | 1                  | 60108-403 | 100 Pack |
| 200             | 3                  | 60108-404 | 50 Pack  |
| 500             | 3                  | 60108-405 | 50 Pack  |
| 500             | 6                  | 60108-500 | 30 Pack  |
| 1,000           | 6                  | 60108-431 | 30 Pack  |
| 2,000           | 6                  | 60108-758 | 30 Pack  |
| 2,000           | 15                 | 60108-735 | 20 Pack  |
| 5,000           | 25                 | 60108-736 | 20 Pack  |
| 10,000          | 75                 | 60108-737 | 10 Pack  |

### Applications:

- Extraction of pesticides using official methods
- Polychlorinated biphenyls in transformer oil
- Alcohol, aldehydes, amines and drugs

### HyperSep Florisil 96 fixed/removable well plates

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-281      | 60300-725          | 1 Each   |
| 25              | 1                | 60307-282      | 60300-726          | 1 Each   |
| 50              | 1                | 60307-283      | 60300-727          | 1 Each   |
| 100             | 1                | 60307-284      | 60300-728          | 1 Each   |

## HyperSep Cyano SPE cartridges and plates

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

### HyperSep Cyano SPE cartridges

| Bed Weight (mg) | Column Volume (mL) | Cat. No.  | Quantity |
|-----------------|--------------------|-----------|----------|
| 50              | 1                  | 60108-746 | 100 Pack |
| 100             | 1                  | 60108-745 | 100 Pack |
| 200             | 3                  | 60108-747 | 50 Pack  |
| 500             | 3                  | 60108-748 | 50 Pack  |
| 500             | 6                  | 60108-749 | 30 Pack  |
| 1,000           | 6                  | 60108-750 | 30 Pack  |
| 2,000           | 15                 | 60108-751 | 20 Pack  |
| 5,000           | 25                 | 60108-752 | 20 Pack  |
| 10,000          | 75                 | 60108-753 | 10 Pack  |

### Applications:

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

### HyperSep Cyano 96 fixed/removable well plates

| Bed Weight (mg) | Well Volume (mL) | Fixed Cat. No. | Removable Cat. No. | Quantity |
|-----------------|------------------|----------------|--------------------|----------|
| 10              | 1                | 60307-301      | 60300-821          | 1 Each   |
| 25              | 1                | 60307-302      | 60300-822          | 1 Each   |
| 50              | 1                | 60307-303      | 60300-823          | 1 Each   |
| 100             | 1                | 60307-304      | 60300-824          | 1 Each   |

# SPE manifolds and accessories

A comprehensive range of accessories to improve your sample preparation workflow

## HyperSep positive pressure manifold

### HyperSep positive pressure manifold

| Description  | Cat. No.  | Quantity |
|--|-----------|----------|
| Positive Pressure Manifold with 13mm Collection Rack   | 60104-236 | 1 Each   |
| Positive Pressure Manifold with 16mm Collection Rack   | 60104-274 | 1 Each   |
| Adaptor Plate for 1mL Cartridges for PP Manifold       | 60104-265 | 1 Each   |
| Adaptor Plate for 3mL Cartridges for PP Manifold       | 60104-266 | 1 Each   |
| Adaptor Plate for 6mL Cartridges for PP Manifold       | 60104-267 | 1 Each   |
| Adaptor Plate for 10mL/15mL Cartridges for PP Manifold | 60104-271 | 1 Each   |
| Collection Rack for 13mm Tubes                         | 60104-268 | 1 Each   |
| Collection Rack for 16mm Tubes                         | 60104-269 | 1 Each   |
| Pre-Drilled Waste Container                            | 60104-270 | 1 Each   |
| Installation Kit                                       | 60104-272 | 1 Each   |
| In Line Air Filter                                     | 60104-273 | 1 Each   |



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

## HyperSep universal vacuum manifold

- Accommodates both SPE cartridges and 96 well plates
- System supplied with: Manifold, base/gauge, flask and stopper, tubing and spigots



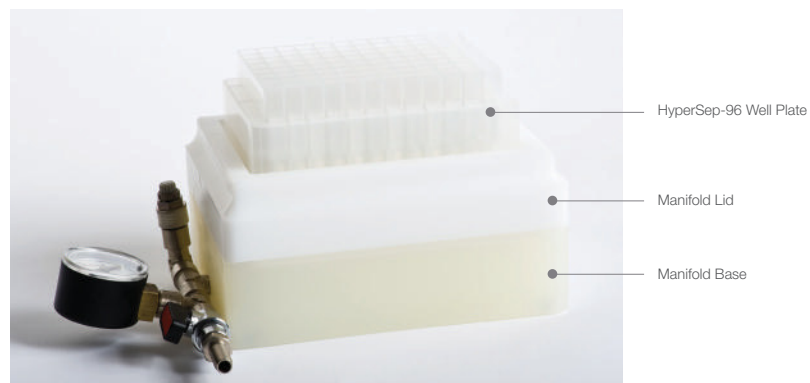
### HyperSep universal vacuum manifold

| Description                            | Cat. No.  | Quantity |
|--|-----------|----------|
| Universal Vacuum Manifold              | 60104-230 | 1 Each   |
| Vacuum Pump, European Version          | 60104-241 | 1 Each   |
| Vacuum Pump, North American Version    | 60104-243 | 1 Each   |
| 24 Well Extraction Plate               | 60104-284 | 1 Each   |
| 48 Well Extraction Plate               | 60104-289 | 1 Each   |
| Plugs for 24-position Extraction Plate | 60104-234 | 24 Pack  |
| Plugs for 48-position Extraction Plate | 60104-235 | 48 Pack  |

## HyperSep-96 well plate vacuum manifold

Included with system:

- Base
- Lid
- Waste collection tray



HyperSep-96 well plate is not included and needs to be purchased separately.

### HyperSep-96 well plate manifolds

| Description                         | Cat. No.  | Quantity |
|-------------------------------------|-----------|----------|
| HyperSep-96 Vacuum Manifold         | 60103-351 | 1 Each   |
| Vacuum Pump, European Version       | 60104-241 | 1 Each   |
| Vacuum Pump, North American Version | 60104-243 | 1 Each   |

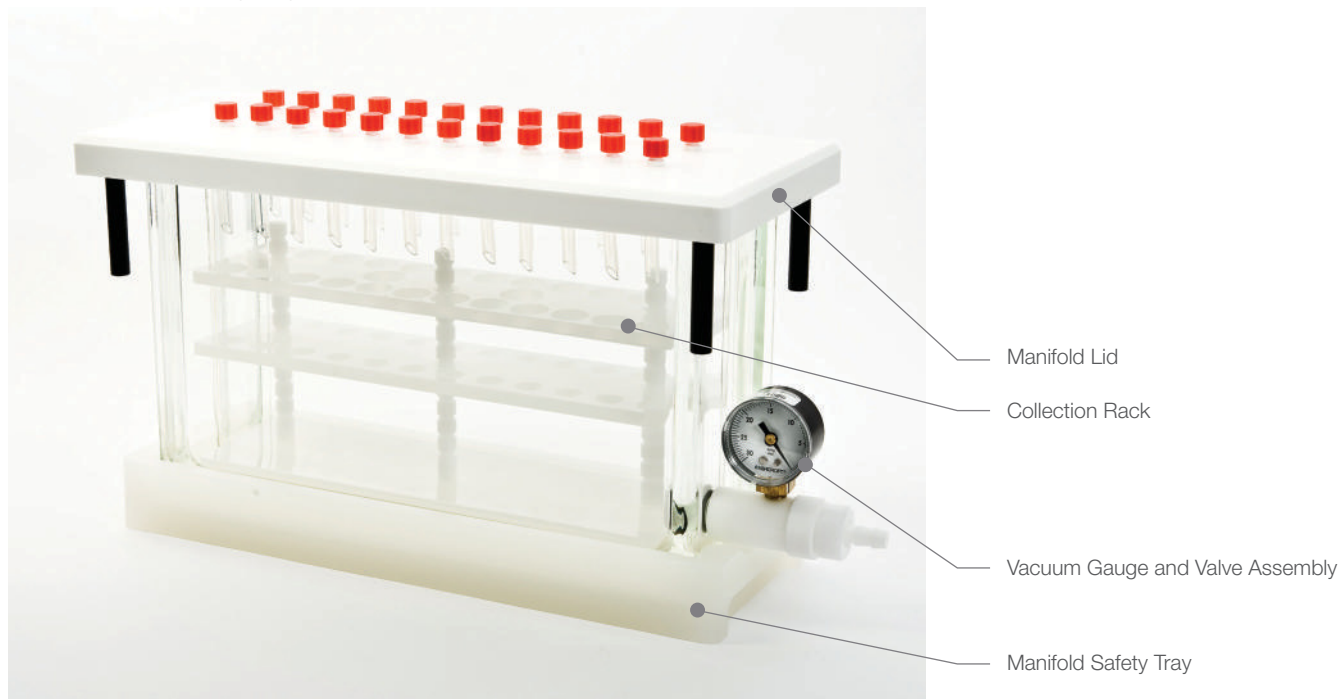
## HyperSep glass block manifolds

16-Port Vacuum Manifold:

- Glass block, corian manifold lid, cover gasket, vacuum gauge and valve assembly, 16 tips, adjustable collection rack, bulkhead luer fittings, 16 plugs and manifold safety tray

24-Port Vacuum Manifold:

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



Luer Lock Plugs  
(Cat. No. 60104-258)



Retaining Clips for  
Collection Rack  
(Cat. No. 60104-255)



Bulkhead Luer Fittings  
(Cat. No. 60104-256)



Collection Rack  
(Cat. No. 60104-251 (16 port),  
60104-252 (24 port))



Vacuum Gauge  
(Cat. No. 60104-240)



Valve Assembly  
(Cat. No. 60104-261)



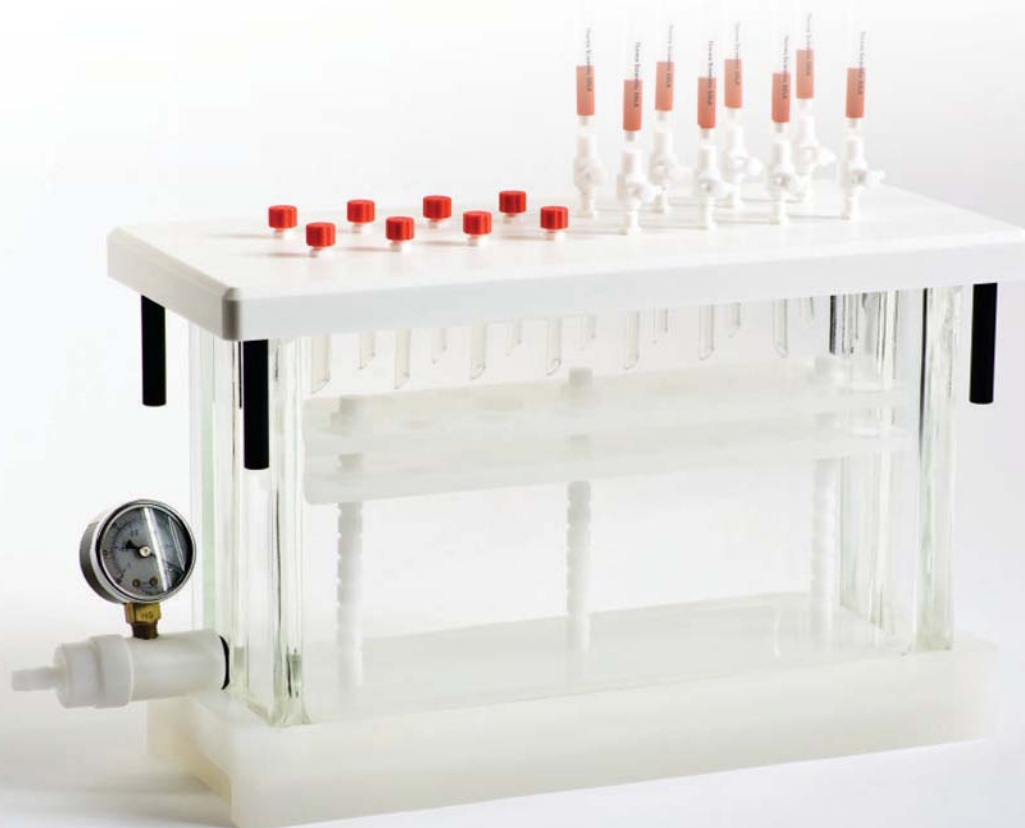
Tips  
(Cat. No. 60104-245)



Manifold Lid Legs  
(Cat. No. 60104-257)

## HyperSep glass block manifolds

| Description                                 | Cat. No.  | Quantity |
|---|-----------|----------|
| 16-port Vacuum Manifold                     | 60104-232 | 1 Each   |
| 24-port Vacuum Manifold                     | 60104-233 | 1 Each   |
| Vacuum Pump, European Version               | 60104-241 | 1 Each   |
| Vacuum Pump, North American Version         | 60104-243 | 1 Each   |
| Replacement parts                           |           |          |
| Vacuum Gauge                                | 60104-240 | 1 Each   |
| Stopcocks for 16-port Vacuum Manifold       | 60104-242 | 16 Pack  |
| Stopcocks for 24-port Vacuum Manifold       | 60104-244 | 24 Pack  |
| Tips for Vacuum Manifold                    | 60104-245 | 12 Pack  |
| Lid for 16-port Glass Block Manifold        | 60104-262 | 1 Each   |
| Lid for 24-port Glass Block Manifold        | 60104-248 | 1 Each   |
| Gasket for 16-port Manifold                 | 60104-249 | 1 Each   |
| Gasket for 24-port Manifold                 | 60104-250 | 1 Each   |
| Collection Rack for 16-port Vacuum Manifold | 60104-251 | 1 Each   |
| Collection Rack for 24-port Vacuum Manifold | 60104-252 | 1 Each   |
| Glass Block for 16-port Vacuum Manifold     | 60104-253 | 1 Each   |
| Glass Block for 24-port Vacuum Manifold     | 60104-254 | 1 Each   |
| Retaining Clips for Collection Rack         | 60104-255 | 12 Pack  |
| Bulkhead Luer Fittings                      | 60104-256 | 12 Pack  |
| Manifold Lid Legs                           | 60104-257 | 4 Pack   |
| Luer Lock Plugs                             | 60104-258 | 12 Pack  |
| Column Adaptors                             | 60104-259 | 15 Pack  |
| Manifold Safety Tray                        | 60104-260 | 1 Each   |
| Vacuum Gauge and Valve Assembly             | 60104-261 | 1 Each   |
| Collection Rack Posts                       | 60104-264 | 3 Pack   |



## HyperSep online SPE products

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



### HyperSep Javelin direct-connect online SPE columns

| ID (mm) | Length (mm) | Retain PEP | Retain CX | Retain AX | Hypercarb | Quantity |
|---------|-------------|------------|-----------|-----------|-----------|----------|
| 2.1     | 10          | 60310-201  | 60310-301 | 60310-401 | 60310-501 | 4 Pack   |
| 3.0     | 10          | 60310-202  | 60310-302 | 60310-402 | 60310-502 | 4 Pack   |

### HyperSep UniGuard direct-connect online SPE cartridges

| ID (mm) | Length (mm) | Retain PEP | Retain CX | Retain AX | Hypercarb | Quantity |
|---------|-------------|------------|-----------|-----------|-----------|----------|
| 2.1     | 10          | 60311-201  | 60311-301 | 60311-401 | 60311-501 | 4 Pack   |
| 3.0     | 10          | 60311-202  | 60311-302 | 60311-402 | 60311-502 | 4 Pack   |

### HyperSep HPLC columns for online SPE

| ID (mm) | Length (mm) | Retain PEP | Retain CX | Retain AX | Hypercarb | Quantity |
|---------|-------------|------------|-----------|-----------|-----------|----------|
| 2.1     | 20          | 60312-201  | 60312-301 | 60312-401 | 60312-501 | 1 Each   |
| 3.0     | 20          | 60312-202  | 60312-302 | 60312-402 | 60312-502 | 1 Each   |

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

# HyperSep Dispersive SPE (QuEChERS)

Fast, easy and robust sample preparation of food for pesticide analysis

QuEChERS Dispersive SPE products provide a Quick, Easy, Cheap, Effective, Rugged and Safe sample preparation technique for multi-residue pesticide analysis. Products are available in a wide range of formats to meet application requirements.

QuEChERS methods overcome problems associated with time consuming, expensive and labor intensive multi-residue methods (MRM).

- Fast and easy sample preparation
- Robust and reproducible process
- High recovery and reproducibility

Learn more about HyperSep Dispersive SPE at [thermofisher.com/quechers](https://thermofisher.com/quechers)





## HyperSep Dispersive SPE

### Considerations in method development

- 1) Determine the properties of the pesticides of interest:
  - Base sensitive compounds - use extraction product with sodium acetate
  - pH dependent
  - Non-base sensitive compounds - use extraction product with sodium chloride or sodium citrate
- 2) Determine the properties of the sample matrix:
  - General
  - Fatty
  - Pigmented
  - Highly pigmented

### Product selection – sample cleanup

| Matrix Type             | Examples                    | Sorbent Requirements             |
|-------------------------|-----------------------------|----------------------------------|
| General Matrices        | Apples<br>Cucumber<br>Melon | Magnesium sulfate, PSA           |
| Fatty Matrices          | Milk<br>Cereals<br>Fish     | Magnesium sulfate, PSA, C18      |
| Pigmented Matrices      | Lettuce<br>Carrot<br>Wine   | Magnesium sulfate, PSA, C18, GCB |
| High Pigmented Matrices | Spinach<br>Red Peppers      | Magnesium sulfate, PSA, C18, GCB |

### QuEChERS troubleshooting

| Problem   | Causes  | Recommended Solutions  |
|---|---|--|
| Loss of planar pesticides   | Presence of GCB may result in a loss of planar compounds          | Use a product with less GCB<br>Use the Dual Phase QuEChERS product   |
| Loss of acidic compounds e.g. 2,4-D from starting matrix  | Presence of PSA will extract acidic compounds from matrix         | Use a product containing magnesium sulfate and C18   |
| Loss of compounds during subsequent analysis  | Some compounds are unstable and can break down during analysis    | Use an analyte protectant e.g. toluene or sorbitol   |
| Addition of sample to QuEChERS extraction tube containing sorbent causes an exothermic reaction | Exothermic reaction between water in sample and magnesium sulfate | Add the sample to the tube, then the solvents, then the sorbent materials  |
| Poor recovery of pesticide compounds  | Sample not in appropriate homogenization state                    | Wrong products used in method<br>Ensure sample is hydrated to 80% or higher<br>Verify nature of pesticides e.g. are base sensitive compounds present |

## HyperSep Dispersive SPE extraction products

### HyperSep Dispersive SPE pre-packed extraction products

| Description  | Capacity (mL) | Cat. No. (250 Pack) | Cat. No. (25 Pack) |
|--|---------------|---------------------|--------------------|
| 6000mg anhydrous magnesium sulfate, 1500mg anhydrous sodium acetate  | 50            | 60105-210           | 60105-310          |
| 4000mg anhydrous magnesium sulfate, 1000mg anhydrous sodium chloride   | 50            | 60105-211           | 60105-311          |
| 4000mg anhydrous magnesium sulfate, 1000mg sodium chloride, 1000mg sodium citrate tribasic dihydrate, 500mg disodium citrate sesquihydrate | 50            | 60105-216           | 60105-316          |
| 6000mg anhydrous magnesium sulfate, 1500mg sodium chloride, 1500mg sodium citrate tribasic dihydrate, 750mg disodium citrate sesquihydrate | 50            | 60105-212           | 60105-312          |
| 1500mg magnesium sulfate, 500mg C18  | 50            | 60105-234           | –                  |
| 900mg anhydrous magnesium sulfate, 300mg PSA, 150mg GCB  | 50            | 60105-237           | –                  |
| 1200mg anhydrous magnesium sulfate, 200mg PSA  | 50            | 60105-351           | –                  |

*Each pack contains centrifuge tubes pre-packed with sorbents*

### HyperSep Dispersive SPE multipacks

| Description  | Cat. No.  | Quantity |
|--|-----------|----------|
| 4000mg anhydrous magnesium sulfate, 1000mg sodium chloride   | 60105-332 | 50 Pack  |
| 4000mg anhydrous magnesium sulfate, 1000mg sodium chloride, 500mg sodium citrate dibasic sesquihydrate, 1000mg sodium citrate tribasic | 60105-333 | 50 Pack  |
| 4000mg anhydrous magnesium sulfate, 1000mg sodium acetate  | 60105-334 | 50 Pack  |
| 6000mg anhydrous magnesium sulfate, 1500mg sodium acetate  | 60105-335 | 50 Pack  |
| 6000mg anhydrous magnesium sulfate, 1500mg sodium chloride   | 60105-336 | 50 Pack  |
| 6000mg anhydrous magnesium sulfate, 1500mg magnesium sulfate, 1500mg sodium citrate dihydrate, 750mg disodium citrate sesquihydrate    | 60105-337 | 50 Pack  |
| 8000mg anhydrous magnesium sulfate, 2000mg of sodium chloride  | 60105-338 | 50 Pack  |
| 8000mg anhydrous magnesium sulfate, 3500mg of sodium chloride  | 60105-339 | 50 Pack  |
| 5000mg anhydrous magnesium sulfate   | 60105-366 | 50 Pack  |
| 500mg C18 sulfate  | 60105-367 | 50 Pack  |

*Each pack contains centrifuge tubes and sorbents packaged in mylar pouches*

### HyperSep Dispersive SPE mylar pouches

| Description  | Cat. No.  | Quantity |
|--|-----------|----------|
| 4000mg anhydrous magnesium sulfate, 1000mg sodium chloride   | 60105-340 | 50 Pack  |
| 6000mg anhydrous magnesium sulfate, 1500mg sodium acetate (anhydrous)  | 60105-341 | 50 Pack  |
| 6000mg anhydrous magnesium sulfate, 1500mg sodium chloride   | 60105-342 | 50 Pack  |
| 6000mg anhydrous magnesium sulfate, 1500mg sodium chloride, 1500mg sodium citrate dihydrate, 750mg disodium citrate sesquihydrate      | 60105-343 | 50 Pack  |
| 4000mg anhydrous magnesium sulfate, 1000mg sodium chloride, 500mg sodium citrate dibasic sesquihydrate, 1000mg sodium citrate tribasic | 60105-344 | 50 Pack  |
| 1200mg sodium chloride   | 60105-345 | 50 Pack  |
| 4000mg sodium sulfate and 500mg anhydrous magnesium sulfate  | 60105-346 | 50 Pack  |
| 4000mg anhydrous magnesium sulfate, 1000mg sodium chloride, 1500mg sodium citrate dibasic dihydrate                                    | 60105-347 | 100 Pack |
| 4000mg anhydrous magnesium sulfate, 2000mg sodium chloride, 1500mg sodium citrate dibasic dihydrate                                    | 60105-348 | 100 Pack |
| 150mg anhydrous magnesium sulfate, 50mg PSA, 50mg GCB  | 60105-354 | 50 Pack  |
| 900mg anhydrous magnesium sulfate, 300mg PSA, 150mg C18  | 60105-355 | 50 Pack  |
| 900mg anhydrous magnesium sulfate, 900mg PSA, 150mg C18  | 60105-358 | 50 Pack  |
| 6000mg anhydrous magnesium sulfate, 1000mg sodium chloride   | 60105-359 | 50 Pack  |

*Each pack contains sorbents packaged in mylar pouches (no centrifuge tubes provided)*

### Empty centrifugation tubes

| Description                  | Cat. No.  | Quantity |
|------------------------------|-----------|----------|
| Empty 50ml centrifugue tubes | 60106-418 | 250 Pack |

## HyperSep Dispersive SPE Clean-up products

## HyperSep Dispersive SPE Clean-up products

| Description   | Capacity (mL) | Cat. No. (100 Pack) | Cat. No. (10 Pack) |
|---|---------------|---------------------|--------------------|
| 150mg anhydrous magnesium sulfate, 50mg PSA, 50mg GCB                   | 2             | 60105-202           | 60105-302          |
| 150mg anhydrous magnesium sulfate, 50mg PSA                             | 2             | 60105-203           | 60105-303          |
| 150mg anhydrous magnesium sulfate, 50mg PSA, 50mg C18                   | 2             | 60105-204           | 60105-304          |
| 150mg anhydrous magnesium sulfate, 25mg PSA                             | 2             | 60105-219           | 60105-319          |
| 150mg anhydrous magnesium sulfate, 25mg PSA, 25mg C18                   | 2             | 60105-220           | 60105-320          |
| 150mg anhydrous magnesium sulfate, 25mg PSA, 2.5mg GCB                  | 2             | 60105-221           | 60105-321          |
| 150mg anhydrous magnesium sulfate, 25mg PSA, 7.5mg GCB                  | 2             | 60105-222           | 60105-322          |
| 150mg anhydrous magnesium sulfate, 50mg PSA, 50mg C18, 50mg GCB         | 2             | 60105-223           | 60105-323          |
| 150mg anhydrous magnesium sulfate, 50mg PSA, 50mg ChloroFiltr™          | 2             | 60105-232           | -                  |
| 150mg anhydrous magnesium sulfate, 150mg PSA                            | 2             | 50105-350           | 60105-350          |
| 150mg anhydrous magnesium sulfate, 50mg PSA, 50mg ChloroFiltr, 50mg C18 | 2             | 60105-353           | -                  |

| Description  | Capacity (mL) | Cat. No. (100 Pack) | Cat. No. (10 Pack) |
|--|---------------|---------------------|--------------------|
| 900mg anhydrous magnesium sulfate, 300mg PSA, 150mg GCB  | 15            | 60105-205           | 60105-305          |
| 900mg anhydrous magnesium sulfate, 300mg PSA, 150mg C18  | 15            | 60105-206           | 60105-306          |
| 750mg anhydrous magnesium sulfate, 250mg PSA, 250mg C18, 250mg GCB   | 15            | 60105-213           | 60105-313          |
| 900mg anhydrous magnesium sulfate, 300mg PSA   | 15            | 60105-214           | 60105-314          |
| 900mg anhydrous magnesium sulfate, 150mg PSA   | 15            | 60105-215           | 60105-315          |
| 900mg anhydrous magnesium sulfate, 150mg PSA, 45mg GCB   | 15            | 60105-217           | 60105-317          |
| 900mg anhydrous magnesium sulfate, 150mg PSA, 15mg GCB   | 15            | 60105-218           | 60105-318          |
| 1200mg anhydrous magnesium sulfate, 400mg PSA  | 15            | 60105-224           | 60105-324          |
| 1200mg anhydrous magnesium sulfate, 400mg PSA, 400mg C18   | 15            | 60105-225           | 60105-325          |
| 1200mg anhydrous magnesium sulfate, 400mg PSA, 400mg C18, 400mg GCB  | 15            | 60105-226           | 60105-326          |
| 900mg anhydrous magnesium sulfate, 150mg PSA, 150mg C18  | 15            | 60105-227           | 60105-327          |
| 150mg anhydrous magnesium sulfate, 50mg PSA, 50mg GCB  | 15            | 60105-230           | 60105-330          |
| 150mg anhydrous magnesium sulfate, 300mg PSA, 150mg ChloroFiltr  | 15            | 60105-231           | 60105-331          |
| 1200mg anhydrous magnesium sulfate, 900mg PSA  | 15            | 60105-235           | -                  |
| 4000mg anhydrous magnesium sulfate, 1000mg sodium chloride, 1000mg sodium citrate tribasic dihydrate, 500mg sodium citrate dibasic sesquihydrate | 15            | 60105-236           | -                  |
| 150mg anhydrous magnesium sulfate, 150mg PSA, 50mg C18   | 15            | 60105-238           | -                  |

*Each pack contains centrifuge tubes pre-packed with sorbents*

## Bulk media

| Description   | Cat. No.  | Quantity |
|---|-----------|----------|
| Anhydrous Magnesium Sulfate                         | 80020-415 | 1kg      |
| C18 (endcapped)                                     | 80020-413 | 1kg      |
| PSA   | 80020-416 | 1kg      |
| Graphitized Carbon Black                            | 80020-417 | 1kg      |
| Sodium Acetate                                      | 80020-424 | 1kg      |
| Description:Disodium hydrogen citrate sesquihydrate | 80020-427 | 1kg      |
| Tri-Sodium Citrate Dihydrate                        | 80020-428 | 1kg      |

## Homogenizers

| Description                          | Cat. No.  | Quantity |
|--------------------------------------|-----------|----------|
| Homogenizers for 15mL QuEChERS tubes | 60106-421 | 50 Pack  |
| Homogenizers for 50mL QuEChERS tubes | 60106-422 | 50 Pack  |

## HyperSep Dispersive SPE Clean-up products for schenck method

| Description  | Capacity (mL) | Cat. No.  | Quantity |
|--|---------------|-----------|----------|
| 400mg PSA on bottom, 200mg GCB on top, separated by a frit | 6             | 60105-207 | 30 Pack  |
| 500mg PSA on bottom, 250mg GCB on top, separated by a frit | 6             | 60105-208 | 30 Pack  |
| 500mg PSA on bottom, 500mg GCB on top, separated by a frit | 6             | 60105-209 | 30 Pack  |

# Syringes and filters

Providing high quality filtration solutions for a variety of samples and applications

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



For more information visit [thermofisher.com/syningefilters](https://www.thermofisher.com/syningefilters)

## Titan3 syringe filters

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 30mm 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
- 30mm products pressure rated to 120psi
- Packed in reusable rigid transparent color coded containers

### Thermo Scientific™ Titan3™ nylon syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | 42204-NN | 100 Pack |
|               | 0.45           | No         | 44504-NN | 100 Pack |
| 17            | 0.2            | No         | 42213-NN | 200 Pack |
|               | 0.45           | No         | 44513-NN | 200 Pack |
| 30            | 0.2            | Yes        | 42225-NN | 100 Pack |
|               | 0.45           | Yes        | 44525-NN | 100 Pack |
|               | 0.45           | No         | 44526-NN | 100 Pack |
|               | 1.5            | No         | 41225-NN | 100 Pack |
|               | 5              | No         | 45025-NN | 100 Pack |

### Titan3 PTFE (hydrophobic) syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | 42204-NP | 100 Pack |
|               | 0.45           | No         | 44504-NP | 100 Pack |
| 17            | 0.2            | No         | 42213-NP | 200 Pack |
|               | 0.45           | No         | 44513-NP | 200 Pack |
| 30            | 0.2            | Yes        | 42225-NP | 100 Pack |
|               | 0.45           | Yes        | 44525-NP | 100 Pack |
|               | 1.0            | No         | 41025-NP | 100 Pack |

### Titan3 PTFE (hydrophilic) syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No.   | Quantity |
|---------------|----------------|------------|------------|----------|
| 17            | 0.2            | No         | 42213-NPL  | 200 Pack |
|               | 0.45           | No         | 44513-NPL  | 200 Pack |
| 30            | 0.2            | No         | 42225-NPL  | 100 Pack |
|               | 0.45           | No         | 444525-NPL | 100 Pack |

### Titan3 PVDF syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | 42204-PV | 100 Pack |
|               | 0.45           | No         | 44504-PV | 100 Pack |
| 17            | 0.2            | Yes        | 42213-PV | 200 Pack |
|               | 0.45           | No         | 44513-PV | 200 Pack |
| 30            | 0.2            | Yes        | 42225-PV | 100 Pack |
|               | 0.45           | No         | 44525-PV | 100 Pack |

#### 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

#### Applications:

- Filtration of aggressive organic, highly basic or hot solutions, transducer protectors
- Filter aqueous solutions after prewetting with an alcohol

**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.

#### Applications:

- Filtration of aggressive organic, highly basic or hot solutions, without the need pre-wet membrane
- Filter aqueous solutions without prewetting with an alcohol

#### Applications:

- General biological filtration
- Filtration of samples where high protein recovery is desired

### Titan3 regenerated cellulose syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | 52204-RC | 100 Pack |
|               | 0.45           | No         | 54504-RC | 100 Pack |
| 17            | 0.2            | Yes        | 52213-RC | 200 Pack |
|               | 0.45           | No         | 54513-RC | 200 Pack |
| 30            | 0.2            | Yes        | 52225-RC | 100 Pack |
|               | 0.45           | No         | 54525-RC | 100 Pack |

### Titan3 PES (polyethersulfone) syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 17            | 0.2            | No         | 42213-PS | 200 Pack |
|               | 0.45           | No         | 44513-PS | 200 Pack |
| 30            | 0.2            | Yes        | 42225-PS | 100 Pack |
|               | 0.45           | No         | 44525-PS | 100 Pack |

### Titan3 GMF (glass microfiber) syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 30            | 0.7            | No         | 40725-GM | 100 Pack |
|               | 1.2            | No         | 41225-GM | 100 Pack |
|               | 3.1            | No         | 42725-GM | 100 Pack |

### Titan3 polypropylene syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 17            | 0.2            | No         | 42213-PP | 200 Pack |
|               | 0.45           | No         | 44513-PP | 200 Pack |
| 30            | 0.2            | No         | 42225-PP | 100 Pack |
|               | 0.45           | No         | 44525-PP | 100 Pack |

### Titan3 cellulose acetate syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | 42204-CA | 100 Pack |
|               | 0.45           | No         | 44502-CA | 100 Pack |
| 17            | 0.2            | No         | 42213-CA | 100 Pack |
|               | 0.45           | No         | 44513-CA | 100 Pack |
| 30            | 0.2            | No         | 42225-CA | 100 Pack |
|               | 0.45           | No         | 44525-CA | 100 Pack |

#### Applications:

- Low non-specific binding applications
- Tissue culture media filtration and general biological sample filtration

#### Applications:

- Ion chromatography
- Tissue culture filtration, filtration of proteins and nucleic acids
- High-temperature liquids

#### Applications:

- Dissolution testing
- General filtration

#### Applications:

- Filtration of biological samples
- Filtration of aggressive organic solutions

#### Applications:

- Tissue culture media filtration, sensitive biological samples



## Titan2 syringe filters

HPLC performe syringe filters

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



### Thermo Scientific™ Target2™ nylon syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | F2504-2  | 100 Pack |
|               | 0.45           | No         | F2504-1  | 100 Pack |
| 17            | 0.2            | No         | F2513-2  | 100 Pack |
|               | 0.45           | No         | F2513-1  | 100 Pack |
| 30            | 0.2            | No         | F2500-2  | 100 Pack |
|               |                | Yes        | F2502-2  | 100 Pack |
|               | 0.45           | No         | F2500-1  | 100 Pack |
|               |                | Yes        | F2502-1  | 100 Pack |
|               | 1.5            | No         | F2500-12 | 100 Pack |
| 5.0           | No             | F2500-50   | 100 Pack |          |

#### Applications:

- General laboratory filtration
- Filtration for most HPLC samples

### Target 2 PTFE (hydrophobic) syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | F2504-4  | 100 Pack |
|               | 0.45           | No         | F2504-3  | 100 Pack |
| 17            | 0.2            | No         | F2513-4  | 100 Pack |
|               | 0.45           | No         | F2513-3  | 100 Pack |
| 30            | 0.2            | No         | F2500-4  | 100 Pack |
|               |                | No         | F2500-3  | 100 Pack |
|               | 0.45           | Yes        | F2502-3  | 100 Pack |
|               |                | No         | F2500-13 | 100 Pack |

#### Applications:

- Filtration of aggressive organic, highly basic or hot solutions, transducer protectors
- Filter aqueous solutions after prewetting with an alcohol

**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

### Target2 PVDF syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | F2504-6  | 100 Pack |
|               | 0.45           | No         | F2504-5  | 100 Pack |
| 17            | 0.2            | No         | F2513-6  | 100 Pack |
|               | 0.45           | No         | F2513-5  | 100 Pack |
| 30            | 0.2            | No         | F2500-6  | 100 Pack |
|               | 0.45           | No         | F2500-5  | 100 Pack |

#### Applications:

- General biological filtration
- Filtration of samples where high protein recovery is desired

### Target2 regenerated cellulose syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | F2504-8  | 100 Pack |
|               | 0.45           | No         | F2504-7  | 100 Pack |
| 17            | 0.2            | No         | F2513-8  | 100 Pack |
|               | 0.45           | No         | F2513-7  | 100 Pack |
| 30            | 0.2            | No         | F2500-8  | 100 Pack |
|               | 0.45           | No         | F2500-7  | 100 Pack |

#### Applications:

- Low non-specific binding applications
- Tissue culture media filtration and general biological sample filtration

### Target2 PES (polyethersulfone) syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 17            | 0.2            | No         | F2513-17 | 100 Pack |
|               | 0.45           | No         | F2513-14 | 100 Pack |
| 30            | 0.2            | No         | F2500-17 | 100 Pack |
|               | 0.45           | No         | F2500-14 | 100 Pack |

#### Applications:

- Ion chromatography
- Tissue culture filtration, filtration of proteins and nucleic acids
- High-temperature liquids

### Target2 GMF (glass microfiber) syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 30            | 0.7            | No         | F2500-18 | 100 Pack |
|               | 1.2            | No         | F2500-19 | 100 Pack |
|               | 3.1            | No         | F2500-20 | 100 Pack |

#### Applications:

- Dissolution testing
- General filtration

### Target2 polypropylene syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | F2504-10 | 100 Pack |
|               | 0.45           | No         | F2504-9  | 100 Pack |
| 17            | 0.2            | No         | F2513-10 | 100 Pack |
|               | 0.45           | No         | F2513-9  | 100 Pack |
| 30            | 0.2            | No         | F2500-10 | 100 Pack |
|               | 0.45           | No         | F2500-9  | 100 Pack |
|               |                | Yes        | F2502-9  | 100 Pack |

#### Applications:

- Filtration of biological samples
- Filtration of aggressive organic solutions

### Target2 cellulose acetate syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No. | Quantity |
|---------------|----------------|------------|----------|----------|
| 4             | 0.2            | No         | F2504-16 | 100 Pack |
|               | 0.45           | No         | F2504-15 | 100 Pack |
| 17            | 0.2            | No         | F2513-16 | 100 Pack |
|               | 0.45           | No         | F2513-15 | 100 Pack |
| 30            | 0.2            | No         | F2500-16 | 100 Pack |
|               | 0.45           | No         | F2500-15 | 100 Pack |

#### Applications:

- Tissue culture media filtration, sensitive biological samples

### Choice nylon syringe filters

| Diameter (mm) | Pore Size (µm) | Pre-Filter | Cat. No.  | Quantity |
|---------------|----------------|------------|-----------|----------|
| 13            | 0.2            | No         | CH2213-NN | 100 Pack |
|               | 0.45           | No         | CH2225-NN | 100 Pack |
| 17            | 0.2            | No         | CH4513-NN | 100 Pack |
|               | 0.45           | No         | CH4525-NN | 100 Pack |

#### 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



## All-plastic disposable syringes

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 50mL



### All-plastic disposable syringes

| Capacity (mL)             | Cat. No. | Quantity |
|---------------------------|----------|----------|
| <b>Luer-Slip Syringes</b> |          |          |
| 1                         | S7510-1  | 100 Pack |
| 3                         | S7510-3  | 100 Pack |
| 5                         | S7510-5  | 100 Pack |
| 10                        | S7510-10 | 100 Pack |
| 20                        | S7510-20 | 100 Pack |
| 30                        | S7510-30 | 50 Pack  |
| 50                        | S7510-50 | 30 Pack  |
| <b>Luer Lock Syringes</b> |          |          |
| 3                         | S7515-3  | 100 Pack |
| 5                         | S7515-5  | 100 Pack |
| 10                        | S7515-10 | 100 Pack |
| 20                        | S7515-20 | 100 Pack |

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

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



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

| Material              | Pore Size (µm) | Cat. No. | Quantity |
|-----------------------|----------------|----------|----------|
| Cellulose Acetate     | 0.2            | F2517-1  | 100 Pack |
| Cellulose Acetate     | 0.45           | F2517-2  | 100 Pack |
| Nylon                 | 0.2            | F2517-3  | 100 Pack |
| Nylon                 | 0.45           | F2517-4  | 100 Pack |
| PVDF                  | 0.2            | F2517-5  | 100 Pack |
| PVDF                  | 0.45           | F2517-6  | 100 Pack |
| Regenerated Cellulose | 0.2            | F2517-7  | 100 Pack |
| Regenerated Cellulose | 0.45           | F2517-8  | 100 Pack |
| PTFE                  | 0.2            | F2517-9  | 100 Pack |
| PTFE                  | 0.45           | F2517-10 | 100 Pack |

## 2mL centrifugal filters, non-sterile

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



### 2mL centrifugal filters, non-sterile

| Material          | Pore Size (µm) | Cat. No. | Quantity |
|-------------------|----------------|----------|----------|
| Cellulose Acetate | 0.2            | F2520-1  | 25 Pack  |
| Cellulose Acetate | 0.45           | F2520-2  | 25 Pack  |
| Nylon             | 0.2            | F2520-3  | 25 Pack  |
| Nylon             | 0.45           | F2520-4  | 25 Pack  |
| PVDF              | 0.2            | F2520-5  | 25 Pack  |
| PVDF              | 0.45           | F2520-6  | 25 Pack  |
| PTFE              | 0.2            | F2520-7  | 25 Pack  |
| PTFE              | 0.45           | F2520-8  | 25 Pack  |

## 25mL centrifugal filters, non-sterile

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



### 25mL centrifugal filters, non-sterile

| Material          | Pore Size (µm) | Cat. No. | Quantity |
|-------------------|----------------|----------|----------|
| Cellulose Acetate | 0.2            | F2519-1  | 50 Pack  |
| Cellulose Acetate | 0.45           | F2519-2  | 50 Pack  |
| Nylon             | 0.2            | F2519-3  | 50 Pack  |
| Nylon             | 0.45           | F2519-4  | 50 Pack  |
| PVDF              | 0.2            | F2519-5  | 50 Pack  |
| PVDF              | 0.45           | F2519-6  | 50 Pack  |

For more information visit [thermofisher.com/syringefilters](https://www.thermofisher.com/syringefilters)



# Sample handling products

Our portfolio includes almost 1k Thermo Scientific vials and closures products designed for any instrument and any application. The following pages have been arranged by product line and vial size, allowing you to quickly find the most appropriate products for your lab.

For more information, visit [thermofisher.com/vials](https://thermofisher.com/vials)

## Featured products



### **SureStop 9mm vials**

Removing any subjectivity around achieving the optimal compression when sealing a vial. Analytical results are improved as a result of the elimination of evaporation differences between samples.

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### **Chromacol Gold Grade vials**

Choose from a large selection of Thermo Scientific™ Chromacol™ vials and closures to match your application and autosampler requirements. Including Thermo Scientific™ Chromacol™ GOLD Vials which provide highest levels of inertness to avoid adhesion at low concentrations for critical analytes.

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### **WebSeal well plates**

A comprehensive range of well plate solutions for high-density sample handling in chromatography.

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# Vials and closures

Our portfolio contains the most comprehensive selection of vials and closures from microsampling to headspace to match all of your application and autosampler requirements. The portfolio focuses on improved sample security and integrity with the Thermo Scientific™ AVCS™ 9mm closures and the Thermo Scientific™ SureStop™ 9mm screw top vial range. Our portfolio of vials and closures assure you of uninterrupted productivity on every separation and analysis.

## AVCS closures and SureStop vials

AVCS Closures together with SureStop vials significantly reduce the error rate of analysis that results from evaporation of the solvent in vials which are not sealed correctly.

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

## National vials and closures

Choose from a large selection of Thermo Scientific™ National™ vials and closures to match your application and autosampler requirements.

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

## MS certified vials

The first and only pre-cleaned, low particle, low background chromatography vial.

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

## Chromacol vials and closures

Choose from a large selection of Thermo Scientific Chromacol vials and closures including GOLD Vials which provide highest levels of inertness to avoid adhesion at low concentrations and for critical analytes.

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

## Crimping and decrimping tools

Speed up your workflow with our tools for opening, closing and disposing of vials.

For more information, visit [thermofisher.com/vials](https://thermofisher.com/vials)

# AVCS closures and SureStop vials

Thermo Scientific™ AVCS Closures and SureStop™ Vials – The next generation of sample handling.

Top reasons why chemists should consider Advanced Vial Closure System (AVCS) Closures and SureStop Vials

Features of 9mm wide opening, integral membrane and solid top closures:

1. AVCS closures along with SureStop vials significantly reduce the error rate of analysis that results from evaporation of the solvent in improperly sealed vials.
2. Re-analysis costs are reduced, sample data integrity increases, and sample throughput increases.
3. No need to use bulky crimpers – AVCS closures with SureStop vials seal as well as crimp top vials.
4. The leveling feature of AVCS designed vials gives more autosampler compatibility with less autosampler interruptions, due to mishandled vials.
5. AVCS design allows for consistent sealing, eliminating user-to-user variance.
6. SureStop design provides a positive feedback closure that creates more consistent data, which for a researcher is almost as important as the actual result.



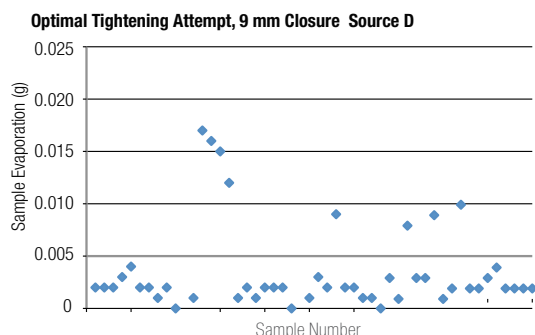
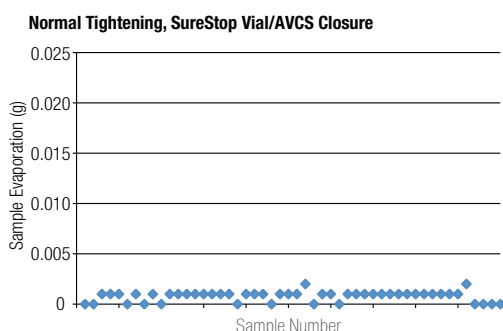
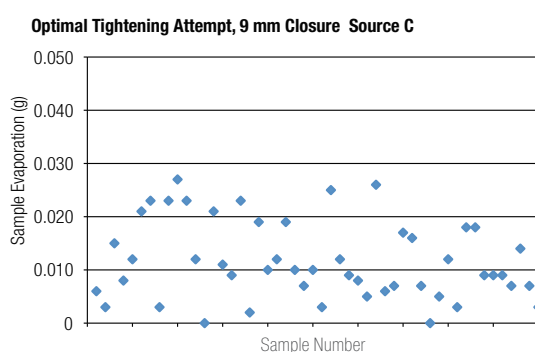
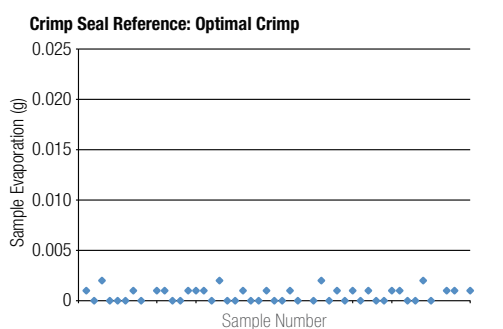
Examples of vial and closure misalignment/deformation. (A) SureStop vial self-aligning cap; (B) generic vial, cap tilt; (C) generic vial, septum dislodged; and (D) generic vial, deformed top.

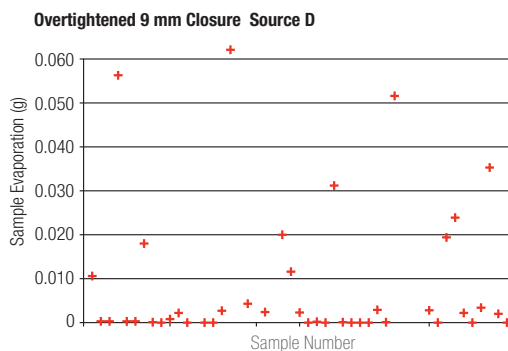
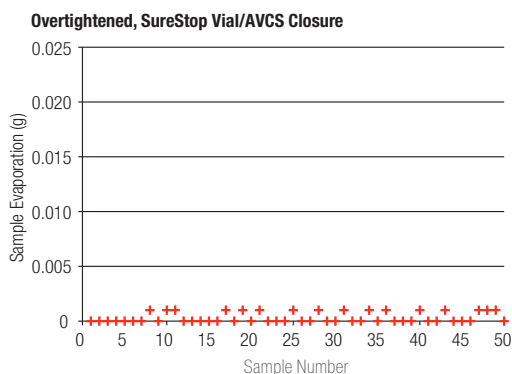
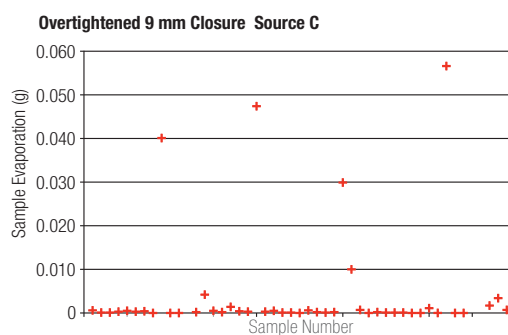
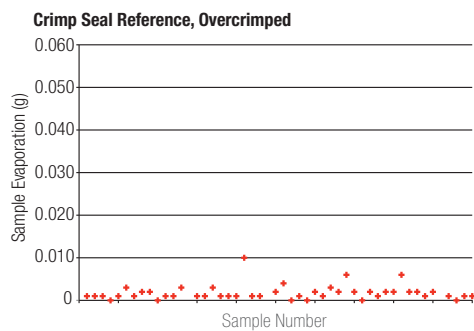


A study of the effects of the typical operator response to evaporative sample loss and septum dislodging during the use of 9 mm screw thread and 11 mm crimp vials and closures were conducted. Sample losses were measured for both overtightened vials and for vials perceived to be optimally tightened and these were compared to losses from new vials designed to provide a definite sealing point.

## Test conditions

- 1.3 mL of pure methanol was added to each vial (always 50 in total)
- All vials were incubated at a temperature of 40 °C for 72 hours
- After 72 hours the final weight was taken and subtracted from the initial 40 °C temperature weight to yield the sample loss in grams





### Are you currently using crimp caps?

Changing to AVCS closures and SureStop vials will provide the following benefits:

- The hassle of crimping is removed; crimping and de-capping tools are not required. Screw thread closures are easier to attach and remove reducing time required for sample prep. Additionally, there can be repetitive stress issues related to high volume crimping that will be alleviated with screw thread vials.
- AVCS closures and SureStop vials offer identical performance to crimp caps (based on solvent loss studies), which make SureStop products a viable alternative for GC use.
- AVCS and SureStop provides a “like crimped” product tightness and reliable quantification even for low boiling compounds; you remove user-to-user vial/closure sealing variability that results from user subjectivity of when they “think” the vial is properly sealed.

### Are you currently using snap caps?

Changing to AVCS closures and SureStop vials will provide the following benefits:

- Positive feedback makes AVCS and SureStop as convenient to use as snap cap.
- Provides a fast closing alternative for volatile solvents/compounds of interest.
- Eliminates variable evaporation rates that can be caused by environmental conditions.

### Are you currently using expensive bonded caps?

Changing to AVCS closures and SureStop vials will provide following benefits:

- Septum push through is eliminated with the AVCS screw-top closure and SureStop vial design. (See illustration below).
- Greater septa choice (bonded caps very limited in septa offering).
- AVCS closures and SureStop vials seal more securely than bonded caps
- AVCS closures and SureStop vials are considerably less expensive than bonded caps and vials.



Non-AVCS push through examples

AVCS no push through

For more information, visit [thermofisher.com/surestop](https://thermofisher.com/surestop)



## Chromacol GOLD vials

|   | Volume | Description  | Cat. No  | Pack of |
|---|--------|--|----------|---------|
| 8 mm Crimp-Top Clear GOLD Grade Vials (to be used with 8mm Crimp Closures)                          | 0.1 mL | SCI-VI™ Crimp Top Inert Vial, Round Bottom                   | 01-CVG   | 500     |
|   | 0.2 mL | SCI-VI™ Crimp Top Inert Vial, Tapered                        | 02-CTVG  | 500     |
|   | 0.3 mL | SCI-VI™ Crimp Top Inert Vial, Round Bottom                   | 03-CVG   | 500     |
| 8-425 Screw Thread Clear GOLD Grade Vials, 12 × 32 mm (to be used with 8-425 Screw Thread Closures) | 2 mL   | Screw Thread Inert Vial, Standard Opening                    | 2-SVG    | 500     |
|   | 1.1 mL | Screw Thread Inert Vial, Conical                             | 1.1-STVG | 500     |
| 9 mm Screw Thread Clear GOLD Grade Vials, 12 × 32 mm (to be used with 9 mm Screw Thread Closures)   | 2 mL   | Screw Tread SureStop Inert Vial, with Patch and Wide Opening | 2-SVWGK  | 100     |
|   | 0.2mL  | Screw Tread Inert Vial, with Patch and Fused Insert          | 02-FISVG | 500     |
| 11 mm Crimp Top Clear GOLD Grade Vials, 12 × 32 mm (to be used with 11 mm Crimp Closures)           | 2 mL   | Crimp Top Inert Vial, Wide Opening                           | 2-CVG    | 500     |
|   | 1.1 mL | Crimp Top Inert Vial, Conical                                | 1.1-CTVG | 500     |
|   | 0.2 mL | Crimp Top Inert Vial, with Patch and Fused Insert            | 02-FIVG  | 500     |
| Micro Insert GOLD Grade for Wide Opening Vials  | 0.2mL  | Conical Inert Glass Insert for Wide Opening Vials            | 02-MTVWG | 1000    |

For more information, visit [thermofisher.com/inertvials](https://thermofisher.com/inertvials)

# Premium vials and closures

## 8mm Screw vials and closures

8-425 thread finish, standard opening, 2mL, 12x32mm

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber, meets all requirements of Pharm. US, EU, JPN
- Open top caps are designed to be used with any of our 8mm septa
- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Flanged caps are particularly suitable for many Japanese autosamplers
- Pre-assembled caps and septa are convenient and minimize contamination from handling



### 8mm, 2mL, 12x32mm standard opening screw thread vials and inserts

| Description             | Glass | Patched | Dimension (mm) | Profile     | Total Volume (mL) | Usable Volume (mL) | Residual (µL) | Cat. No.  | Pack of |
|-------------------------|-------|---------|----------------|-------------|-------------------|--------------------|---------------|-----------|---------|
| 8-425 Screw Thread Vial | Clear | Yes     | 12x32          | Flat Bottom | 2.0               | 1.5                | <170          | 60180-508 | 100     |
|                         | Amber | Yes     | 12x32          | Flat Bottom | 2.0               | 1.5                | <170          | 60180-560 | 100     |

### 8-425 screw thread caps and septa

| Description  | Cap Color | Cap Material  | Septum                             | Hardness °shore | Thickness (mm) | Cat. No.  | Pack of |
|--|-----------|---------------|------------------------------------|-----------------|----------------|-----------|---------|
| 5mm Open Top Screw Cap, 8-425 thread, 5mm hole             | Black     | Polypropylene | –                                  | –               | –              | 60180-514 | 100     |
| 5mm Open Top Screw Cap, flanged, 8-425 thread, 5mm hole    | Pink      | Polypropylene | –                                  | –               | –              | 60180-660 | 100     |
| Septum for 8-425 Screw Caps                                | –         | –             | Blue Silicone/PTFE                 | 30              | 1.1            | 60180-515 | 500     |
|  | –         | –             | White Silicone/Red PTFE            | 50              | 1.5            | 60180-562 | 100     |
| 5mm Open Top Screw Cap with flange, 8-425 thread, 5mm hole | Pink      | Polypropylene | Red PTFE/White Silicone            | 45              | 1.3            | 60180-661 | 100     |
|  | Pink      | Polypropylene | Blue PTFE/White Silicone, Pre-slit | 55              | 0.9            | 60180-662 | 100     |
| 5mm Open Top Screw Cap, 8-425 thread, 5mm hole             | Pink      | Polypropylene | Ivory PTFE/Red Rubber              | 45              | 1.0            | 60180-665 | 100     |
|  | Pink      | Polypropylene | Red PTFE/White Silicone/Red PTFE   | 45              | 1.0            | 60180-666 | 100     |
|  | Pink      | Polypropylene | Red PTFE/White Silicone            | 45              | 1.3            | 60180-667 | 100     |

For more information, visit [thermofisher.com/vials](https://thermofisher.com/vials)

## 8mm standard opening screw thread vial convenience kits

- Includes 100 vials and 100 caps with pre-assembled septa
- Caps feature pre-inserted septa for added convenience during sample preparation

### 8mm standard opening screw thread vial convenience kits

| Kit Type                                     | Glass | Patched | Cap Color | Septum                  | Vial Cat. No. | Cap/Septum Cat. No. | Cat. No.  | Pack of |
|--|-------|---------|-----------|-------------------------|---------------|---------------------|-----------|---------|
| Convenience Kit, Standard Opening Screw Vial | Clear | Yes     | Black     | Blue Silicone/PTFE      | 60180-508     | 60180-514/60180-515 | 60180-596 | 1000    |
|  | Clear | Yes     | Black     | Red PTFE/White Silicone | 60180-508     | 60180-514/60180-562 | 60180-600 | 100     |

## 9mm wide opening screw thread vials and closures

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber, meets all requirements of Pharm. US, EU, JPN
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Easy-on, easy-off convenience with just one turn
- Caps with bonded septa resist dislodging during injection when using large diameter blunt needles
- Closures have the profile of a crimp or snap closure for compatibility with robotic autosamplers



\* This vial fits Thermo Scientific AS 3000 and TriPlus only

### 9mm wide opening screw thread vials

| Description   | Glass | Patched | Dimension (mm) | Profile     | Total Volume (mL) | Usable Volume (mL) | Residual (µL) | Cat. No.  | Pack of |
|---|-------|---------|----------------|-------------|-------------------|--------------------|---------------|-----------|---------|
| 9mm Screw Thread Thermo Scientific™ Micro+ Vial 300µL, Fused Insert | Clear | Yes     | 12x32          | Insert Vial | 0.3               | 250µL              | <3            | 60180-507 | 100     |
| 9mm Screw Thread Vial   | Clear | Yes     | 12x32          | Flat Bottom | 2.0               | 1.5                | <170          | 60180-509 | 100     |
|   | Clear | No      | 12x32          | Flat Bottom | 2.0               | 1.5                | <170          | 60180-723 | 1000    |
|   | Amber | Yes     | 12x32          | Flat Bottom | 2.0               | 1.5                | <170          | 60180-561 | 100     |
|   | Amber | Yes     | 12x32          | Flat Bottom | 2.0               | 1.5                | <170          | 60180-724 | 1000    |
|   | Clear | No      | 15x46          | Flat Bottom | 4.0               | 3.5                | <500          | 60180-510 | 125     |



### 9mm short screw thread vial closures

| Description                            | Cap Color | Cap Material  | Septum                             | Hardness shore | Thickness (mm) | Cat. No.  | Pack of |
|--|-----------|---------------|------------------------------------|----------------|----------------|-----------|---------|
| 9mm Open Top Short Screw Cap, 6mm hole | Blue      | Polypropylene | Clear PTFE/Blue Silicone           | 30             | 1.0            | 60180-516 | 100     |
|  | Blue      | Polypropylene | Red PTFE/White Silicone            | 55             | 1.0            | 60180-729 | 1000    |
|  | Blue      | Polypropylene | Ivory PTFE/Red Rubber              | 45             | 1.0            | 60180-728 | 1000    |
|  | Pink      | Polypropylene | Red PTFE/White Silicone            | 55             | 1.0            | 60180-671 | 100     |
|  | Pink      | Polypropylene | Ivory PTFE/Red Rubber              | 45             | 1.0            | 60180-669 | 100     |
|  | Pink      | Polypropylene | Red PTFE/White Silicone/Red PTFE   | 45             | 1.0            | 60180-670 | 100     |
|  | Pink      | Polypropylene | Blue PTFE/White Silicone, Pre-slit | 55             | 1.0            | 60180-672 | 100     |

### 9mm convenience kits

- Includes 100 vials and 100 caps with pre-assembled septa
- Caps feature pre-inserted septa for added convenience during sample preparation

### 9mm wide opening screw thread vials convenience kits

| Kit Type                                    | Glass | Patched | Cap Color | Septum                  | Vial Cat. No. | Cap Cat. No. | Cat. No.  | Pack of |
|---|-------|---------|-----------|-------------------------|---------------|--------------|-----------|---------|
| Convenience Kit, Wide Open Short Screw Vial | Clear | Yes     | Blue      | Blue Silicone/PTFE      | 60180-509     | 60180-516    | 60180-599 | 100     |
|   | Amber | No      | Pink      | Red PTFE/White Silicone | 60180-724     | 60180-671    | 60180-698 | 100     |



For more information, visit [thermofisher.com/vials](https://www.thermofisher.com/vials)

Items not shown to scale

## 11mm wide opening crimp top vials, 2mL, 12x32mm and closures

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber meets all requirements of Pharm. US, EU, JPN
- Aluminum crimp seals with prefitted septa for all 11mm crimp top and snap cap vials
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Aluminum seals must be applied with a crimping tool



### 11mm wide opening crimp top vials, 2ml, 12x32mm

| Description                       | Glass | Patched | Dimension (mm) | Profile     | Total Volume (mL) | Usable Volume (mL) | Residual (µL) | Cat. No.  | Pack of |
|-----------------------------------|-------|---------|----------------|-------------|-------------------|--------------------|---------------|-----------|---------|
| 11mm Crimp Top Vial, Wide Opening | Clear | Yes     | 12x32          | Flat Bottom | 2.0               | 1.5                | <170          | 60180-502 | 100     |

### 11mm crimp top vial closures

| Description                     | Cap Color | Cap Material | Septum                 | Hardness shore | Thickness (mm) | Cat. No.  | Pack of |
|---------------------------------|-----------|--------------|------------------------|----------------|----------------|-----------|---------|
| 11mm Crimp Cap, 6mm center hole | Blue      | Aluminum     | Blue Silicone/Red PTFE | 20             | 1.4            | 60180-526 | 100     |

## 11mm crimp top convenience kits

- Includes 100 vials and 100 caps with pre-assembled septa
- Caps feature pre-assembled septa for added convenience during sample preparation

### 11mm crimp top convenience kits

| Kit Type                                     | Glass | Patched | Cap Color | Septum                 | Vial Cat. No. | Cap Cat. No. | Cat. No.  | Pack of |
|--|-------|---------|-----------|------------------------|---------------|--------------|-----------|---------|
| Convenience Kit, Wide Opening Crimp Top Vial | Clear | Yes     | Blue      | Blue Silicone/Red PTFE | 60180-502     | 60180-526    | 60180-597 | 100     |

### 11mm crimping tool

| Description    | Use                                | Cat. No.  | Pack of |
|----------------|------------------------------------|-----------|---------|
| Manual Crimper | Attaches 11mm aluminum crimp seals | 60180-543 | 1       |

## 11mm snap cap vials, wide opening, 2ml, 12x32mm and closures

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber, meets all requirements of Pharm. US, EU, JPN
- Crimp/Snap vials can be used with snap caps or aluminum crimp seal closures
- Snap Caps eliminate the need for crimping or decrimping tools
- Polyethylene caps are chemically inert and suitable for most chromatography applications



### 11mm snap cap vials, wide opening, 2ml, 12x32mm

| Description          | Glass | Patched | Dimension (mm) | Profile     | Total Volume (mL) | Usable Volume (mL) | Residual (µL) | Cat. No.  | Pack of |
|----------------------|-------|---------|----------------|-------------|-------------------|--------------------|---------------|-----------|---------|
| 11mm Crimp/Snap Vial | Clear | No      | 12x32          | Flat Bottom | 2.0               | 1.5                | <170          | 60180-710 | 1000    |

### 11mm snap cap vial closures

| Description             | Cap Color | Cap Material | Septum                             | Hardness shore | Thickness (mm) | Cat. No.  | Pack of |
|-------------------------|-----------|--------------|------------------------------------|----------------|----------------|-----------|---------|
| 11mm Snap Cap, 6mm hole | Pink      | Polyethylene | Clear PTFE/Synthetic Red Rubber    | 60             | 1.0            | 60180-676 | 100     |
|                         | Pink      | Polyethylene | Red PTFE/White Silicone            | 45             | 1.3            | 60180-677 | 100     |
|                         | Pink      | Polyethylene | Red PTFE/White Silicone, Star-slit | 45             | 1.3            | 60180-678 | 100     |

For more information, visit [thermofisher.com/vials](https://thermofisher.com/vials)

## 20mm headspace crimp top vials and closures

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber, meets all requirements of Pharm. US, EU, JPN

### Applications:

Recommended for operation of Thermo Scientific™ TriPlus™ HS Autosampler

Clear glass vials with 20mm crimp seal finish are designed to fit most headspace autosamplers



Images shown are 70% to scale

### 20mm crimp top headspace vials

| Description               | Glass | Patched | Dimension (mm) | Finish       | Profile      | Total Volume (mL) | Usable Volume (mL) | Cat. No.  | Pack of |
|---------------------------|-------|---------|----------------|--------------|--------------|-------------------|--------------------|-----------|---------|
| 20mm Headspace Crimp Vial | Clear | Yes     | 22.5x46        | Beveled Edge | Round Bottom | 12                | 10                 | 60180-504 | 125     |
|                           | Clear | Yes     | 22.5x75        | Beveled Edge | Round Bottom | 21                | 20                 | 60180-506 | 125     |
|                           | Clear | No      | 22.5x75        | Beveled Edge | Round Bottom | 21                | 20                 | 60180-741 | 1000    |



Images shown are 70% to scale

### 20mm crimp top vial closures

| Description                                 | Cap Color | Cap Material | Septum                          | Hardness shore | Thickness (mm) | Cat. No.  | Pack of |
|---|-----------|--------------|---------------------------------|----------------|----------------|-----------|---------|
| 20mm Crimp Cap, 8mm hole                    | Silver    | Aluminum     | 20mm Gray Chlorobutyl/Gray PTFE | 52             | 3.0            | 60180-513 | 100     |
| 20mm Crimp Cap, 9.5mm hole                  | Silver    | Aluminum     | Natural PTFE/Blue Silicone      | 45             | 3.2            | 60180-511 | 100     |
| 20mm Composite Magnetic Crimp Cap, 8mm hole | Blue      | Alu/Tinplate | Natural PTFE/Blue Silicone      | 45             | 3.2            | 60180-520 | 100     |

### 20mm crimping and decrimping tools

| Description      | Use  | Cat. No.  | Pack of |
|------------------|--|-----------|---------|
| Manual Crimper   | Attaches 20mm crimp seals                    | 60180-544 | 1       |
| Manual Decrimper | Removes 20mm crimp seals without vial damage | 60180-557 | 1       |

# National vials and closures

More laboratory professionals look to Thermo Scientific National products to meet their critical sampling needs than any other company

- Comprehensive instrument compatibility, “correct fit”
- The industry’s widest selection of vials and closures for every application, from economical to high end products
- Innovative products for challenging applications
- Quality products in glass (1st hydrolytic class glass (Type 1) in clear and amber, meets all requirements of Pharm. US, EU, JPN)
- Certified and Mass Spec Certified Vial Kits
- The leading manufacturer of vials and closures in North America since 1986
- In-house product development team
- Leading company in convenience and assembled kits

For more information, visit [thermofisher.com/national](https://www.thermofisher.com/national)





# MS certified vials

The first and only pre-cleaned, low particle, low background chromatography vial

When your instrumentation, sample handling and methodology is pushing the limits, a chromatography vial that can keep up is essential

- The only chromatography vials pre-cleaned to provide unmatched consistency
- The first low particle, low background chromatography vials
- Pre-cleaned vial packaging protects the product integrity
- Tested and certified for up to 15 critical physical characteristics affecting vial performance
- Positive ESI LC-MS and GC-MS chromatograms included in each pack

## Low particle background

The presence of inorganic sub-micron particles in all glass vials as a byproduct of the manufacturing process is a little known phenomenon that has not been extensively studied. Gas chromatographers depend on injection port liners to act as traps for particulates while the HPLC chromatographer takes extensive steps to eliminate them during sample preparation. This has been an effective strategy for routine analytical methods, but the need to work with even lower concentrations of analytes creates the possibility of interactions with compounds of interest.

Thermo Scientific MS Certified Vials undergo a proprietary cleaning process that greatly reduces the background particulates along with their potential effect on high sensitivity chromatography. The table gives a comparison of the particle distribution obtained from an analysis of standard vials versus the Thermo Scientific MS Certified Vials. All MS Certified Vials are processed and tested for background particulates. A typical vial that has not been processed can exhibit particle counts exceeding 5000 particles per mL with the highest counts occurring in the range below 0.5 $\mu$ m. This has

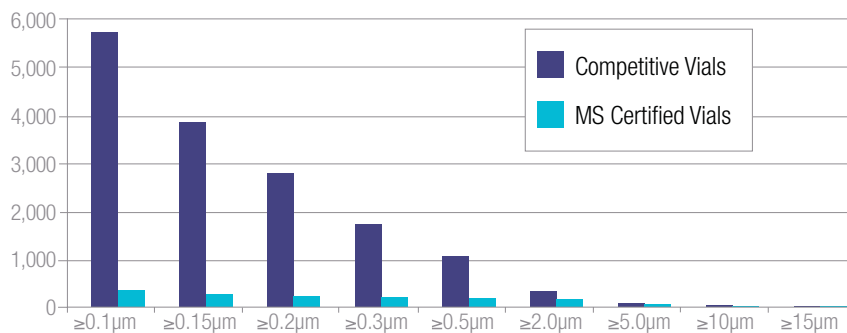
traditionally been of little concern when GC inlet liners or HPLC guard columns are used. GC techniques employing on-column injection create the need for a sample vial with minimal background particulates to prevent an accumulation of foreign material at the head of the column that might adversely affect a separation. Similarly newer techniques employing finely packed HPLC columns, capillary columns and direct connection of the analytical column to

the sample valve also require the elimination of as much particulate matter as possible from the sample stream.

The table below shows the results obtained from particulate analysis of a typical unprocessed vial compared to the Thermo Scientific MS Certified Vials. The processed vial shows a significant reduction in total particle counts.

| VIAL                    | $\geq 0.1\mu\text{m}$ | $\geq 0.15\mu\text{m}$ | $\geq 0.2\mu\text{m}$ | $\geq 0.2\mu\text{m}$ | $\geq 0.5\mu\text{m}$ | $\geq 2.0\mu\text{m}$ | $\geq 5.0\mu\text{m}$ | $\geq 10\mu\text{m}$ | $\geq 15\mu\text{m}$ |
|-------------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|
| Competitive Vials       | 5,677                 | 3,809                  | 2,755                 | 1,709                 | 1,051                 | 307                   | 76                    | 4                    | 0                    |
| Thermo Scientific Vials | 356                   | 264                    | 218                   | 192                   | 176                   | 160                   | 45                    | 8                    | 3                    |

Typical Cumulative Particle Counts



For more information, visit [thermofisher.com/msvials](https://thermofisher.com/msvials)

## MS certified vials kits

### Unassembled and assembled vial kits

| Kit Type  | Glass | Patched | Cap Color | Septum                                     | Cat. No.         | Pack of |
|---|-------|---------|-----------|--|------------------|---------|
| Convenience Kit, 9mm SureStop Screw Vial, 2mL with AVCS Closure                       | Clear | Yes     | Blue      | Blue Silicone/PTFE                         | MSCERT5000-34W   | 100     |
|   | Amber | Yes     | Blue      | Blue Silicone/PTFE                         | MSCERT5000-35W   | 100     |
|   | Clear | Yes     | Blue      | Blue Silicone/PTFE, Pre-slit               | MSCERT5000-40W   | 100     |
|   | Amber | Yes     | Blue      | Blue Silicone/PTFE, Pre-slit               | MSCERT5000-41W   | 100     |
| Convenience Kit, 9mm 200µL Fused Insert Screw Vial                                    | Clear | Yes     | Blue      | Bonded Clear PTFE/Clear Silicone           | MSCERT5000-30LVW | 100     |
| Convenience Kit, 9mm 350µL Fused Insert Screw Vial                                    | Clear | Yes     | Blue      | Bonded Clear PTFE/Clear Silicone           | MSCERT5000-31LVW | 100     |
| Convenience Kit, 9mm Wide Opening 1.5mL Total Recovery Screw Vial with 10µL Reservoir | Clear | No      | Blue      | Bonded Clear PTFE/Clear Silicone           | MSCERT5000-33TR  | 100     |
| Convenience Kit, 9mm Wide Opening Screw Vial, 2mL                                     | Clear | Yes     | Blue      | Bonded Clear PTFE/Clear Silicone           | MSCERT5000-341W  | 100     |
|   | Amber | Yes     | Blue      | Bonded Clear PTFE/Clear Silicone           | MSCERT5000-351W  | 100     |
| Convenience Kit, 9mm 200µL Fused Insert Screw Vial                                    | Clear | Yes     | Gray      | Bonded Clear PTFE/Clear Silicone, Pre-slit | MSCERT5000-36LVW | 100     |
| Convenience Kit, 9mm 350µL Fused Insert Screw Vial                                    | Clear | Yes     | Gray      | Bonded Clear PTFE/Clear Silicone, Pre-slit | MSCERT5000-37LVW | 100     |
| Convenience Kit, 9mm Wide Opening 1.7mL High Recovery Screw Vial with 30µL Reservoir  | Clear | No      | Gray      | Bonded Clear PTFE/Clear Silicone, Pre-slit | MSCERT5000-38    | 100     |
| Convenience Kit, 9mm Wide Opening 1.5mL Total Recovery Screw Vial with 10µL Reservoir | Clear | No      | Gray      | Bonded Clear PTFE/Clear Silicone, Pre-slit | MSCERT5000-39TR  | 100     |
| Convenience Kit, 9mm Wide Opening Screw Vial, 2mL                                     | Clear | Yes     | Gray      | Bonded Clear PTFE/Clear Silicone, Pre-slit | MSCERT5000-401W  | 100     |
|   | Amber | Yes     | Gray      | Bonded Clear PTFE/Clear Silicone, Pre-slit | MSCERT5000-411W  | 100     |
| Convenience Kit, 9mm Wide Opening Screw Vial, 2mL, sterilized                         | Clear | Yes     | Blue      | Bonded Clear PTFE/Clear Silicone           | MSCERT5000-S34W  | 100     |
|   | Amber | Yes     | Blue      | Bonded Clear PTFE/Clear Silicone           | MSCERT5000-S35W  | 100     |
|   | Clear | Yes     | Gray      | Bonded Clear PTFE/Clear Silicone, Pre-slit | MSCERT5000-S40W  | 100     |
|   | Amber | Yes     | Gray      | Bonded Clear PTFE/Clear Silicone, Pre-slit | MSCERT5000-S41W  | 100     |
| Assembled Kit, 9mm Wide Opening Screw Vial, 2mL                                       | Clear | Yes     | Blue      | Bonded Clear PTFE/Clear Silicone           | MSCERT5000-134W  | 100     |
|   | Amber | Yes     | Blue      | Bonded Clear PTFE/Clear Silicone           | MSCERT5000-135W  | 100     |
| Assembled Kit, 13-425 Screw Vial, 4mL   | Clear | Yes     | Black     | Bonded Clear PTFE/Clear Silicone           | MSCERT4015-135W  | 100     |



## National certified vials and closures convenience kits

- National Certified Vial Kits are fully lot-tested including HPLC and GC analysis for 15 critical parameters
- Certificate of Conformance included in every pack
- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Fixed insert or conical base vials for limited volume sampling

### Unassembled kits

- Includes 100 vials and 100 caps with pre-assembled septa
- Reusable two compartment trays protect vials and closures while keeping matching supplies together
- Clear trays make it easy to keep track of available supplies without opening containers

### Assembled kits

- Include 100 vials with pre-attached caps and septa
- Packaged in convenient vial trays with clear covers



### National certified vials and closures convenience kits

| Kit Type  | Glass | Patched | Cap Color | Septum                                   | Vial Cat. No. | Cap Cat. No. | Cat. No.      | Pack of |
|---|-------|---------|-----------|--|---------------|--------------|---------------|---------|
| Convenience Kit, Certified 9mm, Wide Opening SureStop Vial, 2mL             | Clear | Yes     | Blue      | Red PTFE/White Silicone                  | C5000-1W      | C5000-54B    | CERT5000-578W | 100     |
|   | Amber | Yes     | Blue      | Red PTFE/White Silicone                  | C5000-2W      | C5000-54B    | CERT5000-575W | 100     |
|   | Clear | Yes     | Blue      | Blue PTFE/White Silicone, Pre-slit       | C5000-1W      | C5000-55B    | CERT5000-593W | 100     |
|   | Clear | Yes     | Blue      | Ivory PTFE/Red Rubber                    | C4000-1W      | C5000-51B    | CERT5000-80W  | 100     |
|   | Amber | Yes     | Blue      | Ivory PTFE/Red Rubber                    | C4000-2W      | C5000-51B    | CERT5000-82W  | 100     |
|   | Clear | Yes     | Blue      | Red PTFE/White Silicone                  | C4000-1W      | C5000-54B    | CERT5000-92W  | 100     |
| Convenience Kit, Certified 9mm Wide Opening High Recovery Screw Vial, 1.7mL | Clear | No      | Black     | Bonded Red PTFE/White Silicone           | C4000-9       | C5000-64B    | CERT5000-992  | 100     |
| Convenience Kit, Certified 9mm Wide Opening Screw Vial, 2mL                 | Clear | Yes     | Black     | Bonded Red PTFE/White Silicone           | C4000-1W      | C5000-64B    | CERT5000-78W  | 100     |
|   | Amber | Yes     | Black     |  | C4000-2W      | C5000-64B    | CERT5000-75W  | 100     |
| Convenience Kit, Certified 9mm Screw Vial, 350µL Fused Insert               | Clear | Yes     | Black     | Bonded Red PTFE/White Silicone           | C4000-LV1W    | C5000-64B    | CERT5000-69LV | 100     |
|   | Amber | Yes     | Black     |  | C4000-LV2W    | C5000-64B    | CERT5000-72LV | 100     |
| Convenience Kit, Certified 10-425 Screw Vial, 2mL                           | Clear | Yes     | Black     | Bonded Red PTFE/White Silicone           | C4015-11W     | C4010-68A    | CERT4010-91   | 100     |
| Assembled Kit, Certified 9mm Wide Opening Screw Vial, 2mL                   | Clear | Yes     | Gray      | Bonded Red PTFE/White Silicone, Pre-slit | C4000-1W      | C5000-75C    | CERT5000-193W | 100     |

For more information, visit [thermofisher.com/national](https://thermofisher.com/national)

## National 8mm crimp top vials

- Superior quality type 1 borosilicate clear and amber glass
- Low volume sample vials for 6mm, 7mm and 8mm autosampler trays
- 8mm crimp top seal minimizes exposure between sample solvent and septum
- A support sleeve may be required for some autosamplers



### National 8mm crimp top vials

| Description        | Glass | Patched | Dimension (mm) | Profile      | Total Volume (µL) | Usable Volume (µL) | Residual (µL) | Cat. No.   | Pack of |
|--------------------|-------|---------|----------------|--------------|-------------------|--------------------|---------------|------------|---------|
| 8mm Crimp Top Vial | Clear | No      | 6x32           | Round Base   | 325               | 250                | <6            | C4008-632R | 100     |
|                    | Clear | No      | 6x32           | Conical Base | 250               | 200                | <2            | C4008-632C | 100     |
|                    | Amber | No      | 7x40           | Conical Base | 575               | 450                | <2            | C4008-740  | 100     |
|                    | Clear | No      | 7x40           | Flat Base    | 775               | 650                | <70           | C4008-741  | 100     |
|                    | Clear | No      | 8x30           | Flat Base    | 800               | 800                | <80           | C4008-1    | 200     |

For more information, visit [thermofisher.com/national](https://thermofisher.com/national)

## National 8mm crimp top closures

- Aluminum crimp seals with prefitted septa
- Provide a secure leak-resistant seal
- Pre-assembled caps and septa are convenient and minimize contamination from handling



### National 8mm crimp top closures

| Description                    | Cap Color | Cap Material | Septum                           | Hardness shore | Thickness (mm) | Cat. No. | Pack of |
|--------------------------------|-----------|--------------|----------------------------------|----------------|----------------|----------|---------|
| 8mm Crimp Cap, 4mm center hole | Silver    | Aluminum     | Clear PTFE/Red Rubber            | 45             | 1.0            | C4008-1A | 200     |
|                                | Silver    | Aluminum     | Red PTFE/White Silicone/Red PTFE | 45             | 1.0            | C4008-2A | 200     |
|                                | Silver    | Aluminum     | Red PTFE/White Silicone          | 45             | 1.3            | C4008-4A | 200     |

## National 8mm crimping and decrimping tools

- Crimping tools provide a reproducible, secure vial closure
- Easy and convenient handling
- High quality construction for durability and long life
- Painted, plated and coated for maximum corrosion resistance
- Textured handle surface provides an assured grip



Items not shown to scale

### National 8mm crimping and decrimping tools

| Description      | Use  | Cat. No.  | Pack of |
|------------------|--|-----------|---------|
| Manual Crimper   | Attaches 8mm aluminum crimp seals                    | C4008-100 | 1       |
| Manual Decrimper | Removes 8mm aluminum crimp seals without vial damage | C4008-102 | 1       |

## National standard opening screw thread vials

2mL, 12x32mm, 8mm standard opening screw thread vials and inserts

- 8-425 screw thread finish
- I.D. vials feature a write-on patch with graduation for convenient sample identification
- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Available silanized (deactivated) for optimal recovery of critical polar, labile or OH-interacting compounds
- Polyspring inserts are self-aligning and provide a cushion against needle contact
- Precision point insert minimizes residual sample loss
- Pulled point inserts are an economical choice for noncritical applications



### National standard opening screw thread vials and inserts

| Description                                | Glass         | Patched | Dimension (mm) | Profile         | Total Volume | Usable Volume | Residual (µL) | Cat. No.   | Pack of |
|--|---------------|---------|----------------|-----------------|--------------|---------------|---------------|------------|---------|
| 8-425 Screw Thread Vial                    | Clear         | No      | 12x32          | Flat Bottom     | 2.0mL        | 1.5mL         | <170          | C4013-1    | 100     |
|  | Clear         | No      | 12x32          | Flat Bottom     | 2.0mL        | 1.5mL         | <170          | C4013-1500 | 1000    |
|  | Clear         | Yes     | 12x32          | Flat Bottom     | 2.0mL        | 1.5mL         | <170          | C4013-1W   | 100     |
|  | Amber         | No      | 12x32          | Flat Bottom     | 2.0mL        | 1.5mL         | <170          | C4013-2    | 100     |
|  | Amber         | Yes     | 12x32          | Flat Bottom     | 2.0mL        | 1.5mL         | <170          | C4013-2W   | 100     |
| 8-425 Screw Thread Vial, silanized         | Clear         | No      | 12x32          | Flat Bottom     | 2.0mL        | 1.5mL         | <170          | C4013-S1   | 100     |
| 8-425 Screw Thread 250µL Conical MicroVial | Polypropylene | No      | 12x32          | Conical         | 475µL        | 250µL         | <4            | C4013-11   | 100     |
| 8-425 Screw Thread 600µL Tapered MicroVial | Polypropylene | No      | 12x32          | High Recovery   | 850µL        | 675µL         | <8            | C4013-13   | 1000    |
| 200µL MicroSert Insert                     | Clear         | –       | 5x31           | Flat Bottom     | 250µL        | 200µL         | <12           | C4012-465  | 500     |
| 150µL Polyspring Insert                    | Clear         | –       | 5x29           | Pulled point    | 200µL        | 175µL         | <1            | C4012-530  | 100     |
| 150µL Insert                               | Clear         | –       | 5x29           | Pulled point    | 200µL        | 175µL         | <1            | C4012-529  | 100     |
| 125µL Polyspring Insert                    | Polypropylene | –       | 5x29           | Precision point | 175µL        | 125µL         | <2            | C4012-530P | 100     |
| 150µL Polyspring Insert, silanized         | Clear         | –       | 5x29           | Pulled point    | 200µL        | 175µL         | <1            | C4012-S530 | 100     |

For more information, visit [thermofisher.com/national](http://thermofisher.com/national)

## National screw thread caps and septa

- Open top caps are designed to be used with any of our 8mm septa
- Phenolic caps are suitable for autoclaving and low temperature applications
- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Flanged caps are preferred for Shimadzu, Hitachi and Tosoh autosamplers
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Closures are shipped in sealed polybags to prevent contamination during transport



### National 8-425 screw thread caps and septa1

| Description                              | Cap Color | Cap Material  | Septum                                    | Hardness shore | Thickness (mm) | Cat. No.   | Pack of |
|--|-----------|---------------|---|----------------|----------------|------------|---------|
| 8mm Open Top Cap 5mm hole                | Black     | Polypropylene | –   | –              | –              | C4013-1A   | 100     |
| 8mm Open Top Cap with flange, 5.5mm hole | Black     | Polypropylene | –   | –              | –              | C4013-3A   | 100     |
|  | White     | Polypropylene | –   | –              | –              | C4013-98W* | 100     |
| Septum for 8-425 Screw Caps              | –         | –             | White Virgin PTFE, 0.01" Septum           | 53             | 0.25           | C4013-10   | 1000    |
|  | –         | –             | Ivory PTFE/Red Rubber Septum              | 45             | 1.00           | C4013-30   | 100     |
|  | –         | –             | Blue PTFE/White Silicone, Pre-slit Septum | 55             | 0.90           | C4013-32   | 100     |
|  | –         | –             | Red PTFE/White Silicone/Red PTFE Septum   | 45             | 1.00           | C4013-40   | 100     |
|  | –         | –             | Red PTFE/White Silicone Septum            | 45             | 1.30           | C4013-60   | 100     |
|  | –         | –             | Tan PTFE/White Silicone Septum            | 45             | 1.50           | C4013-61   | 1000    |
| 8mm Open Top Cap, 5.5mm hole             | Black     | Polypropylene | Ivory PTFE/Red Rubber                     | 45             | 1.00           | C4013-30A  | 100     |
|  | Black     | Polypropylene | Red PTFE/White Silicone/Red PTFE          | 45             | 1.00           | C4013-40A  | 100     |
|  | Black     | Polypropylene | Red PTFE/White Silicone                   | 45             | 1.30           | C4013-60A  | 100     |
| 8mm Open Top Cap with flange, 5.5mm hole | Black     | Polypropylene | Red PTFE/White Silicone                   | 45             | 1.30           | C4013-63A  | 100     |
|  | White     | Polypropylene | Red PTFE/White Silicone                   | 45             | 1.30           | C4013-63W  | 100     |
|  | Yellow    | Polypropylene | Red PTFE/White Silicone                   | 50             | 1.30           | C4013-63Y  | 100     |
|  | Black     | Polypropylene | Blue PTFE/White Silicone, Pre-slit        | 55             | 0.90           | C4013-64A  | 100     |
|  | White     | Polypropylene | Blue PTFE/White Silicone, Pre-slit        | 55             | 0.90           | C4013-64W  | 100     |
|  | Black     | Phenol        | Red PTFE/White Silicone                   | 45             | 1.30           | C4013-74A  | 100     |
| 8mm Open Top Cap with flange, 5.5mm hole | Black     | Polypropylene | Red PTFE/White Silicone, Pre-slit         | 55             | 1.00           | C4013-77A  | 100     |
| 8mm Open Top Cap, 5.5mm hole             | Black     | Polypropylene | Bonded Red PTFE/White Silicone, Pre-slit  | 45             | 1.30           | C4013-69A  | 100     |

## National standard opening screw thread vial convenience kits

- Save time during sample preparation
- Reduce the risk of contamination

### Unassembled kits

- Includes 100 vials and 100 caps with pre-assembled septa
- Reusable two compartment trays protect vials and closure while keeping matching supplies together
- Clear trays make it easy to keep track of available supplies without opening containers



### Assembled kits

- Include 100 vials with pre-attached caps and septa
- Packaged in convenient vial trays with clear covers or in economical polybags



Items not shown to scale

## National standard opening screw thread vial convenience kits

| Kit Type                  | Glass | Patched | Cap Color       | Septum                             | Vial Cat. No. | Cap/Septum Cat. No.   | Cat. No.   | Pack of |
|---------------------------|-------|---------|-----------------|------------------------------------|---------------|-----------------------|------------|---------|
| Convenience Kit           | Clear | No      | Black, flanged  | Red PTFE/White Silicone            | C4013-1       | C4013-63A             | C4013-14   | 100     |
|                           | Clear | No      | Black           | Red PTFE/White Silicone            | C4013-1       | C4013-60A             | C4013-15   | 100     |
|                           | Amber | No      | Black           | Red PTFE/White Silicone            | C4013-2       | C4013-60A             | C4013-17   | 100     |
|                           | Clear | Yes     | Black, flanged  | Red PTFE/White Silicone, Pre-slit  | C4013-1W      | C4013-77A             | C4013-95W  | 100     |
| Assembled Kit             | Clear | No      | Black           | White Virgin PTFE, 0.01"           | C4013-1       | C4013-1A/<br>C4013-10 | C4013-10A  | 100     |
|                           | Clear | No      | Black           | Red PTFE/White Silicone            | C4013-1       | C4013-60A             | C4013-15A  | 100     |
|                           | Amber | No      | Black           | Red PTFE/White Silicone            | C4013-2       | C4013-60A             | C4013-17A  | 100     |
|                           | Clear | No      | Black, flanged  | Blue PTFE/White Silicone, Pre-slit | C4013-1       | C4013-3A/<br>C4013-32 | C4013-32A  | 100     |
|                           | Clear | No      | Black, flanged  | Red PTFE/White Silicone            | C4013-1       | C4013-63A             | C4013-57   | 100     |
|                           | Clear | No      | White, flanged  | Red PTFE/White Silicone            | C4013-1       | C4013-63W             | C4013-58   | 100     |
|                           | Clear | No      | Black, phenolic | Red PTFE/White Silicone            | C4013-1       | C4013-74A             | C4013-492A | 100     |
|                           | Amber | No      | Black, phenolic | Red PTFE/White Silicone            | C4013-2       | C4013-74A             | C4013-494A | 100     |
| Assembled Kit, in Polybag | Clear | No      | Black           | White Virgin PTFE, 0.01"           | C4013-1       | C4013-1A/<br>C4013-10 | C4013-010A | 100     |

For more information, visit [thermofisher.com/national](http://thermofisher.com/national)



## National Target DP 9mm wide opening screw thread vials

2mL, 12x32mm, 9mm wide opening short screw thread vials and inserts

- C5000 SureStop 9mm vials as part of the Advanced Vial Closure System (AVCS) offer the sealing and performance characteristics of a crimp top vial and remove any subjectivity achieving optimal seal compression closing a vial by incorporating a definite stop point into the design of the vial finish. They should be used with AVCS C5000 closures in order to get the best possible performance.
- Some vials feature an I.D. write-on patch with graduation for convenient sample identification
- Wide neck opening design, allows easy filling, requires Micro-Inserts with a diameter of 6mm
- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Available silanized (deactivated) for optimal recovery of critical polar compounds
- Polyspring inserts are self-aligning and provide a cushion against needle contact
- Precision point insert minimizes residual sample loss



### National 9mm wide opening screw thread vials and inserts

| Description                  | Glass    | Patched   | Dimension (mm) | Profile     | Total Volume | Usable Volume | Residual (µL) | Cat. No. | Pack of |
|------------------------------|----------|-----------|----------------|-------------|--------------|---------------|---------------|----------|---------|
| 9mm SureStop Vial (AVCS)     | Clear    | No        | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C5000-1  | 100     |
|                              | Clear    | Yes       | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C5000-1W | 100     |
|                              | Amber    | No        | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C5000-2  | 100     |
|                              | Amber    | Yes       | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C5000-2W | 100     |
| 9mm Target DP Vial           | Clear    | No        | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C4000-1  | 100     |
|                              | Clear    | Yes       | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C4000-1W | 100     |
|                              | Amber    | Yes       | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C4000-2W | 100     |
|                              | Clear PP | Graduated | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C4000-14 | 100     |
| 9mm Target DP ColorBand Vial | Clear    | Blue**    | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C4000-1B | 100     |
|                              | Clear    | Green**   | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C4000-1G | 100     |
|                              | Clear    | Red**     | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C4000-1R | 100     |
|                              | Clear    | Yellow**  | 12x32          | Flat Bottom | 2.0mL        | 1.5mL         | <170          | C4000-1Y | 100     |



### National Target DP 9mm wide opening screw thread vials and inserts (continued)

| Description  | Glass         | Patched | Dimension (mm) | Profile         | Total Volume | Usable Volume | Residual (µL) | Cat. No.   | Pack of |
|--|---------------|---------|----------------|-----------------|--------------|---------------|---------------|------------|---------|
| 9mm Target DP Vial, High Recovery with 30µL Reservoir              | Clear         | No      | 12x32          | Tapered Base    | 1.7mL        | 1.3mL         | <4            | C4000-9    | 100     |
|  | Amber         | No      | 12x32          | Tapered Base    | 1.7mL        | 1.3mL         | <4            | C4000-9A   | 100     |
| 9mm Target DP Vial, Total Recovery with 10µL Reservoir             | Clear         | No      | 12x32          | Deep Well Base  | 1.5mL        | 1.2mL         | <1            | C4000-9TR  | 100     |
| 9mm Target DP MacroVial 350µL, Fused Insert                        | Clear         | No      | 12x32          | Insert Vial     | 475µL        | 350µL         | <2            | C4000-LV1  | 100     |
|  | Clear         | Yes     | 12x32          | Insert Vial     | 475µL        | 350µL         | <2            | C4000-LV1W | 100     |
|  | Amber         | No      | 12x32          | Insert Vial     | 475µL        | 350µL         | <2            | C4000-LV2  | 100     |
|  | Amber         | Yes     | 12x32          | Insert Vial     | 475µL        | 350µL         | <2            | C4000-LV2W | 100     |
| 9mm Target DP MacroVial 200µL, Fused Insert                        | Clear         | Yes     | 12x32          | Insert Vial     | 375µL        | 240µL         | <1            | C4000-LV3W | 100     |
| 9mm Target DP Micro-V Tapered MicroVial with 150µL reservoir       | Clear         | No      | 12x32          | Tapered Base    | 1.4mL        | 1.0mL         | <4            | C4000-V1   | 100     |
|  | Amber         | No      | 12x32          | Tapered Base    | 1.4mL        | 1.0mL         | <4            | C4000-V2   | 100     |
| 9mm Target DP Vial, silanized                                      | Clear         | No      | 12x32          | Flat Bottom     | 2.0mL        | 1.5mL         | <170          | C4000-S1   | 100     |
|  | Clear         | Yes     | 12x32          | Flat Bottom     | 2.0mL        | 1.5mL         | <170          | C4000-S1W  | 100     |
|  | Amber         | Yes     | 12x32          | Flat Bottom     | 2.0mL        | 1.5mL         | <170          | C4000-S2W  | 100     |
| 9mm Target DP Vial, High Recovery, silanized*, with 30µL Reservoir | Clear         | No      | 12x32          | Tapered Base    | 1.7mL        | 1.3mL         | <4            | C4000-S9   | 100     |
| 9mm Target DP 300µL Vial   | Polypropylene | No      | 12x32          | Conical         | 400µL        | 300µL         | <2            | C4000-11   | 100     |
| 350µL Insert   | Clear         | -       | 6x31           | Pulled Point    | 400µL        | 350µL         | <4            | C4010-627L | 100     |
| 300µL Insert   | Clear         | -       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-629  | 100     |
| 350µL Insert   | Clear         | -       | 6x31           | Precision Point | 400µL        | 350µL         | <2            | C4010-629L | 100     |
| 300µL Insert, Graduation Marks                                     | Polypropylene | -       | 6x30           | Conical         | 325µL        | 250µL         | <2            | C4010-629P | 100     |
| 300µL Polyspring Insert  | Clear         | -       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-630  | 100     |
|  | Polypropylene | -       | 6x30           | Conical         | 325µL        | 250µL         | <2            | C4010-630P | 100     |
| 400µL MicroSert Insert   | Clear         | -       | 6x31           | Flat Bottom     | 500µL        | 400µL         | <25           | C4011-631  | 100     |
| 300µL Insert, silanized*   | Clear         | -       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-S629 | 100     |
| 300µL Polyspring Insert, silanized*                                | Clear         | -       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-S630 | 100     |
| 400µL MicroSert Insert, silanized                                  | Clear         | -       | 6x31           | Flat Bottom     | 500µL        | 400µL         | <25           | C4011-S631 | 500     |
| 300µL Polyspring Insert, Kimshield                                 | Clear         | -       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-K630 | 100     |

\*\*Target DP ColorBand vials are designed to provide full sample color coding for autosamplers with optical vial detection. Use the optimum cap for your instrument without sacrificing your color coding scheme.

## National 9mm screw caps and septa

C5000 closures featuring AVCS technology (Advanced Vial Closure System)



- Elimination of septum “push-through”
- Increased sealing capability
- Improved autosampler compatibility
- Flexibility to select the best septum for your instrument and applications
- Cost efficient alternative to caps with bonded septa
- Optimized ergonomics, fine texturing and evenly spaced ribbing for superior handling

Further features are:

- Fully compatible with all National Target DP vials
- Easy-on, easy-off convenience with just one turn
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Closures have the profile of a crimp or snap closure for compatibility with robotic autosamplers
- Closures are shipped in sealed polybags to prevent contamination during transport



### National 9mm screw thread caps and septa

| Description                      | Cap Color | Cap Material  | Septum                                    | Hardness shore | Thickness (mm) | Cat. No.  | Pack of |
|----------------------------------|-----------|---------------|---|----------------|----------------|-----------|---------|
| 9mm Open Top Screw Cap, 6mm hole | Blue      | Polypropylene | –   | N/A            | N/A            | C5000-98B | 100     |
| Septum for 9mm Screw Thread Cap  | –         | –             | Ivory PTFE/Red Rubber                     | 35             | 1.0            | C4000-30  | 100     |
|                                  | –         | –             | Red PTFE/White Silicone/Red PTFE          | 45             | 1.0            | C4000-40  | 100     |
|                                  | –         | –             | Blue PTFE/White Silicone, Pre-slit        | 55             | 1.0            | C4000-55  | 100     |
|                                  | –         | –             | Red PTFE/White Silicone                   | 50             | 1.0            | C4000-60  | 100     |
| 9mm Open Top Cap, 6mm hole       | Blue      | Polypropylene | Soft septum, PTFE/Blue Silicone           | 30             | 1.0            | C5000-44B | 100     |
|                                  | Blue      | Polypropylene | Soft septum, PTFE/Blue Silicone, Pre-slit | 30             | 1.0            | C5000-45B | 100     |
|                                  | Black     | Polypropylene | Ivory PTFE/Red Rubber                     | 45             | 1.0            | C5000-51A | 100     |
|                                  | Blue      | Polypropylene | Ivory PTFE/Red Rubber                     | 45             | 1.0            | C5000-51B | 100     |
|                                  | Green     | Polypropylene | Ivory PTFE/Red Rubber                     | 45             | 1.0            | C5000-51G | 100     |
|                                  | Red       | Polypropylene | Ivory PTFE/Red Rubber                     | 45             | 1.0            | C5000-51R | 100     |
|                                  | Yellow    | Polypropylene | Ivory PTFE/Red Rubber                     | 45             | 1.0            | C5000-51Y | 100     |
|                                  | Pink      | Polypropylene | Ivory PTFE/Red Rubber                     | 45             | 1.0            | C5000-51P | 100     |



### National 9mm screw thread caps and septa (continued)

| Description                         | Cap Color                         | Cap Material  | Septum   | Hardness shore | Thickness (mm) | Cat. No.   | Pack of  |
|-------------------------------------|-----------------------------------|---------------|--|----------------|----------------|------------|----------|
| 9mm Open Top Cap, 6mm hole          | Black                             | Polypropylene | Red PTFE/White Silicone/Red PTFE               | 50             | 1.0            | C5000-53A  | 100      |
|                                     | Blue                              | Polypropylene | Red PTFE/White Silicone/Red PTFE               | 50             | 1.0            | C5000-53B  | 100      |
|                                     | Green                             | Polypropylene | Red PTFE/White Silicone/Red PTFE               | 50             | 1.0            | C5000-53G  | 100      |
|                                     | Red                               | Polypropylene | Red PTFE/White Silicone/Red PTFE               | 50             | 1.0            | C5000-53R  | 100      |
|                                     | Yellow                            | Polypropylene | Red PTFE/White Silicone/Red PTFE               | 50             | 1.0            | C5000-53Y  | 100      |
|                                     | Black                             | Polypropylene | Red PTFE/White Silicone                        | 55             | 1.0            | C5000-54A  | 100      |
|                                     | Blue                              | Polypropylene | Red PTFE/White Silicone                        | 55             | 1.0            | C5000-54B  | 100      |
|                                     | Green                             | Polypropylene | Red PTFE/White Silicone                        | 55             | 1.0            | C5000-54G  | 100      |
|                                     | Red                               | Polypropylene | Red PTFE/White Silicone                        | 55             | 1.0            | C5000-54R  | 100      |
|                                     | Yellow                            | Polypropylene | Red PTFE/White Silicone                        | 55             | 1.0            | C5000-54Y  | 100      |
|                                     | Pink                              | Polypropylene | Red PTFE/White Silicone                        | 55             | 1.0            | C5000-54P  | 100      |
|                                     | Black                             | Polypropylene | Blue PTFE/White Silicone, Pre-slit             | 55             | 1.0            | C5000-55A  | 100      |
|                                     | Blue                              | Polypropylene | Blue PTFE/White Silicone, Pre-slit             | 55             | 1.0            | C5000-55B  | 100      |
|                                     | Green                             | Polypropylene | Blue PTFE/White Silicone, Pre-slit             | 55             | 1.0            | C5000-55G  | 100      |
|                                     | Red                               | Polypropylene | Blue PTFE/White Silicone, Pre-slit             | 55             | 1.0            | C5000-55R  | 100      |
|                                     | Yellow                            | Polypropylene | Blue PTFE/White Silicone, Pre-slit             | 55             | 1.0            | C5000-55Y  | 100      |
|                                     | Pink                              | Polypropylene | Blue PTFE/White Silicone, Pre-slit             | 55             | 1.0            | C5000-55P  | 100      |
|                                     | Blue                              | Polypropylene | Ivory PTFE/Red Rubber, Pre-slit                | 45             | 1.0            | C5000-57B  | 100      |
|                                     | Green                             | Polypropylene | Ivory PTFE/Red Rubber, Pre-slit                | 45             | 1.0            | C5000-57G  | 100      |
|                                     | 9mm Cap with Integral PP Membrane | Clear         | Polypropylene                                  | Polypropylene  | N/A            | N/A        | C5000-50 |
| Blue                                |                                   | Polypropylene | Polypropylene                                  | N/A            | N/A            | C5000-50B  | 100      |
| 9mm Solid Top Cap                   | Blue                              | Polypropylene | Ivory PTFE/Red Rubber                          | 45             | 1.0            | C5000-99B  | 100      |
| 9mm Open Top Cap, 6mm hole          | Black                             | Polypropylene | Bonded Red PTFE/White Silicone                 | 45             | 1.0            | C5000-64B  | 100      |
|                                     | Gray                              | Polypropylene | Bonded Red PTFE/White Silicone, Pre-slit       | 45             | 1.0            | C5000-75C  | 100      |
|                                     | Blue                              | Polypropylene | Bonded Natural PTFE/Clear Silicone             | 45             | 1.3            | C5000-62B  | 100      |
| Magnetic 9mm Open Top Cap, 6mm hole | Blue                              | Polypropylene | Soft septum, PTFE/Blue Silicone                | 30             | 1.0            | C5000-46M  | 100      |
| 9mm Open Top Cap, 6mm hole          | Blue                              | Polypropylene | Solid Aluminum Disk with Silicone sealing ring |                | 0.06           | C5000-56AL | 100      |

For more information, visit [thermofisher.com/national](https://thermofisher.com/national)

## National 9mm screw thread vials convenience kits

- Save time during sample preparation
- Reduce the risk of contamination

### Unassembled kits

- Includes 100 vials and 100 caps with pre-assembled septa
- Reusable two compartment trays protect vials and closure while keeping matching supplies together
- Clear trays make it easy to keep track of available supplies without opening containers

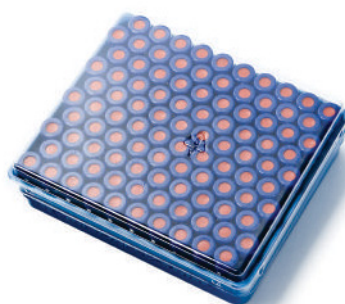
### Assembled kits

- Include 100 vials with pre-attached caps and septa
- Packaged in convenient vial trays with clear covers

Convenience Kit



Assembled Kit



Items not shown to scale

## National 9mm wide opening screw thread vials convenience kits

| Kit Type                 | Glass         | Patched | Cap Color                          | Septum                                   | Vial Cat. No. | Cap Cat. No. | Cat. No.   | Pack of |
|--------------------------|---------------|---------|------------------------------------|--|---------------|--------------|------------|---------|
| SureStop Convenience Kit | Clear         | No      | Blue                               | Ivory PTFE/Red Rubber                    | C5000-1       | C5000-51B    | C5000-580  | 100     |
|                          | Clear         | Yes     | Blue                               | Ivory PTFE/Red Rubber                    | C5000-1W      | C5000-51B    | C5000-580W | 100     |
|                          | Clear         | No      | Blue                               | Red PTFE/White Silicone                  | C5000-1       | C5000-54B    | C5000-592  | 100     |
|                          | Clear         | Yes     | Blue                               | Red PTFE/White Silicone                  | C5000-1W      | C5000-54B    | C5000-592W | 100     |
|                          | Clear         | Yes     | Blue                               | Red PTFE/White Silicone/Red PTFE         | C5000-1W      | C5000-53B    | C5000-586W | 100     |
|                          | Clear         | Yes     | Blue                               | Blue PTFE/White Silicone, Pre-slit       | C5000-1W      | C5000-55B    | C5000-595W | 100     |
| AVCS Convenience Kit     | Clear         | No      | Blue                               | Ivory PTFE/Red Rubber                    | C4000-1       | C5000-51B    | C5000-80   | 100     |
|                          | Clear         | Yes     | Blue                               | Ivory PTFE/Red Rubber                    | C4000-1W      | C5000-51B    | C5000-80W  | 100     |
|                          | Amber         | Yes     | Pink                               | Ivory PTFE/Red Rubber                    | C4000-2W      | C5000-51P    | C5000-82P  | 100     |
|                          | Amber         | Yes     | Blue                               | Ivory PTFE/Red Rubber                    | C4000-2W      | C5000-51B    | C5000-82W  | 100     |
|                          | Clear         | Yes     | Blue                               | Ivory PTFE/Red Rubber, Pre-slit          | C4000-1W      | C5000-57B    | C5000-83W  | 100     |
|                          | Clear         | No      | Blue                               | Red PTFE/White Silicone/Red PTFE         | C4000-1       | C5000-53B    | C5000-86   | 100     |
|                          | Clear         | Yes     | Blue                               | Red PTFE/White Silicone/Red PTFE         | C4000-1W      | C5000-53B    | C5000-86W  | 100     |
|                          | Amber         | Yes     | Blue                               | Red PTFE/White Silicone/Red PTFE         | C4000-2W      | C5000-53B    | C5000-88W  | 100     |
|                          | Polypropylene | No      | Blue                               | Red PTFE/White Silicone                  | C4000-11      | C5000-54B    | C5000-87   | 100     |
|                          | Clear         | Yes     | Black                              | Red PTFE/White Silicone                  | C4000-1W      | C5000-54A    | C5000-91W  | 100     |
|                          | Clear         | No      | Blue                               | Red PTFE/White Silicone                  | C4000-1       | C5000-54B    | C5000-92   | 100     |
|                          | Clear         | No      | Pink                               | Red PTFE/White Silicone                  | C4000-1       | C5000-54P    | C5000-92P  | 100     |
|                          | Clear         | Yes     | Blue                               | Red PTFE/White Silicone                  | C4000-1W      | C5000-54B    | C5000-92W  | 100     |
|                          | Amber         | Yes     | Blue                               | Red PTFE/White Silicone                  | C4000-2W      | C5000-54B    | C5000-94W  | 100     |
|                          | Clear         | No      | Blue                               | Blue PTFE/White Silicone, Pre-slit       | C4000-1       | C5000-55B    | C5000-95   | 100     |
|                          | Clear         | Yes     | Blue                               | Blue PTFE/White Silicone, Pre-slit       | C4000-1W      | C5000-55B    | C5000-95W  | 100     |
| Clear                    | No            | Blue    | Blue PTFE/White Silicone, Pre-slit | C4000-LV1                                | C5000-55B     | C5000-LV95   | 100        |         |
| Polypropylene            | No            | Blue    | Blue PTFE/White Silicone, Pre-slit | C4000-11                                 | C5000-55B     | C5000-97     | 100        |         |
| Convenience Kit          | Clear         | Yes     | Black                              | Bonded Red PTFE/White Silicone           | C4000-1W      | C5000-64B    | C5000-78W  | 100     |
|                          | Clear         | Yes     | Gray                               | Bonded Red PTFE/White Silicone, Pre-slit | C4000-1W      | C5000-75C    | C5000-93W  | 100     |

## National 9mm wide opening screw thread vials convenience kits (continued)

| Kit Type           | Glass | Patched | Cap Color | Septum                             | Vial Cat. No. | Cap Cat. No. | Cat. No.    | Pack of |
|--------------------|-------|---------|-----------|------------------------------------|---------------|--------------|-------------|---------|
| Assembled AVCS Kit | Clear | No      | Blue      | Ivory PTFE/Red Rubber              | C4000-1       | C5000-51B    | C5000-180   | 100     |
|                    | Clear | Yes     | Blue      | Ivory PTFE/Red Rubber              | C4000-1W      | C5000-51B    | C5000-180W  | 100     |
|                    | Amber | Yes     | Blue      | Ivory PTFE/Red Rubber              | C4000-2W      | C5000-51B    | C5000-182W  | 100     |
|                    | Clear | Yes     | Blue      | Ivory PTFE/Red Rubber, Pre-slit    | C4000-1W      | C5000-57B    | C5000-183W  | 100     |
|                    | Amber | Yes     | Blue      | Ivory PTFE/Red Rubber, Pre-slit    | C4000-2W      | C5000-57B    | C5000-184W  | 100     |
|                    | Clear | No      | Blue      | Red PTFE/White Silicone/Red PTFE   | C4000-1       | C5000-53B    | C5000-186   | 100     |
|                    | Clear | Yes     | Blue      | Red PTFE/White Silicone/Red PTFE   | C4000-1W      | C5000-53B    | C5000-186W  | 100     |
|                    | Clear | Yes     | Red       | Red PTFE/White Silicone/Red PTFE   | C4000-1W      | C5000-53R    | C5000-186WR | 100     |
|                    | Amber | Yes     | Blue      | Red PTFE/White Silicone/Red PTFE   | C4000-2W      | C5000-53B    | C5000-188W  | 100     |
|                    | Clear | No      | Blue      | Red PTFE/White Silicone            | C4000-1       | C5000-54B    | C5000-192   | 100     |
|                    | Clear | Yes     | Blue      | Red PTFE/White Silicone            | C4000-1W      | C5000-54B    | C5000-192W  | 100     |
|                    | Amber | Yes     | Blue      | Red PTFE/White Silicone            | C4000-2W      | C5000-54B    | C5000-194W  | 100     |
|                    | Clear | Yes     | Blue      | Blue PTFE/White Silicone, Pre-slit | C4000-1W      | C5000-55B    | C5000-195W  | 100     |
|                    | Amber | Yes     | Blue      | Blue PTFE/White Silicone, Pre-slit | C4000-2W      | C5000-55B    | C5000-196W  | 100     |

C4000-MS



: shown to scale

## National 9mm wide opening screw thread vial storerooms

- Storerooms organize supplies and save valuable bench space

### National 9mm wide opening screw thread vial storerooms

| Description                            | Glass | Patched | Cap Color | Septum | Vial Cat. No. | Cap/Septum Cat. No. | Cat. No. | Pack of |
|--|-------|---------|-----------|--------|---------------|---------------------|----------|---------|
| 6 Drawer Mini-Storeroom – Cabinet Only | –     | –       | –         | –      | –             | –                   | C4000-MS | 1       |

For more information, visit [thermofisher.com/national](https://thermofisher.com/national)

## National 10mm wide opening screw thread vials

2mL, 12x32mm 10mm wide opening screw thread vials and inserts

- 10-425 thread finish
- I.D. vials feature a write-on patch with graduation for convenient sample identification
- Wide neck opening design, allows easy filling, requires Micro-Inserts with a diameter of 6mm
- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Optional silanized (deactivated) glass provides optimal recovery of critical polar, labile or OH-interacting compounds
- Polyspring inserts are self-aligning and provide a cushion against needle contact
- Precision point insert minimizes residual sample loss



### National 10mm wide opening screw thread vials and inserts

| Description                                       | Glass         | Patched | Dimension (mm) | Profile        | Total Volume | Usable Volume | Residual (µL) | Cat. No.  | Pack of |
|---|---------------|---------|----------------|----------------|--------------|---------------|---------------|-----------|---------|
| 10-425 Screw Thread Vial                          | Clear         | No      | 12x32          | Flat Bottom    | 2.0mL        | 1.5mL         | <170          | C4010-1   | 100     |
|   | Clear         | Yes     | 12x32          | Flat Bottom    | 2.0mL        | 1.5mL         | <170          | C4010-1W  | 100     |
|   | Amber         | No      | 12x32          | Flat Bottom    | 2.0mL        | 1.5mL         | <170          | C4010-2   | 100     |
|   | Amber         | Yes     | 12x32          | Flat Bottom    | 2.0mL        | 1.5mL         | <170          | C4010-2W  | 100     |
| 10-425 Screw Thread MacroVial 350µL, Fused Insert | Clear         | No      | 12x32          | Insert Vial    | 450µL        | 350µL         | <2            | C4010-LV1 | 100     |
|   | Amber         | No      | 12x32          | Insert Vial    | 450µL        | 350µL         | <2            | C4010-LV2 | 100     |
| 10-425 Screw Thread Vial, Silanized               | Clear         | Yes     | 12x32          | Flat Bottom    | 2.0mL        | 1.5mL         | <170          | C4010-S1W | 100     |
|   | Amber         | Yes     | 12x32          | Flat Bottom    | 2.0mL        | 1.5mL         | <170          | C4010-S2W | 100     |
| 10-425 Screw Thread Vial                          | Polypropylene | No      | 12x32          | Conical        | 600µL        | 400µL         | <6            | C4010-11  | 100     |
|   | Polypropylene | No      | 12x32          | Reservoir Base | 750µL        | 550µL         | <70           | C4010-14  | 100     |



### National 10mm wide opening screw thread vials and inserts (continued)

| Description                        | Glass         | Patched | Dimension (mm) | Profile         | Total Volume | Usable Volume | Residual (µL) | Cat. No.   | Pack of |
|------------------------------------|---------------|---------|----------------|-----------------|--------------|---------------|---------------|------------|---------|
| 350µL Insert                       | Clear         | –       | 6x31           | Pulled Point    | 400µL        | 350µL         | <4            | C4010-627L | 100     |
| 300µL Insert                       | Clear         | –       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-629  | 100     |
| 350µL Insert                       | Clear         | –       | 6x31           | Precision Point | 400µL        | 350µL         | <2            | C4010-629L | 100     |
| 300µL Insert, Graduation Marks     | Polypropylene | –       | 6x30           | Conical         | 325µL        | 250µL         | <2            | C4010-629P | 100     |
| 300µL Polyspring Insert            | Clear         | –       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-630  | 100     |
|                                    | Polypropylene | –       | 6x30           | Conical         | 325µL        | 250µL         | <2            | C4010-630P | 100     |
| 400µL MicroSert Insert             | Clear         | –       | 6x31           | Flat Bottom     | 500µL        | 450µL         | <25           | C4011-631  | 500     |
| 300µL Insert, silanized            | Clear         | –       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-S629 | 100     |
| 300µL Polyspring Insert, silanized | Clear         | –       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-S630 | 100     |

For more information, visit [thermofisher.com/national](https://www.thermofisher.com/national)



## National 10-425 wide opening screw caps and septa

- Open top caps are designed to be used with any of our 10mm septa
- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Closures are shipped in sealed polybags to prevent contamination during transport



## National 10-425 wide opening screw caps and septa

| Description                   | Cap Color     | Cap Material                       | Septum                                    | Hardness shore | Thickness (mm) | Cat. No.    | Pack of |
|-------------------------------|---------------|------------------------------------|---|----------------|----------------|-------------|---------|
| 10mm Open Top Cap, 8.5mm hole | Light Blue    | Polypropylene                      | -   | -              | -              | C4010-1A    | 100     |
| 10mm Open Top Cap, 8.5mm hole | -             | -                                  | Red PTFE/White Silicone, Soft Septum      | 50             | 1.3            | C4010-35    | 100     |
|                               | -             | -                                  | Red PTFE/White Silicone/Red PTFE Septum   | 45             | 1.3            | C4010-40    | 100     |
|                               | -             | -                                  | Blue PTFE/White Silicone, Pre-slit Septum | 55             | 1.5            | C4010-55    | 100     |
|                               | -             | -                                  | Red PTFE/White Silicone Septum            | 45             | 1.3            | C4010-60    | 100     |
| 10mm Open Top Cap, 8.5mm hole | Light Blue    | Polypropylene                      | Ivory PTFE/Red Rubber                     | 45             | 1.0            | C4010-30A   | 100     |
|                               | Black         | Polypropylene                      | Red PTFE/White Silicone, Soft             | 45             | 1.3            | C4010-35BLK | 100     |
|                               | White         | Polypropylene                      | Red PTFE/White Silicone, Soft             | 45             | 1.3            | C4010-35W   | 100     |
|                               | Light Blue    | Polypropylene                      | Red PTFE/White Silicone/Red PTFE          | 45             | 1.0            | C4010-40A   | 100     |
|                               | Light Blue    | Polypropylene                      | Blue PTFE/White Silicone, Pre-slit        | 55             | 1.5            | C4010-55A   | 100     |
|                               | Black         | Polypropylene                      | Blue PTFE/White Silicone, Pre-slit        | 55             | 1.5            | C4010-55BLK | 100     |
|                               | Light Blue    | Polypropylene                      | Red PTFE/White Silicone                   | 50             | 1.3            | C4010-60A   | 100     |
|                               | Red           | Polypropylene                      | Red PTFE/White Silicone                   | 50             | 1.3            | C4010-60AR  | 1000    |
|                               | White         | Polypropylene                      | Red PTFE/White Silicone                   | 50             | 1.3            | C4010-60AW  | 1000    |
|                               | Black         | Polypropylene                      | Red PTFE/White SiliconeS                  | 50             | 1.5            | C4010-60BLK | 100     |
| Light Blue                    | Polypropylene | Red PTFE/White Silicone, Star-slit | 50  | 1.5            | C4010-65A      | 100         |         |
| 10mm Solid Top Cap            | White         | Polyurethane                       | PTFE/PE Foam Liner                        | -              | 1.3            | C4010-99    | 100     |

## National 10mm wide opening screw thread vials convenience kits

- Save time during sample preparation
- Reduce the risk of contamination

### Unassembled kits

- Includes 100 vials and 100 caps with pre-assembled septa
- Reusable two compartment trays protect vials and closure while keeping matching supplies together
- Clear trays make it easy to keep track of available supplies without opening containers



### Assembled kits

- Include 100 vials with pre-attached caps and septa
- Packaged in convenient vial trays with clear covers or in economical polybags



## National 10mm wide opening screw thread vials convenience kits

Items not shown to scale

| Description               | Glass | Patched | Cap Color  | Septum                             | Vial Cat. No. | Cap Cat. No. | Cat. No.    | Pack of |
|---------------------------|-------|---------|------------|------------------------------------|---------------|--------------|-------------|---------|
| Convenience Kit           | Clear | No      | Light Blue | Red PTFE/White Silicone            | C4010-1       | C4010-60A    | C4010-88    | 100     |
|                           | Amber | Yes     | Light Blue | Red PTFE/White Silicone            | C4010-2W      | C4010-60A    | C4010-88AW  | 100     |
|                           | Clear | Yes     | Light Blue | Red PTFE/White Silicone            | C4010-1W      | C4010-60A    | C4010-88W   | 100     |
|                           | Clear | No      | White      | Red PTFE/White Silicone, Soft      | C4010-1       | C4010-35W    | C4010-95    | 100     |
|                           | Clear | Yes     | White      | Red PTFE/White Silicone, Soft      | C4010-1W      | C4010-35W    | C4010-95W   | 100     |
|                           | Clear | Yes     | Black      | Blue PTFE/White Silicone, Pre-slit | C4010-1W      | C4010-55BLK  | C4010-97W   | 100     |
| Assembled Kit             | Clear | No      | Light Blue | Red PTFE/White Silicone            | C4010-1       | C4010-60A    | C4010-17    | 100     |
|                           | Clear | Yes     | Light Blue | Red PTFE/White Silicone            | C4010-1W      | C4010-60A    | C4010-17W   | 100     |
|                           | Clear | No      | White      | Red PTFE/White Silicone, Soft      | C4010-1       | C4010-35W    | C4010-57    | 100     |
|                           | Amber | Yes     | White      | Red PTFE/White Silicone, Soft      | C4010-2W      | C4010-35W    | C4010-57AW  | 100     |
|                           | Clear | Yes     | White      | Red PTFE/White Silicone, Soft      | C4010-1W      | C4010-35W    | C4010-57W   | 100     |
|                           | Amber | No      | Black      | Red PTFE/White Silicone, Soft      | C4010-2       | C4010-35BLK  | C4010-67A   | 100     |
| Assembled Kit, in Polybag | Amber | Yes     | Light Blue | Red PTFE/White Silicone            | C4010-2W      | C4010-60A    | C4010-017AW | 100     |

## National 11mm crimp top vials

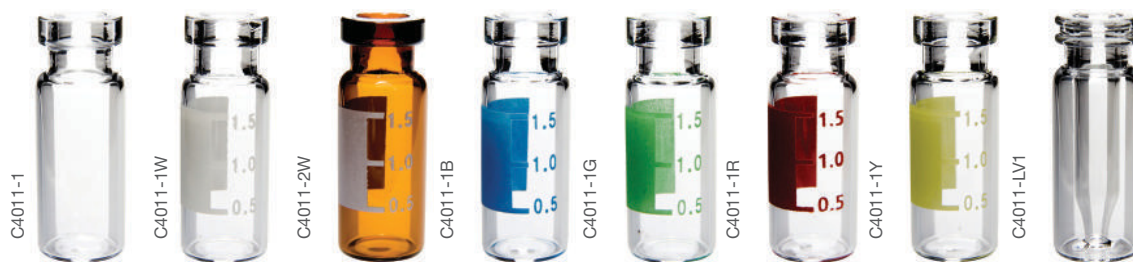
2mL, 12x32, crimp top vials and inserts

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- I.D. vials feature a write-on patch with graduation for convenient sample identification
- Standard opening vials require Micro-Inserts with a diameter of 5mm
- Wide opening vials, allow easy filling, require Micro-Inserts with a diameter of 6mm
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Optional silanized (deactivated) glass provides optimal recovery of critical polar, labile or OH-interacting compounds\*
- Polyspring inserts are self-aligning and provide a cushion against needle contact
- Precision point insert minimizes residual sample loss
- Pulled point inserts are an economical choice for noncritical applications
- Glastic vial features a glass insert pre-inserted inside of a clear TPX vial



### National 11mm standard opening crimp top vials and inserts

| Description                          | Glass         | Patched | Dimension (mm) | Profile         | Total Volume | Usable Volume | Residual (µL) | Cat. No.   | Pack of |
|--------------------------------------|---------------|---------|----------------|-----------------|--------------|---------------|---------------|------------|---------|
| 11mm Standard Opening Crimp Top Vial | Clear         | No      | 12x32          | Flat Bottom     | 2mL          | 1.5mL         | <170          | C4012-1    | 100     |
|                                      | Clear         | Yes     | 12x32          | Flat Bottom     | 2mL          | 1.5mL         | <170          | C4012-1W   | 100     |
|                                      | Amber         | No      | 12x32          | Flat Bottom     | 2mL          | 1.5mL         | <170          | C4012-2    | 100     |
|                                      | Amber         | Yes     | 12x32          | Flat Bottom     | 2mL          | 1.5mL         | <170          | C4012-2W   | 100     |
| 200µL MicroSert Insert               | Clear         | –       | 5x31           | Flat Bottom     | 250µL        | 200µL         | <12           | C4012-465  | 500     |
| 150µL Polyspring Insert              | Clear         | –       | 5x29           | Pulled point    | 200µL        | 175µL         | <1            | C4012-530  | 100     |
| 150µL Insert                         | Clear         | –       | 5x29           | Pulled point    | 200µL        | 175µL         | <3            | C4012-529  | 100     |
| 200µL Insert                         | Clear         | –       | 5x31           | Pulled point    | 200µL        | 170µL         | <2            | C4012-529L | 100     |
| 125µL Polyspring Insert              | Polypropylene | –       | 5x29           | Precision point | 175µL        | 125µL         | <2            | C4012-530P | 100     |
| 150µL Polyspring Insert, silanized   | Clear         | –       | 5x29           | Pulled point    | 200µL        | 175µL         | <1            | C4012-S530 | 100     |



### National 11mm wide opening crimp top vials and inserts

| Description                                   | Glass | Patched | Dimension (mm) | Profile       | Total Volume | Usable Volume | Residual (µL) | Cat. No.  | Pack of |
|---|-------|---------|----------------|---------------|--------------|---------------|---------------|-----------|---------|
| 11mm Crimp Top Vial, Wide Opening             | Clear | No      | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-1   | 100     |
|   | Clear | Yes     | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-1W  | 100     |
|   | Amber | Yes     | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-2W  | 100     |
| 11mm Crimp Top ColorBand Vial, Wide Opening   | Clear | Blue*   | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-1B  | 100     |
|   | Clear | Green*  | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-1G  | 100     |
|   | Clear | Red*    | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-1R  | 100     |
|   | Clear | Yellow* | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-1Y  | 100     |
| 11mm Crimp/Snap MacroVial 250µL, Fused Insert | Clear | No      | 12x32          | Fused Conical | 500µL        | 350µL         | <2            | C4011-LV1 | 100     |

\* ColorBand vials are designed to provide full sample color coding for autosamplers with optical vial detection. Use the optimum cap for your instrument without sacrificing your color coding scheme.



### National 11mm crimp top vials and inserts (continued)

| Description   | Glass         | Patched | Dimension (mm) | Profile       | Total Volume | Usable Volume | Residual (µL) | Cat. No.   | Pack of |
|---|---------------|---------|----------------|---------------|--------------|---------------|---------------|------------|---------|
| 11mm Crimp Top MacroVial 250µL, Fused Insert              | Clear         | Yes     | 12x32          | Fused Conical | 500µL        | 350µL         | <2            | C4011-LV1W | 100     |
| 11mm Crimp/Snap MacroVial 250µL, Fused Insert             | Amber         | No      | 12x32          | Fused Conical | 500µL        | 350µL         | <2            | C4011-LV2  | 100     |
| 11mm Crimp Top MacroVial 250µL, Fused Insert              | Amber         | Yes     | 12x32          | Fused Conical | 500µL        | 350µL         | <2            | C4011-LV2W | 100     |
| 11mm Crimp Top Micro-V Microsampling Vial, 15µL Reservoir | Clear         | No      | 12x32          | High Recovery | 1.5mL        | 1.1mL         | <4            | C4011-V1   | 100     |
| 11mm Crimp Top 1.5mL High Recovery MicroVial              | Clear         | No      | 12x32          | High Recovery | 1.7mL        | 1.3mL         | <4            | C4011-9    | 100     |
| 11mm Crimp Top, Wide Opening, silanized*                  | Clear         | No      | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-S1   | 100     |
|   | Clear         | Yes     | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-S1W  | 100     |
|   | Amber         | Yes     | 12x32          | Flat Bottom   | 2mL          | 1.5mL         | <170          | C4011-S2W  | 100     |
| 11mm Crimp/Snap 250µL MicroVial                           | Polypropylene | No      | 12x32          | Conical Base  | 475µL        | 300µL         | <2            | C4011-13   | 100     |
| 11mm Crimp/Snap 600µL MicroVial                           | Polypropylene | No      | 12x32          | Conical Base  | 600µL        | 400µL         | <4            | C4011-16   | 100     |
| 11mm Crimp/Snap 800µL MicroVial                           | Polypropylene | No      | 12x32          | Conical Base  | 800µL        | 600µL         | <6            | C4011-11   | 100     |



### National 11mm crimp top vials and inserts (continued)

| Description                                | Glass         | Patched | Dimension (mm) | Profile         | Total Volume | Usable Volume | Residual (µL) | Cat. No.   | Pack of |
|--|---------------|---------|----------------|-----------------|--------------|---------------|---------------|------------|---------|
| 11mm Crimp/Snap 850µL AP-2000 MaxVial      | Polypropylene | No      | 12x32          | High Recovery   | 825µL        | 650µL         | <8            | C4011-15   | 1000    |
| 11mm Crimp/Snap 1mL Vial                   | Polypropylene | No      | 12x32          | Flat Bottom     | 1000µL       | 800µL         | <80           | C4011-14   | 100     |
| 11mm Crimp/Snap 1mL TPX High Recovery Vial | TPX           | No      | 12x32          | High Recovery   | 1000µL       | 750µL         | <8            | C4011-24   | 100     |
| 350µL Insert                               | Clear         | –       | 6x31           | Pulled Point    | 400µL        | 350µL         | <4            | C4010-627L | 100     |
| 300µL Insert                               | Clear         | –       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-629  | 100     |
| 350µL Insert                               | Clear         | –       | 6x31           | Precision Point | 400µL        | 350µL         | <2            | C4010-629L | 100     |
| 300µL Insert, Graduation Marks             | Polypropylene | –       | 6x30           | Conical         | 325µL        | 250µL         | <2            | C4010-629P | 100     |
| 300µL Polyspring Insert                    | Clear         | –       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-630  | 100     |
|  | Polypropylene | –       | 6x30           | Conical         | 325µL        | 250µL         | <2            | C4010-630P | 100     |
| 400µL MicroSert Insert                     | Clear         | –       | 6x31           | Flat Bottom     | 500µL        | 400µL         | <25           | C4011-631  | 500     |
| 300µL Insert, silanized                    | Clear         | –       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-S629 | 100     |
| 300µL Polyspring Insert, silanized         | Clear         | –       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-S630 | 100     |
| 400µL MicroSert Insert, silanized          | Clear         | –       | 6x31           | Flat Bottom     | 500µL        | 400µL         | <25           | C4011-S631 | 500     |

## National 11mm crimp top closures

- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Aluminum crimp closures provide a secure leak-resistant seal
- Aluminum seals must be applied with a crimping tool
- Closures are shipped in sealed polybags to prevent contamination during transport
- Synthetic PTFE/Red Rubber seal is specially formulated for improved background performance
- First crimp cap with assembled aluminum liner for analysis of elastomers, polymers, phthalates, halogenated compounds and silicones
- First crimp cap with tight PTFE sealing disk due to additional silicone ring



### National 11mm crimp top closures

| Description                                       | Cap Color                        | Cap Material              | Septum                           | Hardness °shore | Thickness (mm) | Cat. No.  | Pack of |
|---|----------------------------------|---------------------------|----------------------------------|-----------------|----------------|-----------|---------|
| 11mm Crimp Cap, 5.5mm hole                        | Silver                           | Aluminum                  | Clear PTFE/Natural Red Rubber    | 60              | 1.0            | C4011-1AP | 100     |
|   | Silver                           | Aluminum                  | Clear PTFE/Natural Red Rubber    | 60              | 1.0            | C4011-1A  | 1000    |
|   | Blue                             | Aluminum                  | Clear PTFE/Natural Red Rubber    | 60              | 1.0            | C4011-98B | 100     |
|   | Green                            | Aluminum                  | Clear PTFE/Natural Red Rubber    | 60              | 1.0            | C4011-98G | 100     |
|   | Red                              | Aluminum                  | Clear PTFE/Natural Red Rubber    | 60              | 1.0            | C4011-98R | 100     |
|   | Yellow                           | Aluminum                  | Clear PTFE/Natural Red Rubber    | 60              | 1.0            | C4011-98Y | 100     |
|   | Silver                           | Aluminum                  | Red PTFE/White Silicone/Red PTFE | 45              | 1.0            | C4011-2A  | 100     |
| 11mm Crimp Cap, 5.5mm hole, Mixed Color, 200 each | Silver                           | Aluminum                  | Red PTFE/White Silicone          | 45              | 1.3            | C4011-4A  | 100     |
|   | Blue                             | Aluminum                  | Red PTFE/White Silicone          | 45              | 1.3            | C4011-4B  | 100     |
|   | Red                              | Aluminum                  | Red PTFE/White Silicone          | 45              | 1.3            | C4011-4R  | 100     |
|   | Silver                           | Aluminum                  | Solid PTFE Disk                  | 53              | 0.25           | C4011-6A  | 1000    |
|   | Silver                           | Aluminum                  | PTFE/Synthetic Red Rubber        | 35              | 1.0            | C4011-7A  | 100     |
|   | Blue                             | Aluminum                  | PTFE/Synthetic Red Rubber        | 35              | 1.0            | C4011-7B  | 1000    |
|   | Green                            | Aluminum                  | PTFE/Synthetic Red Rubber        | 35              | 1.0            | C4011-7G  | 1000    |
| Red   | Aluminum                         | PTFE/Synthetic Red Rubber | 35                               | 1.0             | C4011-7R       | 1000      |         |
| 11mm Crimp Cap, 5.5mm hole, Mixed Color, 200 each | Silver, Blue, Green, Red, Yellow | Aluminum                  | PTFE/Synthetic Red Rubber        | 35              | 1.0            | C4011-7K  | 1000    |

For more information, visit [thermofisher.com/national](https://thermofisher.com/national)

## National 11mm crimping and decrimping tools

- Crimping tools provide a reproducible, secure vial closure
- Manual decrimping tools allow easy removal of aluminum seals without breakage
- Clean room crimpers and decrimpers can be autoclaved



Items not shown to scale

### National 11mm crimping and decrimping tools

| Description                                | Use  | Cat. No.    | Pack of |
|--|--|-------------|---------|
| Manual Crimper                             | Attaches 11mm aluminum crimp seals           | C4012-100   | 1       |
| Manual Decrimper                           | Removes 11mm aluminum crimp seals            | C4012-102   | 1       |
| Manual stainless steel Cleanroom Crimper   | Attaches 11mm crimp seals                    | C4012-100SS | 1       |
| Manual stainless steel Cleanroom Decrimper | Removes 11mm crimp seals without vial damage | C4012-102SS | 1       |

For electronic crimpers and decrimpers look on page 2-091

## National 11mm crimp top convenience kits

- Save time during sample preparation
- Reduce the risk of contamination

### Unassembled kits

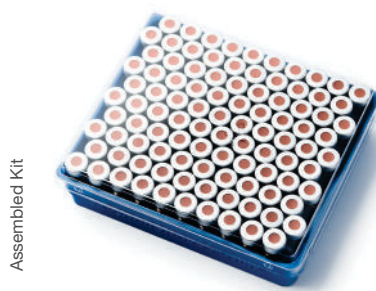
- Includes 100 vials and 100 caps with pre-assembled septa
- Reusable two compartment trays protect vials and closure while keeping matching supplies together
- Clear trays make it easy to keep track of available supplies without opening containers



Convenience Kit

### Assembled kits

- Include 100 vials with pre-attached caps and septa
- Packaged in convenient vial trays with clear covers or in economical polybags



Assembled Kit



Convenience Kit

Items not shown to scale

### National 11mm crimp top convenience kits

| Kit Type  | Glass | Patched | Cap Color | Septum                | Vial Cat. No.         | Cap Cat. No. | Cat. No.   | Pack of |
|---|-------|---------|-----------|-----------------------|-----------------------|--------------|------------|---------|
| Convenience Kit, Standard Opening Crimp Top Vial                | Clear | No      | Silver    | Clear PTFE/Red Rubber | C4012-1               | C4011-1AHP   | C4012-88   | 500     |
| Convenience Kit, Wide Opening Crimp Top Vial                    | Clear | No      | Silver    | Clear PTFE/Red Rubber | C4011-1               | C4011-1AP    | C4011-87   | 100     |
|   | Clear | Yes     | Silver    | Clear PTFE/Red Rubber | C4011-1W              | C4011-1AP    | C4011-87W  | 100     |
|   | Clear | No      | Silver    | Clear PTFE/Red Rubber | C4011-1               | C4011-1AP    | C4011-88   | 500     |
| Kit includes Polyspring Tapered Insert for small sample volumes | Clear | No      | Silver    | Clear PTFE/Red Rubber | C4011-1/<br>C4010-630 | C4011-1AP    | C4011-95   | 100     |
| Assembled Kit, Wide Opening Crimp Top Vial, Nitrogen purged     | Clear | No      | Silver    | Clear PTFE/Red Rubber | C4011-1               | C4011-1AP    | C4011-1CV  | 100     |
|   | Amber | Yes     | Silver    | Clear PTFE/Red Rubber | C4011-2W              | C4011-1AP    | C4011-2WCV | 100     |

## National 11mm crimp top vial storerooms

- Storerooms organize supplies and save valuable bench space
- 6 Drawer Mini-Storeroom holds 500 vials and closures
- 9 Drawer Storeroom holds 2000 vials and closures



Items not shown to scale

### National 11mm crimp top vial storerooms

| Description  | Glass | Patched | Cap Color | Septum                | Vial Cat. No. | Cap Cat. No. | Cat. No.   | Pack of |
|--|-------|---------|-----------|-----------------------|---------------|--------------|------------|---------|
| 6 Drawer Mini-Storeroom, 500 pieces Caps and Vials | Clear | Yes     | Silver    | Clear PTFE/Red Rubber | C4011-1W      | C4011-1AP    | C4011-688W | 1       |
| 6 Drawer Mini-Storeroom – Cabinet Only             | –     | –       | –         | –                     | –             | –            | C4000-MS   | 1       |
| 9 Drawer Storeroom – Cabinet Only                  | –     | –       | –         | –                     | –             | –            | C4075-500  | 1       |

## National 11mm crimp top vial racks

- Polypropylene vial racks are resistant to most solvents
- Racks feature alphanumeric indexing for easier vial identification
- Racks can be stacked for efficient storage



Items not shown to scale

### National 11mm crimp top vial racks

| Description  | Capacity        | Cat. No.  | Pack of |
|--|-----------------|-----------|---------|
| PVC storage rack for 12x32mm vials with clear lid              | 100vials, 10x10 | C4011-25A | 1       |
| Polypropylene storage rack for 12x32mm vials, no lid, reusable | 50 vials, 5x10  | C4012-25  | 1       |

For more information, visit [thermofisher.com/national](http://thermofisher.com/national)



## National 11mm wide opening Snap-It vials

2mL, 12x32mm wide opening Thermo Scientific™ Snap-It vials and inserts

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- I.D. vials feature a write-on patch with graduation for convenient sample identification
- Wide neck opening design, allows easy filling, requires Micro-Inserts with a diameter of 6mm
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Optional silanized (deactivated) glass provides optimal recovery of critical polar, labile or OH-interacting compounds
- Polyspring inserts are self-aligning and provide a cushion against needle contact
- Precision point insert minimizes residual sample loss
- Pulled point inserts are an economical choice for noncritical applications
- Glastic vial features a glass insert pre-inserted inside of a clear TPX vial
- Snap-It vials can be used with snap caps or aluminum crimp seal closures



### National 11mm wide opening snap-it vials and inserts

| Description   | Glass         | Patched | Dimension (mm) | Profile        | Total Volume | Usable Volume | Residual (µL) | Cat. No.  | Pack of |
|---|---------------|---------|----------------|----------------|--------------|---------------|---------------|-----------|---------|
| 11mm Snap-It Vial                                     | Clear         | No      | 12x32          | Flat Bottom    | 2mL          | 1.5mL         | <170          | C4011-5   | 100     |
|   | Clear         | Yes     | 12x32          | Flat Bottom    | 2mL          | 1.5mL         | <170          | C4011-5W  | 100     |
|   | Amber         | No      | 12x32          | Flat Bottom    | 2mL          | 1.5mL         | <170          | C4011-6   | 100     |
|   | Amber         | Yes     | 12x32          | Flat Bottom    | 2mL          | 1.5mL         | <170          | C4011-6W  | 100     |
| 11mm Snap-It MacroVial 250µL, Fused Insert            | Clear         | No      | 12x32          | Fused Conical  | 500µL        | 350µL         | <2            | C4011-LV1 | 100     |
|   | Amber         | No      | 12x32          | Fused Conical  | 500µL        | 350µL         | <2            | C4011-LV2 | 100     |
| 11mm Snap-It High Recovery MicroVial, 1.5mL           | Clear         | No      | 12x32          | High Recovery  | 1.7mL        | 1.3mL         | <4            | C4011-4   | 100     |
| 11mm Snap-It Vial, silanized                          | Clear         | No      | 12x32          | Flat Bottom    | 2mL          | 1.5mL         | <170          | C4011-S5  | 100     |
|   | Clear         | Yes     | 12x32          | Flat Bottom    | 2mL          | 1.5mL         | <170          | C4011-S5W | 100     |
|   | Amber         | Yes     | 12x32          | Flat Bottom    | 2mL          | 1.5mL         | <170          | C4011-S6W | 100     |
|   | Clear         | No      | 12x32          | High Recovery  | 1.5mL        | 1.1mL         | <4            | C4011-S4  | 100     |
| 11mm Snap-It Vial, Total Recovery with 10µL Reservoir | Clear         | No      | 12x32          | Deep Well Base | 1.5mL        | 1.2mL         | <1            | C4011-9TR | 100     |
| 11mm Snap-It 250µL MicroVial                          | Polypropylene | No      | 12x32          | Conical Base   | 475µL        | 300µL         | <2            | C4011-13  | 100     |



### National 11mm wide opening snap-it vials and inserts (continued)

| Description                                | Glass         | Patched | Dimension (mm) | Profile       | Total Volume | Usable Volume | Residual (µL) | Cat. No. | Pack of |
|--|---------------|---------|----------------|---------------|--------------|---------------|---------------|----------|---------|
| 11mm Snap-It 600µL MicroVial               | Polypropylene | No      | 12x32          | Conical Base  | 600µL        | 400µL         | <4            | C4011-16 | 100     |
| 11mm Snap-It 800µL MicroVial               | Polypropylene | No      | 12x32          | Conical Base  | 800µL        | 600µL         | <6            | C4011-11 | 100     |
| 11mm Snap-It 850µL AP-2000 MaxVial         | Polypropylene | No      | 12x32          | High Recovery | 825µL        | 650µL         | <8            | C4011-15 | 1000    |
| 11mm Snap-It 1mL Vial                      | Polypropylene | No      | 12x32          | Flat Bottom   | 1000µL       | 800µL         | <80           | C4011-14 | 100     |
| 11mm Snap-It 1mL TPX High Recovery Vial    | TPX           | No      | 12x32          | High Recovery | 1000µL       | 750µL         | <8            | C4011-24 | 100     |
| 11mm Snap-It Glastic Glass Insert/TPX Vial | Clear         | No      | 12x32          | Insert Vial   | 475µL        | 350µL         | <4            | C4012-15 | 100     |



### National 11mm wide opening snap-it vials and inserts (continued)

| Description                        | Glass         | Patched | Dimension (mm) | Profile         | Total Volume | Usable Volume | Residual (µL) | Cat. No.   | Pack of |
|------------------------------------|---------------|---------|----------------|-----------------|--------------|---------------|---------------|------------|---------|
| 350µL Insert                       | Clear         | -       | 6x31           | Pulled Point    | 400µL        | 350µL         | <4            | C4010-627L | 100     |
| 300µL Insert                       | Clear         | -       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-629  | 100     |
| 350µL Insert                       | Clear         | -       | 6x31           | Precision Point | 400µL        | 350µL         | <2            | C4010-629L | 100     |
| 300µL Insert, Graduation Marks     | Polypropylene | -       | 6x30           | Conical         | 325µL        | 250µL         | <2            | C4010-629P | 100     |
| 300µL Polyspring Insert            | Clear         | -       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-630  | 100     |
| 400µL MicroSert Insert             | Clear         | -       | 6x31           | Flat Bottom     | 500µL        | 400µL         | <25           | C4011-631  | 500     |
| 300µL Insert, silanized            | Clear         | -       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-S629 | 100     |
| 300µL Polyspring Insert, silanized | Clear         | -       | 6x29           | Conical         | 375µL        | 300µL         | <1            | C4010-S630 | 100     |
| 400µL MicroSert Insert, silanized  | Clear         | -       | 6x31           | Flat Bottom     | 500µL        | 400µL         | <25           | C4011-S631 | 500     |

For more information, visit [thermofisher.com/national](https://www.thermofisher.com/national)

## National 11mm wide opening Snap-It caps and septa

- Redesign of locking tabs provides easier application and removal of caps
- Enlarged open area allows for needle penetration across the entire vial opening
- Textured outer surface for easier gripping and improved detection by autosamplers with optical vial sensors
- Fully compatible with all Snap-It vials
- Snap-It caps are easy to apply and easy to remove
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Snap-It caps eliminate the need for crimping or de-capping tools
- Polyethylene caps are chemically inert and suitable for most chromatography applications
- Closures are shipped in sealed polybags to prevent contamination during transport
- Integral Molded Polyethylene cap is an economical choice for routine HPLC applications, but with low sealing property and zero resealing capacity



### National 11mm Snap-It caps and septa

| Description                                | Cap Color    | Cap Material            | Septum                           | Hardness shore | Thickness (mm) | Cat. No.    | Pack of |
|--|--------------|-------------------------|----------------------------------|----------------|----------------|-------------|---------|
| 11mm Snap-It Cap, thinned penetration area | Clear        | Polyethylene            | Integral Molded In Polyethylene  | –              | –              | C4011-50    | 100     |
|  | Blue         | Polyethylene            | Integral Molded In Polyethylene  | –              | –              | C4011-50B   | 100     |
|  | Green        | Polyethylene            | Integral Molded In Polyethylene  | –              | –              | C4011-50G   | 100     |
|  | Red          | Polyethylene            | Integral Molded In Polyethylene  | –              | –              | C4011-50R   | 100     |
| 11mm Snap-It Cap, 6mm hole                 | Clear        | Polyethylene            | Clear PTFE/Synthetic Red Rubber  | 60             | 1.0            | C4011-51    | 100     |
|  | Blue         | Polyethylene            | Clear PTFE/Synthetic Red Rubber  | 60             | 1.0            | C4011-51B   | 100     |
|  | Black        | Polyethylene            | Clear PTFE/Synthetic Red Rubber  | 60             | 1.0            | C4011-51BLK | 100     |
|  | Green        | Polyethylene            | Clear PTFE/Synthetic Red Rubber  | 60             | 1.0            | C4011-51G   | 100     |
|  | Red          | Polyethylene            | Clear PTFE/Synthetic Red Rubber  | 60             | 1.0            | C4011-51R   | 100     |
|  | Clear        | Polyethylene            | White Virgin PTFE, 0.01"         | 53             | 0.25           | C4011-52    | 100     |
|  | Blue         | Polyethylene            | White Virgin PTFE, 0.01"         | 53             | 0.25           | C4011-52B   | 100     |
|  | Green        | Polyethylene            | White Virgin PTFE, 0.01"         | 53             | 0.25           | C4011-52G   | 100     |
|  | Red          | Polyethylene            | White Virgin PTFE, 0.01"         | 53             | 0.25           | C4011-52R   | 100     |
|  | Yellow       | Polyethylene            | White Virgin PTFE, 0.01"         | 53             | 0.25           | C4011-52Y   | 100     |
|  | Clear        | Polyethylene            | Red PTFE/White Silicone/Red PTFE | 45             | 1.0            | C4011-53    | 100     |
|  | Blue         | Polyethylene            | Red PTFE/White Silicone/Red PTFE | 45             | 1.0            | C4011-53B   | 100     |
|  | Red          | Polyethylene            | Red PTFE/White Silicone/Red PTFE | 45             | 1.0            | C4011-53R   | 100     |
|  | Yellow       | Polyethylene            | Red PTFE/White Silicone/Red PTFE | 45             | 1.0            | C4011-53Y   | 100     |
|  | Clear        | Polyethylene            | Red PTFE/White Silicone          | 50             | 1.0            | C4011-54    | 100     |
|  | Blue         | Polyethylene            | Red PTFE/White Silicone          | 50             | 1.0            | C4011-54B   | 100     |
| Black                                      | Polyethylene | Red PTFE/White Silicone | 50                               | 1.0            | C4011-54BLK    | 100         |         |
| Green                                      | Polyethylene | Red PTFE/White Silicone | 50                               | 1.0            | C4011-54G      | 100         |         |

## National 11mm Snap-It caps and septa (continued)

| Description                | Cap Color | Cap Material | Septum                             | Hardness shore | Thickness (mm) | Cat. No.    | Pack of |
|----------------------------|-----------|--------------|------------------------------------|----------------|----------------|-------------|---------|
| 11mm Snap-It Cap, 6mm hole | Red       | Polyethylene | Red PTFE/White Silicone            | 50             | 1.0            | C4011-54R   | 100     |
|                            | Yellow    | Polyethylene | Red PTFE/White Silicone            | 50             | 1.0            | C4011-54Y   | 100     |
|                            | Clear     | Polyethylene | Blue PTFE/White Silicone, Pre-slit | 55             | 1.0            | C4011-55    | 100     |
|                            | Blue      | Polyethylene | Blue PTFE/White Silicone, Pre-slit | 55             | 1.0            | C4011-55B   | 100     |
|                            | Black     | Polyethylene | Blue PTFE/White Silicone, Pre-slit | 55             | 1.0            | C4011-55BLK | 100     |
|                            | Green     | Polyethylene | Blue PTFE/White Silicone, Pre-slit | 55             | 1.0            | C4011-55G   | 100     |
|                            | Red       | Polyethylene | Blue PTFE/White Silicone, Pre-slit | 55             | 1.0            | C4011-55R   | 100     |
|                            | Yellow    | Polyethylene | Blue PTFE/White Silicone, Pre-slit | 55             | 1.0            | C4011-55Y   | 100     |
|                            | Clear     | Polyethylene | Red PTFE/White Silicone, Star-slit | 45             | 1.3            | C4011-59    | 100     |
|                            | Orange    | Polyethylene | Red PTFE/White Silicone, Star-slit | 55             | 1.0            | C4011-590OR | 1000    |

## National 11mm wide opening Snap-It cap convenience kits

- Save time during sample preparation
- Reduce the risk of contamination

### Unassembled kits

- Includes 100 vials and 100 caps with pre-assembled septa
- Reusable two compartment trays protect vials and closure while keeping matching supplies together
- Clear trays make it easy to keep track of available supplies without opening containers



Items not shown to scale

## National 11mm wide opening Snap-It cap convenience kits

| Kit Type                                    | Glass | Patched | Cap Color | Septum                  | Vial Cat. No. | Cap Cat. No. | Cat. No.   | Pack of |
|---|-------|---------|-----------|-------------------------|---------------|--------------|------------|---------|
| Convenience Kit, Wide Opening Snap Cap Vial | Amber | Yes     | Clear     | Clear PTFE/Red Rubber   | C4011-6W      | C4011-51     | C4011-72AW | 100     |
|   | Clear | No      | Clear     | Red PTFE/White Silicone | C4011-5       | C4011-54     | C4011-73   | 100     |
|   | Clear | Yes     | Clear     | Red PTFE/White Silicone | C4011-5W      | C4011-54     | C4011-73W  | 100     |
|   | Clear | No      | Pink      | Red PTFE/White Silicone | C4011-5       | C4011-54P    | C4011-73P  | 100     |

For more information, visit [thermofisher.com/national](https://www.thermofisher.com/national)

## National 13mm crimp/snap vials

4mL, 15x45mm crimp/snap cap vials and inserts

- Superior quality 1st hydrolytic class glass (Type 1) in clear feature a 13mm crimp/snap-ring finish – use with 13mm aluminum Seals or Thermo Scientific™ National™ Target™ Kim-Snap™ Closures
- Polyspring inserts are self-aligning and provide a cushion against needle contact



### National 13mm crimp/snap cap vials and inserts

| Description                     | Glass | Patched | Dimension (mm) | Profile      | Total Volume | Usable Volume | Residual (µL) | Cat. No.  | Pack of |
|---------------------------------|-------|---------|----------------|--------------|--------------|---------------|---------------|-----------|---------|
| 13mm Crimp/Snap Vial            | Clear | No      | 15x45          | Flat Bottom  | 4.8mL        | 4.25mL        | <800µL        | C4015-4   | 100     |
| 800µL Polyspring Conical Insert | Clear | –       | 8x38           | Pulled Point | 950µL        | 800µL         | <9µL          | C4015-638 | 100     |
| 350µL Conical Insert            | Clear | –       | 6x40           | Pulled Point | 375µL        | 300µL         | <8µL          | C4015-643 | 100     |

## National 13mm crimp/snap caps and septa

- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Aluminum crimp closures provide a secure leak-resistant seal
- Aluminum seals must be applied with a crimping tool
- Synthetic PTFE/red rubber seal is specially formulated for improved background performance
- Kim-Snap closures provide a tight seal without the need of a crimper



### National 13mm crimp/snap caps and septa

| Description              | Cap Color | Cap Material | Septum                          | Hardness °shore | Thickness (mm) | Cat. No.  | Pack of |
|--------------------------|-----------|--------------|---------------------------------|-----------------|----------------|-----------|---------|
| 13mm Crimp Cap, 6mm hole | Silver    | Aluminum     | Clear PTFE/Synthetic Red Rubber | 65              | 1.3            | C4015-1AP | 144     |

## National 13mm crimp/snap crimping and decrimping tools

- Crimping tools provide a reproducible, secure vial closure
- Manual decrimping tools allow easy removal of aluminum seals without breakage
- Clean room crimpers and decrimpers can be autoclaved



Items not shown to scale

### National 13mm crimp/snap crimping and decrimping tools

| Description                                | Use  | Cat. No.    | Pack of |
|--|--|-------------|---------|
| Manual Crimper                             | Attaches 13mm aluminum crimp seals           | C4013-100   | 1       |
| Manual Decrimper                           | Removes 13mm aluminum crimp seals            | C4013-102   | 1       |
| Manual stainless steel Cleanroom Crimper   | Attaches 13mm crimp seals                    | C4013-100SS | 1       |
| Manual stainless steel Cleanroom Decrimper | Removes 13mm crimp seals without vial damage | C4013-102SS | 1       |

For electronic crimpers and decrimpers look on page 2-091

For more information, visit [thermofisher.com/national](https://www.thermofisher.com/national)

## National 4ml screw thread vials

4mL, 15x45mm screw thread vials and inserts

- 13-425 thread finish
- I.D. vials feature a write-on patch with graduation for convenient sample identification
- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Optional silanized (deactivated) glass provides optimal recovery of critical polar, labile or OH-interacting compounds
- Polyspring inserts are self-aligning and provide a cushion against needle contact



### National 4ml screw thread vials and inserts

| Description                                   | Glass         | Patched | Dimension (mm) | Profile      | Total Volume | Usable Volume | Residual (µL) | Cat. No.  | Pack of |
|---|---------------|---------|----------------|--------------|--------------|---------------|---------------|-----------|---------|
| 13-425 Screw Thread Vial                      | Clear         | No      | 15x45          | Flat Bottom  | 4mL          | 4mL           | <800          | C4015-1   | 100     |
|   | Clear         | Yes     | 15x45          | Flat Bottom  | 4mL          | 4mL           | <800          | C4015-11W | 100     |
|   | Amber         | No      | 15x45          | Flat Bottom  | 4mL          | 4mL           | <800          | C4015-2   | 100     |
|   | Amber         | Yes     | 15x45          | Flat Bottom  | 4mL          | 4mL           | <800          | C4015-2W  | 100     |
| 13-425 Screw Thread AP2000 High Recovery Vial | Clear         | No      | 15.25x45       | Tapered Base | 3.5mL        | 3.5mL         | <15           | C4015-9   | 100     |
|   | Polypropylene | No      | 15x45          | Tapered Base | 2.5mL        | 2mL           | <15           | C4015-14  | 100     |
| 13-425 Screw Thread Vial, silanized           | Clear         | No      | 15x45          | Flat Bottom  | 4mL          | 4mL           | <800          | C4015-S1  | 100     |
| 800µL Polyspring Conical Insert               | Clear         | -       | 8x38           | Pulled Point | 950µL        | 800µL         | <9            | C4015-638 | 100     |
| 350µL Conical Insert                          | Clear         | -       | 6x40           | Pulled Point | 375µL        | 300µL         | <8            | C4015-643 | 100     |

## National 13-425 screw thread caps and septa

- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Phenolic resin caps perform well at high temperatures and are compatible with exposure to corrosives
- Open top caps are designed to be used with any of our 13mm septa
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Caps with bonded septa resist dislodging during injection when using large diameter blunt needles
- Integral Molded Polypropylene cap is an economical choice when septum resealing is not required



### National 13-425 screw thread caps and septa

Images shown are 70% to scale

| Description  | Cap Color | Cap Material  | Septum                             | Hardness shore | Thickness (mm) | Cat. No.    | Pack of |
|--|-----------|---------------|------------------------------------|----------------|----------------|-------------|---------|
| 13mm Open Top Screw Cap, 13-425 thread, 8.5mm hole | Black     | Polypropylene | –                                  | –              | –              | C4015-1A    | 100     |
| Septum for 13-425 Screw Caps                       | –         | –             | White Virgin PTFE, 0.01"           | 53             | 0.25           | C4015-10    | 1000    |
|  | –         | –             | Red PTFE/White Silicone/Red PTFE   | 55             | 1.25           | C4015-40    | 100     |
|  | –         | –             | Red PTFE/White Silicone, Soft      | 45             | 1.5            | C4015-45    | 100     |
|  | –         | –             | Red PTFE/White Silicone            | 50             | 1.5            | C4015-60    | 100     |
| 13mm Open Top Screw Cap, 13-425 thread, 8.5mm hole | Black     | Polypropylene | Ivory PTFE/Red Rubber              | 35             | 1.5            | C4015-30A   | 100     |
|  | Black     | Polypropylene | Red PTFE/White Silicone/Red PTFE   | 55             | 1.25           | C4015-40A   | 100     |
|  | White     | Polypropylene | Red PTFE/White Silicone, Soft      | 45             | 1.5            | C4015-45W   | 100     |
|  | Black     | Polypropylene | Blue PTFE/White Silicone, Pre-slit | 55             | 1.5            | C4015-55BLK | 100     |
|  | Black     | Polypropylene | Red PTFE/White Silicone            | 60             | 1.5            | C4015-75A   | 100     |
| 13mm Single Piece Screw Cap, 13-425 thread         | Natural   | Polypropylene | Integral Molded Polypropylene      | –              | 0.25           | C4015-5A    | 100     |
| 13mm Open Top Screw Cap, 13-425 thread, 8.5mm hole | Black     | Phenol        | Red PTFE/White Silicone            | 60             | 1.5            | C4015-66A   | 100     |
| 13mm Open Top Screw Cap, 13-425 thread, 8.5mm hole | Black     | Polypropylene | Bonded Red PTFE/White Silicone     | 45             | 1.5            | C4015-67A   | 100     |

For more information, visit [thermofisher.com/national](http://thermofisher.com/national)



## National 4ml screw thread convenience kits

- Save time during sample preparation
- Reduce the risk of contamination

### Unassembled kits

- Includes 100 vials and 100 caps with pre-assembled septa



C4015-88

### Assembled kits

- Include 100 vials with pre-attached caps and septa
- Packaged in convenient vial trays with clear covers or in economical polybags



C4015-21



C4015-017

## National 4ml screw thread convenience kits

Items not shown to scale

| Kit Type                  | Glass | Patched | Cap Color | Septum                   | Vial Cat. No. | Cap/Septum Cat. No. | Cat. No.   | Pack of |
|---------------------------|-------|---------|-----------|--------------------------|---------------|---------------------|------------|---------|
| Convenience Kit           | Clear | No      | Black     | Red PTFE/White Silicone  | C4015-1       | C4015-75A           | C4015-88   | 100     |
| Assembled Kit             | Clear | No      | Black     | White Virgin PTFE, 0.01" | C4015-1       | C4015-1A/C4015-10   | C4015-21   | 100     |
|                           | Clear | No      | Black     | Red PTFE/White Silicone  | C4015-1       | C4015-75A           | C4015-17   | 100     |
|                           | Amber | No      | Black     | Red PTFE/White Silicone  | C4015-2       | C4015-75A           | C4015-17A  | 100     |
|                           | Amber | Yes     | Black     | Red PTFE/White Silicone  | C4015-2W      | C4015-75A           | C4015-17AW | 100     |
|                           | Clear | Yes     | Black     | Red PTFE/White Silicone  | C4015-11W     | C4015-75A           | C4015-17W  | 100     |
|                           | Clear | No      | Black     | PTFE/Red Rubber          | C4015-1       | C4015-66/73816T-13P | C4015-482A | 100     |
| Assembled Kit, in Polybag | Clear | No      | Black     | Red PTFE/White Silicone  | C4015-1       | C4015-75A           | C4015-017  | 100     |

## National 4mL screw thread vial racks

- Polypropylene vial racks are resistant to most solvents
- Racks feature alphanumeric indexing for easier vial identification
- Racks can be stacked for efficient storage



C4015-27



C4015-25

Items not shown to scale

## National 4mL Screw Thread Vial Racks

| Description  | Capacity        | Cat. No.  | Pack of |
|--|-----------------|-----------|---------|
| PVC storage rack for 15x45mm vials with clear lid              | 100vials, 10x10 | C4015-27A | 1       |
| Polypropylene storage rack for 15x45mm vials, no lid, reusable | 50 vials, 5x10  | C4015-25  | 1       |

## National shell vials and inserts

- Superior quality type 1 borosilicate and amber glass
- Polyethylene SepCap with starburst center design eases syringe needle penetration
- Convenient vial kits include equal quantities of vials and caps
- Polyspring inserts are self-aligning and provide a cushion against needle contact
- Microsampling vials allow maximum sample extraction without need for separate inserts

### Recommended for the following instruments:

- Alcott
- Gilson
- Shimadzu
- Waters (Wisp 96 respectively 48 Position Carousel)



## National shell vials and inserts

| Description  | Glass         | Patched | Dimension (mm) | Profile         | Total Volume | Usable Volume | Residual (µL) | Cat. No.   | Pack of |
|--|---------------|---------|----------------|-----------------|--------------|---------------|---------------|------------|---------|
| 1mL Shell Vial with SepCap                             | Clear         | No      | 8x40           | Flat Bottom     | 1.25mL       | 1mL           | <80           | C4015-96   | 200     |
|  | Amber         | No      | 8x40           | Flat Bottom     | 1.25mL       | 1mL           | <80           | C4015-99   | 200     |
|  | Polypropylene | No      | 8x40           | Flat Bottom     | 1.25mL       | 1mL           | <80           | C4015-95P  | 250     |
| 250µL Polyspring Conical Insert                        | Clear         | -       | 5x34           | Pulled Point    | 250µL        | 210µL         | <3            | C4015-96A  | 100     |
| 300µL Polyspring Conical Insert                        | Polypropylene | -       | 5x29           | Precision Point | 275µL        | 250µL         | <3            | C4015-96PA | 100     |
| 0.7mL Accuform Shell Vial with SepCap                  | Polypropylene | No      | 8x40           | Tapered Base    | 0.90mL       | 0.7mL         | <8            | C4015-94   | 1000    |
| 2mL Shell Vial with SepCap                             | Clear         | No      | 12x32          | Flat Bottom     | 2.4mL        | 1.8mL         | <200          | C4011-80   | 200     |
|  | Polypropylene | No      | 12x32          | Flat Bottom     | 2.4mL        | 1.8mL         | <200          | C4011-77P  | 1000    |
| 4mL Shell Vial with SepCap                             | Clear         | No      | 15x45          | Flat Bottom     | 5.5mL        | 4mL           | <800          | C4015-48   | 100     |
|  | Polypropylene | No      | 15x45          | Flat Bottom     | 5.5mL        | 4mL           | <800          | C4015-47P  | 100     |
| 800µL Polyspring Conical Insert                        | Clear         | -       | 6x38           | Pulled Point    | 950µL        | 800µL         | <9            | C4015-638  | 100     |
| Positive Displacement Vial for Alcott with PE Plug Cap | Clear         | No      | 8x35           | Flat Bottom     | 1mL          | 900µL         | -             | C4008-50   | 1000    |

## National headspace vials

- Superior quality 1st hydrolytic class glass (Type 1)
- Headspace vials are available with either a round or flat base
- Round bottom vials are compatible with most autosamplers and more easily handled by robotic arms that lift the vial from the tray
- Flat bottom vials maximize heating efficiency in manual headspace sampling and are required for use in some instrument models
- Vials feature beveled or square edge finish
- The bevel edge on the lip of the vial provides additional sealing power for greater leak resistance under high pressure



### National headspace vials

Images shown are 90% to scale

| Description                   | Glass | Dimension (mm) | Finish       | Profile      | Total Volume (mL) | Usable Volume (mL) | Cat. No.  | Pack of |
|-------------------------------|-------|----------------|--------------|--------------|-------------------|--------------------|-----------|---------|
| 20mm Headspace Crimp Vial     | Clear | 22x38          | Beveled Edge | Flat Bottom  | 9                 | 6                  | C4020-60  | 1000    |
|                               | Clear | 22x38          | Square Rim   | Flat Bottom  | 9                 | 6                  | C4020-6   | 1000    |
|                               | Clear | 23x46          | Beveled Edge | Flat Bottom  | 12.5              | 10                 | C4020-10  | 100     |
|                               | Clear | 23x46          | Beveled Edge | Round Bottom | 12.5              | 10                 | C4020-210 | 100     |
|                               | Clear | 23x75          | Beveled Edge | Flat Bottom  | 21.5              | 20                 | C4020-20  | 100     |
|                               | Clear | 23x75          | Beveled Edge | Round Bottom | 21.5              | 20                 | C4020-2   | 100     |
| 18mm Screw Top Headspace Vial | Clear | 23x75          | Square Rim   | Flat Bottom  | 21.5              | 20                 | C4020-25  | 1000    |
|                               | Clear | 30x60          | Beveled Edge | Flat Bottom  | 27                | 25                 | C4020-27  | 1000    |
|                               | Clear | 22.5x46        | Screw Thread | Round Bottom | 12                | 10                 | C4020-180 | 125     |
|                               | Clear | 22.5x76        | Screw Thread | Round Bottom | 21                | 20                 | C4020-18  | 125     |

## National headspace caps and septa

- Aluminum seals are available in standard center hole and pressure release versions
- Pressure release seals (Aluminum-PR) are designed to open when internal pressure exceeds 3.0±0.5bar
- Use magnetic tinplate seals with CTC™ (Leap technologies), Gerstel and other magnetic transport autosamplers
- Pre-assembled caps and septa are convenient and minimize contamination from handling



Images shown are 50% to scale

### National headspace caps and septa

| Description                                 | Cap Color | Cap Material | Septum                                 | Hardness shore | Thickness (mm) | Cat. No.   | Pack of |
|---|-----------|--------------|--|----------------|----------------|------------|---------|
| 20mm Crimp Cap, 9.5mm hole                  | Silver    | Aluminum     | -                                      | -              | -              | C4020-3A   | 1000    |
| 20mm Tear-off Crimp Cap                     | Silver    | Aluminum     | -                                      | -              | -              | C4020-5A   | 1000    |
| 20mm Pressure Release Crimp Cap, 7.5mm hole | Silver    | Aluminum-PR  | -                                      | -              | -              | C4020-6A   | 1000    |
| Septum for 20mm Crimp Caps                  | -         | -            | 20mm Gray Bromobutyl Stopper           | 37             | -              | C4020-30   | 1000    |
|   | -         | -            | 20mm Tan PTFE/White Silicone           | 45             | 3.2            | C4020-32   | 100     |
|   | -         | -            | 20mm Gray PTFE/Red Rubber              | 50             | 3.0            | C4020-34   | 100     |
|   | -         | -            | 20mm Gray PTFE/Black Butyl Molded      | 50             | 3.0            | C4020-36   | 100     |
|   | -         | -            | Unfaced Black Rubber                   | 55             | 3.0            | C4020-40   | 100     |
| 20mm Crimp Cap, 9.5mm hole                  | Silver    | Aluminum     | Gray PTFE/Red Rubber                   | 50             | 3.0            | C4020-34A  | 100     |
| 20mm Pressure Release Crimp Cap, 8mm hole   | Silver    | Aluminum-PR  | Gray PTFE/Red Rubber                   | 50             | 3.0            | C4020-34AP | 100     |
| 20mm Crimp Cap, 9.5mm hole                  | Silver    | Aluminum     | Clear PTFE/Gray Butyl Rubber           | 50             | 3.0            | C4020-39A  | 100     |
| 20mm Pressure Release Crimp Cap, 8mm hole   | Silver    | Aluminum-PR  | Clear PTFE/Gray Butyl Rubber           | 50             | 3.0            | C4020-43AP | 100     |
| 20mm Crimp Cap, 9.5mm hole                  | Silver    | Aluminum     | Gray PTFE/Gray Butyl Rubber, Pharmafix | 50             | 3.0            | C4020-36A  | 100     |
| 20mm Pressure Release Crimp Cap, 8mm hole   | Silver    | Aluminum-PR  | Gray PTFE/Gray Butyl Rubber, Pharmafix | 50             | 3.0            | C4020-36AP | 100     |
| 20mm Crimp Cap, 9.5mm hole                  | Silver    | Aluminum     | Tan PTFE/White Silicone                | 45             | 3.2            | C4020-32A  | 100     |
| 20mm Pressure Release Crimp Cap, 8mm hole   | Silver    | Aluminum-PR  | Tan PTFE/White Silicone                | 45             | 3.2            | C4020-32AP | 100     |
| 20mm Magnetic Crimp Cap, 5mm hole           | Gold      | Tin-plated   | Clear PTFE/Translucent Blue Silicone   | 45             | 3.0            | C4020-38A  | 100     |
| 20mm Magnetic Crimp Cap, 8mm hole           | Gold      | Tin-plated   | Clear PTFE/Translucent Blue Silicone   | 45             | 3.0            | C4020-42A  | 100     |
| 20mm Pressure Release Crimp Cap, 7.5mm hole | Silver    | Aluminum-PR  | Clear PTFE/Translucent Blue Silicone   | 45             | 3.0            | C4020-42AP | 100     |
| 18mm Magnetic Screw Cap, 8mm hole           | Silver    | Steel        | 18mm Blue Silicone/Natural PTFE        | 45             | 2.0            | C4020-47   | 125     |
| 18mm Magnetic Screw Cap, 8mm hole, SPME     | Silver    | Steel        | 18mm Blue Silicone/PTFE, not prefitted | 30             | 1.0            | C4020-48   | 125     |

## National 20mm crimp top headspace unassembled convenience kits

- Include matched quantities of vials and silver aluminum seals with pre-assembled septa
- Convenience kits save time during sample preparation



Item not shown to scale

### National 20mm crimp top headspace unassembled convenience kits

| Kit Type   | Glass | Cap Color | Septum                                  | Vial Cat. No. | Cap Cat. No. | Cat. No.  | Pack of |
|--|-------|-----------|---|---------------|--------------|-----------|---------|
| Convenience Kit, 20mm Headspace Crimp Vial, Beveled Edge, Round Bottom, Pressure Release Crimp Cap, 7.5mm hole | Clear | Silver    | Gray PTFE/Black Butyl Rubber, Pharmafix | C4020-2       | C4020-36AP   | C4020-139 | 100     |
|  | Clear | Silver    | Tan PTFE/White Silicone                 | C4020-2       | C4020-32AP   | C4020-320 | 1000    |

## National 20mm headspace crimping and decrimping tools

- Crimping tools provide a reproducible, secure vial closure
- Manual decrimping tools allow easy removal of aluminum seals without breakage
- Decapping pliers are an economical choice for small quantities of vials
- Clean room crimpers and decrimpers can be autoclaved



Items not shown to scale

### National 20mm headspace crimping and decrimping tools

| Description                                | Use   | Cat. No.    | Pack of |
|--|---|-------------|---------|
| Manual Crimper                             | Attaches 20mm crimp seals                               | C4020-100   | 1       |
| Decapping Pliers                           | Removes 20mm crimp seals, Protective gloves recommended | C4020-101   | 1       |
| Manual Decrimper                           | Removes 20mm crimp seals                                | C4020-102   | 1       |
| Manual stainless steel Cleanroom Crimper   | Attaches 20mm crimp seals                               | C4020-100SS | 1       |
| Manual stainless steel Cleanroom Decrimper | Removes 20mm crimp seals without vial damage            | C4020-102SS | 1       |

For electronic crimpers and decrimpers look on page 2-091

## Sample storage screw thread vials, caps and septa

- Capacity ranges from 2-40mL
- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Eliminate leaching of ions
- Provide consistent pH for duration of sample storage life
- PTFE-Lined Solid-top storage caps
- PTFE film/PE foam backing offers broad chemical resistance
- Not autoclavable



Images shown are 70% to scale

### National sample storage screw thread vials

| Description       | Glass | Patched | Dimension (mm) | Profile     | Total Volume (mL) | Capacity (DRAMS) | Cat. No.  | Pack of |
|-------------------|-------|---------|----------------|-------------|-------------------|------------------|-----------|---------|
| 8-425 Screw Vial  | Clear | No      | 12x32          | Flat Bottom | 2                 | 0.5              | B7999-1   | 100     |
| 13-425 Screw Vial | Clear | No      | 15x45          | Flat Bottom | 4                 | 1                | B7999-2   | 100     |
| 15-425 Screw Vial | Clear | No      | 17x60          | Flat Bottom | 8                 | 2                | B7999-3   | 200     |
| 15-425 Screw Vial | Clear | No      | 19x65          | Flat Bottom | 12                | 3                | B7999-12  | 200     |
| 18-400 Screw Vial | Clear | No      | 21x70          | Flat Bottom | 16                | 4                | B7999-4   | 200     |
| 20-400 Screw Vial | Clear | No      | 23x85          | Flat Bottom | 22                | 6                | B7999-5   | 200     |
| 24-400 Screw Vial | Clear | No      | 28x95          | Flat Bottom | 40                | 8                | B7999-6   | 100     |
| 8-425 Screw Vial  | Amber | No      | 12x32          | Flat Bottom | 2                 | 0.5              | B7999-1A  | 100     |
| 13-425 Screw Vial | Amber | No      | 15x45          | Flat Bottom | 4                 | 1                | B7999-2A  | 100     |
| 15-425 Screw Vial | Amber | No      | 17x60          | Flat Bottom | 8                 | 2                | B7999-3A  | 200     |
| 15-425 Screw Vial | Amber | No      | 19x65          | Flat Bottom | 12                | 3                | B7999-12A | 200     |
| 18-400 Screw Vial | Amber | No      | 21x70          | Flat Bottom | 16                | 4                | B7999-4A  | 200     |
| 24-400 Screw Vial | Amber | No      | 28x95          | Flat Bottom | 40                | 8                | B7999-6A  | 100     |



Images shown are 70% to scale

### National sample storage screw thread caps and septa

| Description                 | Cap Color | Cap Material  | Septum                                  | Hardness shore | Thickness (mm) | Cat. No. | Pack of |
|-----------------------------|-----------|---------------|---|----------------|----------------|----------|---------|
| 8-425 Screw Cap             | White     | Urethane      | PTFE/PE Foam Liner                      | 75             | 1.3            | B7815-8  | 100     |
| 13-425 Screw Cap            | White     | Urethane      | PTFE/PE Foam Liner                      | 75             | 1.3            | B7815-13 | 100     |
| 15-425 Screw Cap            | White     | Polypropylene | PTFE/PE Foam Liner                      | 75             | 1.3            | B7815-15 | 100     |
| 18-400 Screw Cap            | White     | Polypropylene | PTFE/PE Foam Liner                      | 75             | 1.3            | B7815-18 | 100     |
| 20-400 Screw Cap            | White     | Polypropylene | PTFE/PE Foam Liner                      | 75             | 1.3            | B7815-20 | 100     |
| 24-400 Screw Cap            | White     | Polypropylene | PTFE/PE Foam Liner                      | 75             | 1.3            | B7815-24 | 100     |
| Septum for 13-425 Screw Cap | -         | -             | 0.01" White PTFE/0.05" Clear Silicone   | 50             | 1.5            | B7995-13 | 100     |
| Septum for 15-425 Screw Cap | -         | -             | 0.01" White PTFE/0.09" Clear Silicone   | 50             | 2.6            | B7995-15 | 100     |
| Septum for 18-400 Screw Cap | -         | -             | 0.01" White PTFE/0.05" Clear Silicone   | 50             | 1.5            | B7995-18 | 100     |
| Septum for 20-400 Screw Cap | -         | -             | 0.01" White PTFE/0.05" Clear Silicone   | 50             | 1.5            | B7995-20 | 100     |
| Septum for 24-400 Screw Cap | -         | -             | 0.01" White PTFE/0.09" Clear Silicone   | 50             | 2.6            | B7995-24 | 100     |
| Septum for 24-400 Screw Cap | -         | -             | 0.013" White PTFE/0.120" Clear Silicone | 50             | 3.3            | B7995-26 | 100     |
| Open top 13-425 Screw Cap   | Black     | Polypropylene | -                                       | -              | -              | B7807-13 | 100     |
| Open top 15-425 Screw Cap   | Black     | Polypropylene | -                                       | -              | -              | B7807-15 | 100     |
| Open top 18-400 Screw Cap   | Black     | Polypropylene | -                                       | -              | -              | B7807-18 | 100     |
| Open top 20-400 Screw Cap   | Black     | Polypropylene | -                                       | -              | -              | B7807-20 | 100     |
| Open top 24-400 Screw Cap   | White     | Polypropylene | -                                       | -              | -              | B7807-24 | 100     |

## National sample storage convenience kits

- Convenience kits save time during sample preparation
- Solid top convenience kits include matched quantities of vials and screw caps with pre-assembled septa
- Open top convenience kits contain shrink-wrapped vials and separately packaged caps and septa in polybags



B7990-2



B7800-20

Items not shown to scale

### National sample storage convenience kits

| Kit Type                                  | Glass | Total Volume (mL) | Cap Color     | Cap Material  | Septum                                 | Vial Cat. No. | Cap/Septum Cat. No.   | Cat. No.  | Pack of |
|---|-------|-------------------|---------------|---------------|--|---------------|-----------------------|-----------|---------|
| Screw Vial Convenience Kit, Solid-top Cap | Clear | 2                 | White         | Urethane      | PTFE/<br>Polyethylene<br>Foam Liner    | B7999-1       | B7815-8               | B7800-1   | 100     |
|   | Clear | 4                 | White         | Urethane      |  | B7999-2       | B7815-13              | B7800-2   | 100     |
|   | Clear | 8                 | White         | Polypropylene |  | B7999-3       | B7815-15              | B7800-3   | 200     |
|   | Clear | 12                | White         | Polypropylene |  | B7999-12      | B7815-15              | B7800-12  | 200     |
|   | Clear | 16                | White         | Polypropylene |  | B7999-4       | B7815-18              | B7800-4   | 200     |
|   | Clear | 22                | White         | Polypropylene |  | B7999-5       | B7815-20              | B7800-5   | 200     |
|   | Clear | 40                | White         | Polypropylene |  | B7999-6       | B7815-24              | B7800-6   | 100     |
|   | Amber | 2                 | White         | Urethane      |  | B7999-1A      | B7815-8               | B7800-1A  | 100     |
|   | Amber | 4                 | White         | Urethane      |  | B7999-2A      | B7815-13              | B7800-2A  | 100     |
|   | Amber | 8                 | White         | Polypropylene |  | B7999-3A      | B7815-15              | B7800-3A  | 200     |
|   | Amber | 12                | White         | Polypropylene |  | B7999-12A     | B7815-15              | B7800-12A | 200     |
|   | Amber | 16                | White         | Polypropylene |  | B7999-4A      | B7815-18              | B7800-4A  | 200     |
| Amber                                     | 40    | White             | Polypropylene | B7999-6A      | B7815-24                               | B7800-6A      | 100                   |           |         |
| Screw Vial Assembled Kit, Solid-top Cap   | Clear | 20                | White         | Polypropylene | PTFE/<br>Polyethylene<br>Foam Liner    | B7920-VO      | B7815-24              | B7800-20  | 100     |
|   | Amber | 20                | White         | Polypropylene |  | B7921-VO      | B7815-24              | B7800-20A | 100     |
| 0.01" White PTFE/ 0.05" Clear Silicone    | Clear | 4                 | Black         | Polypropylene | 0.01" White PTFE/ 0.05" Clear Silicone | B7999-2       | B7807-13/<br>B7995-13 | B7990-2   | 100     |
|   | Clear | 8                 | Black         | Polypropylene |  | B7999-3       | B7807-15/<br>B7995-15 | B7990-3   | 200     |
|   | Clear | 12                | Black         | Polypropylene |  | B7999-12      | B7807-15/<br>B7995-15 | B7990-12  | 200     |
|   | Clear | 22                | Black         | Polypropylene |  | B7999-5       | B7807-20/<br>B7995-20 | B7990-5   | 200     |
|   | Clear | 40                | White         | Polypropylene |  | B7999-6       | B7807-24/<br>B7995-24 | B7990-6   | 100     |
|   | Amber | 12                | Black         | Polypropylene |  | B7999-12A     | B7807-15/<br>B7995-15 | B7990-12A | 200     |
|   | Amber | 40                | White         | Polypropylene |  | B7999-6A      | B7807-24/<br>B7995-24 | B7990-6A  | 100     |

For more information, visit [thermofisher.com/national](http://thermofisher.com/national)



## National EPA screw vials

### EPA screw vial convenience kits

- Convenience kits save time during sample preparation
- Unassembled convenience kits include shrink-wrapped vials and separately packaged caps and septa in polybags
- Assembled kits include vials with pre-assembled caps and septa
- 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”



B7920

Items not shown to scale

### National epa screw vial convenience kits

| Kit Type                       | Glass | Total Volume (mL) | Dimension (mm) | Septum                                | Cat. No. | Pack of |
|--------------------------------|-------|-------------------|----------------|---------------------------------------|----------|---------|
| EPA Screw Vial Convenience Kit | Clear | 40                | 28x95          | 0.01" White PTFE/0.09" Clear Silicone | B7950-B  | 100     |
| EPA Screw Vial Assembled Kit   | Clear | 40                | 28x95          | 0.01" White PTFE/0.09" Clear Silicone | B7950    | 100     |
|                                | Amber | 40                | 28x95          | 0.01" White PTFE/0.09" Clear Silicone | B7951    | 100     |
|                                | Clear | 20                | 28x57          | 0.01" White PTFE/0.09" Clear Silicone | B7920    | 100     |
|                                | Amber | 20                | 28x57          | 0.01" White PTFE/0.09" Clear Silicone | B7921    | 100     |



B7950-VO

B7951-VO



B7950-1A

B7995-24

### National EPA screw vials, caps and septa

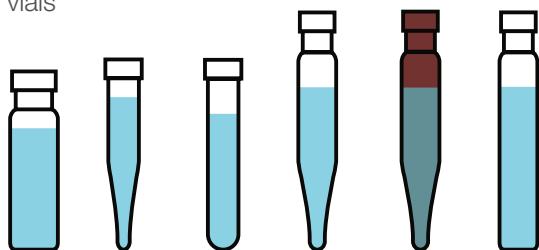
\*60% to scale

| Description                 | Glass | Cap Color | Dimension (mm) | Total Volume (mL) | Material                              | Cat. No. | Pack of |
|-----------------------------|-------|-----------|----------------|-------------------|---------------------------------------|----------|---------|
| 24-400 EPA Screw Vial       | Clear | -         | 28x95          | 40                | -                                     | B7950-VO | 100     |
|                             | Amber | -         | 28x95          | 40                | -                                     | B7951-VO | 100     |
| 24-400 EPA Screw Cap        | -     | White     | -              | -                 | Polypropylene                         | B7950-1A | 100     |
| Septum for 24-400 Screw Cap | -     | -         | -              | -                 | 0.01" White PTFE/0.09" Clear Silicone | B7995-24 | 100     |

# National vial reference chart

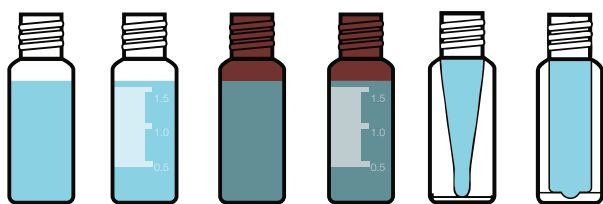
\* Drawing is valid for: C4000-1B, C4000-1G, C4000-1R, C4000-1Y  
Images shown are 80% to scale

## 8mm crimp top vials



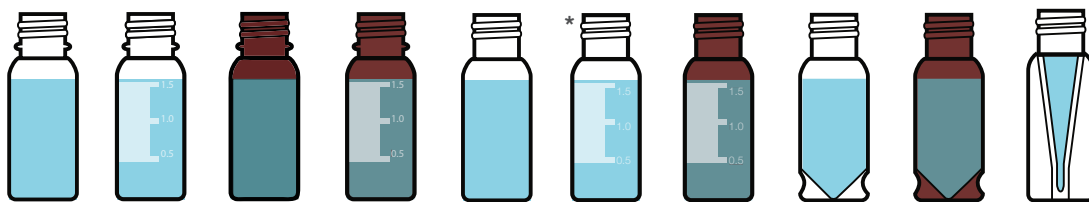
|                               |         |            |            |           |           |           |
|-------------------------------|---------|------------|------------|-----------|-----------|-----------|
| <b>Part No.</b>               | C4008-1 | C4008-632C | C4008-632R | C4008-739 | C4008-740 | C4008-741 |
| <b>Dimensions</b>             | 8x30    | 6x32       | 6x32       | 7x40      | 7x40      | 7x40      |
| <b>Common Description</b>     | 0.8mL   | 0.2mL      | 0.3mL      | 0.7mL     | 0.7mL     | 0.8mL     |
| <b>Approx. Total Capacity</b> | 1mL     | 250µL      | 325µL      | 575µL     | 575µL     | 775µL     |
| <b>Rec. Usable Volume</b>     | 0.8mL   | 200µL      | 250µL      | 450µL     | 450µL     | 650µL     |
| <b>Residual Volume</b>        | <80µL   | <3µL       | <6µL       | <2µL      | <2µL      | <70µL     |
| <b>Composition</b>            | Glass   | Glass      | Glass      | Glass     | Amber     | Glass     |

## Standard-opening 8-425 screw thread vials – 12x32mm



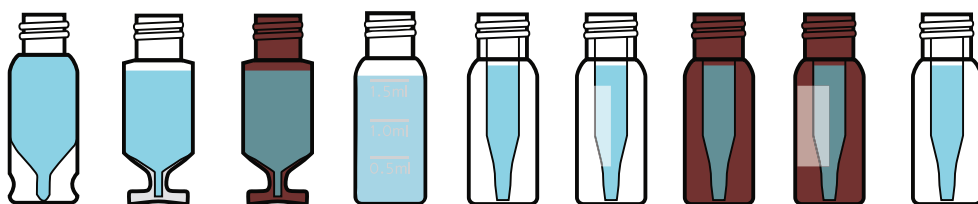
|                               |         |          |         |          |          |          |
|-------------------------------|---------|----------|---------|----------|----------|----------|
| <b>Part No.</b>               | C4013-1 | C4013-1W | C4013-2 | C4013-2W | C4013-11 | C4013-13 |
| <b>Common Description</b>     | 2mL     | 2mL      | 2mL     | 2mL      | 250µL    | 600µL    |
| <b>Approx. Total Capacity</b> | 1.9mL   | 1.9mL    | 1.9mL   | 1.9mL    | 475µL    | 850µL    |
| <b>Rec. Usable Volume</b>     | 1.5mL   | 1.5mL    | 1.5mL   | 1.5mL    | 250µL    | 675µL    |
| <b>Residual Volume</b>        | <170µL  | <170µL   | <170µL  | <170µL   | <3µL     | <8µL     |
| <b>Composition</b>            | Glass   | Glass    | Amber   | Amber    | Polypro  | Polypro  |

## Target DP 9mm screw vials 12x32mm



|                               |         |          |         |          |         |          |          |         |          |          |
|-------------------------------|---------|----------|---------|----------|---------|----------|----------|---------|----------|----------|
| <b>Part No.</b>               | C5000-1 | C5000-1W | C5000-2 | C5000-2W | C4000-1 | C4000-1W | C4000-2W | C4000-9 | C4000-9A | C4000-11 |
| <b>Common Description</b>     | 2mL     | 2mL      | 2mL     | 2mL      | 2mL     | 2mL      | 2mL      | 1.5mL   | 1.5mL    | 450µL    |
| <b>Approx. Total Capacity</b> | 2mL     | 2mL      | 2mL     | 2mL      | 2mL     | 2mL      | 2mL      | 1.7mL   | 1.7mL    | 250µL    |
| <b>Rec. Usable Volume</b>     | 1.5mL   | 1.5mL    | 1.5mL   | 1.5mL    | 1.5mL   | 1.5mL    | 1.5mL    | 1.3mL   | 1.3mL    | 250µL    |
| <b>Residual Volume</b>        | <170µL  | <170µL   | <170µL  | <170µL   | <170µL  | <170µL   | <170µL   | <4µL    | <4µL     | <1µL     |
| <b>Composition</b>            | Glass   | Glass    | Amber   | Amber    | Glass   | Glass    | Amber    | Glass   | Amber    | PolyPro  |

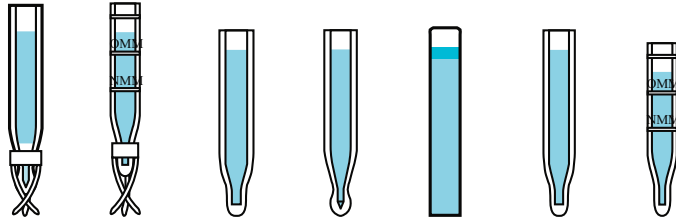
## Target DP 9mm screw vials 12x32mm



|                               |           |          |          |          |           |            |           |            |            |
|-------------------------------|-----------|----------|----------|----------|-----------|------------|-----------|------------|------------|
| <b>Part No.</b>               | C4000-9TR | C4000-V1 | C4000-V2 | C4000-14 | C4000-LV1 | C4000-LV1W | C4000-LV2 | C4000-LV2W | C4000-LV3W |
| <b>Common Description</b>     | 1.5mL     | 1.5mL    | 1.5mL    | 2mL      | 350µL     | 350µL      | 350µL     | 350µL      | 200µL      |
| <b>Approx. Total Capacity</b> | 1.5mL     | 1.4mL    | 1.4mL    | 2mL      | 475µL     | 475µL      | 475µL     | 475µL      | 375µL      |
| <b>Rec. Usable Volume</b>     | 1.2mL     | 1.0mL    | 1.0mL    | 1.5mL    | 350µL     | 350µL      | 350µL     | 350µL      | 240µL      |
| <b>Residual Volume</b>        | <1µL      | <4µL     | <4µL     | <180µL   | <2µL      | <2µL       | <2µL      | <2µL       | <1µL       |
| <b>Composition</b>            | Glass     | Glass    | Amber    | Clear PP | Glass     | Glass      | Amber     | Amber      | Glass      |

Target DP microvolume inserts

\*Drawing is valid for: C4011-1B, C4011-1G, C4011-1R, C4011-1Y  
Images shown are 80% to scale



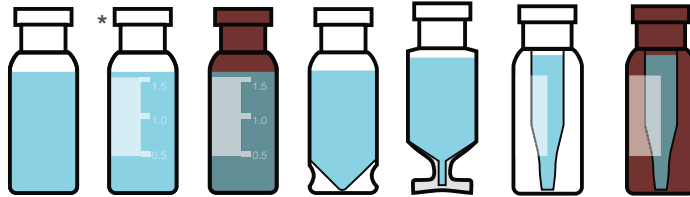
| Part No.               | C4010-630 | C4010-630P | C4010-627L | C4010-629L | C4011-631 | C4010-629 | C4010-629P |
|------------------------|-----------|------------|------------|------------|-----------|-----------|------------|
| Dimensions             | 6x29mm    | 6x30mm     | 6x31mm     | 6x31mm     | 6x31mm    | 6x29mm    | 6x30mm     |
| Common Description     | 300µL     | 300µL      | 350µL      | 350µL      | 400µL     | 300µL     | 300µL      |
| Approx. Total Capacity | 375µL     | 325µL      | 400µL      | 400µL      | 500µL     | 375µL     | 325µL      |
| Rec. Usable Volume     | 300µL     | 250µL      | 350µL      | 350µL      | 400µL     | 300µL     | 250µL      |
| Residual Volume        | <1µL      | <2µL       | <4µL       | <2µL       | <25µL     | <4µL      | <2µL       |
| Composition            | Glass     | Polypro    | Glass      | Glass      | Glass     | Glass     | Polypro    |

10mm wide opening screw thread vials – 12x32mm



| Part No.               | C4010-1 | C4010-1W | C4010-2 | C4010-2W | C4010-LV1 | C4010-LV2 | C4010-11 | C4010-14 |
|------------------------|---------|----------|---------|----------|-----------|-----------|----------|----------|
| Common Description     | 2mL     | 2mL      | 2mL     | 2mL      | 350µL     | 350µL     | 250µL    | 700µL    |
| Approx. Total Capacity | 2mL     | 2mL      | 2mL     | 2mL      | 450µL     | 450µL     | 600µL    | 750µL    |
| Rec. Usable Volume     | 1.5mL   | 1.5mL    | 1.5mL   | 1.5mL    | 350µL     | 350µL     | 400µL    | 550µL    |
| Residual Volume        | <170µL  | <170µL   | <170µL  | <170µL   | <2µL      | <2µL      | 4µL      | <70µL    |
| Composition            | Glass   | Glass    | Amber   | Amber    | Glass     | Amber     | Polypro  | Polypro  |

11mm wide opening crimp top vials



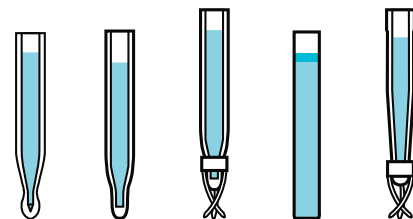
| Part No.               | C4011-1 | C4011-1W | C4011-2W | C4011-9 | C4011-V1 | C4011-LV1W | C4011-LV2W |
|------------------------|---------|----------|----------|---------|----------|------------|------------|
| Common Description     | 2mL     | 2mL      | 2mL      | 1.5mL   | 1.5mL    | 250µL      | 250µL      |
| Approx. Total Capacity | 2mL     | 2mL      | 2mL      | 1.7mL   | 1.5mL    | 500µL      | 500µL      |
| Rec. Usable Volume     | 1.5mL   | 1.5mL    | 1.5mL    | 1.3mL   | 1.1mL    | 350µL      | 350µL      |
| Residual Volume        | <170µL  | <170µL   | <170µL   | <4µL    | <4µL     | <2µL       | <2µL       |
| Composition            | Glass   | Glass    | Amber    | Glass   | Glass    | Glass      | Amber      |

11mm standard-opening crimp vials  
12x32mm



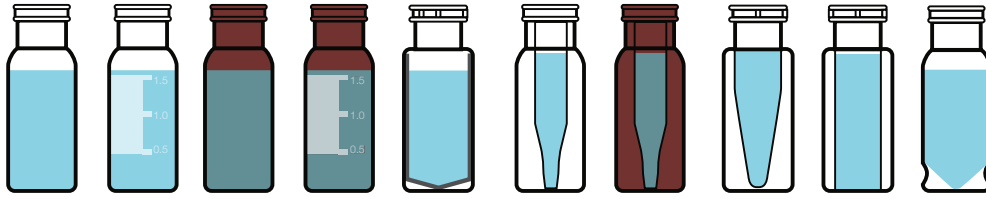
| Part No.               | C4012-1 | C4012-1W | C4012-2 | C4012-2W |
|------------------------|---------|----------|---------|----------|
| Common Description     | 2mL     | 2mL      | 2mL     | 2mL      |
| Approx. Total Capacity | 2mL     | 2mL      | 2mL     | 2mL      |
| Rec. Usable Volume     | 1.5mL   | 1.5mL    | 1.5mL   | 1.5mL    |
| Residual Volume        | <170µL  | <170µL   | <170µL  | <170µL   |
| Composition            | Glass   | Glass    | Amber   | Amber    |

Standard microvolume inserts



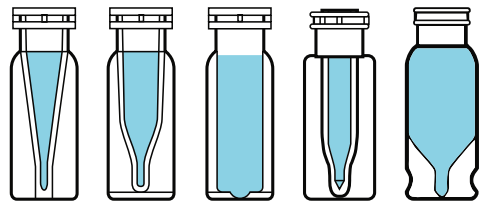
| Part No.               | C4012-529 | C4012-529L | C4012-530 | C4012-465 | C4012-530P |
|------------------------|-----------|------------|-----------|-----------|------------|
| Dimensions             | 5x29mm    | 5x31mm     | 5x29mm    | 5x31mm    | 5x30mm     |
| Common Description     | 150µL     | 150µL      | 150µL     | 200µL     | 125µL      |
| Approx. Total Capacity | 200µL     | 200µL      | 200µL     | 250µL     | 175µL      |
| Rec. Usable Volume     | 175µL     | 170µL      | 170µL     | 200µL     | 150µL      |
| Residual Volume        | <3µL      | <2µL       | <1µL      | <12µL     | <2µL       |
| Composition            | Glass     | Glass      | Glass     | Glass     | Polypro    |

11mm Snap-It-vials – 12x32mm



|                        |         |          |         |          |          |           |           |          |          |         |
|------------------------|---------|----------|---------|----------|----------|-----------|-----------|----------|----------|---------|
| <b>Part No.</b>        | C4011-5 | C4011-5W | C4011-6 | C4011-6W | C4011-24 | C4011-LV1 | C4011-LV2 | C4011-11 | C4011-14 | C4011-4 |
| <b>Common</b>          | 2mL     | 2mL      | 2mL     | 2mL      | 700µL    | 350µL     | 350µL     | 800µL    | 3700µL   | 1.5mL   |
| <b>Description</b>     | 2mL     | 2mL      | 2mL     | 2mL      | 1000µL   | 500µL     | 500µL     | 800µL    | 1000µL   | 1.7mL   |
| <b>Approx. Total</b>   | 1.5mL   | 1.5mL    | 1.5mL   | 1.5mL    | 750µL    | 350µL     | 350µL     | 600µL    | 800µL    | 1.3mL   |
| <b>Capacity</b>        | <170µL  | <170µL   | <170µL  | <170µL   | <8µL     | <2µL      | <2µL      | <6µL     | <80µL    | <4µL    |
| <b>Rec. Usable</b>     | Glass   | Glass    | Amber   | Amber    | TPX      | Glass     | Amber     | Polypro  | Polypro  | Glass   |
| <b>Volume</b>          |         |          |         |          |          |           |           |          |          |         |
| <b>Residual Volume</b> |         |          |         |          |          |           |           |          |          |         |
| <b>Composition</b>     |         |          |         |          |          |           |           |          |          |         |

11mm Snap-It-vials – 12x32mm



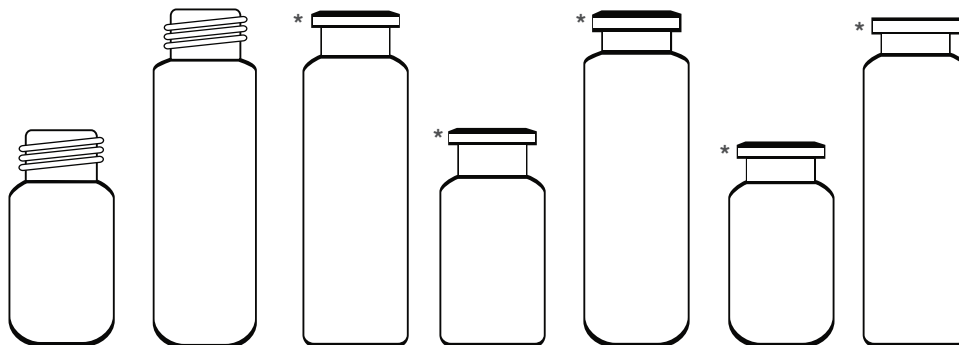
|                        |          |          |          |          |        |
|------------------------|----------|----------|----------|----------|--------|
| <b>Part No.</b>        | C4011-13 | C4011-16 | C4011-15 | C4012-15 | C4011- |
| <b>Common</b>          | 250µL    | 600µL    | 850µL    | 250µL    | 9TR    |
| <b>Description</b>     | 475µL    | 600µL    | 825µL    | 475µL    | 1.5mL  |
| <b>Approx. Total</b>   | 300µL    | 400µL    | 650µL    | 350µL    | 1.5mL  |
| <b>Capacity</b>        | <2µL     | <4µL     | <8µL     | <4µL     | 1.2mL  |
| <b>Rec. Usable</b>     | Polypro  | Polypro  | Polypro  | Glastic  | <1µL   |
| <b>Volume</b>          |          |          |          |          |        |
| <b>Residual Volume</b> |          |          |          |          |        |
| <b>Composition</b>     |          |          |          |          |        |

Headspace vials



|                      |         |          |          |
|----------------------|---------|----------|----------|
| <b>Part No.</b>      | C4020-6 | C4020-60 | C4020-27 |
| <b>Common</b>        | 6mL     | 6mL      | 27mL     |
| <b>Description</b>   | 9mL     | 9mL      | 27mL     |
| <b>Approx. Total</b> | Glass   | Glass    | Glass    |
| <b>Capacity</b>      |         |          |          |
| <b>Composition</b>   |         |          |          |

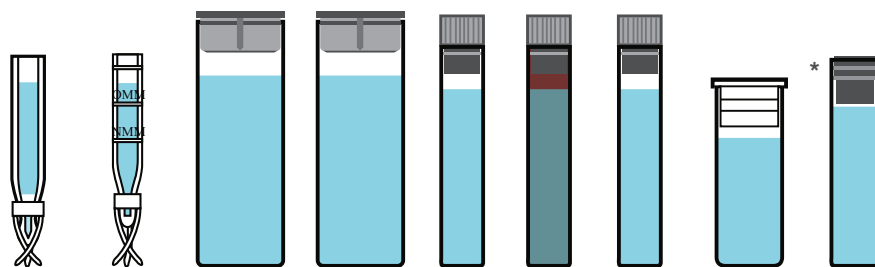
Headspace vials



|                      |           |          |          |          |         |           |          |
|----------------------|-----------|----------|----------|----------|---------|-----------|----------|
| <b>Part No.</b>      | C4020-180 | C4020-18 | C4020-20 | C4020-10 | C4020-2 | C4020-210 | C4020-25 |
| <b>Common</b>        | 10mL      | 20mL     | 20mL     | 10mL     | 20mL    | 10mL      | 20mL     |
| <b>Description</b>   | 12mL      | 21mL     | 21.5mL   | 12.5mL   | 21.5mL  | 12.5mL    | 21.5mL   |
| <b>Approx. Total</b> | Glass     | Glass    | Glass    | Glass    | Glass   | Glass     | Glass    |
| <b>Capacity</b>      |           |          |          |          |         |           |          |
| <b>Composition</b>   |           |          |          |          |         |           |          |

Images shown are 80% to scale  
 \* 60% to scale

### Shell vials and inserts



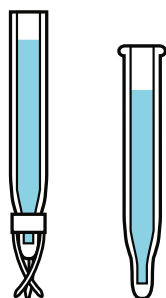
|                        |           |            |          |           |          |          |           |          |          |
|------------------------|-----------|------------|----------|-----------|----------|----------|-----------|----------|----------|
| <b>Part No.</b>        | C4015-96A | C4015-96PA | C4015-48 | C4015-47P | C4015-96 | C4015-99 | C4015-95P | C4011-80 | C4008-50 |
| <b>Dimensions</b>      | 5x34mm    | 5x29mm     | -        | -         | -        | -        | -         | -        | 8x35mm   |
| <b>Common</b>          | 250µL     | 275µL      | 4mL      | 4mL       | 1mL      | 1.25mL   | 1mL       | 2mL      | 1mL      |
| <b>Description</b>     | 375µL     | 375µL      | 5.5mL    | 5.5mL     | 1.25mL   | 1mL      | 1.25mL    | 2.4mL    | 1mL      |
| <b>Approx. Total</b>   | 210µL     | 250µL      | <800µL   | <800µL    | 1mL      | <80µL    | 1mL       | 1.8mL    | 850µL    |
| <b>Capacity</b>        | <3µL      | <3µL       | Glass    | Polypro   | <80µL    | Amber    | <80µL     | <200µL   | -        |
| <b>Rec. Usable</b>     | Glass     | PolyPro    |          |           | Glass    |          | PolyPro   | Glass    | Glass    |
| <b>Volume</b>          |           |            |          |           |          |          |           |          |          |
| <b>Residual Volume</b> |           |            |          |           |          |          |           |          |          |
| <b>Composition</b>     |           |            |          |           |          |          |           |          |          |

### 15x45mm screw thread vials



|                        |         |           |         |          |         |          |
|------------------------|---------|-----------|---------|----------|---------|----------|
| <b>Part No.</b>        | C4015-1 | C4015-11W | C4015-2 | C4015-2W | C4015-9 | C4015-14 |
| <b>Common</b>          | 4mL     | 4mL       | 4mL     | 4mL      | 3.5mL   | 2.5mL    |
| <b>Description</b>     | 5.2mL   | 5.2mL     | 5.2mL   | 5.2mL    | 4.5mL   | 2.5mL    |
| <b>Approx. Total</b>   | 4mL     | 4mL       | 4mL     | 4mL      | 3.5mL   | 2mL      |
| <b>Capacity</b>        | <800µL  | <800µL    | <800µL  | <800µL   | <15µL   | <15µL    |
| <b>Rec. Usable</b>     | Glass   | Glass     | Amber   | Amber    | Glass   | Polypro  |
| <b>Volume</b>          |         |           |         |          |         |          |
| <b>Residual Volume</b> |         |           |         |          |         |          |
| <b>Composition</b>     |         |           |         |          |         |          |

### Microvolume inserts for 15x45mm 4ml vials



|                        |           |           |
|------------------------|-----------|-----------|
| <b>Part No.</b>        | C4015-638 | C4015-643 |
| <b>Dimensions</b>      | 6x38mm    | 6x42mm    |
| <b>Common</b>          | 700µL     | 500µL     |
| <b>Description</b>     | 950µL     | 375µL     |
| <b>Approx. Total</b>   | 800µL     | 300µL     |
| <b>Capacity</b>        | <9µL      | <8µL      |
| <b>Rec. Usable</b>     | Glass     | Glass     |
| <b>Volume</b>          |           |           |
| <b>Residual Volume</b> |           |           |
| <b>Composition</b>     |           |           |

Images shown are 80% to scale

\*50% to scale

\* Positive Displacement Vial for Alcott 708

# National vial reference chart

There's a lot more that goes into our vials than just samples

## Innovative glass technology and unmatched performance

Even more sensitive chromatography and mass spectrometry systems demand reliable vials which can routinely deliver the ultimate purity grade and the lowest surface activity possible. Sample security and confidence in data integrity are paramount in trace analysis and can only be achieved with the highest vial-glass quality.

Most autosampler vials are made from Type 1 hydrolytic-grade glass, which unfortunately absorbs analytes on vial walls when working with polar and/or highly adsorbing compounds at low concentration levels. We have introduced a higher grade of glass with the lowest levels of alkaline materials with our new inert vials range. You can maximize your analytical performance and have fewer failed assays with the Thermo Scientific Chromacol GOLD-Grade vials. These premium vials are manufactured in perfect conditions and at optimum surface-saving temperatures to ensure the maximum degree of the inertness of the low-alkaline glass.

### Increase productivity and save time

- Highest recovery rates; even with critical compounds (e.g. trisubstituted N-atoms, tertiary amines) in trace concentrations.
- Highly reproducible; consistent peak heights and symmetry

### Confidence in results with highest quality vial

- Made of 1st hydrolytic class, special 33 expansion glass; meeting current USPs and Pharmacopeias.
- Ultra-low adsorption surface for critical polar compound; enables ultra trace-level analysis for strongly adsorbing analytes.
- The high-class standard in Europe and Asia for decades.
- Ultra-low pH shift, due to the minimized surface activity.
- Lowest alkaline content, for less glass-wall interactions.

### A vial that reduces the cost of analysis

- Stable analysis and higher reproducibility; increases security and integrity of analytical results.
- Buffer reduction possible.
- No risk of run-stops during overnight analysis.
- Optimal autosampler fit regardless of lot.



For more information, visit [thermofisher.com/inertvials](https://thermofisher.com/inertvials)

# Chromacol vials and closures

- Innovative products in micro- and precision sampling
- High quality, stringent manufacturing tolerances, have been extensively tested for comprehensive autosampler compatibility
- Products developed in close technical cooperation with the instrument manufacturers
- Detailed information regarding material specifications and compatibility
- Competent and experienced worldwide distributor network

## Approximate chemical composition for borosilicate glass

| Description                   | SiO <sub>2</sub> | B <sub>2</sub> O <sub>3</sub> | Al <sub>2</sub> O <sub>3</sub> | CaO  | MgO | Na <sub>2</sub> O | K <sub>2</sub> O | BaO   |
|-------------------------------|------------------|-------------------------------|--------------------------------|------|-----|-------------------|------------------|-------|
| 33 expansion Glass            | 80%              | 13%                           | 3%                             | 0.1% | –   | 4%                | 0.1%             | <0.1% |
| N-51A Glass                   | 72%              | 12%                           | 7%                             | 1%   | –   | 6%                | 2%               | <0.1% |
| Clear Borosilicate-GOLD Grade | 80.6%            | 13%                           | 2.3%                           | –    | –   | 4%                | –                | –     |



## Chromacol 8mm crimp top vials

- The SCI-VI system gives the chromatography user the ability to inject reproducibly from glass vials with residual volumes as low as 1µL to 5µL in a full range of autosampler instruments
- Precision-machined sleeves that allow the vials to be used in the vast majority of commercial autosamplers
- Sleeves are reusable and support the crimped, sealed vials in the correct position within both the autosampler carousel or racks
- Allow movement of the vials as a unit to injection positions in both GC and HPLC autosamplers
- Thermo Scientific Chromacol GOLD glass quality, a low expansion high purity glass with an extremely low concentration of active sites
- Available in both clear and amber glass these vials can be used with 8mm crimp and snap caps



### Chromacol 8mm crimp top vials

| Description                                    | Glass | Patched | Dimension (mm) | Profile      | Total Volume (µL) | Usable Volume (µL) | Residual (µL) | Cat. No.  | Pack of |
|--|-------|---------|----------------|--------------|-------------------|--------------------|---------------|-----------|---------|
| 0.3mL Sci-Vi Crimp Top Vial – GOLD Grade Glass | Clear | No      | 6x32           | Round Bottom | 325               | 250                | <5            | 03-CVG    | 500     |
| 0.2mL Sci-Vi Crimp Top Vial – GOLD Grade Glass | Clear | No      | 6x32           | Conical      | 250               | 200                | <5            | 02-CTVG   | 500     |
| 0.1mL Sci-Vi Crimp Top Vial – GOLD Grade Glass | Clear | No      | 6x32           | Round Bottom | 125               | 80                 | <1            | 01-CVG    | 500     |
| 1.2mL Crimp Top Vial                           | Clear | No      | 8x40           | Flat Bottom  | 1300              | 1200               | <75           | 1.2-CWV   | 500     |
| 0.8mL Crimo Top Vial                           | Clear | No      | 7x40           | Flat Bottom  | 775               | 650                | <70           | 08-CPV    | 500     |
| 0.7mL Crimp Top Tapered Vial                   | Clear | No      | 7x40           | Conical      | 575               | 450                | <5            | 07-CPV    | 500     |
|  | Amber | No      | 7x40           | Conical      | 575               | 450                | <5            | 07-CPV(A) | 500     |



### Chromacol 8mm crimp top vials

| Description  | Glass | Patched | Dimension (mm) | Profile     | Total Volume (µL) | Usable Volume (µL) | Residual (µL) | Cat. No.  | Pack of |
|--|-------|---------|----------------|-------------|-------------------|--------------------|---------------|-----------|---------|
| 0.6mL Crimp Top Tapered Vial   | Amber | No      | 7x32           | Conical     | 600               | 550                | <5            | 06-CTV(A) | 500     |
| PTFE Vial Support Sleeve for 6x32mm vials, fits robotic autosamplers | PTFE  | No      | 12x32          | Flat Bottom | –                 | –                  | –             | SV-S11A   | 25      |

For sleeves please contact your local sales representative.



## Chromacol 8mm crimp top closures

- Aluminum crimp seals with prefitted septa
- Provide a secure leak-resistant seal
- Pre-assembled caps and septa are convenient and minimize contamination from handling



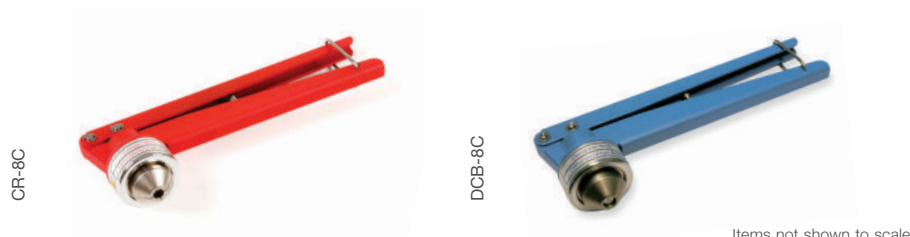
### Chromacol 8mm crimp top closures

| Description                                       | Cap Color | Cap Material | Septum                           | Hardness shore | Thickness (mm) | Cat. No.   | Pack of |
|---|-----------|--------------|----------------------------------|----------------|----------------|------------|---------|
| 8mm Crimp Cap, 4mm hole, Type 7 Rubber/PTFE Liner | Silver    | Aluminum     | Red Natural Rubber/Clear PTFE    | 60             | 1.0            | 8-AC7      | 1000    |
| 8mm Crimp Cap, 4mm hole                           | Silver    | Aluminum     | White Silicone/Red PTFE          | 50             | 1.3            | 8-AC-ST15  | 500     |
|   | Silver    | Aluminum     | Blue Silicone/PTFE               | 30             | 1.0            | 8-AC-ST101 | 500     |
|   | Silver    | Aluminum     | White Virgin PTFE, 0.01"         | 53             | 0.2            | 8-ACT      | 1000    |
|   | Silver    | Aluminum     | Red PTFE/White Silicone/Red PTFE | 57             | 1.0            | 8-AC-TST1  | 500     |
| 8mm Snap Cap, Thinned penetration area            | Clear     | Polyethylene | Integral Molded In Polyethylene  | -              | -              | 8-PEC1     | 1000    |

For electronic crimpers look on page 2-091

## Chromacol 8mm crimping and decrimping tools

- Crimping tools provide a reproducible secure closure
- High quality construction for durability and long life
- Fine textured surface (powder coated) for a better grip and corrosion resistance



Items not shown to scale

### Chromacol 8mm crimping and decrimping tools

| Description      | Use  | Cat. No. | Pack of |
|------------------|--|----------|---------|
| Manual Crimper   | Attaches 8mm aluminum crimp seals                    | CR-8C    | 1       |
| Manual Decrimper | Removes 8mm aluminum crimp seals without vial damage | DCB-8C   | 1       |

For electronic crimpers and decrimpers look on page 2-091

## Chromacol 2mL, 12x32mm standard opening screw thread vials and inserts

- 8-425 thread finish vials are best suited for most instruments where the vial remains in the sample tray during injection
- Manufactured from superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- GOLD grade glass quality is a low expansion high purity glass with an extremely low concentration of active sites
- Available with a graduated, write-on patch for convenient sample identification
- Small opening requires Micro-Inserts with a diameter of 5mm
- While maintaining the standard outer dimensions the internal volumes of these vials range from below 300 $\mu$ L to 2mL
- Where levels of inorganic ions have to be kept to an absolute minimum the use of plastics may be preferred to the more conventional glass vials



### Chromacol 2mL, 12x32 standard opening screw thread vials and inserts

| Description   | Glass         | Patched | Dimension (mm) | Profile     | Total Volume (mL) | Usable Volume (mL) | Residual ( $\mu$ L) | Cat. No. | Pack of |
|---|---------------|---------|----------------|-------------|-------------------|--------------------|---------------------|----------|---------|
| 8-425 Screw Thread Vial                                 | Clear         | Yes     | 12x32          | Flat Bottom | 2.0               | 1.5                | <170                | 2-SV     | 500     |
|   | Amber         | Yes     | 12x32          | Flat Bottom | 2.0               | 1.5                | <170                | 2-SV(A)  | 500     |
| 8-425 Screw Thread 0.3mL Vial                           | Polypropylene | No      | 12x32          | Insert Vial | 0.3               | 250 $\mu$ L        | <3                  | 03-PPSV  | 500     |
| 200 $\mu$ L Insert                                      | Clear Glass   | No      | 5x31           | Flat Bottom | 250 $\mu$ L       | 200 $\mu$ L        | <12                 | 02-NV    | 1000    |
|   | Clear Glass   | No      | 5x30           | Conical     | 200 $\mu$ L       | 160 $\mu$ L        | <4                  | 02-MTV   | 1000    |
| Self-centering support device for tapered glass inserts | Polyethylene  | -       | -              | -           | -                 | -                  | -                   | MTS-1    | 500     |

Support sleeve allows conical tip vial to be used in standard 12x32mm autosampler trays

## Chromacol 8-425 screw thread caps and septa

- Open top caps are designed to be used with any of our 8mm septa
- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Flanged caps are particularly suitable for Shimadzu and Tosoh autosamplers
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Closures are shipped in sealed polybags to prevent contamination during transport



### Chromacol 8-425 screw thread caps and septa

| Description  | Cap Color | Cap Material  | Septum                        | Hardness shore | Thickness (mm) | Cat. No.  | Pack of |
|--|-----------|---------------|-------------------------------|----------------|----------------|-----------|---------|
| 8mm Open Top Screw Cap, 8-425 thread, 5mm hole                           | Black     | Polypropylene | –                             | –              | –              | 8-SC      | 500     |
| 8mm Open Top Screw Cap with flange, 8-425 thread, 5mm hole               | Black     | Polypropylene | –                             | –              | –              | 8-SCJ     | 500     |
|  | White     | Polypropylene | –                             | –              | –              | 8-SCJ(W)  | 500     |
| Septum for 8-425 Screw Caps  | –         | –             | Red Natural Rubber/Clear PTFE | 38             | 1.0            | 8-6RT1    | 1000    |
|  | –         | –             | White Silicone/Red PTFE       | 45             | 1.3            | 8-ST15    | 500     |
|  | –         | –             | Blue Silicone/PTFE            | 50             | 1.2            | 8-ST14    | 500     |
|  | –         | –             | Blue Silicone/PTFE, Pre-slit  | 50             | 1.2            | 8-ST14X   | 500     |
|  | –         | –             | Blue Silicone/PTFE            | 30             | 1.0            | 8-ST101   | 500     |
|  | –         | –             | White Virgin PTFE, 0.01"      | 53             | 0.3            | 8-T02     | 1000    |
| 8mm Open Top Screw Cap, 8-425 thread, 5mm hole, Type 8 Rubber/PTFE Liner | Black     | Polypropylene | Red Natural Rubber/Clear PTFE | 50             | 1.3            | 8-SC-8RT1 | 500     |
| 8mm Open Top Screw Cap, 8-425 thread, 5mm hole                           | Black     | Polypropylene | White Silicone/Red PTFE       | 45             | 1.3            | 8-SC-ST15 | 500     |

## Chromacol standard opening screw thread vial convenience and instrument select (IS) kits

- Convenience kits save time during sample preparation
- Includes 100 vials and 100 caps with pre-assembled septa for added convenience during sample preparation
- Reusable two compartment trays protect vials and closure while keeping matching supplies together



Convenience Kits

Items not shown to scale

### Chromacol standard opening screw thread vial convenience and instrument select (IS) kits

| Kit Type  | Glass | Patched | Cap Color | Septum                      | Vial Cat. No. | Cap/Septum Cat. No. | Cat. No.   | Pack of |
|---|-------|---------|-----------|-----------------------------|---------------|---------------------|------------|---------|
| Convenience Kit, Standard Opening Screw Vial                              | Clear | Yes     | White     | Blue Silicone/PTFE          |               | 8-SC(W)+<br>8-ST101 | 2-SV101-CP | 100     |
| IS Kit, Standard Opening Screw Vial for Thermo Scientific LC Autosamplers | Clear | Yes     | Black     | White Silicone/<br>Red PTFE | 2-SV          | 8-SC-ST15           | TSL        | 100     |

For more information, visit [thermofisher.com/chromacol](https://thermofisher.com/chromacol)

## Chromacol 9mm wide opening screw thread vials and inserts

- SureStop 9mm vials as part of the Advanced Vial Closure System (AVCS) offer the sealing and performance characteristics of a crimp top vial and remove any subjectivity in achieving optimal seal compression closing a vial by incorporating a definite stop point into the design of the vial finish. See pages XX to XX
- SureStop 9mm vials should be used with AVCS 9-SCK closures in order to get the best possible performance
- Available with a graduated, write-on patch for convenient sample identification
- Wide neck opening design, allows easy filling, requires Micro-Inserts with a diameter of 6mm
- Manufactured from superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts



### Chromacol 9mm wide opening screw thread vials and inserts

| Description  | Glass         | Patched | Dimension (mm) | Profile              | Total Volume | Usable Volume | Residual (µL) | Cat. No.   | Pack of |
|--|---------------|---------|----------------|----------------------|--------------|---------------|---------------|------------|---------|
| 9mm SureStop Screw Thread Vial (AVCS)                          | Amber         | Yes     | 12x32          | Flat Bottom          | 2.0mL        | 1.5mL         | <170          | 2-SVWK(A)  | 100     |
| 9mm Screw Thread Vial  | Clear         | No      | 15x46          | Flat Bottom          | 4.0mL        | 3.5mL         | <500          | 4-SVQ      | 500     |
|  | Clear         | Yes     | 12x32          | Flat Bottom          | 2.0mL        | 1.5mL         | <170          | 2-SVW      | 500     |
|  | Amber         | Yes     | 12x32          | Flat Bottom          | 2.0mL        | 1.5mL         | <170          | 2-SVW(A)   | 500     |
| 9mm Screw Thread Vial, High Recovery with 30µL Reservoir       | Clear         | No      | 12x32          | Tapered Base         | 1.5mL        | 1.3mL         | <4            | 1.5-HRSV   | 100     |
| 9mm Screw Thread Vial, Ultra High Recovery with 10µL Reservoir | Clear         | No      | 12x32          | Mandrel Base         | 1.2mL        | 1.0mL         | <2            | 1.2-UHRSV  | 100     |
| 9mm Screw Thread Vial 300µL, Fused Insert                      | Clear         | Yes     | 12x32          | Insert Vial          | 0.3mL        | 250µL         | <3            | 03-FISV    | 500     |
|  | Amber         | Yes     | 12x32          | Insert Vial          | 0.3mL        | 250µL         | <3            | 03-FISV(A) | 500     |
| 300µL Insert   | Clear         | -       | 6x31           | Flat Bottom          | 300µL        | 200µL         | <12           | 03-NV      | 1000    |
| Self-centering support device for tapered glass inserts        | Polyethylene  | -       | -              | -                    | -            | -             | -             | MTS-1      | 500     |
| 9mm Screw Thread Vial  | Polypropylene | No      | 12x32          | Insert Vial, Mandrel | 300µL        | 200µL         | <4            | 03-PPSVW   | 500     |
| 0.6MI Pe Screw Top Vial W Cylindrical Insert                   | Polyethylene  | ----    | 12x32          | Insert Vial          | 600µL        |               |               | 06-PESVW   | 500     |
| 0.6MI Pe Screw Top Vial W Cylindrical Insert                   | Polypropylene | ----    | 12x32          | Insert Vial          | 600µL        |               |               | 06-PPSVW   | 500     |

## Chromacol 9mm screw thread closures

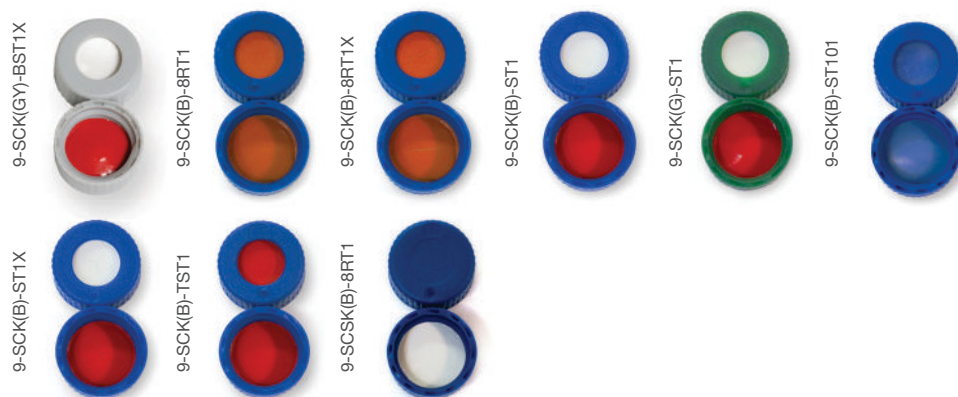


### K-Series closures featuring AVCS technology (Advanced Vial Closure System)

- Septa push through virtually eliminated due to improved interior geometry
- Improved sealing capability
- Improved autosampler compatibility
- AVCS provides the freedom to select the best septum for your instrument and applications
- Cost efficient alternative to caps with bonded septa
- Optimized ergonomics, fine texturing and evenly spaced ribbing for superior handling

Further features are:

- Easy-on, easy-off convenience with just one turn
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Closures have the profile of a crimp or snap closure for compatibility with robotic autosamplers
- Closures are shipped in sealed polybags to prevent contamination during transport
- Special caps for magnetic transport autosamplers
- Flanged caps suitable for Shimadzu, Hitachi and Tosoh instruments



### Chromacol 9mm screw thread closures

| Description                                 | Cap Color | Cap Material  | Septum                                   | Hardness shore | Thickness (mm) | Cat. No.        | Pack of |
|---|-----------|---------------|--|----------------|----------------|-----------------|---------|
| 9mm Open Top Short Screw Cap, 6mm hole      | Gray      | Polypropylene | Bonded Red PTFE/White Silicone, Pre-slit | 45             | 1.2            | 9-SCK(GY)-BST1X | 500     |
| 9mm Open Top Short Screw AVCS Cap, 6mm hole | Blue      | Polypropylene | Red Rubber/Clear PTFE                    | 58             | 1.0            | 9-SCK(B)-8RT1   | 500     |
|   | Blue      | Polypropylene | Red Rubber/Clear PTFE, Pre-slit          | 58             | 1.0            | 9-SCK(B)-8RT1X  | 500     |
|   | Blue      | Polypropylene | White Silicone/Red PTFE                  | 57             | 1.0            | 9-SCK(B)-ST1    | 500     |
|   | Green     | Polypropylene | White Silicone/Red PTFE                  | 57             | 1.0            | 9-SCK(G)-ST1    | 500     |
|   | Blue      | Polypropylene | Blue Silicone/PTFE                       | 30             | 1.0            | 9-SCK(B)-ST101  | 500     |
|   | Blue      | Polypropylene | White Silicone/Red PTFE, Y-Pre-slit      | 57             | 1.0            | 9-SCK(B)-ST1X   | 500     |
| 9mm Solid Top Short Screw AVCS Cap          | Blue      | Polypropylene | Red PTFE/White Silicone/Red PTFE         | 57             | 1.0            | 9-SCK(B)-TST1   | 500     |
|   | Blue      | Polypropylene | Red Natural Rubber/Beige PTFE            | 58             | 1.0            | 9-SCSK(B)-8RT1  | 500     |

## Chromacol 9mm wide opening convenience and instrument select (IS) kits

- Convenience kits save time during sample preparation
- Includes 100 vials and 100 caps with pre-assembled septa for added convenience during sample preparation
- Reusable two compartment trays protect vials and closure while keeping matching supplies together

2-SVWGK8-CPK



For more information, visit [thermofisher.com/chromacol](https://thermofisher.com/chromacol)

### Chromacol 9mm wide opening screw thread vial convenience and instrument select (IS) kits

| Kit Type   | Glass | Patched | Cap Color | Septum                            | Vial Cat. No. | Cap Cat. No.   | Cat. No.        | Pack of |
|--|-------|---------|-----------|-----------------------------------|---------------|----------------|-----------------|---------|
| SureStop Convenience Kit                               | Amber | Yes     | Blue      | White Silicone/Red PTFE           | 2-SVWK(A)     | 9-SCK(B)-ST1   | 2-SVWK(A)ST-CPK | 100     |
| SureStop IS Kit, GOLD Grade, for Thermo GC Autosampler | Clear | Yes     | Blue      | Blue Silicone/PTFE                | 2-SVWGK       | 9-SCK(B)-ST101 | TTRGKK          | 100     |
| AVCS Convenience Kit                                   | Clear | Yes     | Blue      | Red Rubber/Clear PTFE             | 2-SVW         | 9-SCK(B)-8RT1  | 2-SVW8-CPK      | 100     |
|  | Clear | Yes     | Blue      | White Silicone/Red PTFE           | 2-SVW         | 9-SCK(B)-ST1   | 2-SVWST-CPK     | 100     |
|  | Amber | Yes     | Blue      | White Silicone/Red PTFE           | 2-SVW(A)      | 9-SCK(B)-ST1   | 2-SVW(A)ST-CPK  | 100     |
| AVCS IS Kit, for Agilent LC Autosampler                | Clear | Yes     | Blue      | Red Rubber/Clear PTFE             | 2-SVW         | 9-SCK(B)-8RT1  | HPLSK           | 100     |
| AVCS IS Kit, for Thermo GC Autosampler                 | Clear | Yes     | Blue      | Blue Silicone/PTFE                | 2-SVW         | 9-SCK(B)-ST101 | TTRK            | 100     |
| AVCS Convenience Kit, for Varian GC Autosampler        | Clear | Yes     | Blue      | White Silicone/Red PTFE           | 2-SVW         | 9-SCK(B)-ST1   | VAGK            | 100     |
| AVCS IS Kit, for Varian LC Autosampler                 | Clear | Yes     | Blue      | White Silicone/Red PTFE           | 2-SVW         | 9-SCK(B)-ST1   | VALK            | 100     |
| AVCS IS Kit, for Waters Alliance® LC Autosampler       | Clear | Yes     | Blue      | White Silicone/Red PTFE           | 2-SVW         | 9-SCK(B)-ST1   | WALK            | 100     |
| AVCS IS Kit, for PerkinElmer LC Autosampler            | Clear | Yes     | Green     | White Silicone/Red PTFE, Pre-slit | 2-SVW         | 9-SCK(G)-ST1X  | PELK            | 100     |

## Chromacol 2mL, 12x32mm, 11mm crimp top vials and closures

- Thermo Scientific Chromacol GOLD glass quality, a low expansion high purity glass with an extremely low concentration of active sites
- Manufactured from superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Available with a graduated, write-on patch for convenient sample identification
- Wide neck opening design, allows easy filling, requires Micro-Inserts with a diameter of 6mm
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Where levels of inorganic ions have to be kept to an absolute minimum the use of plastics may be preferred to the more conventional glass vials

### Compatible with:

Most HPLC and GC autosamplers

For autosampler compatibility visit [thermofisher.com/chromexpert](http://thermofisher.com/chromexpert)



### Chromacol 2mL, 12x32mm, 11mm crimp top vials and inserts

| Description                             | Glass | Patched | Dimension (mm) | Profile       | Total Volume | Usable Volume | Residual (µL) | Cat. No. | Pack of |
|---|-------|---------|----------------|---------------|--------------|---------------|---------------|----------|---------|
| 11mm Crimp Top Vial, Wide Opening       | Clear | Glass   | 15x46          | Flat Bottom   | 4.0mL        | 3.5mL         | <500          | 4-CV     | 500     |
|   | Clear | Glass   | 12x40          | Flat Bottom   | 2.5mL        | 2.0mL         | <170          | 2.5-CV   | 500     |
|   | Clear | Yes     | 12x32          | Flat Bottom   | 2.0mL        | 1.5mL         | <170          | 2-CV     | 500     |
|   | Amber | Yes     | 12x32          | Flat Bottom   | 2.0mL        | 1.5mL         | <170          | 2-CV(A)  | 500     |
| 11mm Crimp Top Vial, Wide Opening       | Clear | Yes     | 12x32          | Round Bottom  | 2.0mL        | 1.5mL         | <170          | 2-CRV    | 500     |
| 11mm Crimp Top 1.5mL High Recovery Vial | Clear | No      | 12x32          | High Recovery | 1.5mL        | 1.3mL         | <4µL          | 1.5-HRCV | 100     |

For more information, visit [thermofisher.com/chromacol](http://thermofisher.com/chromacol)





### Chromacol 2mL, 12x32mm, 11mm crimp top vials and inserts (continued)

| Description  | Glass | Patched | Dimension (mm) | Profile     | Total Volume | Usable Volume | Residual (µL) | Cat. No.  | Pack of |
|--|-------|---------|----------------|-------------|--------------|---------------|---------------|-----------|---------|
| 11mm Crimp Top 0.9mL Vial, Wide Opening                    | Clear | No      | 10x32          | Conical     | 1.0mL        | 850µL         | <5            | 09-CTV    | 500     |
|  | Clear | No      | 12x32          | Insert Vial | 0.9mL        | 830µL         | <3            | 09-FIV    | 500     |
| 11mm Crimp Top 0.3mL Vial, Fused Insert                    | Clear | Yes     | 12x32          | Insert Vial | 0.3mL        | 250µL         | <3            | 03-FIV    | 500     |
|  | Amber | Yes     | 12x32          | Insert Vial | 0.3mL        | 250µL         | <3            | 03-FIV(A) | 500     |
| 11mm Crimp Top 0.2mL Vial, Fused Insert – GOLD Grade Glass | Clear | Yes     | 12x32          | Insert Vial | 0.2mL        | 180µL         | <2            | 02-FIVG   | 500     |



### Chromacol 2mL, 12x32mm, 11mm crimp top vials and inserts (continued)

| Description  | Glass | Patched | Dimension (mm) | Profile     | Total Volume | Usable Volume | Residual (µL) | Cat. No. | Pack of |
|--------------|-------|---------|----------------|-------------|--------------|---------------|---------------|----------|---------|
| 300µL Insert | Clear | –       | 6x31           | Flat Bottom | 300µL        | 200µL         | <12           | 03-NV    | 1000    |

## Chromacol 11mm crimp top closures

- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Aluminum crimp closures provide a secure leak-resistant seal
- Aluminum seals must be applied with a crimping tool
- Closures are shipped in sealed polybags to prevent contamination during transport
- First crimp cap with assembled aluminum liner for interference free analysis of Elastomers, Polymers, Phthalates, Halogenated compounds and Silicones
- First crimp cap with tight PTFE sealing disk due to additional silicone ring



### Chromacol 11mm crimp top closures

| Description   | Cap Color | Cap Material | Septum   | Hardness shore | Thickness (mm) | Cat. No.   | Pack of |
|---|-----------|--------------|--|----------------|----------------|------------|---------|
| 11mm Crimp Cap, 6mm center hole, Type 6 Rubber/PTFE | Red       | Aluminum     | Red Chlorobutyl Rubber/ Clear PTFE, Sulphur free | 40             | 1.0            | 11-AC6(R)  | 500     |
| 11mm Crimp Cap, 6mm center hole, Type 7 Rubber/PTFE | Silver    | Aluminum     | Red Natural Rubber/Clear PTFE                    | 60             | 1.0            | 11-AC7     | 500     |
|   | Blue      | Aluminum     |  | 60             | 1.0            | 11-AC7(B)  | 500     |
| 11mm Aluminium Crimp Cap Type 8 Rubber/PTFE         | Silver    | Aluminum     | Type 8 Rubber / PTFE                             |                |                | 11-AC8     | 500     |
| 11mm Aluminium Crimp Cap Type 8 Rubber/PTFE         | Blue      | Aluminum     | Type 8 Rubber / PTFE                             |                |                | 11-AC8(B)  | 500     |
|   | Green     | Aluminum     | Type 8 Rubber / PTFE                             |                |                | 11-AC8(G)  | 500     |
|   | Gold      | Aluminum     | Type 8 Rubber / PTFE                             |                |                | 11-AC8(GO) | 500     |
|   | Red       | Aluminum     | Type 8 Rubber / PTFE                             |                |                | 11-AC8(R)  | 500     |

For more information, visit [thermofisher.com/chromacol](https://thermofisher.com/chromacol)



### Chromacol 11mm crimp top closures (continued)

| Description                     | Cap Color | Cap Material | Septum                           | Hardness shore | Thickness (mm) | Cat. No.       | Pack of |
|---------------------------------|-----------|--------------|----------------------------------|----------------|----------------|----------------|---------|
| 11mm Crimp Cap, 6mm center hole | Blue      | Aluminum     | Blue Silicone/Red PTFE           | 20             | 1.4            | 11-AC(B)-ST144 | 500     |
|                                 | Silver    | Aluminum     | White Silicone/Red PTFE          | 50             | 1.3            | 11-AC-ST15     | 500     |
|                                 | Silver    | Aluminum     | Blue Silicone/PTFE               | 30             | 1.0            | 11-AC-ST101    | 500     |
|                                 | Silver    | Aluminum     | Blue Silicone/PTFE, Pre-slit     | 30             | 1.0            | 11-AC-ST101X   | 500     |
|                                 | Silver    | Aluminum     | White Virgin PTFE, 0.01"         | -              | 0.25           | 11-ACT         | 1000    |
|                                 | Silver    | Aluminum     | Red PTFE/White Silicone/Red PTFE | 57             | 1.0            | 11-AC-TST1     | 500     |



### Chromacol 11mm crimp top closures (continued)

| Description                            | Cap Color | Cap Material | Septum                  | Hardness shore | Thickness (mm) | Cat. No.   | Pack of |
|--|-----------|--------------|-------------------------|----------------|----------------|------------|---------|
| 11mm Crimp Cap, magnetic               | Silver    | Steel        | White Silicone/Red PTFE | 57             | 1.3            | 11-MC-ST15 | 500     |
| 11mm Snap Cap for Crimp Vials          | Clear     | Polyethylene | -                       | -              | -              | 11-PEC1    | 1000    |
| 11mm Snap Cap for Crimp Vials, Pre cut | Clear     | Polyethylene | -                       | -              | -              | 11-PEC1X   | 1000    |
| 11mm Snap Cap for Crimp Vials          | Clear     | Polyethylene | White Silicone/Red PTFE | 57             | 1.0            | 11-PEC-ST1 | 500     |

## Chromacol 11mm crimp top convenience and instrument select (IS) kits

- Convenience kits save time during sample preparation
- Include matched quantities of vials and aluminum seals with pre-assembled septa for added convenience during sample preparation
- Reusable two compartment trays protect vials and closure while keeping matching supplies together



2-CV7-CP

Items not shown to scale

### Chromacol 11mm crimp top convenience and instrument select (IS) kits

| Kit Type   | Glass | Patched | Cap Color | Septum                                    | Vial Cat. No. | Cap Cat. No. | Cat. No.    | Pack of |
|--|-------|---------|-----------|---|---------------|--------------|-------------|---------|
| Convenience Kit, Wide Opening Crimp Top Vial                   | Amber | Yes     | Silver    | Red Natural Rubber/<br>Clear PTFE, Type 7 | 2-CV(A)       | 11-AC7       | 2-CV(A)7-CP | 100     |
| IS Kit, Wide Opening Crimp Top Vial for Agilent GC Autosampler | Clear | Yes     | Silver    | Red Natural Rubber/<br>Clear PTFE, Type 7 | 2-CV          | 11-AC7       | HPG         | 100     |

For more information, visit [thermofisher.com/chromacol](https://thermofisher.com/chromacol)

## Chromacol 11mm crimping and decrimping tools

- Crimping tools provide a reproducible, secure vial closure for all 11mm vial and seal combinations
- Easy and convenient handling
- High quality construction for durability and long life
- Fine textured surface (powder coated) for a better grip and corrosion resistance



### Chromacol 11mm Crimpers and Decrimpers

Items not shown to scale

| Description      | Use   | Cat. No. | Pack of |
|------------------|---|----------|---------|
| Manual Crimper   | Attaches 11mm aluminum crimp seals                    | CR-11C   | 1       |
| Manual Decrimper | Removes 11mm aluminum crimp seals without vial damage | DCB-11C  | 1       |

For electronic crimpers and decrimpers look on page 2-091

### Compatible with:

Most HPLC and GC autosamplers

## Chromacol 2mL, 12x32mm, 11mm snap cap vials

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Available with a graduated, write-on patch for convenient sample identification
- Wide neck opening design, allows easy filling; requires Micro-Inserts with diameter of 6mm
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Snap-Cap vials can be used with snap caps or aluminum crimp seal closures

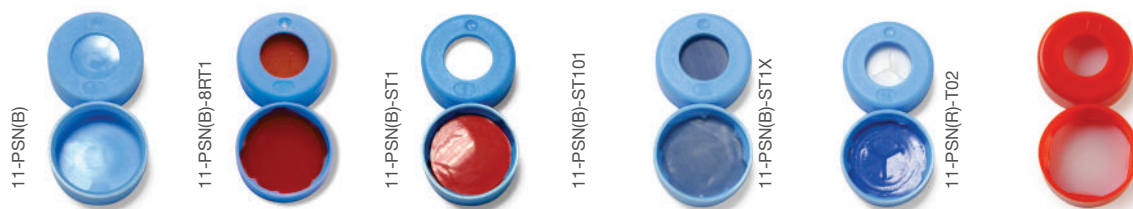


### Chromacol 2mL, 12x32mm, 11mm snap vials and inserts

| Description   | Glass         | Patched | Dimension (mm) | Profile       | Total Volume | Usable Volume | Residual (μL) | Cat. No.   | Pack of |
|---|---------------|---------|----------------|---------------|--------------|---------------|---------------|------------|---------|
| 11mm Snap Cap Vial                                      | Clear         | Yes     | 12x32          | Flat Bottom   | 2.0mL        | 1.5mL         | <170          | 2-RV       | 500     |
|   | Amber         | Yes     | 12x32          | Flat Bottom   | 2.0mL        | 1.5mL         | <170          | 2-RV(A)    | 500     |
| 11mm Snap Cap 1.5mL Vial                                | Clear         | No      | 12x32          | High Recovery | 1.5mL        | 1.3mL         | <4            | 1.5-HRRV   | 100     |
| 11mm Snap Cap 300μL Vial, Fused Insert                  | Clear         | Yes     | 12x32          | Fused Conical | 300μL        | 250μL         | <3            | 03-FIRV    | 500     |
|   | Amber         | Yes     | 12x32          | Fused Conical | 300μL        | 250μL         | <3            | 03-FIRV(A) | 500     |
| 300μL Insert  | Clear         | -       | 6x31           | Flat Bottom   | 300μL        | 200μL         | <12           | 03-NV      | 1000    |
| Self-centering support device for tapered glass inserts | Polyethylene  | -       | -              | -             | -            | -             | -             | MTS-1      | 500     |
| 600UI Crimp Top Vial Polyethylene Insert                | Polypropylene | -       | 12x32          | Insert Vial   | 600μL        | -             | -             | 06-PECV    | 500     |
| 600UI Pe Crimp / Snap Vial, Cylindrical Insert          | Polypropylene | -       | 12x32          | Insert Vial   | 600μL        | -             | -             | 06-PERV    | 500     |

## Chromacol 11mm snap closures

- New design of locking tabs provides easier application and removal of caps
- Enlarged open area allows for needle penetration across the entire vial opening
- Textured outer surface for easier gripping and improved detection by autosamplers with optical vial sensors
- Easy to apply and easy to remove from Snap vials without tools
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Snap caps eliminate the need for crimping or de-crimping tools
- Polyethylene caps are chemically inert and suitable for most chromatography applications
- Closures are shipped in sealed polybags to prevent contamination during transport



### Chromacol 11mm snap closures

| Description                             | Cap Color | Cap Material | Septum                             | Hardness shore | Thickness (mm) | Cat. No.        | Pack of |
|---|-----------|--------------|------------------------------------|----------------|----------------|-----------------|---------|
| 11mm Snap Cap, thinned penetration area | Blue      | Polyethylene | Integral Molded In Polyethylene    | –              | –              | 11-PSN(B)       | 500     |
| 11mm Snap Cap, 6mm hole                 | Blue      | Polyethylene | Red Natural Rubber/Clear PTFE      | 58             | 1.0            | 11-PSN(B)-8RT1  | 500     |
|   | Blue      | Polyethylene | White Silicone/Red PTFE            | 57             | 1.0            | 11-PSN(B)-ST1   | 500     |
|   | Blue      | Polyethylene | Blue Silicone/PTFE                 | 30             | 1.0            | 11-PSN(B)-ST101 | 500     |
|   | Blue      | Polyethylene | White Silicone/Blue PTFE, Pre-slit | 57             | 1.0            | 11-PSN(B)-ST1X  | 500     |
|   | Red       | Polyethylene | White Virgin PTFE, 0.01"           | 53             | 0.3            | 11-PSN(R)-T02   | 500     |

## Chromacol 11mm snap cap wide opening vial convenience kits

- Convenience kits save time during sample preparation
- Includes 100 vials and 100 caps with pre-assembled septa for added convenience during sample preparation
- Reusable two compartment trays protect vials and closure while keeping matching supplies together



2-RVST-CP

Items not shown to scale

### Chromacol 11mm snap cap wide opening vial convenience kits

| Kit Type                                | Glass | Patched | Cap Color | Septum                        | Vial Cat. No. | Cap Cat. No.   | Cat. No.  | Pack of |
|---|-------|---------|-----------|-------------------------------|---------------|----------------|-----------|---------|
| Convenience Kit, Wide Opening Snap Vial | Clear | Yes     | Blue      | White Silicone/Red PTFE       | 2-RV          | 11-PSN(B)-ST1  | 2-RVST-CP | 100     |
|   | Clear | Yes     | Blue      | Red Natural Rubber/Clear PTFE | 2-RV          | 11-PSN(B)-8RT1 | 2-RV8-CP  | 100     |

## Chromacol 13mm screw vials, 13-425 thread finish

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts



Images shown are 60% to scale  
\*40% to scale

### Chromacol 13mm screw vials, 13-425 thread finish

| Description                                  | Glass | Patched | Dimension (mm) | Profile       | Total Volume (mL) | Usable Volume (mL) | Residual (μL) | Cat. No. | Pack of |
|--|-------|---------|----------------|---------------|-------------------|--------------------|---------------|----------|---------|
| 13-425 Screw Thread Vial                     | Clear | No      | 13x100         | Round Bottom  | 10.0              | 8.5                | <500          | 10-SV    | 125     |
|  | Clear | No      | 13x65          | Round Bottom  | 5.0               | 4.5                | <500          | 5-SV     | 125     |
|  | Clear | No      | 15x46          | Flat Bottom   | 4.0               | 3.5                | <800          | 4-SV     | 500     |
|  | Amber | No      | 15x46          | Flat Bottom   | 4.0               | 3.5                | <800          | 4-SV(A)  | 500     |
| 13-425 Screw Thread 3.5mL High Recovery Vial | Clear | No      | 15.25x46       | High Recovery | 3.5               | 3.0                | <12           | 3.5-HRSV | 250     |

## Chromacol 13-425 Thread Caps and Septa

- Open top caps are designed to be used with any of our 12mm septa
- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Pre-assembled caps and septa are convenient and minimize contamination from handling



### Chromacol 13-425 Screw thread caps and septa

| Description                                      | Cap Color | Cap Material  | Septum                         | Hardness shore | Thickness (mm) | Cat. No. | Pack of |
|--|-----------|---------------|--------------------------------|----------------|----------------|----------|---------|
| 13mm Open Top Screw Cap, 13-425 thread, 8mm hole | Black     | Polypropylene | –                              | –              | –              | 12-SC    | 500     |
| 13mm Solid Top Cap, 13-425 thread                | Black     | Polypropylene | –                              | –              | –              | 12-SCS   | 500     |
| Septum for 13-425 Screw Caps                     | –         | –             | Red Natural Rubber/ Clear PTFE | 38             | 1.0            | 12-6RT1  | 500     |
|  | –         | –             | White Silicone/Red PTFE        | 57             | 2.0            | 12-ST2   | 500     |
|  | –         | –             | Blue Silicone/PTFE             | 30             | 1.0            | 12-ST101 | 500     |



### Chromacol 13-425 Screw thread caps and septa (continued)

| Description                                      | Cap Color | Cap Material  | Septum                        | Hardness shore | Thickness (mm) | Cat. No.   | Pack of |
|--|-----------|---------------|-------------------------------|----------------|----------------|------------|---------|
| 13mm Open Top Screw Cap, 13-425 thread, 8mm hole | Black     | Polypropylene | White Silicone/Red PTFE       | 57             | 1.3            | 13-SC-ST15 | 500     |
|  | Black     | Polypropylene | Red Natural Rubber/Clear PTFE | 58             | 1.0            | 12-SC-8RT1 | 500     |
|  | Black     | Polypropylene | White Silicone/Red PTFE       | 57             | 2.0            | 12-SC-ST2  | 500     |



## Chromacol shell/neckless vials

- Superior quality 1st hydrolytic class glass (Type 1) in clear
- Polyethylene cap with starburst center design eases syringe needle penetration
- Convenience kits include equal quantities of vials and caps



### Chromacol shell/neckless vials

| Description                         | Glass | Patched | Dimension (mm) | Profile     | Total Volume (mL) | Usable Volume (mL) | Residual (µL) | Cat. No.   | Pack of |
|-------------------------------------|-------|---------|----------------|-------------|-------------------|--------------------|---------------|------------|---------|
| 1mL Neckless/Shell Vial             | Clear | No      | 8x40           | Flat Bottom | 1.25              | 1.0                | <80           | 1-NWV      | 500     |
| 1mL Neckless/Shell Vial with PE-Cap | Clear | No      | 8x40           | Flat Bottom | 1.25              | 1.0                | <80           | 1-NWV-C    | 200     |
| 1mL Neckless/Shell Vial with PE-Cap | Amber | No      | 8x40           | Flat Bottom | 1.25              | 1.0                | <81           | 1-NWV(A)-C | 200     |
| 2mL Neckless/Shell Vial             | Clear | No      | 12x32          | Flat Bottom | 2.5               | 2.0                | <175          | 2.5-NV     | 500     |
| 4mL Neckless/Shell Vial with PE-Cap | Clear | No      | 15x46          | Flat Bottom | 5.5               | 4.0                | <350          | 4-NWV-C    | 100     |

## Chromacol headspace vials

Glass vials with 20mm crimp seal or 18mm screw thread finish are designed to fit most headspace autosamplers

- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber, meets all requirements of Pharm. US, EU, JPN
- Round bottom vials are compatible with most autosamplers and more easily handled by robotic arms that lift the vial from the tray
- Vials feature beveled edge 20mm crimp finish
- The bevel edge on the lip of the vial provides additional sealing power for greater leak resistance under high pressure
- Screw thread headspace vials are convenient and do not require tools
- Multiple turn threading maintains a tight seal through extreme heating cycles



### Chromacol headspace vials

| Description               | Glass | Patched | Dimension (mm) | Finish       | Profile      | Total Volume (mL) | Usable Volume (mL) | Cat. No. | Pack of |
|---------------------------|-------|---------|----------------|--------------|--------------|-------------------|--------------------|----------|---------|
| 20mm Headspace Crimp Vial | Clear | No      | 30x60          | Beveled Edge | Flat Bottom  | 27                | 27                 | 27-CV    | 100     |
|                           | Clear | No      | 23x75          | Beveled Edge | Round Bottom | 22                | 20                 | 22-CV    | 125     |
|                           | Clear | No      | 22.5x75        | Beveled Edge | Round Bottom | 21                | 20                 | 20-CV    | 125     |
|                           | Amber | No      | 22.5x75        | Beveled Edge | Round Bottom | 21                | 20                 | 20-CV(A) | 125     |

For more information, visit [thermofisher.com/chromacol](https://thermofisher.com/chromacol)



### Chromacol headspace vials (continued)

| Description                   | Glass | Patched | Dimension (mm) | Finish       | Profile      | Total Volume (mL) | Usable Volume (mL) | Cat. No. | Pack of |
|-------------------------------|-------|---------|----------------|--------------|--------------|-------------------|--------------------|----------|---------|
| 20mm Headspace Crimp Vial     | Clear | No      | 22.5x46        | Beveled Edge | Round Bottom | 12                | 10                 | 10-CV    | 125     |
|                               | Amber | No      | 22.5x46        | Beveled Edge | Round Bottom | 12                | 10                 | 10-CV(A) | 125     |
|                               | Clear | No      | 18x50          | Beveled Edge | Round Bottom | 10                | 9                  | 9-CV     | 100     |
|                               | Clear | No      | 22x38          | Beveled Edge | Round Bottom | 8                 | 6                  | 6-CV     | 125     |
| 18mm Screw Top Headspace Vial | Clear | No      | 22.5x76        | Screw Thread | Round Bottom | 21                | 20                 | 20-HSV   | 125     |
|                               | Clear | No      | 22.5x46        | Screw Thread | Round Bottom | 12                | 10                 | 10-HSV   | 125     |

### Chromacol 20mm crimping and decrimping tools

- Crimping tools provide a reproducible, secure vial closure for all 20mm vial and seal combinations
- Easy and convenient handling
- High quality construction for durability and long life
- Fine textured surface (powder coated) for a better grip and corrosion resistance



Items not shown to scale

### Chromacol 20mm crimping and decrimping tools

| Description      | Use   | Cat. No. | Pack of |
|------------------|---|----------|---------|
| Manual Crimper   | Attaches 20mm crimp seals                               | CR-20C   | 1       |
| Decapping Pliers | Removes 20mm crimp seals, Protective gloves recommended | DCR-20   | 1       |
| Manual Decrimper | Removes 20mm crimp seals without vial damage            | DCB-20C  | 1       |

## Chromacol headspace caps and septa

- Use magnetic seals with PAL/CTC/Leap Technologies, Gerstel and other magnetic transport autosamplers
- 20mm crimp seals must be applied with a crimping tool
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Extended temperature range products for high-temperature headspace applications



Images shown are 50%  
to scale

### Chromacol headspace caps and septa

| Description                       | Cap Color | Cap Material     | Septum | Hardness °shore | Thickness (mm) | Cat. No.   | Pack of |
|-----------------------------------|-----------|------------------|--------|-----------------|----------------|------------|---------|
| 20mm Crimp Cap, 9mm hole          | Silver    | Aluminum         | -      | -               | -              | 20-ACB     | 500     |
| 20mm Magnetic Crimp Cap, 6mm hole | Silver    | Tinplate         | -      | -               | -              | 20-MCB     | 500     |
|                                   | Red       | Alu/<br>Tinplate | -      | -               | -              | 20-MCBC(R) | 500     |
| 18mm Magnetic Screw Cap, 8mm hole | Silver    | Steel            | -      | -               | -              | 18-MSB     | 125     |



|                            |   |   |  |    |      |          |      |
|----------------------------|---|---|--|----|------|----------|------|
| Septum for 20mm Crimp Caps | - | - | 20mm Gray Bromobutyl Stopper                             | 55 | 3.0  | 20-B3P   | 500  |
|                            | - | - | 20mm Molded Gray Chlorobutyl                             | 52 | 3.0  | 20-CB3   | 1000 |
|                            | - | - | 20mm Molded Gray Bromobutyl/<br>Gray PTFE                | 52 | 3.0  | 20-CBT3  | 1000 |
|                            | - | - | 20mm Molded Black Bromobutyl/<br>Gray PTFE, Bellows Type | 52 | 3.0  | 20-CBT3B | 1000 |
|                            | - | - | 20mm Silicone/<br>PTFE for liquid – liquid extraction    | -  | 0.25 | 20-LLX   | 100  |
|                            | - | - | 20mm Blue Silicone/Natural PTFE                          | 45 | 3.0  | 20-ST3   | 500  |
|                            | - | - | 20mm Red Silicone/Natural PTFE,<br>high temperature      | 45 | 3.1  | 20-ST3HT | 100  |
|                            | - | - | 20mm Blue Silicone/PTFE                                  | 30 | 1.0  | 20-ST101 | 500  |

### Chromacol headspace caps and septa (continued)

| Description                                 | Cap Color | Cap Material     | Septum  | Hardness °shore | Thickness (mm) | Cat. No.        | Pack of |
|---|-----------|------------------|---|-----------------|----------------|-----------------|---------|
| Septum for 18mm Screw Caps                  | -         | -                | 18mm Blue Silicone/PTFE                                     | 30              | 1.0            | 18-ST101        | 125     |
| 20mm Composite Magnetic Crimp Cap, 8mm hole | Blue      | Alu/<br>Tinplate | 20mm Blue Silicone/Natural PTFE                             | 45              | 3.0            | 20-MCBC-ST3     | 500     |
|   | Red       | Alu/<br>Tinplate | 20mm Molded Gray Chlorobutyl                                | 52              | 3.0            | 20-MCBC(R)-CBT3 | 500     |
|   | Red       | Alu/<br>Tinplate | 20mm Blue Silicone/Natural PTFE                             | 45              | 3.0            | 20-MCBC(R)-ST3  | 500     |
| 20mm Magnetic Tinplate Crimp Cap            | Silver    | Tinplate         | 20mm Blue Silicone/Natural PTFE                             | 45              | 3.0            | 20-MCB-ST3      | 500     |
| 20mm Crimp Cap, 9mm hole                    | Silver    | Aluminum         | 20mm Molded Gray/Bromobutyl/<br>Gray PTFE                   | 52              | 3.0            | 20-AC-CBT3      | 500     |
|   | Silver    | Aluminum         | 20mm Blue Silicone/Natural PTFE                             | 45              | 3.0            | 20-AC-ST3       | 500     |
| 18mm Magnetic Screw Cap, 8mm hole           | Silver    | Steel            | 18mm Molded Blue Chlorobutyl/<br>Gray PTFE                  | 52              | 3.0            | 18-MSC-CBT3     | 125     |
|   | Silver    | Steel            | 18mm Blue Silicone/PTFE, not prefitted                      | 30              | 1.0            | 18-MSC-ST101    | 125     |
|   | Silver    | Steel            | 18mm Blue Silicone/Natural PTFE                             | 45              | 2.0            | 18-MSC-ST201    | 125     |
| 20mm Magnetic Tinplate Crimp Cap            | Silver    | Tinplate         | 20mm Red Silicone/Natural PTFE,<br>high temperature (300°C) | 45              | 3.1            | 20-MCB-ST3HT    | 500     |
| 18mm Magnetic Screw Cap, 8mm hole           | Silver    | Steel            | 18mm Red Silicone/Natural PTFE,<br>high temperature (250°C) | 45              | 3.1            | 18-MSC-ST3HT    | 125     |
| 20mm Magnetic Crimp Cap, 8mm hole           | Gold      | Tinplate         | 20mm White Silicone/Blue PTFE with thin Penetration Area    | 45              | 3mm / 1.5mm    | 20-MCB-STME     | 100     |
| 20mm Magnetic Crimp Cap, 8mm hole           | Blue      | Alu/<br>Tinplate | 20mm White Silicone/Blue PTFE with thin Penetration Area    | 45              | 3mm / 1.5mm    | 20-MCBC-STME    | 100     |
| 18mm Magnetic Crimp Cap, 8mm hole           | Silver    | Steel            | 20mm White Silicone/Blue PTFE with thin Penetration Area    | 45              | 2.2mm / 1.5mm  | 18-MSC-STME     | 100     |

| Description                                      | Cap Material | Septum              | Cat. No.   | Pack of |
|--|--------------|---------------------|------------|---------|
| Wash Kit Closures, PE Snap Cap T/S, slit, PK/100 | Polyethylene | PTFE/Silicone, Slit | WSKTCL-100 | 100     |

## Chromacol headspace vial convenience kits

- Include matched quantities of vials and seals with pre-assembled septa for added convenience during sample preparation
- Convenience kits save time during sample preparation



Items not shown to scale

### Chromacol headspace vial convenience kits

| Kit Type   | Glass | Patched | Cap Color | Septum                                 | Vial Cat. No. | Cap Cat. No. | Cat. No.       | Pack of |
|--|-------|---------|-----------|--|---------------|--------------|----------------|---------|
| Convenience Kit, 20mL Headspace Screw Vial, Round Bottom, Steel Screw Cap, 8mm hole            | Clear | No      | Silver    | 18mm Blue Silicone/Natural PTFE        | 20-HSV        | 18-MS-ST201  | 20-HSVST201-CP | 125     |
| Convenience Kit, 20mL Headspace Crimp Vial, Beveled Edge, Round Bottom, Al Crimp Cap, 8mm hole | Clear | No      | Silver    | 20mm Molded Blue Chlorobutyl/Gray PTFE | 20-CV         | 20-AC-CBT3   | 20-CVCBT3-CP   | 125     |
| Convenience Kit, 20mL Headspace Crimp Vial, Beveled Edge, Round Bottom, Al Crimp Cap, 8mm hole | Clear | No      | Silver    | 20mm Blue Silicone/Natural PTFE        | 20-CV         | 20-AC-ST3    | 20-CVST3-CP    | 125     |

| Description   | Glass | Septum              | Cat. No. | Pack of |
|---|-------|---------------------|----------|---------|
| Wash Kit, PP Box 25 cavities, 10ml Glass Crimp Vial , PE Snap Cap S/T, slit, 25 each vial + closure | Clear | PTFE/Silicone, Slit | WSKT-25  | 25      |



## Chromacol sample storage screw thread vials

- Capacity range up to 40mL
- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Provide consistent pH for duration of sample storage life
- PTFE-Lined Solid-top storage caps



Caps and Septa images 50% to scale

### Chromacol sample storage screw thread vials

| Description       | Glass | Patched | Dimension (mm) | Profile     | Total Volume (mL) | Capacity (DRAMS) | Cat. No.    | Pack of |
|-------------------|-------|---------|----------------|-------------|-------------------|------------------|-------------|---------|
| 24-400 Screw Vial | Clear | No      | 28x95          | Flat Bottom | 40                | 8                | 40-SV       | 100     |
|                   | Amber | No      | 28x95          | Flat Bottom | 40                | 8                | 40-SV(A)    | 100     |
| 20-400 Screw Vial | Clear | No      | 23x85          | Flat Bottom | 22                | 6                | 22-SQAAAAAV | 200     |
| 18-400 Screw Vial | Clear | No      | 21x70          | Flat Bottom | 16                | 4                | 16-SV       | 200     |
|                   | Amber | No      | 21x70          | Flat Bottom | 16                | 4                | 16-SV(A)    | 200     |
| 15-425 Screw Vial | Clear | No      | 19x65          | Flat Bottom | 12                | 3                | 12-SV       | 200     |
|                   | Amber | No      | 19x65          | Flat Bottom | 12                | 3                | 12-SV(A)    | 200     |
|                   | Clear | No      | 17x60          | Flat Bottom | 8                 | 2                | 8-SV        | 200     |
|                   | Amber | No      | 17x60          | Flat Bottom | 8                 | 2                | 8-SV(A)     | 200     |

For smaller vials look at the previous sections



Caps and Septa images 50% to scale

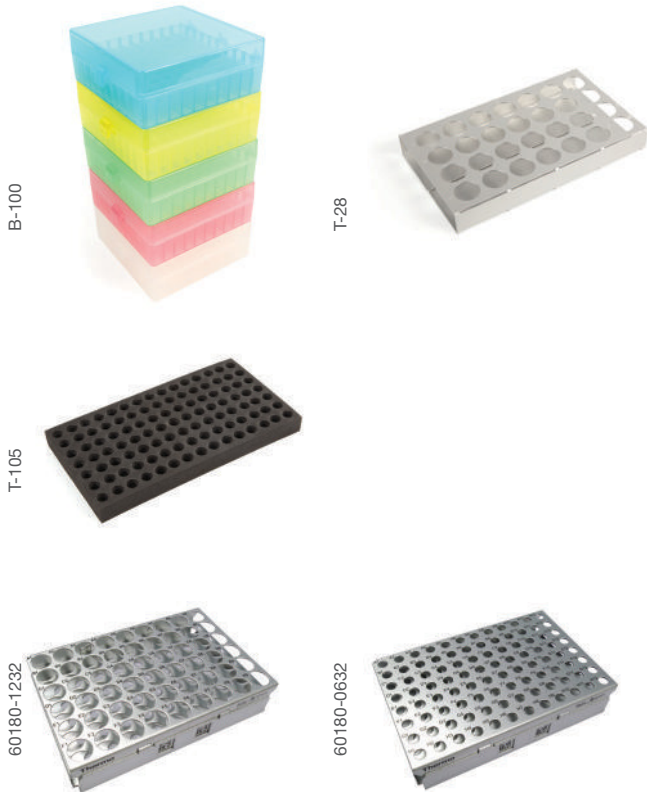
### Chromacol sample storage screw thread caps and septa

| Description      | Cap Color | Cap Material  | Septum             | Hardness °shore | Thickness (mm) | Cat. No. | Pack of |
|------------------|-----------|---------------|--------------------|-----------------|----------------|----------|---------|
| 24-400 Screw Cap | White     | Polypropylene | PTFE/PE Foam Liner | –               | 1.0            | 24-SCST  | 100     |
| 20-400 Screw Cap | White     | Polypropylene | PTFE/PE Foam Liner | –               | 1.0            | 20-SCST  | 100     |
| 18-400 Screw Cap | White     | Polypropylene | PTFE/PE Foam Liner | –               | 1.0            | 18-SCST  | 100     |
| 15-425 Screw Cap | White     | Polypropylene | PTFE/PE Foam Liner | –               | 1.0            | 15-SCST  | 100     |
| 13-425 Screw Cap | White     | Urea          | PTFE/PE Foam Liner | –               | 1.0            | 13-SCST  | 100     |

For more information, visit [thermofisher.com/chromacol](https://thermofisher.com/chromacol)

## Chromacol vial racks and storage boxes

- For a safe working position on the lab bench and during transport
- Ideal for space-saving storage in fridges
- Temperature resistant from -90°C to 121°C (except Foam)
- Chemically resistant and fairly robust; autoclavable (except Foam)



Items not shown to scale

### Chromacol vial racks and storage boxes

| Description  | Color   | Material          | Dimension (mm) | No of Vials | OD of Vials (mm) | Stackable | Cat. No.   | Pack of |
|--|---|-------------------|----------------|-------------|------------------|-----------|------------|---------|
| Autoclavable freezer and storage box with lid, alphanumeric grid, -90°C to 121°C | 5 assorted colors (red, yellow, blue, green, natural) | Polypropylene     | 155x140x55     | 100         | 12               | Yes       | B-100      | 5       |
|  | Silver  | Anodised Aluminum | 210x134        | 28          | 22               | No        | T-28       | 5       |
| Vial Tray  | Black   | Foam              | 210x134        | 105         | 12               | No        | T-105      | 5       |
| SBS/ANSI standard footprint Vial Rack  | Silver  | Anodised Aluminum | 127,8x85,5     | 54          | 12               | No        | 60180-1232 | 1       |
|  | Silver  | Anodised Aluminum | 127,8x85,5     | 96          | 6                | No        | 60180-0632 | 1       |



## Chromacol EPA, TOC and Scintillation screw vials

### Level 300 cleaned and certified

- Processed and packaged under a registered ISO Quality Management System
- Laboratory certified to meet U.S. EPA Super Fund Standards in accordance with the latest edition of EPA's "Specifications and Guidance for Contaminant Free Sample Containers"
- Every case of Level 300 product contains a Certificate of Analysis and is custody sealed to ensure reliable chain-of-custody

### Level 200 cleaned

- Processed and packaged under a strict registered ISO Quality Management System in the same manner as Level 300 products
- Level 200 products are not certified

- Every case of product is labeled with its production number and is custody sealed to ensure reliable chain-of-custody

### Level 100

- Level 100 products are not certified or pre-cleaned
- Every case of product is labeled with its production number and is custody sealed to ensure reliable chain-of-custody

### TOC vials

- The only low-level certified vials in the market for Total Organic Carbon (TOC) testing and sampling
- Major TOC instrument manufacturers recommend these vials when analysis of low levels of TOC requires low background level assurance

- Each lot of vials is tested and certified to contribute less than 10ppb TOC as background or for less stringent applications the 20ppb TOC version

- Certificate of Analysis is included with lot production numbers

### Thermo Scientific™ Sterilin™ Scintillation vials

- Provide the very lowest background count and benefit from very high optical clarity.
- Typical background count of 13CPM or lower, compared to an average 16-65CPM from competitive products
- Noise level of 2.28 and a quenching index factor of 349

### Chromacol EPA screw vial kits

| Kit Type                                      | Glass | Dimension (mm) | Total Volume (mL) | Level                 | Septum          | Cat. No.        | Pack of |
|---|-------|----------------|-------------------|-----------------------|-----------------|-----------------|---------|
| EPA Screw Vial Assembled Kit Vials/Septa/Caps | Clear | 28x95          | 40                | Level 100             | 0.01" 1Silicone | 40-EPAVCS       | 100     |
|   | Clear | 28x95          | 40                | Level 200 Pre-cleaned |                 | 40-EPAVCS-PC    | 72      |
|   | Clear | 28x95          | 40                | Level 300 Pre-cleaned |                 | 40-EPAVCS-PC3   | 72      |
|   | Amber | 28x95          | 40                | Level 100             |                 | 40-EPAVCS(A)    | 100     |
|   | Amber | 28x95          | 40                | Level 200 Pre-cleaned |                 | 40-EPAVCS(A)-PC | 72      |
|   | Clear | 28x57          | 20                | Level 100             |                 | 20-EPAVCS       | 100     |
|   | Amber | 28x57          | 20                | Level 100             |                 | 20-EPAVCS(A)    | 100     |

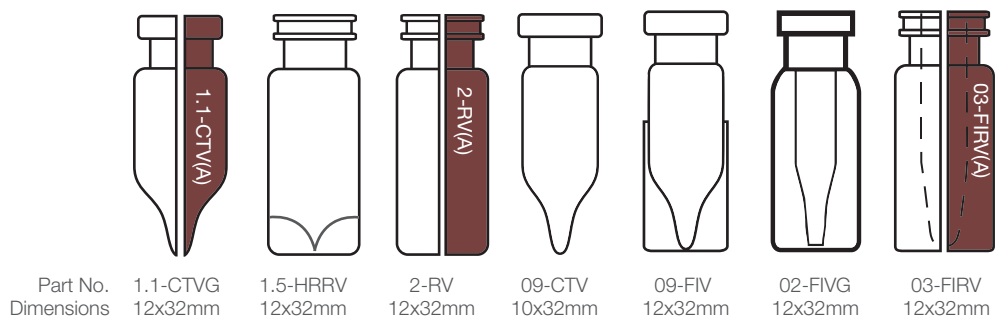
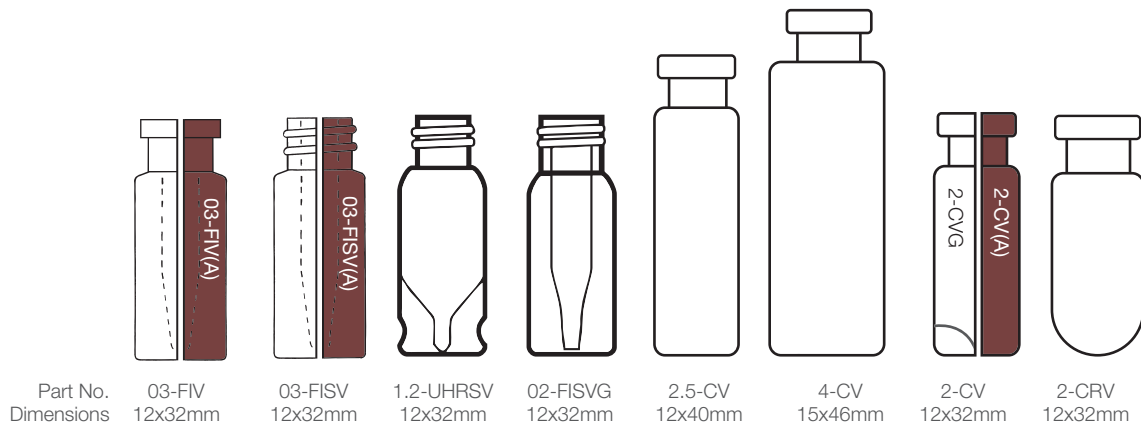
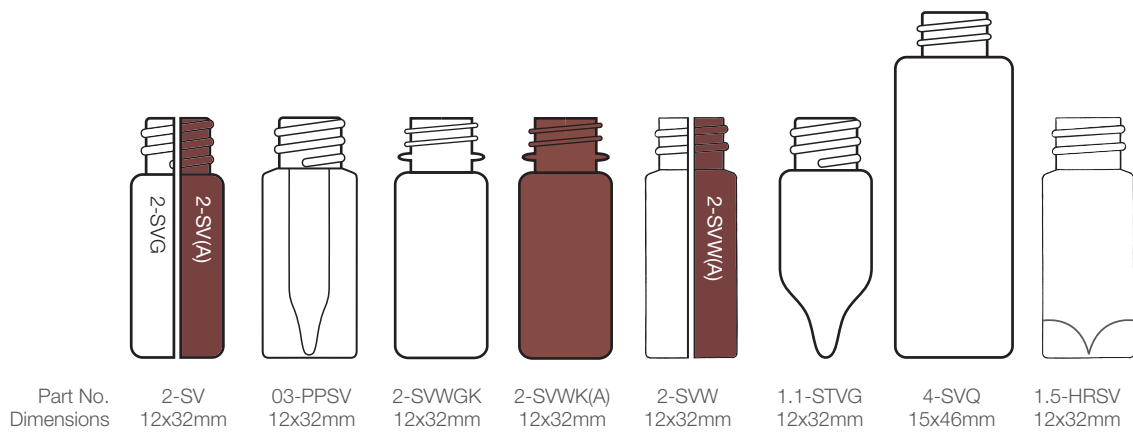
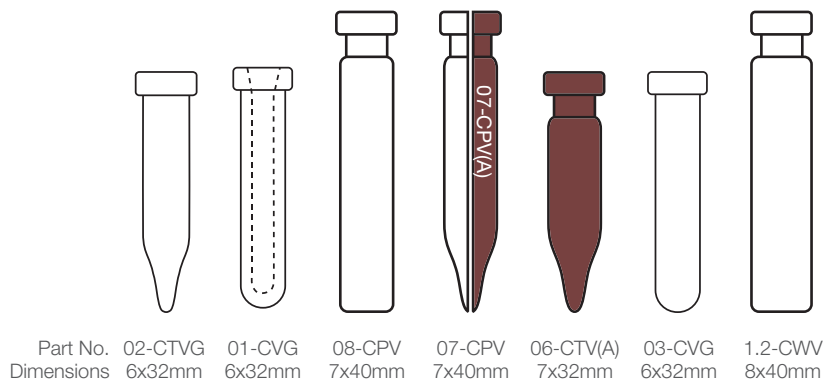
### Chromacol TOC vial kits (assembled)

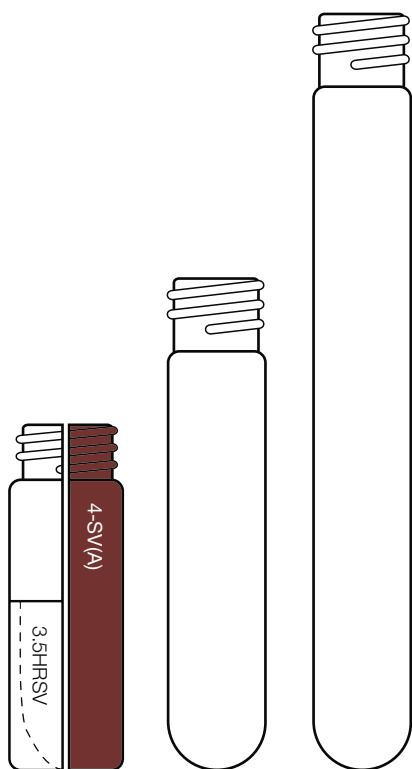
| Description  | Glass | Dimension (mm) | Total Volume (mL) | Cap Color | Cap Material  | Septum                    | Cat. No.    | Pack of |
|--|-------|----------------|-------------------|-----------|---------------|---------------------------|-------------|---------|
| TOC clear vial with bonded cap cover, open top cap TOC 10ppb | Clear | 28x96          | 40                | White     | Polypropylene | Beige PTFE/White Silicone | 40-TOCSV-10 | 72      |
| TOC clear vial with cap bonded cover, open top cap TOC 20ppb | Clear | 28x96          | 40                | White     | Polypropylene | Beige PTFE/White Silicone | 40-TOCSV-20 | 72      |

### Chromacol scintillation vial kit

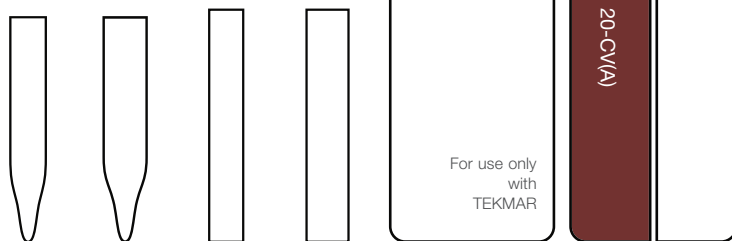
| Description                    | Glass | Dimension (mm) | Total Volume (mL) | Noise | Background Count | Quenching Index Factor | Cat. No.  | Pack of |
|--------------------------------|-------|----------------|-------------------|-------|------------------|------------------------|-----------|---------|
| 20mL vial with foil lined caps | Clear | 27x57          | 20                | 2.28  | 13 CPM           | 349                    | 20-EPSVCA | 500     |

# Chromacol vial comparison chart





|            |         |         |          |
|------------|---------|---------|----------|
| Part No.   | 4-SV    | 5-SV    | 10-SV    |
| Dimensions | 15x46mm | 13x65mm | 13x100mm |



|            |        |          |        |        |         |                   |
|------------|--------|----------|--------|--------|---------|-------------------|
| Part No.   | 02-MTV | 02-MTVWG | 02-NV  | 03-NV  | 22-CV   | 20-CV(A) / 20-HSV |
| Dimensions | 5x30mm | 6x30mm   | 5x31mm | 6x31mm | 22x75mm | 22x75mm           |

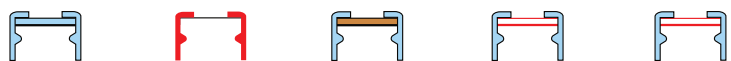


|            |         |         |           |         |                |
|------------|---------|---------|-----------|---------|----------------|
| Part No.   | 9-CV    | 6-CV    | 20-EPSVCA | 27-CV   | 10-CV / 10-HSV |
| Dimensions | 18x50mm | 22x38mm | 27x57mm   | 30x60mm | 22x46mm        |

# Chromacol caps and septa comparison chart

|                        |  |  |   |   |   |   |  |  |  |
|------------------------|--|--|---|---|---|---|--|--|--|
| Part No.<br>Dimensions | <br>8-AC-ST15<br>8x5mm            | <br>8-AC-ST101<br>8x5mm           |   |   |   |   |  |  |  |
| Part No.<br>Dimensions | <br>8-ACT<br>8x5mm                | <br>8-PEC1<br>8x5mm               | <br>*8-SC<br>8x9mm           | <br>*8-SCJ<br>8x9mm              | <br>8-SC-8RT1<br>8x9mm     | <br>8-SC-ST15<br>8x9mm |  |  |  |
| Part No.<br>Dimensions | <br>8-ST14<br>8x1.4mm             | <br>8-ST14X<br>8x1.4mm            | <br>8-ST143<br>8x1.5mm       | <br>8-ST144<br>8x1.4mm           | <br>8-6RT1<br>8x1mm        | <br>8-ST101<br>8x1mm    | <br>8-T02<br>8x0.25mm | <br>8-TST1<br>8x1mm | <br>8-ST15<br>8x1.5mm |
| Part No.<br>Dimensions | <br>*9-SCK(B)-<br>8RT1<br>9x6.5mm | <br>9-SCK(B)-<br>ST101<br>9x6.5mm | <br>*9-SCK(B)-ST1<br>9x6.5mm | <br>9-SCK(B)-<br>TST1<br>9x6.5mm | <br>9-SCSK-8RT1<br>9x6.5mm | <br>*11-AC6<br>11x6mm  |  |  |  |
| Part No.<br>Dimensions | <br>*11-AC7<br>11x6mm           | <br>11-AC-ST101<br>11x6mm       | <br>11-AC-ST101X<br>11x6mm | <br>11-AC(B)-ST144<br>11x6mm   | <br>11-AC-ST15<br>11x6mm | <br>11-ACT<br>11x6mm |  |  |  |
| Part No.<br>Dimensions | <br>11-AC-TST1<br>11x6mm        | <br>11-LLX<br>11x3mm            | <br>11-PEC1<br>11x6mm      | <br>11-PEC1X<br>11x6mm         | <br>11-PEC-ST1<br>11x7mm | <br>11-MC-ST15        |  |  |  |

\*Cap available in alternative colors.  
See below for more details



|            |                 |                |                |                 |               |
|------------|-----------------|----------------|----------------|-----------------|---------------|
| Part No.   | 11-PSN(B)-ST101 | *11-PSN(R)-T02 | 11-PSN(B)-8RT1 | *11-PSN(B)-ST1X | 11-PSN(B)-ST1 |
| Dimensions | 11x6.5mm        | 11x6.5mm       | 11x6.5mm       | 11x6.5mm        | 11x6.5mm      |



|            |         |         |           |            |            |         |
|------------|---------|---------|-----------|------------|------------|---------|
| Part No.   | *12-SC  | 12-SCS  | 12-SC-ST2 | 12-SC-8RT1 | 13-SC-ST15 | 13-SCST |
| Dimensions | 12x10mm | 12x10mm | 12x10mm   | 12x10mm    | 12x10mm    | 12x10mm |



|            |        |         |          |
|------------|--------|---------|----------|
| Part No.   | 12-ST2 | 12-6RT1 | 12-ST101 |
| Dimensions | 12x2mm | 12x1mm  | 12x1mm   |



|            |         |             |              |        |        |          |
|------------|---------|-------------|--------------|--------|--------|----------|
| Part No.   | 18-MSC  | 18-MSC-CBT3 | 18-MSC-ST201 | 20-ACB | 20-MCB | *20-MCBC |
| Dimensions | 18x13mm | 18x13mm     | 18x13mm      | 20x7mm | 20x7mm | 20x7mm   |



|            |                 |              |            |           |        |         |
|------------|-----------------|--------------|------------|-----------|--------|---------|
| Part No.   | 20-MCBC(R)-CBT3 | *20-MCBC-ST3 | 20-AC-CBT3 | 20-AC-ST3 | 20-CB3 | 20-CBT3 |
| Dimensions |                 | 20x7mm       | 20x7mm     | 20x7mm    | 20x3mm | 20x3mm  |



|            |          |        |        |          |          |
|------------|----------|--------|--------|----------|----------|
| Part No.   | 20-CBT3B | 20-LLX | 20-ST3 | 20-ST3HT | 20-ST15  |
| Dimensions | 20x3mm   | 20x3mm | 20x3mm | 20x3.1mm | 20x1.5mm |



|            |          |          |           |
|------------|----------|----------|-----------|
| Part No.   | 20-ST101 | 18-ST101 | 20-2FB3   |
| Dimensions | 20x1mm   | 18x1mm   | 20x13.4mm |

# Electronic crimping and decrimping tools

Adjustable crimp and highest sample security

## Product features and benefits

- 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
- Statistics and log of recent crimping results
- Motor with extended lifetime and no particle emission



Versatile and programmable Crimp Station

## Maximized sample security with electronic crimping tools

Our new electronic Thermo Scientific™ Crimper portfolio includes tools for 8mm, 11mm, 13mm, and 20mm 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 aluminum, pressure release and bi-metal caps while remaining in most sample trays. If steel caps are in use we recommend the Thermo Scientific™ High-Power Crimp Station as it provides the highest crimping force independent from battery charge status. The Crimp Head selection includes also special crimp heads for 13mm and 20mm flip-off caps, further specials are available on request.



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

For more information, visit [thermofisher.com/chromacol](https://www.thermofisher.com/chromacol)

## Electronic High-Power Crimper

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 and also available separately.

The High-Power Crimper can be used as a hand-held device – additional convenience applies with the optional adjustable accessory base which measures 25.4 x 17.7cm; the maximum height for the crimper stand is 37.6cm.

| Description   | Cat. No.        | Pack of |
|---|-----------------|---------|
| Programmable Electronic High Power Crimper  | 60180-ECRHB     | 1       |
| Programmable Electronic High Power Crimper Kit 11mm<br><i>Including 11mm Crimp Head and 11mm Decrimp Head</i> | 60180-ECRH11KIT | 1       |
| Programmable Electronic High Power Crimper Kit 11mm<br><i>Including 13mm Crimp Head and 13mm Decrimp Head</i> | 60180-ECRH13KIT | 1       |
| Programmable Electronic High Power Crimper Kit 20mm<br><i>Including 20mm Crimp Head and 20mm Decrimp Head</i> | 60180-ECRH20KIT | 1       |

### Accessories for High-Power Crimper

| Description   | Cat. No.   | Pack of |
|---|------------|---------|
| Accessory Base for Electronic Crimpers<br><i>Height adjustable and solvent resistant<br/>(consists of base plate and bar)</i> | ECRH-STAND | 1       |
| 8mm Crimp Head  | ECMJ-8     | 1       |
| 11mm Crimp Head   | ECMJ-11    | 1       |
| 11mm Decrimp Head   | ECDJ-11    | 1       |
| 13mm Crimp Head   | ECMJ-13    | 1       |
| 13mm Decrimp Head   | ECDJ-13    | 1       |
| 13mm Flip-Off Crimp Head  | ECMJ-13FO  | 1       |
| 20mm Crimp Head   | ECMJ-20    | 1       |
| 20mm Decrimp Head   | ECDJ-20    | 1       |
| 20mm Flip-Off Crimp-Head  | ECMJ-20FO  | 1       |



## 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.

| Description                            | Cat. No.     | Pack of |
|--|--------------|---------|
| Crimper for 8mm Aluminum Crimp Caps    | 60180-ECR8   | 1       |
| Crimper for 11mm Aluminum Crimp Caps   | 60180-ECR11  | 1       |
| Crimper for 13mm Aluminum Crimp Caps   | 60180-ECR13  | 1       |
| Crimper for 20mm Aluminum Crimp Caps   | 60180-ECR20  | 1       |
| Decrimper for 11mm Aluminum Crimp Caps | 60180-EDCB11 | 1       |
| Decrimper for 13mm Aluminum Crimp Caps | 60180-EDCB13 | 1       |
| Decrimper for 20mm Aluminum Crimp Caps | 60180-EDCB20 | 1       |



# Well plates for chromatography

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

- No leeching due to high-end material



For more information, visit [thermofisher.com/webseal](https://www.thermofisher.com/webseal)



## WebSeal well plates, plastic, non-coated, non-sterile, chromatography tested

- 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  $-80^{\circ}\text{C}$  to  $+121^{\circ}\text{C}$
- 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
- Low binding PP for homogenous assays and storage



## WebSeal well plates, plastic, non-coated, non-sterile, chromatography tested

| Description                    | Material                        | Total Height | Well Format                             | Total Volume ( $\mu\text{L}$ )    | Working Volume Range $\mu\text{L}/$ Well | Cat. No.   | Pack of    |
|--------------------------------|---------------------------------|--------------|---|-----------------------------------|--|------------|------------|
| 96 Well Microplate, Round Well | PP                              | 14.4         | V-Shape, 8mm Diameter                   | 450                               | 10-400                                   | 60180-P100 | 20         |
|                                | PP                              | 14.4         | V-Shape, 8mm Diameter                   | 450                               | 10-400                                   | 60180-P130 | 120        |
| 96 Well Plates, Round Well     | PP                              | 26.5         | U-Shape, 8mm Diameter, Mid Height Plate | 1100                              | 50-900                                   | 60180-P154 | 50         |
|                                | PP                              | 31.6         | U-Shape, 8mm Diameter, Mid Height Plate | 1300                              | 50-1000                                  | 60180-P103 | 5          |
|                                | PP                              | 31.6         | U-Shape, 8mm Diameter, Mid Height Plate | 1300                              | 50-1000                                  | 60180-P133 | 50         |
|                                | PP                              | 45.0         | U-Shape, 8mm Diameter                   | 2000                              | 50-1900                                  | 60180-P104 | 5          |
|                                | PP                              | 45.0         | U-Shape, 8mm Diameter                   | 2000                              | 50-1900                                  | 60180-P124 | 50         |
|                                | 96 Deep Well Plate, Square Well | PP           | 31.0                                    | U-Shape, Square, Mid Height Plate | 1600                                     | 50-1300    | 60180-P155 |
| PP                             |                                 | 44.0         | V-Shape, Square                         | 2000                              | 50-1900                                  | 60180-P105 | 5          |
| PP                             |                                 | 44.0         | V-Shape, Square                         | 2000                              | 50-1900                                  | 60180-P135 | 50         |
| 384 Well Microplate            | PP                              | 15.5         | V-Shape, Square, Micro Titer Plate      | 145                               | 4-120                                    | 60180-P109 | 10         |
|                                | PP                              | 15.5         | V-Shape, Square, Micro Titer Plate      | 145                               | 4-120                                    | 60180-P129 | 100        |
|                                | PP                              | 22.0         | V-Shape, Square, Deep Well Plate        | 252                               | 5-240                                    | 60180-P107 | 5          |
|                                | PP                              | 22.0         | V-Shape, Square, Deep Well Plate        | 252                               | 5-240                                    | 60180-P127 | 100        |

## WebSeal mats and sealing tapes, non-sterile

- 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)



For more information, visit [thermofisher.com/webseal](https://www.thermofisher.com/webseal)

## WebSeal mats and sealing tapes, non-sterile

| Description   | Color  | Material          | Well Design  | Pre-slit | Cat. No.   | Pack of |
|---|--------|-------------------|--|----------|------------|---------|
| WebSeal Mats CLR Silicone Mat, Round Well               | Clear  | Silicone          | 96 Round Well, 8mm Diameter, Flat Base with Cross                | No       | 60180-M184 | 50      |
| WebSeal Mats (Alcohol Resistant), Round Well            | Clear  | EVA               | 96 Round Well, 8mm Diameter                                      | No       | 60180-M101 | 5       |
|   | Clear  | EVA               | 96 Round Well, 8mm Diameter                                      | No       | 60180-M171 | 50      |
| WebSeal CLR Silicone Mat, Round Well                    | Clear  | Silicone          | 96 Round Well – Flat Base, 8mm Diameter, Large Penetration Area  | No       | 60180-M134 | 5       |
|   | Clear  | Silicone          | 96 Round Well – Flat Base, 8mm Diameter, Large Penetration Area  | Yes      | 60180-M183 | 5       |
| WebSeal Mats (Solvent Resistant), Round Well            | Blue   | Silicone/PTFE     | 96 Round Well – Flat Base, 8mm Diameter, Large Penetration Area  | No       | 60180-M102 | 5       |
|   | Blue   | Silicone/PTFE     | 96 Round Well – Flat Base, 8mm Diameter, Large Penetration Area  | Yes      | 60180-M103 | 5       |
| WebSeal Mats (Alcohol Resistant), Square Well           | Clear  | EVA               | 96 Square Well - Flat Base                                       | No       | 60180-M177 | 5       |
|   | Clear  | EVA               | 96 Square Well - Flat Base                                       | No       | 60180-M178 | 50      |
| WebSeal CLR Silicone Mat, Square Well                   | Clear  | Silicone          | 96 Square Well – Flat Base, 8mm Diameter, Large Penetration Area | No       | 60180-M121 | 5       |
|   | Clear  | Silicone          | 96 Square Well – Flat Base, 8mm Diameter, Large Penetration Area | Yes      | 60180-M123 | 5       |
|   | Clear  | Silicone          | 96 Square well – Flat Base, 8mm Diameter, Flat Base with Cross   | No       | 60180-M185 | 50      |
|   | Clear  | Silicone          | 384 Square Well  | No       | 60180-M126 | 5       |
|   | Clear  | Silicone          | 384 Square Well  | Yes      | 60180-M150 | 5       |
|   | Clear  | Silicone          | 384 Square Well, Flat Base with Cross                            | No       | 60180-M186 | 50      |
| Sealing Tape, -40°C - 90°C                              | Clear  | PE/Silicone       | N/A  | No       | 60180-M142 | 100     |
| Sealing Tape, -70°C - 100°C                             | Clear  | PES/Silicone      | N/A  | No       | 60180-M143 | 100     |
| Sealing Tape, -80°C - 120°C                             | Silver | Aluminum/Silicone | N/A  | N/A      | 60180-M144 | 100     |
| Sealing Tape with SRA (Synthetic Rubber Adhesive)       | Clear  | Polyolefin/Rubber | N/A  | No       | 60180-M145 | 100     |
| Re-sealing Tape with 3 Layer No Adhesive at Cavity Area | Clear  | PET/Silicone/PET  | N/A  | Yes      | 60180-M146 | 100     |
|   | Clear  | PET/Silicone/PET  | N/A  | Yes      | 60180-M176 | 25      |
| Hand held Sealing Tape Applicator                       | Gold   | N/A               | N/A  | N/A      | 60180-M950 | 2       |
| Hand Held Mat Applicator                                | Black  | N/A               | N/A  | N/A      | 60180-M999 | 1       |
| WebSeal Cutter for Vial Removal                         | Silver | N/A               | N/A  | N/A      | 60180-M975 | 1       |

## WebSeal well plates, plastic, non-coated, non-sterile, certified

- 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



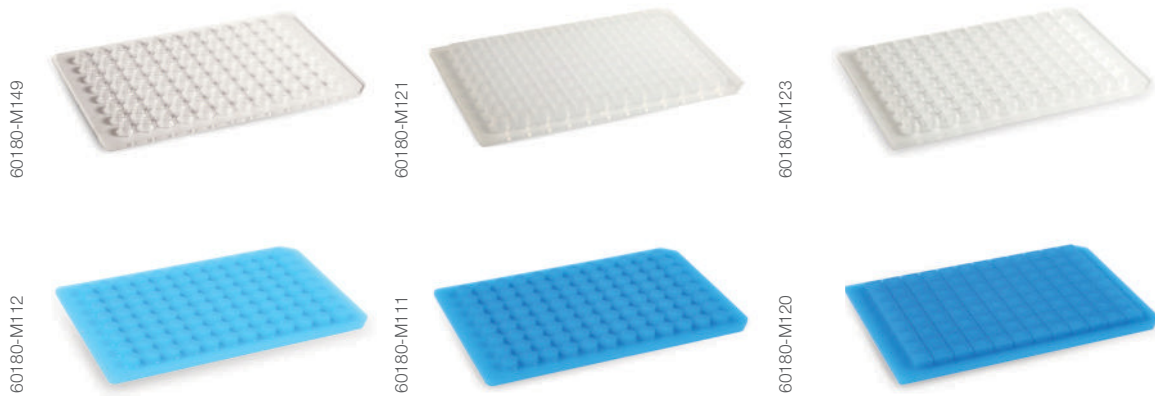
For more information, visit [thermofisher.com/webseal](https://www.thermofisher.com/webseal)

## WebSeal well plates, plastic, non-coated, non-sterile, certified

| Description                           | Material | Total Height | Well Format                        | Total Volume (μL) | Working Volume Range μL/Well | Cat. No.   | Pack of |
|---------------------------------------|----------|--------------|------------------------------------|-------------------|------------------------------|------------|---------|
| 96 Well Microplate, Low Volume        | PP       | 15.0         | Total V-Shape, 5.6mm Diameter      | 100               | 5-80                         | 60180-P210 | 50      |
| 96 Well Microplate, Round Well        | PP       | 14.7         | Flat Bottom, 7mm Diameter          | 350               | 10-300                       | 60180-P205 | 100     |
|                                       | PP       | 14.7         | Flat Bottom, 7mm Diameter          | 350               | 10-300                       | 60180-P215 | 10      |
|                                       | PP       | 14.7         | U-Shape, 7mm Diameter              | 270               | 10-250                       | 60180-P206 | 100     |
|                                       | PP       | 14.7         | U-Shape, 7mm Diameter              | 270               | 10-250                       | 60180-P216 | 10      |
|                                       | PP       | 14.7         | V-Shape, 7mm Diameter              | 220               | 10-190                       | 60180-P207 | 100     |
|                                       | PP       | 14.7         | V-Shape, 7mm Diameter              | 220               | 10-190                       | 60180-P217 | 10      |
| 96 Well Mid Height Plates, Round Well | PP       | 33.0         | U-Shape, 7mm Diameter              | 1000              | 50-900                       | 60180-P208 | 96      |
|                                       | PP       | 41.6         | U-Shape, 7mm Diameter              | 1200              | 50-900                       | 60180-P201 | 50      |
|                                       | PP       | 41.6         | U-Shape, 7mm Diameter              | 1200              | 50-900                       | 60180-P211 | 5       |
| 96 Deep Well Plate, Square Well       | PP       | 44.4         | V-Shape, 8mm Diameter              | 2000              | 50-1900                      | 60180-P202 | 50      |
|                                       | PP       | 44.4         | V-Shape, 8mm Diameter              | 2000              | 50-1900                      | 60180-P212 | 5       |
| 384 Well Microplate                   | PP       | 14.4         | U-Shape, Square, Micro Titer Plate | 58                | 2-35                         | 60180-P203 | 60      |
|                                       | PP       | 14.4         | U-Shape, Square, Micro Titer Plate | 58                | 2-35                         | 60180-P213 | 10      |
|                                       | PP       | 30.2         | V-Shape, Square, Deep Well Plate   | 300               | 5-240                        | 60180-P204 | 48      |
|                                       | PP       | 30.2         | V-Shape, Square, Deep Well Plate   | 300               | 5-240                        | 60180-P214 | 6       |

## WebSeal mats, non-sterile

- 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



For more information, visit [thermofisher.com/webseal](https://www.thermofisher.com/webseal)

## WebSeal mats, non-sterile

| Description                                   | Color | Material      | Well Design   | Pre-slit | Cat. No.   | Pack of |
|---|-------|---------------|---|----------|------------|---------|
| WebSeal Mats (alcohol resistant), Round Well  | Clear | EVA           | 96 Round Well, 7mm Diameter                                       | No       | 60180-M179 | 100     |
| WebSeal CLR Silicone Mat, Round Well          | Clear | Silicone      | 96 Round Well – Flat Base, 5.6mm Diameter, Cross                  | No       | 60180-M210 | 50      |
|   | Clear | Silicone      | 96 Round Well – Flat Base, 7mm Diameter, Large Penetration Area   | No       | 60180-M105 | 5       |
|   | Clear | Silicone      | 96 Round Well – Flat Base, 7mm Diameter, Large Penetration Area   | Yes      | 60180-M116 | 5       |
|   | Clear | Silicone      | 96 Round Well – 7mm Diameter, Step, Small Penetration Area        | Yes      | 60180-M113 | 5       |
|   | Clear | Silicone      | 96 Round Well – 7mm Diameter, Step, Small Penetration Area        | No       | 60180-M149 | 5       |
| WebSeal CLR Silicone Mat, Square Well         | Clear | Silicone      | 96 Square Well – Flat Base, 8mm Diameter, Flat Base with Cross    | No       | 60180-M185 | 50      |
|   | Clear | Silicone      | 96 Square Well – Flat Base - 8mm Diameter, Large Penetration Area | No       | 60180-M121 | 5       |
|   | Clear | Silicone      | 96 Square Well – Flat Base - 8mm Diameter, Large Penetration Area | Yes      | 60180-M123 | 5       |
|   | Clear | Silicone      | 384 Square Well for 384 Deep Well Plates                          | No       | 60180-M126 | 5       |
|   | Clear | Silicone      | 384 Square Well for 384 Deep Well Plates                          | Yes      | 60180-M150 | 5       |
|   | Clear | Silicone      | 384 Square Well, Flat Base with Cross for 384 Microtiter Plates   | No       | 60180-M186 | 50      |
| WebSeal Mat (Solvent Resistant), Round Well   | Blue  | Silicone/PTFE | 96 Round Well – Flat Base, Step, 7mm Diameter                     | No       | 60180-M111 | 5       |
|   | Blue  | Silicone/PTFE | 96 Round Well – Flat Base, Step, 7mm Diameter                     | Yes      | 60180-M112 | 5       |
| WebSeal Mat, (Solvent Resistant), Square Well | Blue  | Silicone/PTFE | 96 Square Well – Flat Base - 8mm Diameter, Large Penetration Area | No       | 60180-M120 | 5       |
|   | Blue  | Silicone/PTFE | 96 Square Well – Flat Base - 8mm Diameter, Large Penetration Area | Yes      | 60180-M122 | 5       |
|   | Blue  | Silicone/PTFE | 384 Square Well for 384 Deep Well Plates                          | No       | 60180-M125 | 5       |
|   | Blue  | Silicone/PTFE | 384 Square Well for 384 Deep Well Plates                          | Yes      | 60180-M131 | 5       |
| WebSeal Mat for Plate+                        | Blue  | Silicone/PTFE | 96 Round well – Dome Base, 7.2mm Diameter                         | No       | 60180-M108 | 5       |
|   | Blue  | Silicone/PTFE | 96 Round well – Dome Base, 7.2mm Diameter                         | Yes      | 60180-M115 | 5       |

## WebSeal plate+ glass coated microplates

- High quality polypropylene microplates coated with 200nm thick layer of silicone dioxide
- Plate+ provides microplates with a chemical resistance similar to glass while retaining the advantages of polypropylene
- Eliminates the need to use glass limited volume inserts
- 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



### WebSeal Plate+ Glass Coated Microplates

| Description                          | Material        | Total Height | Well Format                              | Total Volume | Working Volume | Cat. No.   | Pack of |
|--------------------------------------|-----------------|--------------|--|--------------|----------------|------------|---------|
| 96 Well Microplate, Round Well       | Glass Coated PP | 14.6         | U-Shape, 7.2mm Diameter                  | 300µL        | 250µL          | 60180-P300 | 10      |
|                                      | Glass Coated PP | 14.6         | V-Shape, 7.2mm Diameter                  | 220µL        | 190µL          | 60180-P302 | 10      |
|                                      | Glass Coated PP | 14.6         | Flat Bottom, 7.2mm Diameter              | 370µL        | 300µL          | 60180-P304 | 10      |
| 96 Well Mid Height Plate, Round Well | Glass Coated PP | 41.5         | U-Shape, 7.2mm Diameter                  | 1.2mL        | 1.0mL          | 60180-P306 | 10      |
| 96 Deep Well Plate, Square Well      | Glass Coated PP | 44.0         | V-Shape, 8mm Diameter                    | 2.4mL        | 2.0mL          | 60180-P308 | 10      |
| 384 Well Microplate                  | Glass Coated PP | 14.4         | Square-Rounded, Flat, Micro Titer Plate  | 120µL        | 90µL           | 60180-P310 | 10      |
|                                      | Glass Coated PP | 22.0         | Square-Rounded, U-Shape, Deep Well Plate | 240µL        | 180µL          | 60180-P312 | 6       |

For more information, visit [thermofisher.com/webseal](https://www.thermofisher.com/webseal)



## WebSeal glass inserted plate kits with 96-position mats

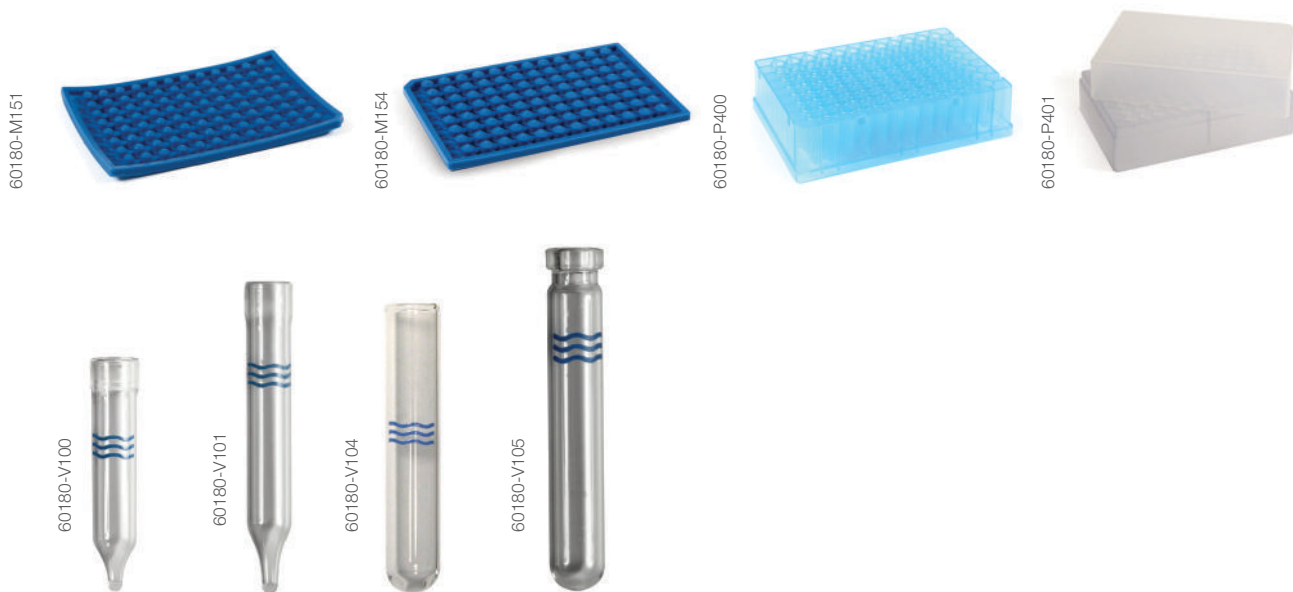
- Convenient wellplate kits with pre-assembled glass or PTFE vials
- Replacement parts for kits available separately
- Unique cutting tool allows removal of individual samples with the seal in place, eliminating cross contamination
- Mats with solid plugs are used for sample storage



### WebSeal glass inserted plate kits 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 of |
|---|---------------|-------------------|---------------------|-------------|---------------|-------------------|---------------|--------------|--------------|---------|
| 96 Well Small Volume Microplate with Sealing Mat                  | Clear Glass   | 500               | 6.5x31              | Taper       | Silicone/PTFE | 32.0              | 60180-V100    | 60180-M151   | 60180-K100   | 5       |
| 96 Well Small Volume Microplate with Sealing Mat and Cutting Tool | Clear Glass   | 700               | 6.5x41.4            | Taper       | Silicone/PTFE | 44.0              | 60180-V101    | 60180-M151   | 60180-K101   | 5       |
| 96 Well Small Volume Microplate with Sealing Mat and Cutting Tool | PTFE          | 700               | 6.5x41.4            | Round       | Silicone/PTFE | 44.0              | 60180-V103    | 60180-M151   | 60180-K103   | 1       |
| 96 Well Microplate with Sealing Mat and Cutting Tool              | Clear Glass   | 1100              | 7.45x38.5           | Round       | Silicone/PTFE | 41.5              | 60180-V104    | 60180-M153   | 60180-K104   | 5       |
| 96 Well Microplate with Crimp Top Vials, Pre-Inserted             | Clear Glass   | 1100              | 7.45x45             | Round       | N/A           | 47.0              | 60180-V105    | N/A          | 60180-K105   | 5       |
| 96 Deep Well Plate with Sealing Mat                               | Clear Glass   | 1500              | 7.25x60.5           | Round       | Silicone/PTFE | 64.5              | 60180-V106    | 60180-M153   | 60180-K106   | 5       |
| 96 Square Well Plate with Sealing Mat                             | Clear Glass   | 1000              | 7.6x45              | Constricted | Silicone/PTFE | 47.3              | 60180-V107    | 60180-M111   | 60180-K107   | 1       |
| 96 Square Well Plate with Sealing Mat - Precut                    | Clear Glass   | 1000              | 7.6x45              | Constricted | Silicone/PTFE | 47.3              | 60180-V107    | 60180-M112   | 60180-K108   | 1       |

## WebSeal kit accessories



### WebSeal kit accessories

| Kit Type   | Vial Material | Total Volume (µL) | Vial Dimension (mm) | Profile     | Mat material  | Total Height (mm) | Pre-slit | Cat. No.   | Pack of |
|--|---------------|-------------------|---------------------|-------------|---------------|-------------------|----------|------------|---------|
| Micro Titer Plate Vial for 96 Wells                | Clear Glass   | 500               | 6.5x31              | Taper       | N/A           | N/A               | N/A      | 60180-V100 | 500     |
|  | Clear Glass   | 700               | 6.5x41.4            | Taper       | N/A           | N/A               | N/A      | 60180-V101 | 500     |
|  | PTFE          | 700               | 6.5x41.4            | Round       | N/A           | N/A               | N/A      | 60180-V103 | 100     |
|  | Clear Glass   | 1100              | 7.45x38.5           | Round       | N/A           | N/A               | N/A      | 60180-V104 | 500     |
| Square/Deep Well Plate Crimp Top Vial for 96 Wells | Clear Glass   | 1100              | 7.45x45             | Round       | N/A           | N/A               | N/A      | 60180-V105 | 500     |
| Deep Well Plate Vial for 96 Wells                  | Clear Glass   | 1500              | 7.25x60.5           | Round       | N/A           | N/A               | N/A      | 60180-V106 | 500     |
| Square Well Plate Vial for 96 Wells                | Clear Glass   | 1000              | 7.6x45              | Constricted | N/A           | N/A               | N/A      | 60180-V107 | 960     |
| 96 Well WebSeal Mat (60180-K100, 101, 103)         | N/A           | N/A               | N/A                 | N/A         | Silicone/PTFE | N/A               | No       | 60180-M151 | 5       |
| 96 Well WebSeal Mat (60180-K100, 101, 103)         | N/A           | N/A               | N/A                 | N/A         | Silicone/PTFE | N/A               | Yes      | 60180-M152 | 5       |
| 96 Well WebSeal Mat (60180-K104, 106)              | N/A           | N/A               | N/A                 | N/A         | Silicone/PTFE | N/A               | No       | 60180-M153 | 5       |
| 96 Well WebSeal Mat (60180-K104, 106)              | N/A           | N/A               | N/A                 | N/A         | Silicone/PTFE | N/A               | Yes      | 60180-M154 | 5       |
| 96 Well WebSeal Mat, Welled Plugs (60180-K107)     | N/A           | N/A               | N/A                 | N/A         | Silicone/PTFE | N/A               | No       | 60180-M111 | 5       |
| 96 Well WebSeal Mat, Welled Plugs (60180-K108)     | N/A           | N/A               | N/A                 | N/A         | Silicone/PTFE | N/A               | Yes      | 60180-M112 | 5       |

## WebSeal kit accessories continued

| Kit Type   | Vial Material | Total Volume (µL) | Vial Dimension (mm) | Profile               | Mat Material | Total Height (mm) | Pre-slit | Cat. No.   | Pack of |
|--|---------------|-------------------|---------------------|-----------------------|--------------|-------------------|----------|------------|---------|
| Plastic 96 Round Well Micro Titer Plate (60180-K100) | N/A           | 800               | N/A                 | V-Shape, 7mm Diameter | N/A          | 31.5              | N/A      | 60180-P400 | 5       |
| PP 96 Round Well Micro Rack (60180-K101, K102)       | N/A           | N/A               | N/A                 | U-Shape, 7mm Diameter | N/A          | 41.6              | N/A      | 60180-P211 | 5       |
| Plastic 96 Well Micro Titer Rack (60180-K104)        | N/A           | N/A               | N/A                 | Rack                  | N/A          | 31.2              | N/A      | 60180-P401 | 5       |
| PP 96 Well Micro Titer Plate (60180-K105)            | N/A           | 2200              | N/A                 | U-Shape               | N/A          | 42.5              | N/A      | 60180-P402 | 5       |
| PP 96 Well Square Well Plate (60180-K107/108/109)    | N/A           | 2000              | N/A                 | U-Shape, Square       | N/A          | 44.0              | N/A      | 60180-P403 | 1       |
| PP 96 Well Square Well Plate (60180-K106)            | PP            | 2000              | N/A                 | V-Shape, Square       | N/A          | 44.0              | N/A      | 60180-P212 | 5       |
| WebSeal Cutter for Vial Removal                      | N/A           | N/A               | N/A                 | N/A                   | N/A          | N/A               | N/A      | 60180-M975 | 1       |

## WebSeal Kit Accessories

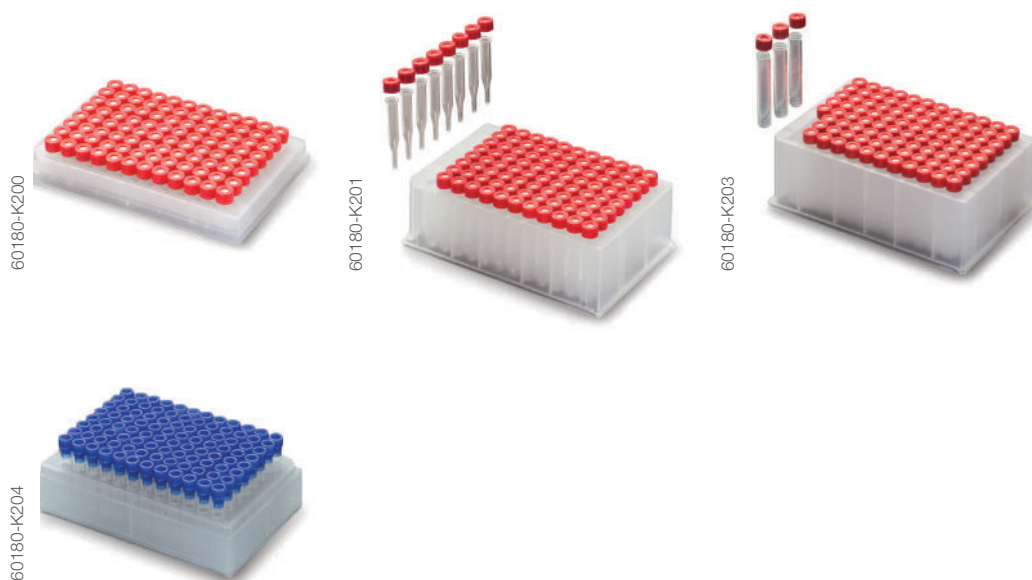


## WebSeal kit accessories

| Kit Type   | Vial Material | Total Volume (µL) | Vial Dimension (mm) | Profile                   | Septum                       | Total Height (mm) | Cat. No.   | Pack of |
|--|---------------|-------------------|---------------------|---------------------------|------------------------------|-------------------|------------|---------|
| Micro Titer Plate Vial for 96 Wells                | Clear Glass   | 100               | 5.7x15.5            | Flat Bottom               | N/A                          | N/A               | 60180-V108 | 960     |
| Deep Well Plate Vial for 96 Wells                  | Clear Glass   | 350               | 6x42.5              | Taper                     | N/A                          | N/A               | 60180-V109 | 960     |
| Square Well Vial for 96 Wells                      | Clear Glass   | 1000              | 7.6x45.9            | Round                     | N/A                          | N/A               | 60180-V110 | 960     |
| MTRS Vial for 96 Wells                             | Clear Glass   | 800               | 7.6x40              | Round                     | N/A                          | N/A               | 60180-V111 | 960     |
| PE Cap, Red, Center Hole for 96 Well Plate Inserts | N/A           | N/A               | N/A                 | N/A                       | Silicone/PTFE, Pre-slit, 45° | N/A               | 60180-C100 | 96      |
| 8mm PE Plug, Blue, for 60180-K204                  | N/A           | N/A               | N/A                 | N/A                       | PE Plug                      | N/A               | 60180-C101 | 96      |
| MT-Plate, PP, 96 Positions                         | N/A           | 350               | N/A                 | Flat Bottom, 7mm Diameter | N/A                          | 14.3              | 60180-P404 | 10      |
| DW-Block, PP, 96 Positions                         | N/A           | 1200              | N/A                 | U-Shape                   | N/A                          | 40.0              | 60180-P405 | 10      |
| SQW-Block, PP, 96 Positions                        | N/A           | 2000              | N/A                 | U-Shape                   | N/A                          | 44.3              | 60180-P406 | 10      |
| Micro-Tube-Rack-System, PP, 96 Positions           | N/A           | N/A               | N/A                 | N/A                       | N/A                          | N/A               | 60180-P407 | 10      |

## WebSeal glass inserted plate kits with individual closures

- 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
- Assembled kits include 96 vials with pre-attached caps and septa
- Pre-assembled kits reduce the risk of vial contamination before use
- Snap Caps offer the same functionality as for screw or crimp caps: PTFE layered Silicone septa for excellent solvent stability
- Polyethylene caps are chemically inert and suitable for most chromatography applications



### WebSeal glass inserted plate kits with individual closures

| Kit Type                  | Vial Material | Total Volume (µL) | Vial Dimension (mm) | Profile     | Septum                       | Vial Cat. No. | Cap Cat. No. | Kit Cat. No. | Pack of |
|---------------------------|---------------|-------------------|---------------------|-------------|------------------------------|---------------|--------------|--------------|---------|
| 96 Well Microplate        | Clear Glass   | 100               | 5.7x15.5            | Flat Bottom | Silicone/PTFE, Pre-slit, 45° | 60180-V108    | 60180-C100   | 60180-K200   | 1       |
| 96 Deep Well Plate        | Clear Glass   | 350               | 6x42.5              | Taper       | Silicone/PTFE, Pre-slit, 45° | 60180-V109    | 60180-C100   | 60180-K201   | 1       |
| 96 Square Well Plate      | Clear Glass   | 1000              | 7.6x45.9            | Round       | Silicone/PTFE, 45°           | 60180-V110    | 60180-C102   | 60180-K202   | 1       |
|                           | Clear Glass   | 1000              | 7.6x45.9            | Round       | Silicone/PTFE, Pre-slit, 45° | 60180-V110    | 60180-C100   | 60180-K203   | 1       |
| 96 Micro-Tube-Rack-System | Clear Glass   | 800               | 7.6x40              | Round       | PE Plug                      | 60180-V111    | 60180-C101   | 60180-K204   | 1       |

For more information, visit [thermofisher.com/webseal](https://www.thermofisher.com/webseal)

## Barcoded well plates for Vanquish systems

The well established Thermo Scientific™ WebSeal™ system offers a new range of chromatography tested, orientation barcoded well plates for Thermo Scientific™ Vanquish™ and Thermo Scientific™ Vanquish™ Flex UHPLC Systems. 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 at the wrong plate position
- The instrument controls plate orientation and verifies the plate before implementing the sequence

60180-P206-216B



60180-P207-217B



### WebSeal well plates barcoded for Vanquish systems

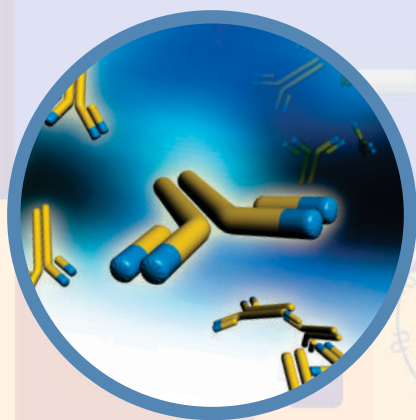
| Description                                    | Material      | Total Height | Well Format           | Total Volume $\mu\text{L}/\text{Well}$ | Working Volume Range $\mu\text{L}/\text{Well}$ | Cat. No.    | Pack of |
|--|---------------|--------------|-----------------------|--|--|-------------|---------|
| 96 Well Microplate, Round Well, Barcoded       | Polypropylene | 14.7         | U-Shape, 7mm Diameter | 270                                    | 10-250   | 60180-P206B | 100     |
|  | Polypropylene | 14.7         | U-Shape, 7mm Diameter | 270                                    | 10-250   | 60180-P216B | 10      |
|  | Polypropylene | 14.7         | U-Shape, 7mm Diameter | 220                                    | 10-190   | 60180-P207B | 100     |
|  | Polypropylene | 14.7         | U-Shape, 7mm Diameter | 220                                    | 10-190   | 60180-P217B | 10      |
| 96 Well Mid Height Plate, Round Well, Barcoded | Polypropylene | 31.6         | U-Shape, 8mm Diameter | 1300                                   | 50-1000  | 60180-P103B | 5       |
|  | Polypropylene | 31.6         | U-Shape, 8mm Diameter | 1300                                   | 50-1000  | 60180-P133B | 50      |
|  | Polypropylene | 41.6         | U-Shape, 7mm Diameter | 1000                                   | 50-900   | 60180-P201B | 50      |
|  | Polypropylene | 41.6         | U-Shape, 7mm Diameter | 1000                                   | 50-900   | 60180-P211B | 5       |
| 96 Deep Well Plate, Square Well, Barcoded      | Polypropylene | 44.0         | V-Shape, Square       | 2000                                   | 50-1900  | 60180-P105B | 5       |
|  | Polypropylene | 44.0         | V-Shape, Square       | 2000                                   | 50-1900  | 60180-P135B | 50      |

# Bio LC columns and accessories

The analysis of proteins, peptides, oligonucleotides and other biomolecules demands a range of sample separation modes, column chemistries, column configurations and detection techniques. Thermo Scientific range of polymeric and silica columns in analytical and nano-scale formats are designed to handle these challenging separations.

For more information on our range of Bio LC columns, visit [thermofisher.com/biolc](http://thermofisher.com/biolc)

## Featured products



### MABPac SEC-1

A size exclusion chromatography (SEC) column specifically designed for the high-resolution separation and characterization of monoclonal antibodies (mAbs) and their aggregates.

Page 3-006



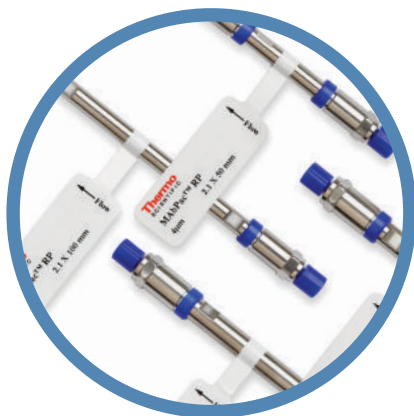
### MABPac SCX

Strong cation exchange (SCX) columns designed specifically for the high-resolution, high efficiency charged variant analysis of mAbs and associated variants.

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## Section contents

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### MABPac RP

Columns designed for high-resolution accurate mass analysis of monoclonal antibodies (mAbs), antibody drug conjugates (ADCs) and other proteins using reversed-phase HPLC and LC-MS for high-resolution separations.

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### EASY-Spray

Thermo Scientific™ EASY-Spray™ columns offer outstanding peak capacity for comprehensive proteome characterization and temperature control for maximum reliability and performance.

Page 3-045

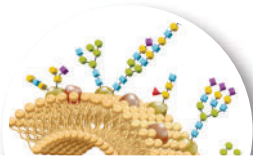
# Columns for biomolecules

## Proteins, mAbs, ADCs



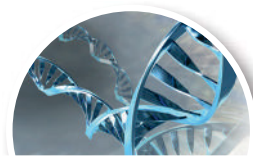
### Thermo Scientific™ ProPac™ columns

- ProPac Elite WCX
- ProPac HIC-10
- ProPac WCX-10
- ProPac SAX-10
- ProPac SCX-10
- ProPac WAX-10
- ProPac IMAC-10



### Thermo Scientific™ ProSwift™ columns

- ProSwift WAX-1S
- ProSwift SAX-1S
- ProSwift WCX-1S
- ProSwift SCX-1S
- ProSwift RP
- ProSwift Con A



### Thermo Scientific™ MAbPac™ columns

- MAbPac SCX-10
- MAbPac SEC
- MAbPac Protein A
- CX-1 pH Buffers
- MAbPac HIC-10
- DNAPac HIC-20
- DNAPac HIC-Butyl
- DNAPac RP

#### Associated products



pH Gradient Buffers



WebSeal Well Plates and Mats



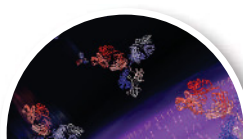
**Peptides**



**Thermo Scientific™  
columns**

- Acclaim Vanquish 120
- Hypersil GOLD Vanquish
- EASY-Spray
- Acclaim PepMap
- Acclaim 300
- BioBasic C18, C8, C4, AX, CX
- Accucore 150-C18
- Accucore Vanquish C18+

**Glycans**



**Thermo Scientific™  
Accucore™ and  
GlycanPac™ columns**

- Acclaim Amide HILIC
- GlycanPac AXH-1
- GlycanPac AXR-1

**Nucleic Acids**



**Thermo Scientific™  
DNAPac™ columns**

- DNAPac PA100, PA200
- DNASwift
- DNAPac PR

**Associated products**



SOLAμ SPE Plates



SMART Digest Kit



Viper Fingertight Fittings

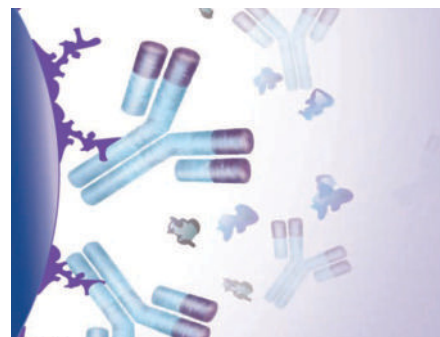
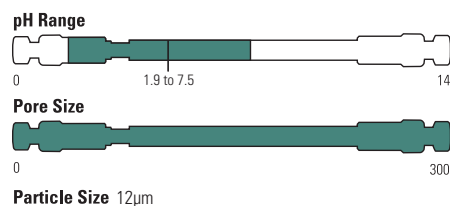
# MABPac HPLC and UHPLC columns

## MABPac Protein A

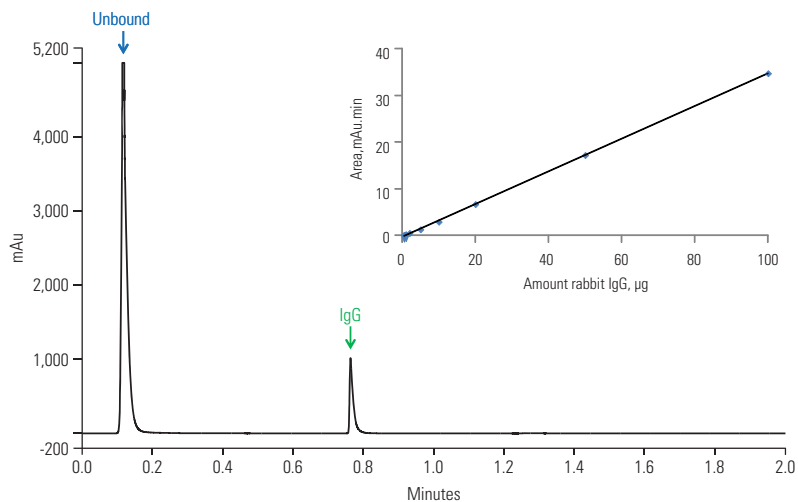
Fast mAb titer analysis

- High-efficiency column
- Rugged, long column lifetime
- Excellent sample recovery
- Designed for ease of use and automation

Thermo Scientific™ MABPac™ Protein A is an affinity column designed to provide fast monoclonal antibody (mAb) titer analysis of samples such as harvest cell cultures (HCC). This HPLC column offers high throughput and accurate analysis through a combination of low back pressure and high efficiency. The MABPac Protein A column format allows rapid automation of loading, binding, elution and collection using Thermo Scientific biocompatible systems. The column is based on a novel non-porous polymeric resin consisting of a divinylbenzene core and a hydrophilic surface, optimized for affinity separation.



## Harvest cell culture titer analysis



### MABPac Protein A, 12µm, 35 x 4.0mm

|                   |   |
|-------------------|---|
| Flow Rate:        | 2 mL/min  |
| Mobile Phase A:   | 50mM Sodium Phosphate, 150mM NaCl, 5% acetonitrile, pH 7.5  |
| Mobile Phase B:   | 50mM Sodium Phosphate, 150mM 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: | 10µL  |
| Detection:        | 280nm   |
| Sample:           | MAB B, 5mg/mL Harvest Cell Culture                          |

## MABPac Protein A

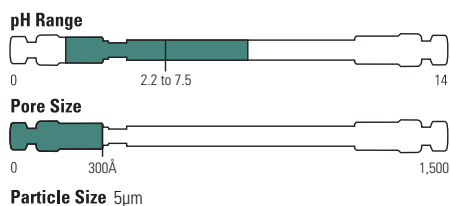
| Particle Size (µm) | Format      | Length (mm) | 4.0mm ID |
|--------------------|-------------|-------------|----------|
| 12                 | HPLC Column | 35          | 082539   |



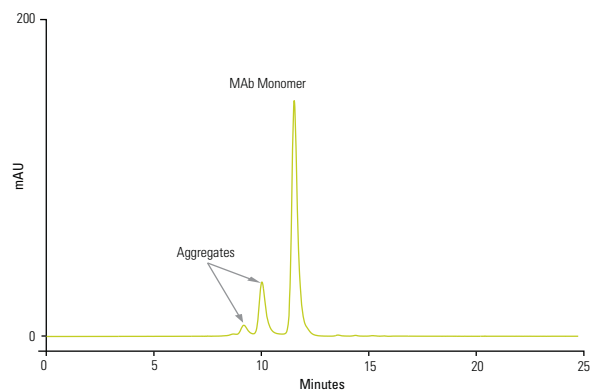
## MABPac SEC-1

A size exclusion chromatography (SEC) column specifically designed for the high-resolution separation and characterization of monoclonal antibodies (mAbs) and their aggregates

- Analysis of monoclonal antibodies (mAbs) and their aggregates
- Analysis of mAb Fab and Fc fragments, even using high and low salt concentrations
- Hydrophilic bonded layer for minimal undesired interactions between the biomolecules and the stationary phase
- Stable surface bonding leads to low column bleed and compatibility with MS, ELSD and Corona Charged Aerosol Detection (CAD)
- Separation range for globular proteins 10,000–1,000,000; exclusion limit for globular proteins >1,000,000



### Monoclonal antibody aggregate separation



#### MABPac SEC-1, 5µm, 300 x 4.0mm (PEEK)

|                   |  |
|-------------------|--|
| Mobile Phase:     | 0.3 M NaCl in 50mM phosphate buffer pH 6.8 |
| Temperature:      | 30°C                                       |
| Flow Rate:        | 0.20mL/min                                 |
| Injection Volume: | 2µL  |
| Detection:        | UV, 280nm                                  |
| Sample:           | MAB (10mg/mL)                              |

### MABPac SEC-1

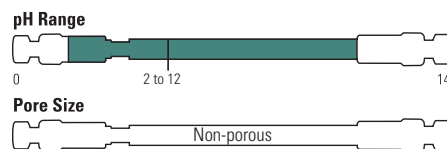
| Particle Size (µm) | Format       | Length (mm) | 2.1mm ID | 4.0mm ID | 7.8mm ID |
|--------------------|--------------|-------------|----------|----------|----------|
| 5                  | Guard Column | 50          | –        | 074697   | –        |
|                    | HPLC Column  | 150         | 088790   | 075592   | –        |
|                    |              | 300         | 088789   | 074696   | 088460   |



## MABPac SCX-10

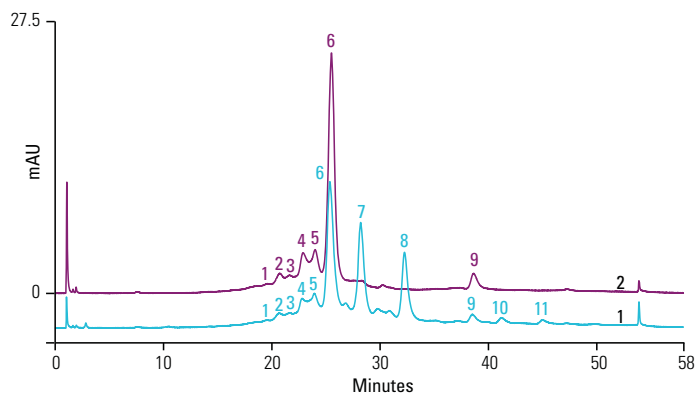
Strong cation exchange column designed specifically for the high-resolution, high efficiency charged variant analysis of monoclonal antibodies and associated variants

- Exceptionally high-resolution for monoclonal antibody charged variants separation
- Ideal for characterization and quality control assessment of monoclonal antibodies
- Unmatched column-to-column and lot-to-lot reproducibility
- Hydrophobic interactions greatly minimized
- Ideal for stability studies
- Meets the regulatory requirements for biopharmaceutical characterization



Particle Size 3µm, 5µm, 10µm

### Baseline resolution of C-terminal lysine variants of a monoclonal antibody



#### MABPac SCX-10, 5µm, 250 x 4.0mm

|                     |  |
|---------------------|--|
| Mobile Phase A:     | 20mM MES (pH 5.6) + 60mM NaCl  |
| Mobile Phase B:     | 20mM MES (pH 5.6) + 300mM NaCl   |
| Gradient:           | 15–36% B in 50 min   |
| Temperature:        | 30°C   |
| Flow Rate:          | 1mL/min  |
| Injection Volume:   | 5µL  |
| Detection:          | UV at 280nm  |
| Samples:            | 1. MAb B, 900µg in 100µL (no carboxypeptidase)<br>2. MAb B, 900µg in 100µL + carboxypeptidase, 50µg, 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<br>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

| Particle Size (µm) | Format       | Length (mm) | 2.0mm ID | 4.0mm ID | 9.0mm ID |
|--------------------|--------------|-------------|----------|----------|----------|
| 3                  | HPLC Column  | 50          | –        | 077907   | –        |
| 5                  | HPLC Column  | 50          | –        | 078656   | –        |
|                    |              | 150         | –        | 085198   | –        |
|                    |              | 250         | –        | 078655   | –        |
| 10                 | Guard Column | 50          | 075749   | 074631   | –        |
|                    | HPLC Column  | 50          | –        | 075603   | –        |
|                    |              | 150         | –        | 075602   | –        |
|                    |              | 250         | 075604   | 074625   | 088784   |

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



# LC columns for biomolecules

The diversity of biological samples in terms of compound structure and properties coupled with matrix complexity demands a range of sample separation modes, column chemistries, column configurations and detection techniques for their effective characterization. We address these needs with a range of silica and polymeric columns specifically designed to handle the unique rigors of the analysis of proteins, peptides, oligonucleotides and other biomolecules.

## Columns for proteins

### Reversed phase

Thermo Scientific BioBasic reversed-phase columns provide superior chromatography because the extra dense bonding chemistry used for these packings produce a highly stable, reproducible surface for reliable results. BioBasic reversed phase packings are available in C18, C8 and C4, chemistries.

Acclaim 300 C18 features 3 $\mu$ m silica particles for rapid analysis of complex protein digests. Compared to 5 $\mu$ m column packings, the smaller particles support increased flow rates and shallower gradients on shorter columns, for faster separation analysis.

Thermo Scientific™ ProSwift™ RP monolith columns uniquely provide the advantages of high resolution at exceptionally high flow rates for fast protein separation analysis.

### Ion exchange

Thermo Scientific™ ProPac™ and Thermo Scientific™ MAbPac™ ion exchange columns are based on a pellicular nonporous core particles providing exceptionally high resolution and efficiency for separations of protein variants, resolving isoforms that differ by a single charged residue. A hydrophilic layer prevents unwanted secondary interactions, and a grafted cation exchange surface provides pH-based selectivity control and fast mass transfer for high-efficiency separation and moderate capacity. ProPac WCX and MAbPac SCX columns are specifically developed for monoclonal separation and analytical characterization. Applications include protein variants in a variety of matrices, such as biopharmaceuticals and dairy products. MAbPac columns are specifically designed for the analysis of monoclonal antibody variants.

BioBasic AX and BioBasic SCX ion exchange columns demonstrate superior reproducibility, both column-to-column and batch-to-batch because the 5 $\mu$ m, 300Å silica provides high efficiency. Both phases provide superior performance for proteins, peptides and nucleic acids using protein friendly ion exchange conditions.

ProSwift ion exchange monoliths provide an excellent alternative to porous or non porous ion exchange media. They offer increased loading capacity compared to pellicular phases combined with excellent resolution compared to traditional porous ion exchange media.

### Size exclusion

BioBasic SEC columns, based on silica with a proprietary polymeric coating, offer the mechanical stability of silica-based size exclusion columns with higher efficiencies than that of polymer-based columns. Four pore sizes (60Å, 120Å, 300Å, 1000Å) are available, making them ideal for molecular weight determination of peptides, proteins and water soluble polymers. They can also be used for sample clean-up prior to other analyses.

MAbPac SEC-1 (300Å 5 $\mu$ m silica) is a size exclusion chromatography (SEC) column specifically designed for separation and characterization of monoclonal antibodies (MAb) and their aggregates, as well as the analysis of Fab and Fc fragments resulting from proteolysis.

### Hydrophobic interaction

The ProPac HIC-10 column is a high-resolution, high-capacity, 300Å, 5 $\mu$ m silica-based HIC column that provides excellent high resolution separations of proteins and variants for analytical and preparative applications. ProPac HIC columns provide exceptional hydrolytic stability under the highly aqueous conditions used in HIC.

## Affinity

The MAbPac Protein A column is a unique non-porous polymeric column designed for fast, accurate determination of monoclonal antibody titer analysis from harvest cell culture. The ProPac IMAC-10 is a high-resolution analytical and semipreparative column for separation of proteins and peptides by immobilized metal affinity chromatography. It is packed with 10 $\mu$ m, nonporous, polymeric beads coated with a hydrophilic layer, then grafted with poly(IDA) chains.

The ProSwift ConA-1S affinity monolith column is unsurpassed for fast, highly efficient enrichment and purification of Concanavalin A (Con A) binding glycans, glycopeptides, and glycoproteins containing high-mannose regions.

## Columns for oligonucleotides

Thermo Scientific DNAPac strong anion exchange columns provide industry-leading resolution for analysis and purification of synthetic oligonucleotides. DNAPac columns can resolve full length oligonucleotides from n-1, n+1, and other failure sequences not possible with other columns.

Thermo Scientific™ DNASwift™ a strong anion exchange monolith column that provides exceptionally high oligonucleotide purity. This semipreparative column incorporates the high resolution and selectivity of the DNAPac column, with increased loading capacity.

## Columns for carbohydrates

Thermo Scientific™ GlycanPac™ AXH-1 and AXR-1 columns are HPLC columns designed for the simultaneous separation of glycans by charge, size and polarity. Separating either fluorescently labeled or native glycans.

## Columns for proteomics

### Nano, capillary and micro columns

Thermo Scientific™ Acclaim™ PepMap™ and PepMap RSLC columns are specially designed for high-resolution analyses of tryptic, natural, and synthetic peptides. The columns are often applied for LC-MS/MS peptide mapping for protein identification, biomarker discovery, and systems biology. Due to their high loading capacity, the columns are exceptionally suitable for the analysis of low abundant peptides in complex proteomics samples. Acclaim PepMap Trap columns are typically applied for the desalting and preconcentration of peptides before LC separation with MS detection.

The columns are designed to provide the highest efficiencies for one dimensional peptide mapping experiments and 2D-LC analyses. Thermo Scientific™ PepSwift™ monolithic columns are specially designed for fast separation and identification of proteins and peptides using nano and capillary LC coupled to MS.

Using highly pure chromatographic media and biocompatible, metal-free fused silica capillaries, Thermo Scientific™ EASY-Spray™ capillary LC columns are produced with a focus on design simplicity and strict quality control. As a result, they deliver outstanding chromatographic performance on any nano LC system.

EASY-Spray columns provide a fully integrated and temperature controlled combined column-emitter design with only a single Thermo Scientific™ nanoViper™ connection between the LC and the MS ion source. This dead volume reduction is a critical component in helping to deliver state of the art performance with ease of use.



## Bio columns selection guide

| Analyte                            | Mode of Analysis        | Recommended Column                            |
|------------------------------------|-------------------------|---|
| Monoclonal antibodies and Proteins | Size Exclusion          | BioBasic SEC                                  |
|                                    |                         | MABPac SEC-1                                  |
|                                    | Ion Exchange            | BioBasic AX                                   |
|                                    |                         | ProPac SCX-10, WCX-10, SAX-10, WAX-10, SCX-20 |
|                                    |                         | MABPac SCX-10, MABPac SCX-10 RS               |
|                                    | Reversed Phase          | ProSwift IEX                                  |
|                                    |                         | BioBasic 18, 8, 4                             |
|                                    |                         | Acclaim 300 C18                               |
|                                    | Hydrophobic Interaction | Accucore 150-C18, 150-C4                      |
|                                    |                         | ProSwift RP                                   |
| Affinity                           | ProPac HIC-10           |   |
|                                    | MABPac Protein A        |   |
|                                    | ProPac IMAC-10          |   |
| Peptides                           | Proteomics              | ProSwift ConA-1S                              |
|                                    |                         | Acclaim PepMap                                |
|                                    |                         | PepSwift                                      |
|                                    | Analytical              | EASY-Spray Columns                            |
|                                    |                         | EASY-Spray Columns                            |
| Preparative                        | BioBasic 18, 8, 4       |   |
| Amino Acids (derivatized)          | Ion Exchange            | Acclaim 300                                   |
|                                    | Reversed phase          | BioBasic                                      |
| Amino Acids (underivatized)        | Ion Exchange            | AminoPac PA10                                 |
|                                    | Reversed phase          | Hypersil GOLD                                 |
| Nucleotides                        | Ion Exchange            | AminoPac PA10                                 |
|                                    | Polar retention         | Hypercarb                                     |
| Oligonucleotides                   | Anion Exchange          | BioBasic AX                                   |
|                                    |                         | DNAPac PA100, PA200, PA200 RS                 |
|                                    |                         | DNASwift                                      |
| Carbohydrates                      | Ligand Exchange         | HyperREZ XP                                   |
|                                    | Ion Exchange            | CarboPac                                      |
|                                    | Mixed Mode              | GlycanPac AXH-1                               |
|                                    | HILIC                   | Acclaim HILIC                                 |
|                                    |                         | Hypersil GOLD HILIC                           |
|                                    |                         | Syncronis HILIC                               |
|                                    | Polar retention         | Accucore 150-Amide-HILIC                      |
|                                    |                         | Hypercarb                                     |

## HPLC phases for biomolecules

### Silica-based reversed phase and ion exchange phases

| Phase                        | Particle Type                  | Particle Size (µm) | Pore Size (Å) | Nominal Surface Area (m <sup>2</sup> /g) | % Carbon | Endcapping | USP Code | Phase Code |
|------------------------------|--------------------------------|--------------------|---------------|--|----------|------------|----------|------------|
| <b>Acclaim Phase</b>         |                                |                    |               |  |          |            |          |            |
| 300 C18                      | Spherical, fully porous silica | 3                  | 300           | 100                                      | 8        | Yes        | L1       | –          |
| <b>Acclaim PepMap Phases</b> |                                |                    |               |  |          |            |          |            |
| 100 C18                      | Spherical, fully porous silica | 2, 3, 5            | 100           | 300                                      | 15       | Yes        | L1       | –          |
| 300 C18                      | Spherical, fully porous silica | 5                  | 300           | 100                                      | 9        | Yes        | L1       | –          |
| 100 C8                       | Spherical, fully porous silica | 3, 5               | 100           | 300                                      | 9        | Yes        | L7       | –          |
| 300 C4                       | Spherical, fully porous silica | 5                  | 300           | 300                                      | 3        | Yes        | L26      | –          |
| <b>Accucore Phases</b>       |                                |                    |               |  |          |            |          |            |
| 150-C18                      | Spherical, solid core silica   | 2.6                | 150           | 80                                       | 7        | Yes        | L1       | 161        |
| 150-C4                       | Spherical, solid core silica   | 2.6                | 150           | 80                                       | 2        | Yes        | L26      | 165        |
| 150-Amide-HILIC              | Spherical, solid core silica   | 2.6                | 150           | 80                                       | –        | –          | –        | 167        |
| <b>BioBasic Phases</b>       |                                |                    |               |  |          |            |          |            |
| 18                           | Spherical, fully porous silica | 5                  | 300           | 100                                      | 9        | Yes        | L1       | 721        |
| 8                            | Spherical, fully porous silica | 5                  | 300           | 100                                      | 5        | Yes        | L7       | 722        |
| 4                            | Spherical, fully porous silica | 5                  | 300           | 100                                      | 4        | Yes        | L26      | 723        |
| AX                           | Spherical, fully porous silica | 5                  | 300           | 100                                      | 3        | No         | –        | 731        |
| SCX                          | Spherical, fully porous silica | 5                  | 300           | 100                                      | 3        | No         | L52      | 733        |

## Columns for protein separations

### Silica-based size exclusion chromatography phases

| Phase                  | SEC Type | Particle Type                  | Particle Size (µm) | Pore Size (Å) | Exclusion Limit Operating Range (kDa) | USP Code | Phase Code |
|------------------------|----------|--------------------------------|--------------------|---------------|---------------------------------------|----------|------------|
| <b>BioBasic Phases</b> |          |                                |                    |               |                                       |          |            |
| SEC 60                 | Aqueous  | Spherical, fully porous silica | 5                  | 60            | 0.1 – 6                               | –        | 733        |
| SEC 120                | Aqueous  | Spherical, fully porous silica | 5                  | 120           | 0.1 – 50                              | L33      | 734        |
| SEC 300                | Aqueous  | Spherical, fully porous silica | 5                  | 300           | 1 – 500                               | L33, L59 | 735        |
| SEC 1000               | Aqueous  | Spherical, fully porous silica | 5                  | 1000          | 20 – 4000                             | L33      | 736        |

### Silica-based hydrophobic interaction chromatography phases

| Column        | Phase                   | Target Applications  | Base Matrix Material  | Particle Size (µm) | Pore Size (Å) | Nominal Surface Area (m <sup>2</sup> /g) | Breakthrough Capacity                | Solvent Compatibility   | pH Range |
|---------------|-------------------------|--|---|--------------------|---------------|--|--------------------------------------|---|----------|
| ProPac HIC-10 | Hydrophobic Interaction | High resolution separations of proteins and protein variants | Spherical, porous ultrapure silica with amide/ethyl surface chemistry | 5                  | 300           | 100                                      | 340mg lysozyme per 7.8 x 75mm column | Ammonium sulfate/phosphate salts, organic solvent for cleanup | 2.5-7.5  |

## Polymeric ion exchange, reversed phase and affinity columns

| Column           | Phase                      | Target Applications   | Base Matrix Material  | Functional Groups      | Breakthrough Capacity           | Recommended Flow Rate               | Solvent Compatibility  | Maximum Backpressure               | pH Range |
|------------------|----------------------------|---|---|------------------------|---------------------------------|-------------------------------------|--|------------------------------------|----------|
| ProPac WCX-10    | Weak Cation Exchange       | High resolution separations of proteins and protein variants                    | Ethylvinylbenzene cross linked with 55% divinylbenzene 10µm nonporous particles | Carboxylate            | 6mg/mL lysozyme                 | 0.2-2.0 mL/min                      | 80% ACN, acetone. Incompatible with alcohols and MeOH                        | 3000psi (21 MPa)                   | 2.0-12   |
| ProPac SCX-10    | Strong Cation Exchange     | High resolution separations of proteins and protein variants                    | Ethylvinylbenzene cross linked with 55% divinylbenzene 10µm nonporous particles | Sulfonate              | 3mg/mL lysozyme                 | 0.2-2.0 mL/min                      | 80% ACN, acetone, MeOH   | 3000psi (21 MPa)                   | 2.0-12   |
| ProPac SCX-20    | Strong Cation Exchange     | High Resolution separations of proteins and protein variants                    | Divinylbenzene 10µm nonporous particles   | Sulfonic               | 20µg/mL Dynamic capacity        | 0.2-2.0 mL/min                      | 50% acetonitrile   | 3000psi (21 MPa)                   | 2.0-12   |
| ProPac WAX-10    | Weak Anion Exchange        | High resolution separations of proteins and protein variants                    | Ethylvinylbenzene cross linked with 55% divinylbenzene 10µm nonporous particles | Tertiary amine         | 5mg/mL BSA                      | 0.2-2.0 mL/min                      | 80% ACN, acetone, MeOH,  | 3000psi (21 MPa)                   | 2.0-12   |
| ProPac SAX-10    | Strong Anion Exchange      | High resolution separations of proteins and protein variants                    | Ethylvinylbenzene cross linked with 55% divinylbenzene 10µm nonporous particles | Quaternary ammonium    | 15mg/mL BSA                     | 0.2-2.0 mL/min                      | 80% ACN, acetone, MeOH   | 3000psi (21 MPa)                   | 2.0-12   |
| ProSwift RP-1S   | Reversed Phase             | Fast protein analysis with high resolution of large peptides to medium proteins | Monolith; polystyrene-divinylbenzene  | Phenyl                 | 5.5mg/mL Insulin                | 2.0-4.0 mL/min                      | Most common organic solvents   | 2800psi (19.2 MPa)                 | 1.0-14   |
| ProSwift RP-2H   | Reversed Phase             | Fast protein analysis with high resolution over a wide size range               | Monolith; polystyrene-divinylbenzene  | Phenyl                 | 1.0mg/mL Lysozyme               | 1.0-10 mL/min                       | Most common organic solvents   | 2800psi (19.3 MPa)                 | 1.0-14   |
| ProSwift RP-3U   | Reversed Phase             | Fast protein analysis with high resolution of large proteins                    | Monolith; polystyrene-divinylbenzene  | Phenyl                 | 0.5mg/mL Lysozyme               | 1.0-16 mL/min                       | Most common organic solvents   | 2800psi (19.3 MPa)                 | 1.0-14   |
| ProSwift RP-4H   | Reversed Phase             | Fast protein analysis with high resolution                                      | Monolith; polystyrene-divinylbenzene  | Phenyl                 | 2.3mg/mL Lysozyme               | 0.1-0.3 mL/min                      | Most common organic Solvents   | 1500psi                            | 1.0-14   |
| ProSwift SAX-1S  | Strong Anion Exchange      | Fast protein analysis with high resolution                                      | Monolith; polymethacrylate  | Quaternary amine       | 18mg/mL BSA                     | 0.5-1.5 (4.6mm)                     | Most common organic solvents   | 1000psi (4.6mm)<br>2000psi (1.0mm) | 2.0-12   |
| ProSwift SCX-1S  | Strong Cation Exchange     | Fast protein analysis with high resolution                                      | Monolith; polymethacrylate  | Sulfonic acid          | 30mg/mL Lysozyme                | 0.5-1.5 mL/min (4.6mm)              | Most common organic solvents   | 1000psi (4.6mm)                    | 2.0-12   |
| ProSwift WAX-1S  | Weak Anion Exchange        | Fast protein analysis with high resolution                                      | Monolith; polymethacrylate  | Tertiary amine (DEAE)  | 18mg/mL BSA                     | 0.5-1.5 mL/min (4.6mm)              | Most common organic solvents   | 1000psi (4.6mm)<br>2000psi (1.0mm) | 2.0-12   |
| ProSwift WCX-1S  | Weak Cation Exchange       | Fast protein analysis with high resolution                                      | Monolith; polymethacrylate  | Carboxylic acid        | 23mg/mL Lysozyme                | 0.5-1.5mL/min (4.6mm),<br>0.05-0.20 | Most common organic solvents   | 1000psi (4.6mm)<br>2000psi (1.0mm) | 2.0-12   |
| ProPac IMAC-10   | Immobilized Metal Affinity | High resolution separation of certain metal-binding proteins and peptides       | Polystyrene divinylbenzene 10µm nonporous particles                             | Poly (IDA) grafts      | >60mg lysozyme/mL gel (4x250mm) | 1.0mL/min                           | EtOH, urea, NaCl, non-ionic detergents, glycerol, acetic acid, guanidine HCl | 3000psi (21MPa)                    | 2.0-12   |
| ProSwift ConA-1S | Affinity                   | Concanavalin A binding (high-mannose) glycans, glycopeptides and proteins       | Monolith; polymethacrylate  | Concanavalin A ligands | 12-16mg of protein              | 0-1.0mL/min                         | Up to 10% methanol   | 2000psi                            | 5.0-8    |

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



## Columns for monoclonal antibody separations

### Polymeric ion exchange columns

| Phase         | IEX Type                           | Particle Type                     | Particle Size (µm) | Pore Size (Å) | Dynamic Capacity   | Recommended Flow Rate   | Solvent Compatibility   | Maximum Backpressure                  | pH Range |
|---------------|------------------------------------|-----------------------------------|--------------------|---------------|--|---|---|---------------------------------------|----------|
| MABPac SCX-10 | Strong cation exchange (sulfonic)  | Polymeric, Highly crosslinked DVB | 3, 5, 10           | non-porous    | MABPac SCX-10 PEEK<br>3µm: 60µg/mL<br>5µm: 40µg/mL<br>10µm: 20µg/mL<br>MABPac SCX-10 RS<br>5µm: 40 µg/mL | 0.2-2.0mL/min (Depending on the particle size and column pressure limits) | 50% Acetonitrile  | 3000psi (21MPa)<br>RS columns 7000psi | 2.0-12   |
| ProPac WCX-10 | Weak cation exchange (carboxylate) | Polymeric, Non-porous DVB         | 10                 | non-porous    | 6mg/mL   | 0.2-2.0mL/min   | 80% ACN, acetone. Incompatible with alcohols including methanol | 3000psi (21MPa)                       | 2.0-12   |

### Silica-based size exclusion chromatography columns

| Phase        | SEC Type | Particle Type                  | Particle Size (µm) | Pore Size (Å) | Exclusion Limit Operating Range (kDa) | USP Code |
|--------------|----------|--------------------------------|--------------------|---------------|---------------------------------------|----------|
| MABPac SEC-1 | Aqueous  | Spherical, fully porous silica | 5                  | 300           | 1-500                                 | L33, L59 |

### Affinity columns

| Phase            | Affinity ligand | Particle Type | Particle Size (µm) | Pore Size (Å) | Capacity         | Recommended Flow Rate | Maximum temperature | Maximum Backpressure | pH Range |
|------------------|-----------------|---------------|--------------------|---------------|------------------|-----------------------|---------------------|----------------------|----------|
| MABPac Protein A | Protein A       | Polymeric     | 12                 | non-porous    | 100µg IgG/column | < 2.5                 | 30                  | 1000                 | 2.5-7.5  |

## Columns for carbohydrate separations

### Polymeric ligand exchange columns

| Phase   | Particle Type      | Particle Size (µm) | Pore Size (Å) | Nominal Surface Area (m <sup>2</sup> /g) | % Carbon | Endcapping | USP Code | Phase Code |
|---|--------------------|--------------------|---------------|--|----------|------------|----------|------------|
| <b>Thermo Scientific™ HyperREZ™ XP Phases</b> |                    |                    |               |  |          |            |          |            |
| Carbohydrate H <sup>+</sup>                   | Spherical, polymer | 8                  | –             | –  | –        | –          | L17      | 690        |
| Carbohydrate Pb <sup>2+</sup>                 | Spherical, polymer | 8                  | –             | –  | –        | –          | L34      | 691        |
| Carbohydrate Ca <sup>2+</sup>                 | Spherical, polymer | 8                  | –             | –  | –        | –          | L19      | 692        |
| Carbohydrate Na <sup>+</sup>                  | Spherical, polymer | 10                 | –             | –  | –        | –          | –        | 693        |
| Organic Acid                                  | Spherical, polymer | 8                  | –             | –  | –        | –          | L17      | 696        |
| Sugar Alcohol                                 | Spherical, polymer | 8                  | –             | –  | –        | –          | L19      | 697        |

### Silica-based HILIC and mixed-mode columns

| Phase                   | Particle Type                  | Particle Size (µm) | Pore Size (Å) | Nominal Surface Area (m <sup>2</sup> /g) | % Carbon | Endcapping | USP Code | Phase Code |
|-------------------------|--------------------------------|--------------------|---------------|--|----------|------------|----------|------------|
| <b>GlycanPac Phases</b> |                                |                    |               |  |          |            |          |            |
| AXH-1                   | Spherical, fully porous silica | 1.9                | 175           | 220                                      | –        | Yes        | –        | –          |
| AXH-1                   | Spherical, fully porous silica | 3                  | 120           | 300                                      | –        | Yes        | –        | –          |
| <b>Accucore Phase</b>   |                                |                    |               |  |          |            |          |            |
| 150-Amide-HILIC         | Spherical, solid core silica   | 2.6                | 150           | 80                                       | –        | –          | –        | 167        |

## Monolithic affinity columns

| Phase                  | Particle Type   | Particle Size (µm) | Pore Size (Å) | Nominal Surface Area (m <sup>2</sup> /g) | % Carbon | Endcapping | USP Code | Phase Code |
|------------------------|---|--------------------|---------------|--|----------|------------|----------|------------|
| <b>ProSwift Phases</b> |   |                    |               |  |          |            |          |            |
| ConA-1S                | Concanavalin A binding (high mannose) glycans, glycopeptides and proteins | "Monolith;         | 175           | 220                                      | -        | Yes        | -        | -          |

## Columns for oligonucleotide separations

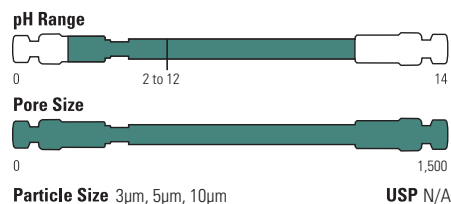
| Column          | Target Applications  | Base Matrix Material  | Substrate Crosslinking | Latex Crosslinking | Capacity                         | Recommended Eluents  | Recommended Flow Rate | Solvent Compatibility        | Maximum Backpressure | pH Range |
|-----------------|--|---|------------------------|--------------------|----------------------------------|--|-----------------------|------------------------------|----------------------|----------|
| DNAPac PA100    | High resolution separations of single and double stranded DNA or RNA oligonucleotides                    | 13µm diameter nonporous substrate agglomerated with alkyl quaternary ammonium functionalized latex 100nm MicroBeads | 55%                    | 5%                 | 40µeq                            | Hydroxide or sodium and lithium salts of Chloride or Perchlorate                     | 1.5mL/min             | 0-100%                       | 4000psi (28MPa)      | 2-12.5   |
| DNAPac PA200    | Improved high resolution separations of single and double stranded DNA or RNA orthogonal to DNAPac PA100 | 8µm diameter nonporous substrate agglomerated with alkyl quaternary ammonium functionalized latex 130nm MicroBeads  | 55%                    | 5%                 | 40µeq                            | Hydroxide, acetate/ or sodium and lithium salts of Chloride or Perchlorate           | 1.2mL/min             | 0-100%                       | 4000psi (28MPa)      | 2-12.5   |
| DNAPac PA200 RS | UHPLC-resolution separations of single and double stranded DNA or RNA Best available resolution          | 4µm diameter nonporous substrate agglomerated with alkyl quaternary ammonium functionalized latex 130nm MicroBeads  | 55%                    | 5%                 | 40µeq                            | Hydroxide, acetate/ hydroxide or sodium and lithium salts of Chloride or Perchlorate | 1.3mL/min             | 0-100%                       | 10,000 psi (69MPa)   | 2-12.5   |
| DNASwift        | High resolution separations for purification of oligonucleotides Highest latex-based capacity            | Monolith; polymethacrylate substrate agglomerated with quaternary amine functionalized latex                        | 70%                    | 3%                 | 8mg, of a 20 mer oligonucleotide | NaClO <sub>4</sub> and NaCl  | 0.5-2.5mL             | Most Common Organic Solvents | 1500psi, 10MPa       | 6.0-12.4 |

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

## MABPac SCX-10 RS

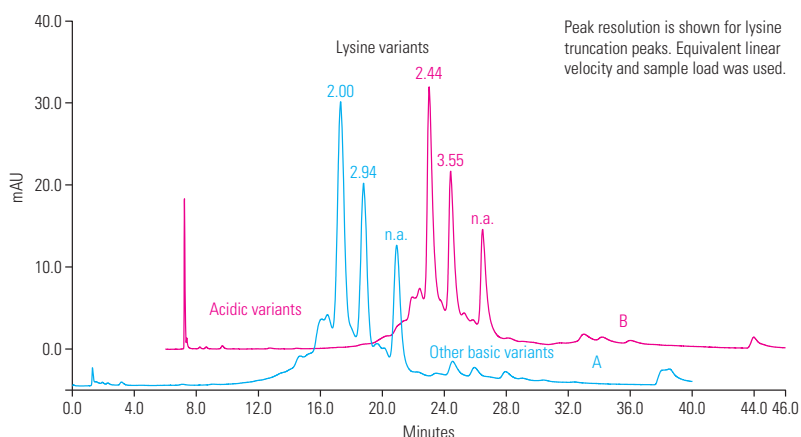
BioRS (Rapid Separation), strong cation exchange column designed for monoclonal antibodies and associated charged variants

- UHPLC, high throughput analysis
- Specially developed Bio-Inert™ PEEK lined stainless steel column hardware
- High-pressure compatibility
- Suitable for operation up to 7,000 psi



Higher resolution and throughput of mAb charge variant UHPLC separations can be achieved using the MABPac SCX-10 RS strong cation-exchange phase with specially developed Bio-Inert PEEK lined stainless steel column hardware. These columns are designed to be used at higher UHPLC conditions to maximize the resolution of mAb variant separation. Higher pressure compatibility of the column hardware allows use of high flow rates for faster separation.

### Improved mAb resolution



#### MABPac SCX, 5µm, 250 x 4.6mm

Mobile Phase A: 20 mM MES pH 5.6 + 60 mM NaCl  
 Mobile Phase B: 20 mM MES pH 5.6 + 300 mM NaCl

|                   |                              |
|-------------------|------------------------------|
| Flow Rate:        | 1.5 mL/min                   |
| Injection Volume: | 15µL                         |
| Sample:           | MAB 5mg/mL                   |
| Chromatogram A:   | Gradient: 33-53% B in 30 min |
| Chromatogram B:   | Gradient: 33-53% in 20 min   |

### MABPac SCX-10 RS

| Particle Size (µm) | Format       | Length (mm) | 2.1mm ID | 4.6mm ID |
|--------------------|--------------|-------------|----------|----------|
| 5                  | UHPLC Column | 50          | 082675   | 082674   |
|                    |              | 150         | 088242   | 085209   |
|                    |              | 250         | 082515   | 082673   |



## pH gradient buffers

Ready-to-use buffers for simple method development during charge variant characterization

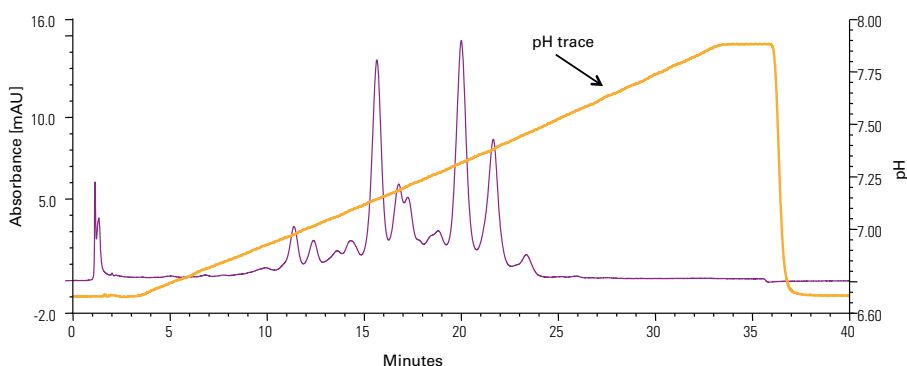
The Thermo Scientific pH gradient platform accelerates method development and facilitates method transfer to QA/QC for a wide range of protein and mAb charge variants through a generic LC-based approach to charge variant characterization.

- 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



Thermo Scientific pH buffer concentrates can be purchased individually or as a pair, in quantities of 125mL or 250mL. For added convenience, the 125mL buffers can also be bundled with columns in a number of specifically preconfigured kits.

### Optimization of mAb charge variant separation using a linear pH gradient: 25% B (pH 6.75) to 50% B (pH 7.9)



### Ph gradient buffers

| Description                         | Buffer Bottle size |        |        |
|-------------------------------------|--------------------|--------|--------|
|                                     | 125mL              | 250mL  | 500mL  |
| Buffer                              |                    |        |        |
| CX-1 pH Gradient Buffer A (pH 5.6)  | 083273             | 085346 | 302779 |
| CX-1 pH Gradient Buffer B (pH 10.2) | 083275             | 085348 | 302780 |

| Kits  | Buffer                 | MABPac SCX-10 Column format | Buffer Bottle size |        |
|---|------------------------|-----------------------------|--------------------|--------|
|   |                        |                             | 125mL              | 250mL  |
| Gradient Buffer Kit: Includes both Buffer A & Buffer B (available in either 125mL or 250mL size – one bottle each/ kit) | –                      | –                           | 083274             | 085349 |
| Gradient Starter Kit: Includes both Buffer A & Buffer B + MABPac SCX-10   | 10µm, 4 × 250mm column | –                           | 083381             | –      |
| Gradient High Throughput Kit: Includes both Buffer A & Buffer B + MABPac SCX-10   | 5µm, 4 × 50mm column   | –                           | 083378             | –      |
| Gradient High Resolution Kit: Includes both Buffer A & Buffer B + MABPac SCX-10   | 5µm, 4 × 250mm column  | –                           | 083272             | –      |

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

## Monoclonal antibody characterization and analysis kits

MAB Charge Variant Analysis IEX Column Kit includes two ion-exchange (IEX) specialty columns for mAb charge variants analysis. This kit is a convenient starter kit for researchers at the beginning of a mAb analysis projects, and facilitates the screening of two columns for determination of the best column for their specific monoclonal antibody sample.

Included in the Kit:

- ProPac WCX-10 Analytical column, 4 × 250mm (P/N 054993)
- MAbPac SCX-10 Analytical column, 4 × 250mm (P/N 074625)

### MAB charge variants kit

| Description                                | Cat. No. |
|--|----------|
| MAB Charge Variant Analysis IEX Column Kit | 076196   |

## MAB Analysis IEX and SEC Column Kit

The MAB Analysis IEX and SEC Column Kit includes two columns: an ion-exchange (IEX) column and a size-exclusion (SEC) column. This kit is a convenient starter and column replacement kit for mAb analysis projects. It is useful for researchers at the beginning of mAb analysis projects, and facilitates the screening of aggregates and variants in two columns.

Included in the kit:

- MAbPac SCX-10 Analytical column, 4 × 250mm (P/N 074625)
- MAbPac SEC-1 Analytical column, 4 × 300mm (P/N 074696)

### MAB analysis kit

| Description                         | Cat. No. |
|-------------------------------------|----------|
| MAB Analysis IEX and SEC Column Kit | 076197   |



## MABPac HIC Family

The MABPac HIC column family is designed for separations of monoclonal antibodies (mAbs) and related biologics by hydrophobic interaction chromatography (HIC). These columns are designed to address the separation challenges as the result of heterogeneity, complexity and diversity of mAbs and related biologics.

- Advanced column chemistry designed for separating mAbs and related biologics
- Broad selectivity coverage for most challenging separations of mAbs
- Excellent bio-compatibility
- High column efficiency
- Rugged column packing

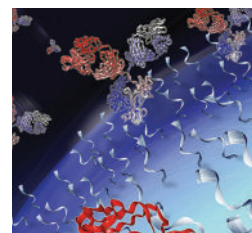
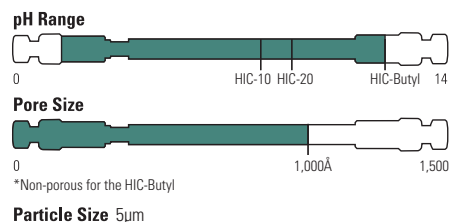
### Applications

The MABPac HIC-10 is the column of choice for intact mAbs/proteins and mAb aggregates while the MABPac HIC-20 is suited to resolve mAb fragments, oxidized mAbs and bispecific mAbs. When it comes to ADCs, MABPac HIC-Butyl is ideal for cystein-conjugated ADC while MABPac HIC-10 and MABPac HIC-20 have proven useful for several cysteine proprietary ADC molecules, as shown below.

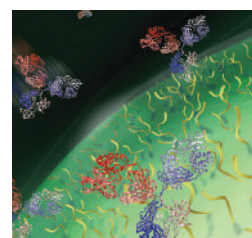
### MABPac HIC Selection Guide

| Column  | MABPac HIC-10 | MABPac HIC-20 | MABPac HIC-Butyl |
|---|---------------|---------------|------------------|
| Intact mAbs/proteins                                | ++++          | +++           | ++               |
| mAb aggregates                                      | ++++          | +++           | ++               |
| mAb fragments (F <sub>ab</sub> and F <sub>d</sub> ) | +++           | ++++          | +++              |
| Oxidized mAbs                                       | +++           | ++++          | +++              |
| Antibody Drug Conjugates (ADCs)                     | +++           | +++           | ++++             |
| Bispecific mAbs                                     | +++           | ++++          | ++               |

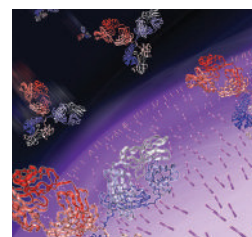
Greater number of ++++ denotes greater suitability



MABPac HIC-10



MABPac HIC-20



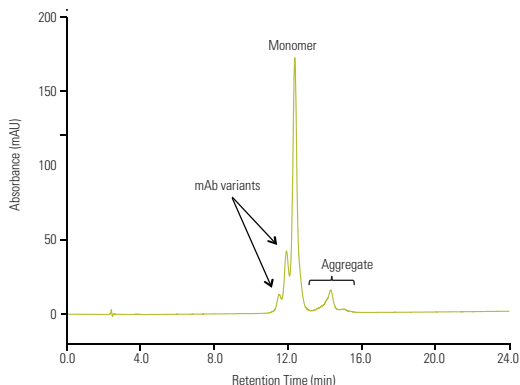
MABPac HIC-Butyl

### MABPac HIC Family

| Description            | Particle Size (µm) | Format                  | Length (mm) | 4.6mm ID |
|------------------------|--------------------|-------------------------|-------------|----------|
| MABPac HIC-10          | 5                  | Guard Cartridges (2/pk) | 10          | 088482   |
|                        |                    | HPLC Column             | 100         | 088480   |
|                        |                    |                         | 250         | 088481   |
| MABPac HIC-20          | 5                  | Guard Cartridges (2/pk) | 10          | 088555   |
|                        |                    | HPLC Column             | 100         | 088553   |
|                        |                    |                         | 250         | 088554   |
| MABPac HIC-Butyl       | 5                  | Guard Cartridges (2/pk) | 10          | 088559   |
|                        |                    | HPLC Column             | 100         | 088558   |
| Guard Cartridge Holder |                    |                         |             | 069580   |

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

## Separation of mAb Aggregates



### MABPac HIC-10, 5µm, 100 x 4.6mm

Mobile Phase A: 2 M ammonium sulfate, 100mM sodium phosphate, pH 7.0

Mobile Phase B: 100mM sodium phosphate, pH 7.0

| Gradient: | Time (min) | %A | %B  |
|-----------|------------|----|-----|
|           | -5.0       | 60 | 40  |
|           | 0.0        | 60 | 40  |
|           | 1.0        | 60 | 40  |
|           | 29.0       | 0  | 100 |
|           | 34.0       | 0  | 100 |

Temperature: 20°C

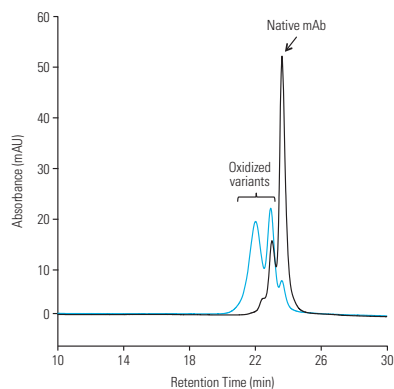
Flow Rate: 0.5mL/min

Injection Volume: 10µL

Detection: UV, 280nm

Sample: Monoclonal antibody (4mg/mL)

## Separation of mAb Fragments



### Column: MABPac HIC-20, 5 µm

Format: 4.6 x 250 mm

Mobile phase A: 2 M ammonium sulfate, 100 mM sodium phosphate, pH 7.0

Mobile phase B: 100 mM sodium phosphate, pH 7.0

| 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 |

Flow Rate: 0.5 mL/min

Inj. Volume: Untreated mAb: 20 µL (1.25 mg/mL)

Oxidized mAb: 20 µL (1.25 mg/mL)

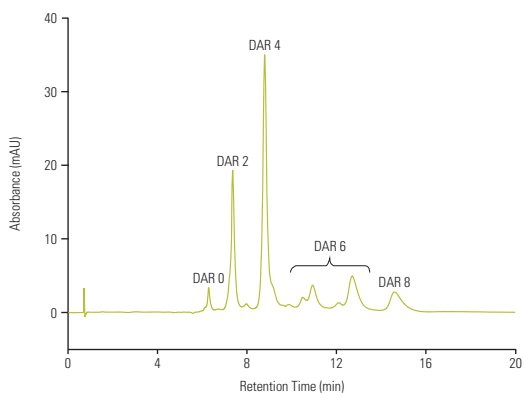
Temp.: 30 °C

Detection: UV (280 nm)

Sample: Untreated mAb

H<sub>2</sub>O<sub>2</sub> oxidized mAb

## Separation of Antibody Drug Conjugates (ADCs)



### MABPac HIC-Butyl, 5µm, 100 x 4.6mm

Mobile Phase A: 1.5 M ammonium sulfate, 50mM sodium phosphate, pH 7.0/ isopropanol (95:5 v/v)

Mobile Phase B: 50mM sodium phosphate, pH 7.0/ isopropanol (80:20 v/v)

| 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 |

Temperature: 25°C

Flow Rate: 1.0mL/min

Injection Volume: 5µL

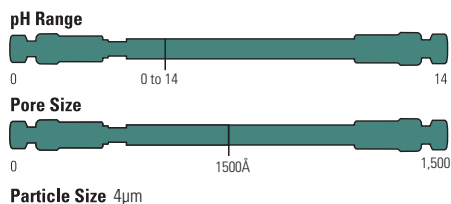
Detection: UV, 280nm

Sample: Cys-conjugated ADC mimic (5mg/mL)

## MABPac RP

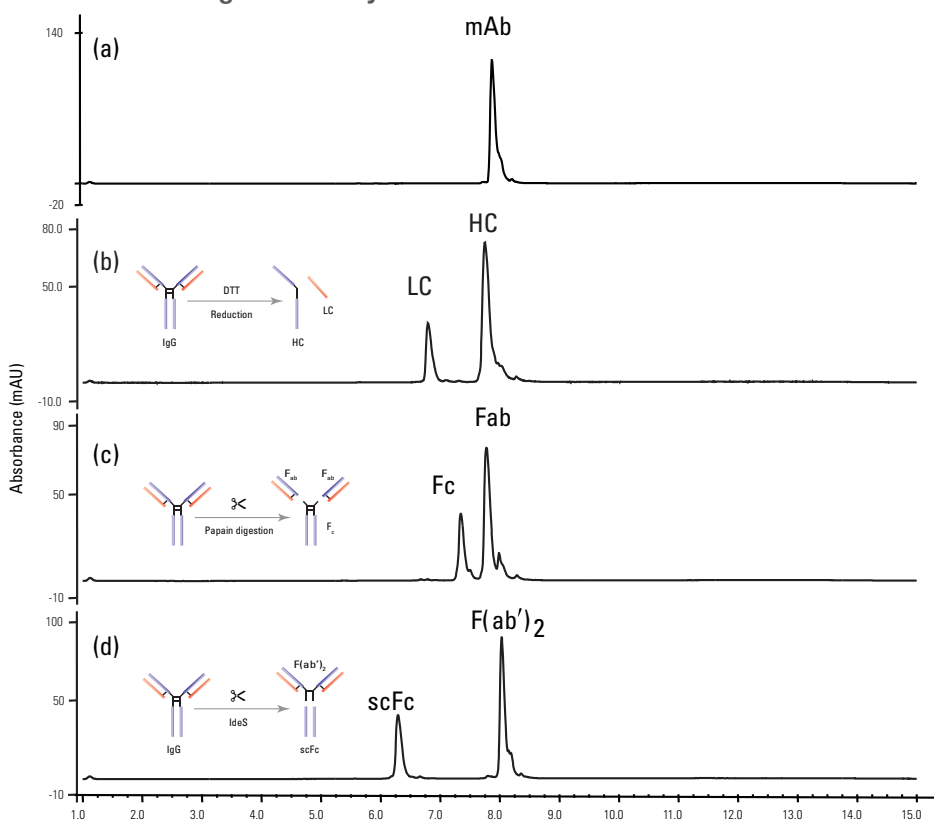
High resolution accurate mass determination of monoclonal antibody variants, antibody drug conjugates (ADC) and proteins

- Superior resolution power for monoclonal antibodies and related substances
- High efficiency with low carry-over
- Excellent MS compatibility
- Wide operating pH range: 0 – 14
- High temperature stability: up to 110°C
- High throughput



The Thermo Scientific™ MABPac™ RP is a reverse phase (RP) liquid chromatography column designed for mAb characterization. Highly efficient separations can be achieved for mAbs and their variants, light chain (LC) and heavy chain (HC), Fc and Fab fragments, scFc and F(ab')<sub>2</sub> fragments. The unique column chemistry provides stability under wide pH range, high temperature, and organic mobile phases and is fully compatible with both UV and MS detection.

### mAb and mAb fragments analysis



#### MABPac RP, 4 μm, 50 x 3.0mm

Mobile Phase A: H<sub>2</sub>O/FA/TFA (99.88 : 0.1:0.02 v/v/v)  
Mobile Phase B: MeCN/ H<sub>2</sub>O/FA/TFA (90: 9.88 :0.1:0.02 v/v/v/v)

| Gradient: | Time (min) | %A | %B |
|-----------|------------|----|----|
|           | 0.0        | 80 | 20 |
|           | 1.0        | 80 | 20 |
|           | 11.0       | 55 | 45 |
|           | 12.0       | 55 | 45 |
|           | 14.0       | 80 | 20 |
|           | 12.0       | 80 | 20 |

Temperature: 80°C  
Flow Rate: 0.5mL/min  
Injection Volume: 5 μL  
Detection: UV, 280nm  
Sample: (a) trastuzumab (5mg/mL)  
(b) trastuzumab + DTT (4mg/mL)  
(c) trastuzumab + Papain (2mg/mL)  
(d) trastuzumab + IdeS (2mg/mL)

#### MABPac RP 1mm

| Particle Size (μm) | Length (mm) | 1mm ID |
|--------------------|-------------|--------|
| 4 μm               | 50          | 303182 |
|                    | 100         | 303183 |
|                    | 150         | 303184 |

### MABPac RP

| Particle Size (μm) | Format                  | Length (mm) | 2.1mm ID | 3.0mm ID |
|--------------------|-------------------------|-------------|----------|----------|
| 4                  | Guard Cartridges (2/pk) | 10          | 088649   | 088646   |
|                    |                         | HPLC Column | 50       | 088648   |
|                    |                         | 100         | 088647   | 088644   |
|                    |                         | 150         | 303270   | 303269   |
|                    | Guard Cartridge Holder  |             | 069580   | 069580   |

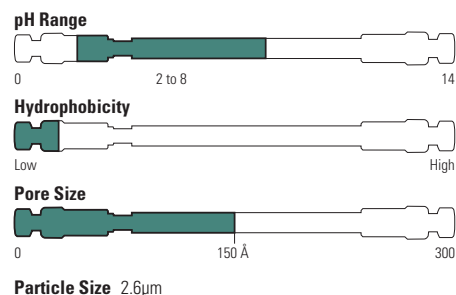


# Columns for glycan analysis

## Accucore 150-amide-HILIC

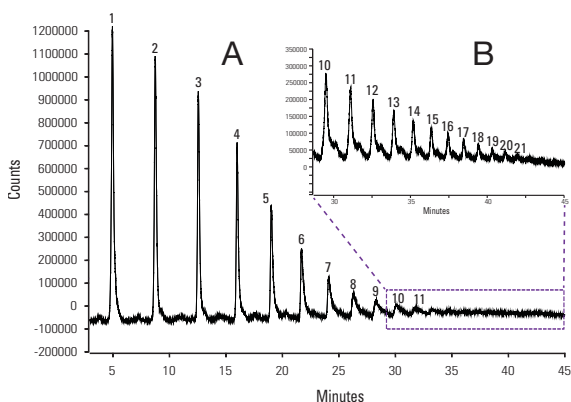
HPLC column for neutral glycan analysis

- Amide phase bonded onto 150 Å pore diameter solid core particles
- High retention of a broad range of hydrophilic analytes in HILIC mode
- Recommended for hydrophilic biomolecules such as glycans



The amide bonded phases provide strong hydrogen bonding interaction between the stationary phase and the analytes, resulting in unique selectivity compared to other HILIC phases. Combined with larger pore size of the solid core particles, Accucore 150-Amide-HILIC is well suited for separating a variety of hydrophilic molecules, including carbohydrates and peptides. As a result, the Accucore 150-Amide-HILIC is an excellent choice for glycan separations.

## 2-AB labeled dextran ladder



### Accucore 150-Amide-HILIC, 2.6µm, 100 x 2.1mm

|                                      |   |
|--------------------------------------|---|
| Mobile Phase A:                      | Acetonitrile  |
| Mobile Phase B:                      | 50mM Ammonium formate, pH 4.5   |
| Gradient:                            | 20–50 % B in 40.0 minutes<br>50 % B for 5.0 minutes<br>50–20 % B in 0.5 minutes<br>50 % B for 4.5 minutes |
| Temperature:                         | 60°C  |
| Flow Rate:                           | 500µL/min   |
| Backpressure at Starting Conditions: | 110 bar   |
| Injection Volume:                    | 2µL to 5µL of sample.   |
| Injection Wash Solvent:              | 80:20 (v/v) acetonitrile:water.   |
| Detector:                            | Fluorescence, 330nm excitation wavelength;  |
|                                      | 420nm emission wavelength; acquisition start  |
|                                      | after 3 min from gradient start.  |
| Run Time:                            | 50 minutes  |

(A) 2µL injection of sample, where 11 glycans were separated.

(B) 5µL injection of sample, zoomed-in to the later part of the gradient rise. A further 10 glycans were detected.

## Accucore 150 amide-HILIC

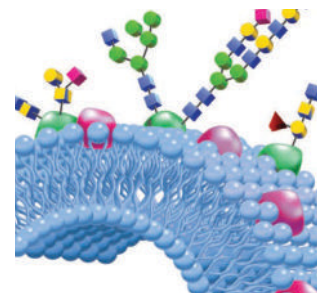
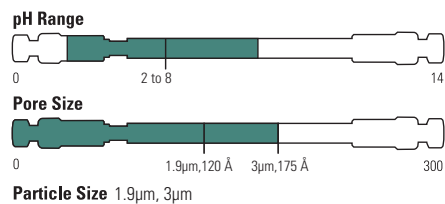
| Particle Size (µm) | Format                 | Length (mm) | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|------------------------|-------------|--------------|--------------|--------------|
| 2.6                | Defender Guard (4/pk)  | 10          | 16726-012105 | 16726-013005 | 16726-014005 |
|                    |                        | HPLC Column | 50           | 16726-052130 | 16726-053030 |
|                    |                        | 100         | 16726-102130 | 16726-103030 | 16726-104630 |
|                    |                        | 150         | 16726-152130 | 16726-153030 | 16726-154630 |
|                    |                        | 250         | 16726-252130 | -            | -            |
|                    | Guard Cartridge Holder |             | 852-00       | 852-00       | 850-00       |

## GlycanPac AXH-1

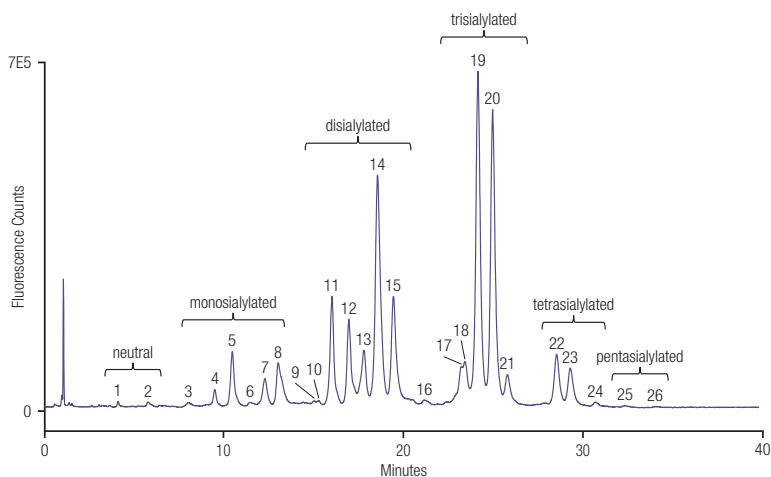
High-resolution columns for neutral and charged glycan analysis

- Unique glycan selectivity based on charge, size and polarity
- Excellent resolution for both native and labeled glycans
- Useful for both high-resolution glycan profile characterization and easy quantification of glycans based on charge, size and polarity
- Compatible with fluorescence and MS detection methods
- High chromatographic efficiency and excellent column stability

Thermo Scientific GlycanPac AXH-1 is a high-performance, silica-based HPLC column for simultaneous separation of glycans by charge, size and polarity. It is designed for high-resolution and high-throughput analysis of biologically important glycans, either labeled or native, by LC-fluorescence and LC-MS methods.



### Separation of 2AB labeled N-glycans from bovine fetuin by charge, size and polarity



#### GlycanPac AXH-1, 1.9µm, 150 x 2.1mm

|                   |   |
|-------------------|---|
| Mobile Phase A:   | Acetonitrile (100%)                     |
| Mobile Phase B:   | Water                                   |
| Mobile Phase C:   | Ammonium formate (100mM, pH = 4.4)      |
| Temperature:      | 30°C                                    |
| Flow Rate:        | 0.4mL/min                               |
| Injection Volume: | 50pmoles                                |
| Detection:        | Fluorescence, 320/420nm                 |
| Sample:           | 2AB labeled N-glycan from bovine fetuin |

| Time (min) | % A | % B | % C | Flow (mL/min) | Curve |
|------------|-----|-----|-----|---------------|-------|
| -10        | 78  | 20  | 2   | 0.4           | 5     |
| 0          | 78  | 20  | 2   | 0.4           | 5     |
| 30         | 70  | 20  | 10  | 0.4           | 5     |
| 35         | 60  | 20  | 20  | 0.4           | 5     |
| 40         | 50  | 20  | 30  | 0.4           | 5     |

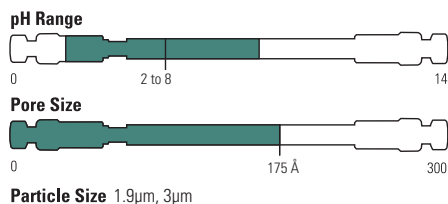
### GlycanPac AXH-1

| Particle Size (µm) | Format                  | Length (mm) | 2.1mm ID | 3.0mm ID | 4.6mm ID |
|--------------------|-------------------------|-------------|----------|----------|----------|
| 1.9                | UHPLC Column            | 100         | 082473   | –        | –        |
|                    |                         | 150         | 082472   | –        | –        |
|                    |                         | 250         | 082521   | –        | –        |
| 3                  | Guard Cartridges (2/pk) | 10          | 082476   | 082475   | 082474   |
|                    | HPLC Column             | 150         | 082470   | 082469   | 082468   |
|                    | Guard Cartridge Holder  |             | 069580   | 069580   | 069580   |

## GlycanPac AXR-1

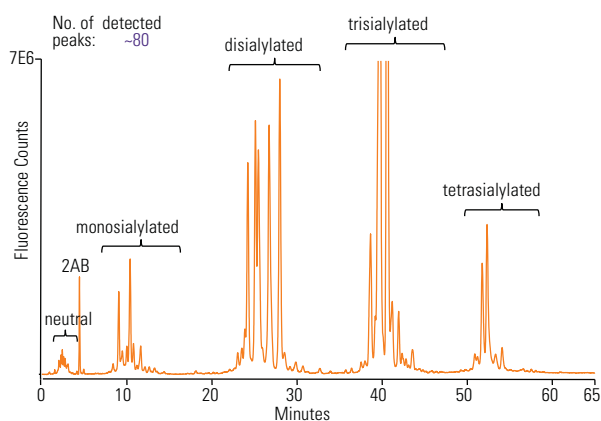
Ultra-high resolution columns for neutral, charged and glycan isomer analysis

- Excellent glycan selectivity based on hydrophobicity, charge, size and isomerization
- High resolution for isomeric glycans
- Compatibility with fluorescence and MS detection methods
- High column efficiency and stability
- Ideal tool for qualitative, quantitative and structural analysis of glycans



The GlycanPac AXR-1 column, based on high-purity and spherical silica substrates, combines both weak anion-exchange (WAX) and reversed-phase (RP) retention mechanisms for optimal selectivity and ultra-high resolution for glycan separation. The WAX functionality separates glycans based on charge, and RP property facilitates high resolution for glycans of the same charge according to their hydrophobicity, branching and isomerization. As the result, the GlycanPac AXR-1 column provides unparalleled resolutions for complex charged glycans.

### Separation of 2AB labeled N-glycans from bovine fetuin



#### GlycanPac AXR-1, 1.9μm, 150 x 2.1mm

Mobile Phase A: Acetonitrile  
 Mobile Phase B: D.I. water  
 Mobile Phase C: Ammonium formate (100mM, pH =4.4)  
 Flow Rate: 0.4mL/min  
 Temperature: 40°C  
 Injection Volume: 100pmoles  
 Detection: Fluorescence, 320/420nm  
 Sample: 2AB labeled N-glycan from bovine fetuin

| Time (min) | % A | % B | % C | Curve |
|------------|-----|-----|-----|-------|
| -10        | 0   | 95  | 5   | 5     |
| 0          | 0   | 95  | 5   | 5     |
| 1          | 0   | 95  | 5   | 5     |
| 30         | 1   | 74  | 25  | 5     |
| 65         | 20  | 50  | 30  | 5     |

### GlycanPac AXR-1

| Particle Size (μm) | Format                  | Length (mm) | Length (mm) |          |          |
|--------------------|-------------------------|-------------|-------------|----------|----------|
|                    |                         |             | 2.1mm ID    | 3.0mm ID | 4.6mm ID |
| 1.9                | UHPLC Column            | 150         | 088136      | -        | -        |
|                    |                         | 250         | 088135      | -        | -        |
| 3                  | Guard Cartridges (2/pk) | 10          | 088258      | 088259   | 088260   |
|                    | HPLC Column             | 150         | 088251      | 088252   | 088255   |
|                    | Guard Cartridge Holder  |             | 069580      | 069580   | 069580   |

# ProPac HPLC columns

## ProPac Elite WCX

High performance chromatography column for charge variant analysis

The ProPac Elite WCX is a weak cation exchange (WCX) liquid chromatography column designed for therapeutic protein charge variant characterization, including the separation of mAbs, ADCs and biosimilars, using LC/UV or MS. The unique column chemistry provides excellent resolution under salt gradient or pH gradient separations. The 5µm particle size and updated column chemistry provide high resolution separations.

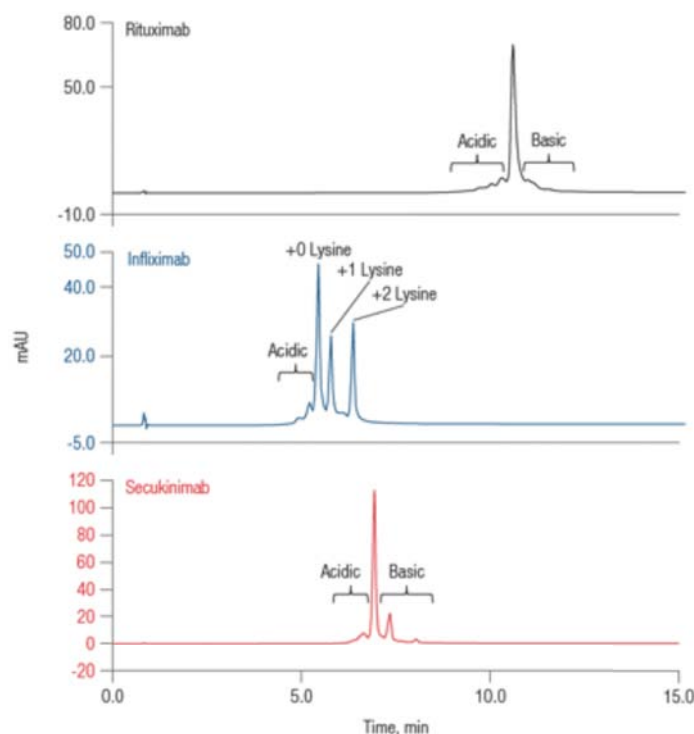
- Next Generation of the ProPac WCX-10
- High efficiency with low carry-over
- Excellent lot-to-lot reproducibility
- Wide operating pH range: 2-12
- High temperature stability: up to 60 °C
- High throughput
- Compatible with CX-1 pH gradient buffers

### Ordering guide

| Description      |             | Particle Size | Length (mm) | 2.0 mm ID | 4.0 mm ID |
|------------------|-------------|---------------|-------------|-----------|-----------|
| ProPac Elite WCX | Analytical  | 5 µm          | 50          | 303028    | 302973    |
|                  |             |               | 100         | 303027    | 302972    |
|                  | HPLC Column |               | 250         | 303026    | 303025    |

### Validation kits

| Part Number | Phase Description            | Set Contents          | Column Dimensions |
|-------------|------------------------------|-----------------------|-------------------|
| 302976      | ProPac Elite WCX             | 3 Columns from 1 Lot  | 4 × 150 mm        |
| 302977      | ProPac Elite WCX, Analytical | 3 Columns from 3 Lots | 4 × 150 mm        |
| 303061      |                              | 3 Columns from 1 Lot  | 4 × 250 mm        |
| 303062      |                              | 3 Columns from 3 Lots | 4 × 250 mm        |



Column: ProPac Elite WCX 5µm  
 Format: 4x150mm  
 Eluents: A: 1X CX-1 pH Gradient Buffer A  
 B: 1X CX-1 pH Gradient Buffer B

| 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  |

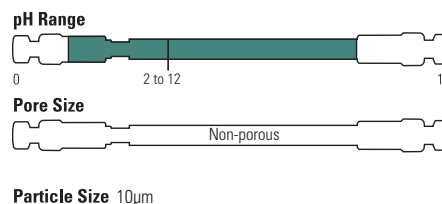
Flow Rate: 1.0 mL/min  
 Inj. Vol: 2 µL  
 Temp: 30 oC  
 Detection: UV, 280 nm  
 Sample: Top: Rituximab, 5 mg/mL  
 Middle: Infliximab, 5 mg/mL  
 Bottom: Secukinimab, 5 mg/mL

## ProPac WCX-10 and SCX-10

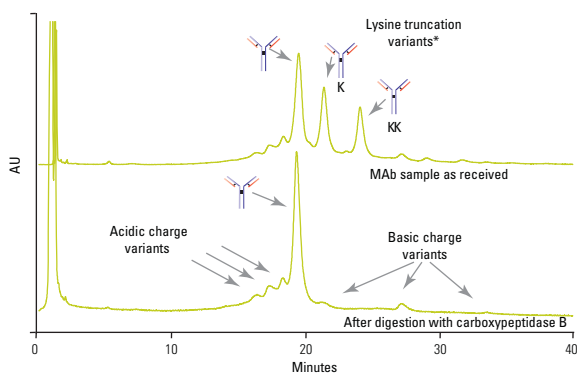
Weak and strong cation exchange columns with exceptionally high resolution and efficiency for separations of protein variants

- Characterization and quality control assessment of monoclonal antibodies and other proteins
- Exceptionally high-resolution and high-efficiency separations
- Useful for characterization of related protein variants including deamidation and mAb lysine truncation variants
- ProPac WCX-10 contains carboxylate functional groups and ProPac SCX-10 contains sulfonate functional groups

ProPac WCX-10 and SCX-10 columns are non-porous particles that can resolve isoforms that differ by a single charged residue. A hydrophilic layer prevents unwanted secondary interactions, and a grafted cation exchange surface provides pH-based selectivity control and fast mass transfer for high-efficiency separation and moderate capacity.



### MAb lysine truncation variants



#### ProPac WCX-10, 10µm, 250 x 4.0mm

Mobile Phase A: 20mM MES+ 115mM NaCl + 1mM EDTA, pH 5.5

Mobile Phase B: 20mM MES+ 145mM NaCl + 1mM EDTA, pH 5.5

| Gradient: | t (min) | %E1 | %E2 |
|-----------|---------|-----|-----|
|           | 0       | 100 | 0   |
|           | 2       | 100 | 0   |
|           | 40      | 0   | 100 |
|           | 60      | 0   | 100 |

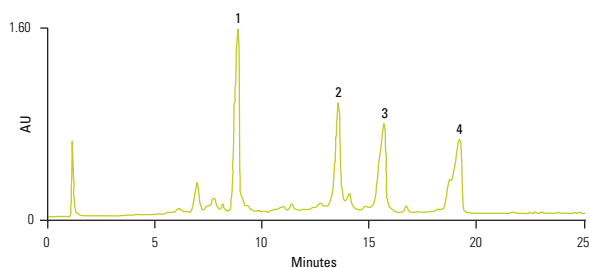
Flow Rate: 1.0mL/min

Detection: UV, 280nm

Sample: MAb

\* Peak assignment supported by data from R.J. Harris, et.al, J.Chromatogr., A 1995,705, 129-134. and Carboxypeptidase B digest.

### Hemoglobin variants



#### ProPac SCX-10, 10µm, 250 x 4.0mm

Mobile Phase A: 20mM Sodium phosphate, 4mM Potassium cyanide, pH 6

Mobile Phase B: 1 M Sodium chloride in water

Mobile Phase C: Water

| Gradient: | Time   | %A | %B | %C |
|-----------|--------|----|----|----|
|           | Init   | 50 | 0  | 50 |
|           | 30 min | 50 | 50 | 0  |

Flow Rate: 1mL/min

Injection Volume: 10µL

Detection: UV, 220nm

Sample: 1. Fetal hemoglobin  
2. Hemoglobin  
3. Sickle cell hemoglobin  
4. Hemoglobin C

## ProPac WCX-10 and SCX-10 continued

### ProPac WCX-10

| Particle Size (µm) | Format       | Length (mm) | 2.0mm ID | 4.0mm ID | 9.0mm ID | 22.0mm ID |
|--------------------|--------------|-------------|----------|----------|----------|-----------|
| 10                 | Guard Column | 50          | 063480   | 054994   | –        | –         |
|                    | HPLC Column  | 50          | –        | 074600   | –        | –         |
|                    |              | 100         | –        | 088778   | –        | –         |
|                    |              | 150         | –        | 088778   | –        | –         |
|                    |              | 250         | 063472   | 054993   | 063474   | 088766    |

### ProPac SCX-10

| Particle Size (µm) | Format       | Length (mm) | 2.0mm ID | 4.0mm ID | 9.0mm ID | 22.0mm ID |
|--------------------|--------------|-------------|----------|----------|----------|-----------|
| 10                 | Guard Column | 50          | 063462   | 079930   | –        | –         |
|                    | HPLC Column  | 250         | 063456   | 054995   | 063700   | 088769    |

### ProPac kits

| Part Number | Phase Description                   | Set Contents                            | Column Dimensions |
|-------------|-------------------------------------|---|-------------------|
| 088776      | ProPac WAX-10 Lot Select Column Set | 3 columns from 1 lot of resin           | 250 x 4.0mm       |
| 088777      | ProPac WAX-10 Lot Select Column Set | 3 lots of resin, 1 column from each lot | 250 x 4.0mm       |
| 088774      | ProPac SAX-10 Lot Select Column Set | 3 columns from 1 lot of resin           | 250 x 4.0mm       |
| 088775      | ProPac SAX-10 Lot Select Column Set | 3 lots of resin, 1 column from each lot | 250 x 4.0mm       |
| 088767      | ProPac WCX-10 Lot Select Column Set | 3 columns from 1 lot of resin           | 250 x 4.0mm       |
| 088768      | ProPac WCX-10 Lot Select Column Set | 3 lots of resin, 1 column from each lot | 250 x 4.0mm       |
| 088772      | ProPac SCX-10 Lot Select Column Set | 3 columns from 1 lot of resin           | 250 x 4.0mm       |
| 088773      | ProPac SCX-10 Lot Select Column Set | 3 lots of resin, 1 column from each lot | 250 x 4.0mm       |

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

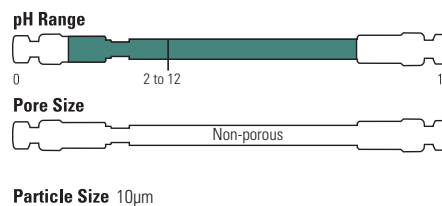


## ProPac SCX-20

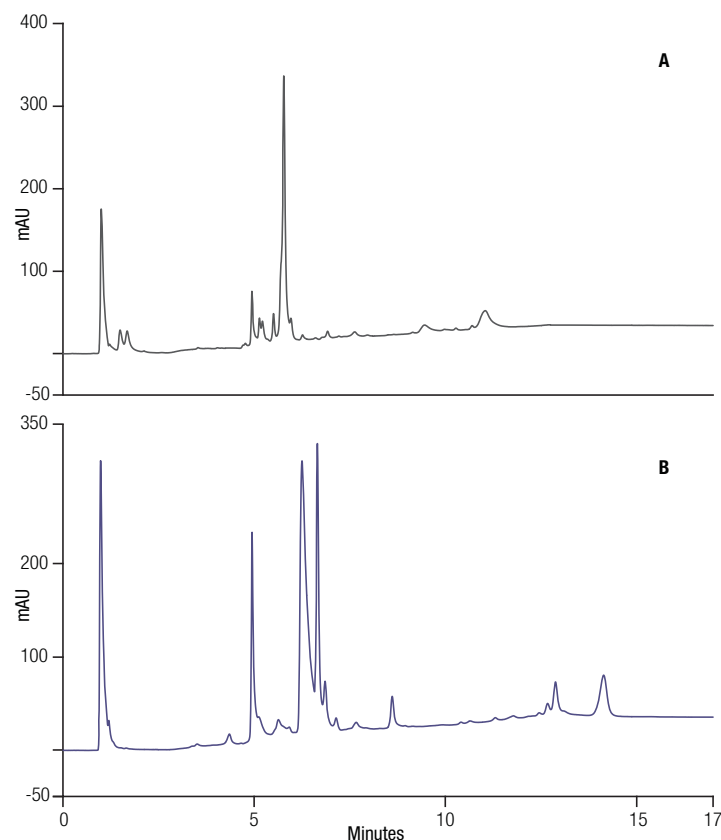
Strong cation-exchange column for high-resolution protein separations

- Grafted cation-exchange surface provides pH-based selectivity control
- Fast mass transfer for high-efficiency separation

The ProPac SCX-20 column is designed specifically to provide high-resolution UHPLC separations of proteins. The stationary phase is composed of 10µm, non-porous, solvent compatible resin beads that are uniformly coated with a highly hydrophilic layer to reduce non-specific interactions between the bead surface and the biopolymer.



### Snake venoms from Naja naja and Russell's viper



#### ProPac SCX-20, 5µm, 250 x 4.0mm

|                   |  |
|-------------------|--|
| Mobile Phase A:   | 20mM Tris pH 7.3                           |
| Mobile Phase B:   | 0.5M NaCl in Eluent A                      |
| Gradient:         | 1–100% B in 10 min                         |
| Temperature:      | 30°C                                       |
| Injection Volume: | 10µL                                       |
| Detection:        | UV, 214nm                                  |
| Samples:          | A. Snake Venom (Naja naja)<br>1mg/mL       |
|                   | B. Snake Venom (Russell's<br>viper) 1mg/mL |

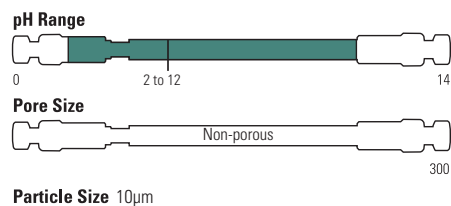
#### ProPac SCX-20

| Particle Size (µm) | Description  | Length (mm) | 4.0mm ID |
|--------------------|--------------|-------------|----------|
| 10                 | Guard Column | 50          | 074643   |
|                    | HPLC Column  | 250         | 074628   |

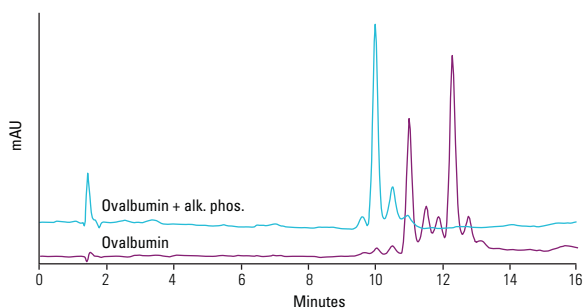
## ProPac WAX-10 and SAX-10

Weak and strong anion anion-exchange providing unequalled high resolution and efficiency in the separations of protein variants

- High-efficiency, high-resolution separations
- Useful for characterization and quality control assessment of closely-related protein variants
- Supports separation of proteins that differ by as little as one amino acid residue
- Neutral hydrophilic coat that eliminates protein-resin hydrophobic interactions
- Superior lot-to-lot and column-to-column reproducibility
- ProPac WAX-10 column contains a tertiary amine functional group and ProPac SAX-10 contains a quaternary amine functional group



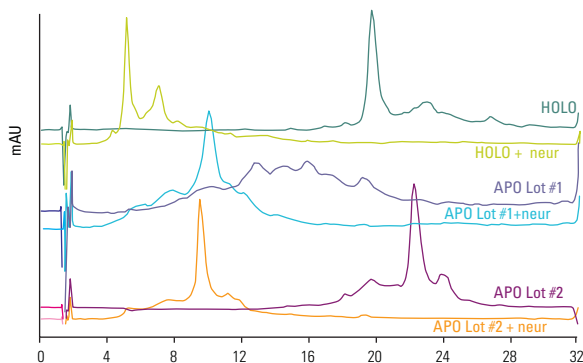
### Resolution of phosphorylation variants of ovalbumin



#### ProPac SAX-10, 10μm, 250 x 4.0mm

|                   |   |      |         |
|-------------------|---|------|---------|
| Mobile Phase A:   | Water   |      |         |
| Mobile Phase B:   | 2.0 M NaCl  |      |         |
| Mobile Phase C:   | 0.1 M Tris/HCl (pH 8.5)                                   |      |         |
| Gradient:         | Time  | %A   | %B %C   |
|                   | 0 min   | 80   | 0 20    |
|                   | 15 min  | 67.5 | 12.5 20 |
| Flow Rate:        | 1.0mL/min   |      |         |
| Injection Volume: | 30μL  |      |         |
| Detection:        | UV, 214nm   |      |         |
| Sample:           | Ovalbumin before and after alkaline phosphatase treatment |      |         |

### Effect of sialylation on transferrin chromatography



#### ProPac SAX-10, 10μm, 250 x 4.0mm

|                   |  |    |       |
|-------------------|--|----|-------|
| Mobile Phase A:   | Water  |    |       |
| Mobile Phase B:   | 2.0 M NaCl   |    |       |
| Mobile Phase C:   | 0.2 M Tris/HCl (pH 9)  |    |       |
| Gradient:         | Time   | %A | %B %C |
|                   | 0 min  | 87 | 3 10  |
|                   | 30 min   | 83 | 7 10  |
| Flow Rate:        | 1.0mL/min  |    |       |
| Injection Volume: | 50μL   |    |       |
| Detection:        | UV, 214nm  |    |       |
| Samples:          | 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. |    |       |

### ProPac WAX-10

| Particle Size (μm) | Format       | Length (mm) | 2.0mm ID | 4.0mm ID | 9.0mm ID | 22.0mm ID |
|--------------------|--------------|-------------|----------|----------|----------|-----------|
| 10                 | Guard Column | 50          | 063470   | 055150   | –        | –         |
|                    | HPLC Column  | 250         | 063464   | 054999   | 063707   | 088771    |

### ProPac SAX-10

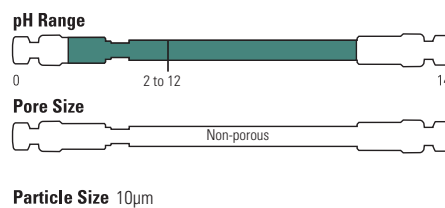
| Particle Size (μm) | Format       | Length (mm) | 2.0mm ID | 4.0mm ID | 9.0mm ID | 22.0mm ID | 4 x 50mm |
|--------------------|--------------|-------------|----------|----------|----------|-----------|----------|
| 10                 | Guard Column | 50          | 063454   | 054998   | –        | –         | –        |
|                    | HPLC Column  | 250         | 063448   | 054997   | 063703   | 088770    | 078990   |



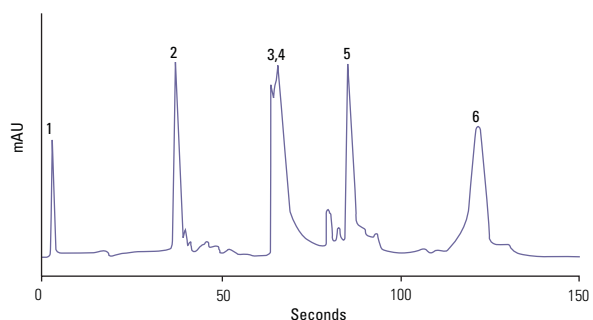
## ProPac PA1

For hydrophilic anionic protein separations

- Good for hydrophilic proteins and peptides
- Ideal for high-resolution separations of proteins with pI values from 3 to 11
- Available in semipreparative format
- Pellicular packing ensures high-efficiency and fast mass transport



### Gradient separation of protein standards



**Column: ProPac PA1, 10µm, 50 x 4.0mm**

|               |   |
|---------------|---|
| Mobile Phase: | 10 to 350mM NaCl<br>in 1.0mM Tris, pH 8.2   |
| Flow Rate:    | 5mL/min   |
| Detection:    | UV, 280nm   |
| Analytes:     | 1. Horseheart Myoglobin 33µg<br>2. Contaminant -<br>3,4. Conalbumin 66<br>5. Ovalbumin 66<br>6. Soybean Trysin Inhibitor 66 |

### ProPac PA1

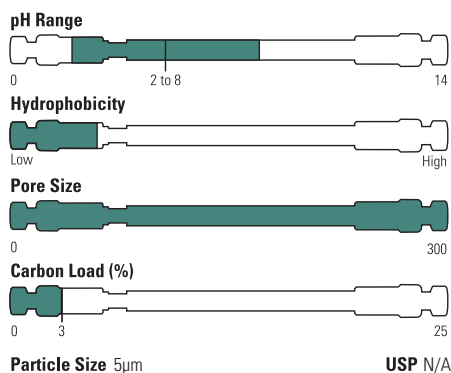
| Particle Size (µm) | Format       | Length (mm) | 4.0mm ID | 9.0mm ID |
|--------------------|--------------|-------------|----------|----------|
| 10                 | Guard Column | 50          | 039657   | -        |
|                    | HPLC Column  | 250         | 039658   | 040137   |



## BioBasic AX

Optimized for the separation of proteins, peptides, other anionic species and polar molecules

- Weak anion exchange phase for multiple charged species
- 300Å pore size for enhanced protein and peptide separations
- Suitable for HILIC retention and separation of highly polar molecules
- Superb stability under demanding pH conditions



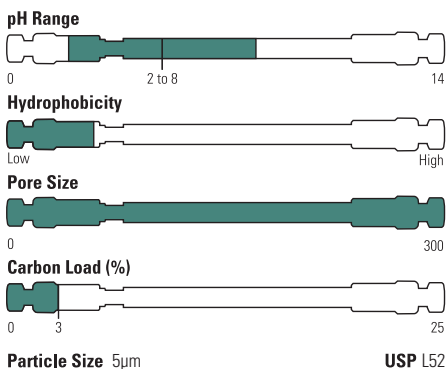
### BioBasic AX

| Particle Size (µm) | Format                          | Length (mm) | 1.0mm ID     | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---------------------------------|-------------|--------------|--------------|--------------|--------------|
| 5                  | Drop-in Guard (4/pk)            | 10          | 73105-011001 | 73105-012101 | 73105-013001 | 73105-014001 |
|                    | HPLC Column                     | 50          | 73105-051030 | 73105-052130 | 73105-053030 | 73105-054630 |
|                    |                                 | 100         | 73105-101030 | 73105-102130 | 73105-103030 | 73105-104630 |
|                    |                                 | 150         | 73105-151030 | 73105-152130 | 73105-153030 | 73105-154630 |
|                    |                                 | 250         | 73105-251030 | 73105-252130 | -            | 73105-254630 |
|                    | UniGuard Guard Cartridge Holder |             | 851-00       | 852-00       | 852-00       | 850-00       |

## BioBasic SCX

For the separation of proteins, peptides, and other cationic species

- Strong cation exchange phase based on sulfonic acid chemistry
- Separation and retention of basic and other cationic species
- 300Å pore size for enhanced protein and peptide separations
- Outstanding stability under demanding pH conditions



### BioBasic SCX

| Particle Size (µm) | Format                          | Length (mm) | 1.0mm ID     | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---------------------------------|-------------|--------------|--------------|--------------|--------------|
| 5                  | Drop-in Guard (4/pk)            | 10          | 73205-011001 | 73205-012101 | 73205-013001 | 73205-014001 |
|                    | HPLC Column                     | 50          | 73205-051030 | 73205-052130 | 73205-053030 | 73205-054630 |
|                    |                                 | 100         | 73205-101030 | 73205-102130 | 73205-103030 | 73205-104630 |
|                    |                                 | 150         | 73205-151030 | 73205-152130 | 73205-153030 | 73205-154630 |
|                    |                                 | 250         | 73205-251030 | -            | -            | 73205-254630 |
|                    | UniGuard Guard Cartridge Holder |             | 851-00       | 852-00       | 852-00       | 850-00       |

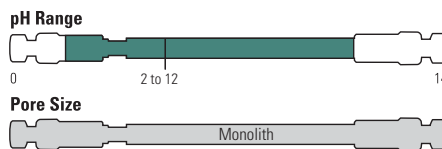
Learn more at [thermofisher.com/LCcolumns](https://www.thermofisher.com/LCcolumns)

## ProSwift IEX

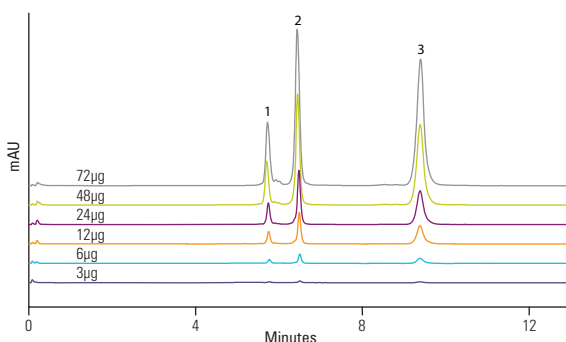
Monolith IEX columns for high-resolution and fast protein analysis

- High resolution
- High loading capacity
- Fast analysis
- Wide range of operational flow rates
- Excellent stability over a wide pH range
- Outstanding reproducibility and ruggedness

ProSwift polymer monolith (poly(Meth)acrylate) media are uniquely suited for separation of proteins. Each monolith is a single cylindrical, sponge-like polymer rod containing an uninterrupted, interconnected network of flow-through channels of a specific pore size. These large channels combined with the monolith's nonporous surfaces result in fast mass-transfer, high-resolution, and fast protein separations. The unique globular morphology of the polymer medium provides its high capacity.



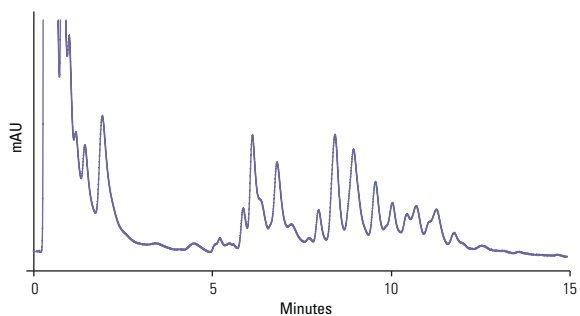
### Dynamic protein loading capacity of ProSwift WCX-1S 50 x 1.0mm



#### ProSwift WCX-1S, 50 x 1.0mm

Mobile Phase A: 10mM Sodium phosphate (pH 7.6)  
 Mobile Phase B: 1 M NaCl in eluent A  
 Gradient: 0% B for 2 min, 0–85% B in 7.5 min,  
 85% B for 3 min  
 Temperature: 30°C  
 Flow Rate: 0.2mL/min  
 Injection Volume: 1–24µL  
 Detection: UV, 280nm  
 Sample: Protein mix, 1mg/mL each  
 Analytes: 1. Ribonuclease A  
 2. Cytochrome C  
 3. Lysozyme

### Protein separation



#### ProSwift WAX-1S, 50 x 1.0mm

Mobile Phase A: 10mM Tris, pH 7.6  
 Mobile Phase B: 1 M NaCl in 10mM Tris, pH 7.6  
 Gradient: 5 to 55% of B in 13 min,  
 hold for 2 min  
 Temperature: 30°C  
 Flow Rate: 0.2mL/min  
 Injection Volume: 1.3µL  
 Detection: UV, 280nm  
 Sample: 1.25mg/mL *E. coli* protein



### ProSwift IEX

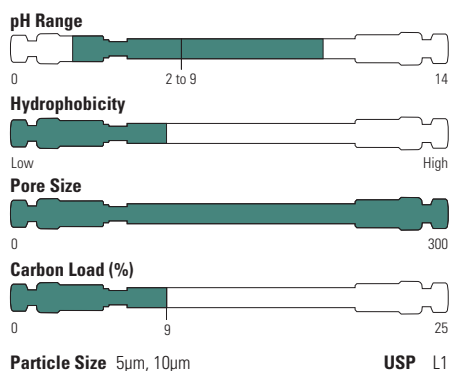
| Functional Group | Length (mm) | 1.0mm ID | 4.6mm ID |
|------------------|-------------|----------|----------|
| WAX-1S           | 50          | -        | 064294   |
| WCX-1S           | 50          | -        | 064295   |
| SAX-1S           | 50          | 068459   | 064293   |
| SCX-1S           | 50          | -        | 066765   |

# Silica based protein columns

## BioBasic 18

Outstanding separation of small to medium peptides

- C18 with 300Å pore size for maximum performance with biomolecules
- High peak capacity stationary phase
- Outstanding reproducibility, efficiency and column lifetime
- Excellent for LC-MS separations



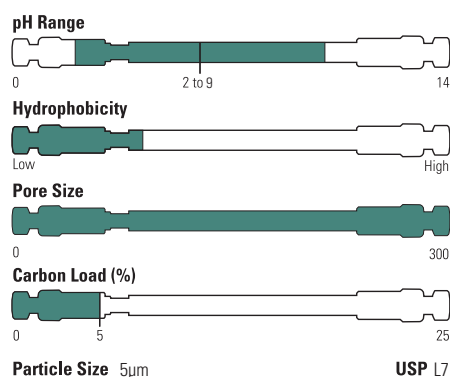
### BioBasic 18

| Particle Size (µm) | Format                          | Length (mm) | 1.0mm ID     | 2.1mm ID     | 4.6mm ID     |
|--------------------|---------------------------------|-------------|--------------|--------------|--------------|
| 5                  | Drop-in Guard (4/pk)            | 10          | 72105-011001 | 72105-012101 | 72105-014001 |
|                    | HPLC Column                     | 50          | 72105-051030 | 72105-052130 | -            |
|                    |                                 | 100         | 72105-101030 | 72105-102130 | 72105-104630 |
|                    |                                 | 150         | 72105-151030 | 72105-152130 | 72105-154630 |
|                    |                                 | 250         | 72105-251030 | 72105-252130 | 72105-254630 |
|                    | UniGuard Guard Cartridge Holder |             | 851-00       | 852-00       | 850-00       |

## BioBasic 8

Optimized for the separation of a wide range of peptides

- C8 with 300Å pore size for improved biomolecule analysis
- An excellent starting column for protein and peptide analysis
- Outstanding reproducibility, efficiency and column lifetime
- Excellent for LC-MS separations



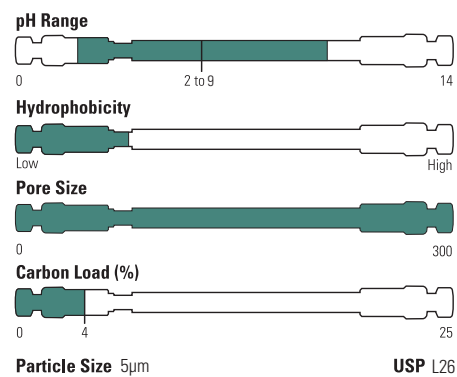
### BioBasic 8

| Particle Size (µm) | Format                          | Length (mm) | 1.0mm ID     | 2.1mm ID     | 4.6mm ID     |
|--------------------|---------------------------------|-------------|--------------|--------------|--------------|
| 5                  | Drop-in Guard (4/pk)            | 10          | 72205-011001 | 72205-012101 | 72205-014001 |
|                    | HPLC Column                     | 50          | 72205-051030 | 72205-052130 | -            |
|                    |                                 | 100         | 72205-101030 | 72205-102130 | 72205-104630 |
|                    |                                 | 150         | 72205-151030 | 72205-152130 | 72205-154630 |
|                    |                                 | 250         | 72205-251030 | 72205-252130 | 72205-254630 |
|                    | UniGuard Guard Cartridge Holder |             | 851-00       | 852-00       | 850-00       |

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

## BioBasic 4

- Based on 300Å silica for outstanding biomolecule performance
- C4 with lower carbon load for optimal retention of larger peptides and proteins
- Outstanding reproducibility, efficiency and column lifetime
- Excellent for LC-MS separations



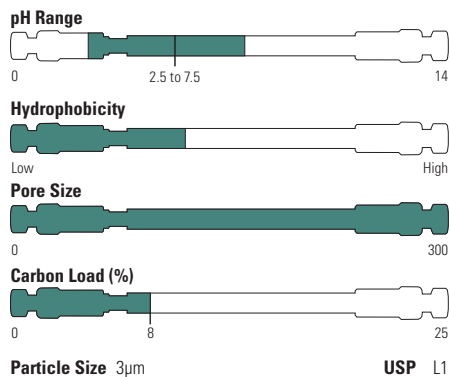
### BioBasic 4

| Particle Size (µm) | Format                          | Length (mm) | 1.0mm ID     | 2.1mm ID     | 4.6mm ID     |
|--------------------|---------------------------------|-------------|--------------|--------------|--------------|
| 5                  | Drop-in Guard (4/pk)            | 10          | 72305-011001 | 72305-012101 | 72305-014001 |
|                    | HPLC Column                     | 50          | 72305-051030 | 72305-052130 | -            |
|                    |                                 | 100         | 72305-101030 | 72305-102130 | 72305-104630 |
|                    |                                 | 150         | 72305-151030 | 72305-152130 | 72305-154630 |
|                    |                                 | 250         | 72305-251030 | 72305-252130 | 72305-254630 |
|                    | UniGuard Guard Cartridge Holder |             | 851-00       | 852-00       | 850-00       |

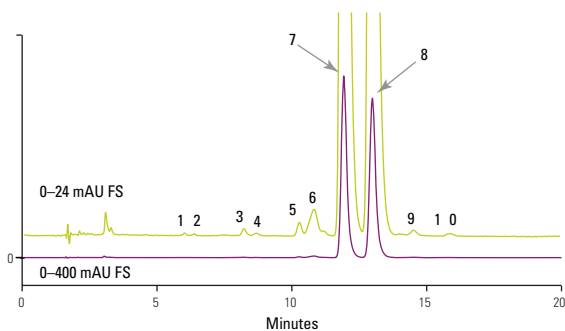
## Acclaim 300 C18

High-resolution reversed-phase separation of proteins and peptides

- Designed for high-resolution peptide mapping and protein separations
- Application tested for suitability in peptide mapping
- Reproducible for dependable results
- LC-MS compatible
- Ultrapure silica with low metal content and exhaustive bonding and endcapping



### Budesonide and related substances



#### Acclaim 300 C18, 3µm, 150 x 4.6mm

Mobile Phase A: Acetonitrile:ethanol 15:1  
 Mobile Phase B: 0.1% phosphoric acid  
 Isocratic 66% B  
 Temperature: 30°C  
 Flow Rate: 1.0mL/min  
 Injection Volume: 15µL  
 Detection: UV, 240nm  
 Sample: Budesonide, 500µg/mL  
 after three days  
 Analytes: 7, 8. Budesonide epimers, 99%

Reference: Hou S, Hindle M, Byron PR;  
*J. Pharm. Biomed. Anal.* 2001 24:371-80.

### Acclaim 300 C18

| Particle Size (µm) | Format                  | Length (mm) | 2.1mm ID | 3.0mm ID | 4.6mm ID |
|--------------------|-------------------------|-------------|----------|----------|----------|
| 3                  | HPLC Column             | 50          | 060263   | —        | 060265   |
|                    |                         | 150         | 060264   | 063684   | 060266   |
| 5                  | Guard Cartridges (2/pk) | 10          | 069690   | 075721   | 069697   |

### 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   |

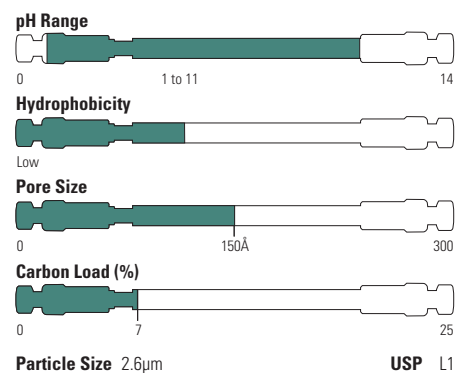
Learn more at [thermofisher.com/LCcolumns](http://thermofisher.com/LCcolumns)

## Accucore 150-C18

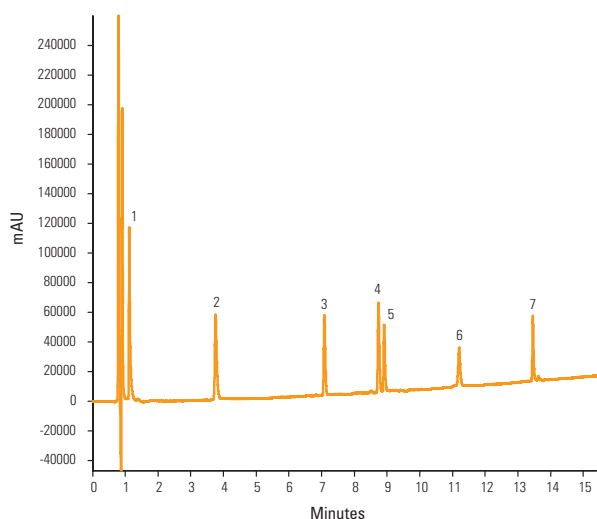
- Designed for the separation of peptides
- Outstanding resolution
- 150Å pore diameter material

Higher peak capacities facilitate increased peptide identifications. Accucore 150-C18 provides much narrower peak widths, therefore significantly higher peak capacity than a column packed with <math><2\mu\text{m}</math> wide pore fully porous C18.

Precision of retention times is critical for reliable analysis. The Accucore 150-C18 column exhibits excellent retention time reproducibility.



### Peptide separations



#### Accucore 150-C18, 2.6μm, 100 x 2.1mm

Mobile Phase A: 0.1% TFA in 10:90 acetonitrile:water

Mobile Phase B: 0.1% TFA in 70:30 acetonitrile:water

Gradient: 0-50% B over 15 min; hold for 2 min; drop to 0% in 0.1 min; hold at 0% B for 5 min

Temperature: 35°C

Flow Rate: 300μL/min

Injection Volume: 5μL

Detection: UV, 220nm

Analytes: 1. Glycine-Tyrosine

2. Valine-Tyrosine-Valine

3. Met-Enkephalin

4. Angiotensin III

5. Leu-Enkephalin

6. Ribonuclease A

7. Insulin

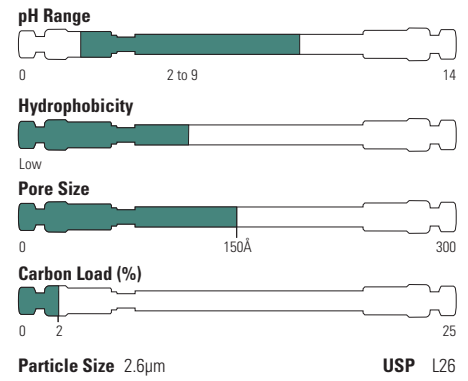
### Accucore 150-C18

| Particle Size (μm) | Format                              | Length (mm) | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|-------------------------------------|-------------|--------------|--------------|--------------|
| 2.6                | Drop-in Guard (4/pk)<br>HPLC Column | 10          | 16126-012105 | 16126-013005 | 16126-014005 |
|                    |                                     | 30          | 16126-032130 | 16126-033030 | 16126-034630 |
|                    |                                     | 50          | 16126-052130 | 16126-053030 | 16126-054630 |
|                    |                                     | 100         | 16126-102130 | 16126-103030 | 16126-104630 |
|                    |                                     | 150         | 16126-152130 | 16126-153030 | 16126-154630 |
|                    | UniGuard Guard Cartridge Holder     | 10          | 852-00       | 852-00       | 850-00       |

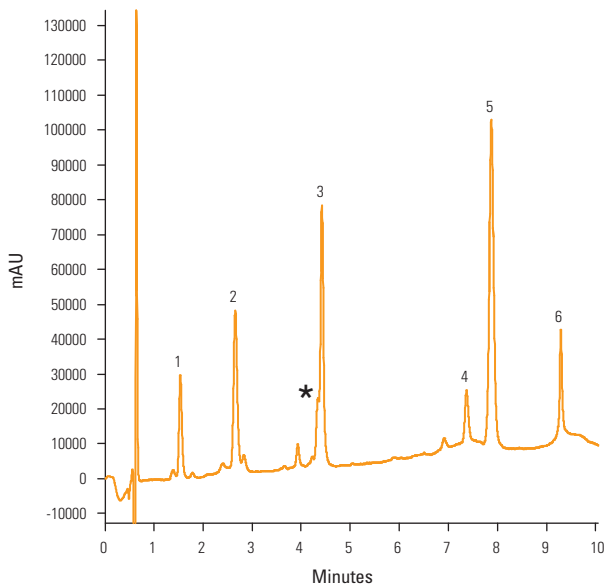
## Accucore 150-C4

- Significantly lower hydrophobic retention than C18
- Ideal for retention of proteins and larger peptides

Accucore 150-C4 provides significantly sharper and higher peaks than a column packed with 5µm wide pore fully porous C4, thus offering better resolution and sensitivity. The Accucore 150-C4 also performs better than a column packed with <2µm wide pore fully porous C4 and generates only a fraction of the backpressure.



### Intact proteins



#### Accucore 150-C4, 2.6µm, 100 x 2.1mm

|                   |  |
|-------------------|--|
| Mobile Phase A:   | 0.1% TFA in 30:70 acetonitrile:water   |
| Mobile Phase B:   | 0.1% TFA in 98:2 acetonitrile:water  |
| Gradient:         | 0-30% B over 8 mins<br>30-95% B over 2 mins<br>95% B hold for 1 min<br>0% B hold for 4 mins  |
| Temperature:      | 40°C   |
| Flow Rate:        | 400µL/min  |
| Injection Volume: | 2µL 10pmol/µL solution   |
| Detection:        | UV, 214 and 280nm  |
| Analytes:         | 1. Insulin<br>2. Cytochrome C<br>3. Lysozyme<br>4. Myoglobin<br>5. Carbonic anhydrase<br>6. Ovalbumin<br>* Carbonic anhydrase impurity |

### Accucore 150-C4

| Particle Size (µm) | Format                          | Length (mm) | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---------------------------------|-------------|--------------|--------------|--------------|
| 2.6                | Drop-in Guard (4/pk)            | 10          | 16526-012105 | 16526-013005 | 16526-014005 |
|                    | HPLC Column                     | 30          | 16526-032130 | 16526-033030 | 16526-034630 |
|                    |                                 | 50          | 16526-052130 | 16526-053030 | 16526-054630 |
|                    |                                 | 100         | 16526-102130 | 16526-103030 | 16526-104630 |
|                    |                                 | 150         | 16526-152130 | 16526-153030 | 16526-154630 |
|                    | UNIGUARD Guard Cartridge Holder | 10          | 852-00       | 852-00       | 850-00       |

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

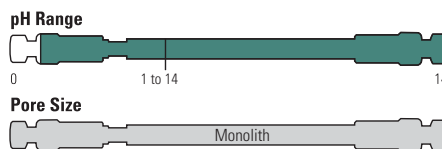


## ProSwift RP

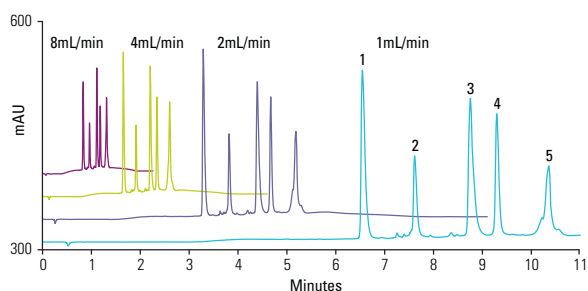
Reversed-phase monolith columns that uniquely provide the advantages of high resolution at exceptionally high flow rates for fast protein separations and analysis

- High resolution at high speed
- Highest operational flow rates available
- High throughput and improved productivity
- Excellent stability over a wide pH range of 1 to 14
- Outstanding reproducibility and ruggedness
- High stringent wash compatible, for example, 1 M NaOH
- High loading capacity

Swift polymer reversed-phase monolith media are (polystyrene-co-DVB) uniquely suited for the separation of proteins. Each monolith is a single cylindrical polymer rod containing an uninterrupted, interconnected network of flow-through channels of a specific pore size; ranging from small channel (1S), medium size channels (2H & 4H) to very large channel (3U) sizes. These channels and the monolith's nonporous surfaces result in fast mass transfer for high-resolution and fast protein separations. The channels also produce low backpressure, allowing the use of higher linear velocities with minimal loss of resolution.



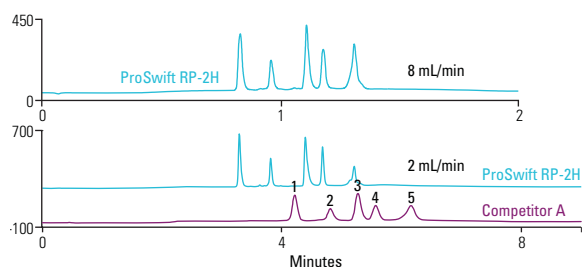
### Proteins



#### ProSwift RP-2H, 50 x 4.6mm

|                   |  |
|-------------------|--|
| Mobile Phase A:   | DI H <sub>2</sub> O/CH <sub>3</sub> CN (95:5; V/V) + 0.1% TFA  |
| Mobile Phase B:   | DI H <sub>2</sub> O/CH <sub>3</sub> CN (5:95; V/V) + 0.1% TFA  |
| Gradient:         | 1mL/min: 1-75% B in 12 min<br>2mL/min: 1-75% B in 6 min<br>4mL/min: 1-75% B in 3 min<br>8mL/min: 1-75% B in 1.5 min                  |
| Flow Rate:        | 1, 2, 4, or 8mL/min  |
| Injection Volume: | 5µL  |
| Detection:        | UV, 214nm  |
| Sample:           | Mixture of five proteins   |
| Analytes:         | 1. Ribonuclease A 1.5mg/mL<br>2. Cytochrome C 0.5mg/mL<br>3. BSA 1.5mg/mL<br>4. Carbonic anhydrase 0.9mg/mL<br>5. Ovalbumin 1.5mg/mL |

### Competitive comparison



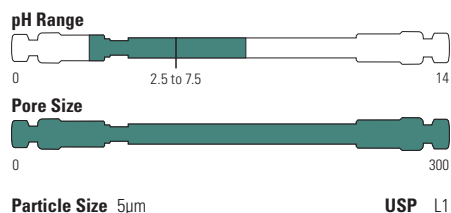
### ProSwift RP

| Functional Group | Length (mm) | 1.0mm ID | 4.6mm ID |
|------------------|-------------|----------|----------|
| RP-1S            | 50          | –        | 064297   |
| RP-2H            | 50          | –        | 064296   |
| RP-3U            | 50          | –        | 064298   |
| RP-4H            | 50          | 069477   | –        |
| RP-10R           | 50          | 164586   | –        |
| RP-4H            | 250         | 066640   | –        |

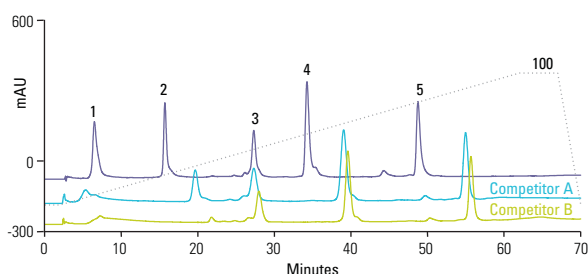
## ProPac HIC-10

Hydrophobic Interaction Chromatography columns for the high-resolution separation of proteins and peptides

- High-resolution HPLC separation of proteins, protein variants and peptides
- Proteins are separated under non-denaturing conditions
- High protein loading capacity for protein purification applications
- Wide range of applications
- Based on 5µm ultra high purity spherical silica gel particles with 300Å pores



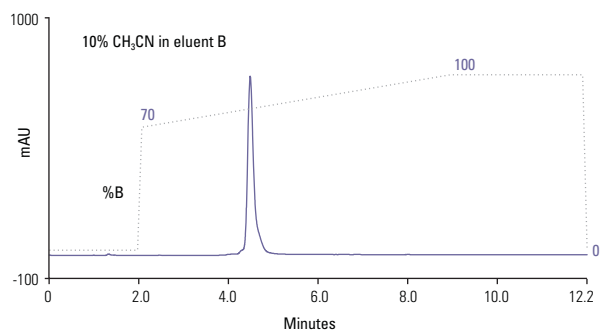
### Protein mixture



#### ProPac HIC-10, 5µm, 75 x 7.8mm Competitors A and B, 75 x 7.5mm

|                   |  |
|-------------------|--|
| Mobile Phase A:   | 2 M ammonium sulfate, 0.1 M sodium phosphate, pH 7.0                                       |
| Mobile Phase B:   | 0.1 M sodium phosphate, pH 7.0   |
| Flow Rate:        | 1.0mL/min  |
| Injection Volume: | 20µL   |
| Detection:        | UV, 214nm  |
| Sample:           | Mixture of proteins (1mg/mL each final after 1:1 dilution with mobile phase A)             |
| Analytes:         | 1. Cytochrome c<br>2. Myoglobin<br>3. Ribonuclease A<br>4. Lysozyme<br>5. Chymotrypsinogen |

### Monoclonal antibody



#### ProPac HIC-10, 5µm 100 x 4.6mm

|                   |   |
|-------------------|---|
| Mobile Phase A:   | 0.5 M ammonium sulfate, 0.1 M sodium phosphate, pH 7.0                                  |
| Mobile Phase B:   | 0.1 M sodium phosphate, pH 7.0 / acetonitrile (90:10 v/v) Gradient: 70–100% B in 15 min |
| Flow Rate:        | 1mL/min   |
| Injection Volume: | 5µL (25µg)  |
| Detection:        | UV, 214nm   |
| Sample:           | MAB 50µL (50mg/mL) + 450µL Eluent B   |

### ProPac HIC-10

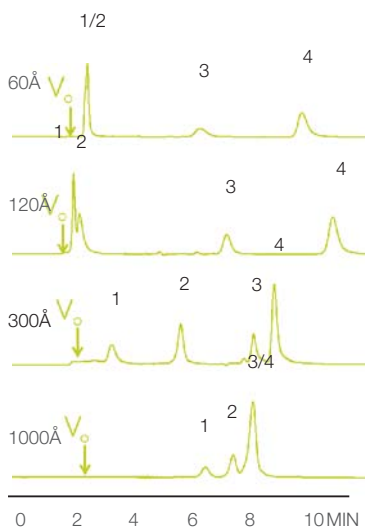
| Particle Size (µm) | Format      | Length (mm) | 2.1mm ID | 4.6mm ID | 7.8mm ID |
|--------------------|-------------|-------------|----------|----------|----------|
| 5                  | HPLC Column | 75          | –        | –        | 063665   |
|                    |             | 100         | 063653   | 063655   | –        |
|                    |             | 250         | –        | 074197   | –        |

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

## BioBasic SEC

Superior separation of water soluble compounds

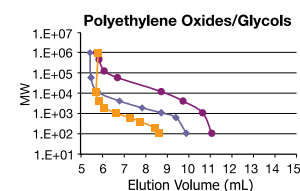
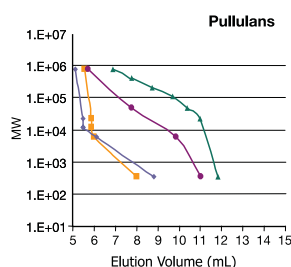
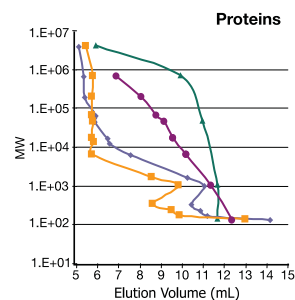
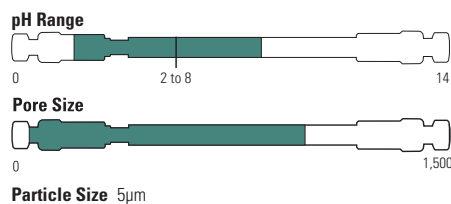
- Covers separation of analytes over a wide molecular weight range
- Long column life and high column efficiencies
- Simple mechanism of interaction based on molecular size and shape
- Ideal for sample clean-up
- Straightforward method development, simple mobile phases



Effect of pore size on SEC resolution

### BioBasic SEC, 5µm, 300 x 7.8mm

Mobile Phase: 0.1M  $\text{KH}_2\text{PO}_4$ , pH 7  
 Flow Rate: 1.0mL/min  
 Injection Volume: 20µL  
 Detection: UV, 254nm  
 Analytes:  
 1. Thyroglobulin (MW669,00)  
 2. Ovalbumin (MW 45,000)  
 3. Angiotensin II (MW 1,046)  
 4. PABA (V<sub>m</sub>) (MW 137)



Molecular weight calibration curves

### BioBasic SEC

| Pore Size (Å)            | Description  | ID (mm) | Length (mm) | Cat. No.     |
|--------------------------|--------------|---------|-------------|--------------|
| <b>BioBasic SEC 60</b>   |              |         |             |              |
| 60                       | Guard Column | 7.8     | 30          | 73305-037821 |
|                          | HPLC Column  | 7.8     | 150         | 73305-157846 |
|                          | HPLC Column  | 7.8     | 300         | 73305-307846 |
| <b>BioBasic SEC 120</b>  |              |         |             |              |
| 120                      | Guard Column | 7.8     | 30          | 73405-037821 |
|                          | HPLC Column  | 7.8     | 150         | 73405-157846 |
|                          | HPLC Column  | 7.8     | 300         | 73405-307846 |
| <b>BioBasic SEC 300</b>  |              |         |             |              |
| 300                      | Guard Column | 7.8     | 30          | 73505-037821 |
|                          | HPLC Column  | 7.8     | 150         | 73505-157846 |
|                          | HPLC Column  | 7.8     | 300         | 73505-307846 |
| <b>BioBasic SEC 1000</b> |              |         |             |              |
| 1000                     | Guard Column | 7.8     | 30          | 73605-037821 |
|                          | HPLC Column  | 7.8     | 150         | 73605-157846 |
|                          | HPLC Column  | 7.8     | 300         | 73605-307846 |

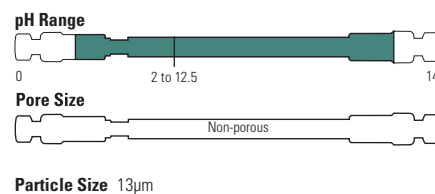
# Oligonucleotide columns

## DNAPac PA100

A strong anion exchange column developed to provide high-resolution analysis and purification of synthetic oligonucleotides

- High-resolution oligonucleotide separations
- Achieve n, n-1 resolution for oligonucleotides
- Resolves oligonucleotides with secondary structures
- Suitable for the analysis of phosphorothioate-based clinical samples
- Easy scale-up from 2.0mm to 22mm ID column (>100x)

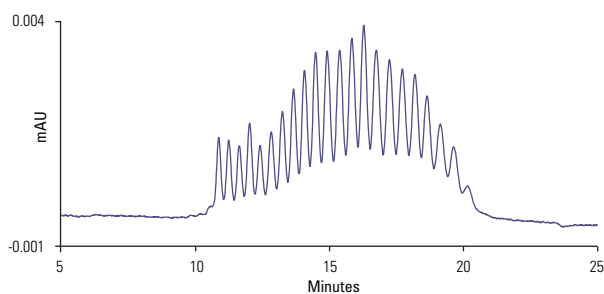
The DNAPac PA100 is a high-resolution anion-exchange column that provides single-base resolution. It is stable under denaturing conditions, rugged, reliable, and can be readily scaled up. The DNAPac PA100 is a 13µm pellicular, nonporous polymeric resin with bound quaternary amine-functionalized Thermo Scientific™ Dionex™ MicroBeads™. The rapid mass-transport characteristics of this resin result in very high-resolution oligonucleotide separations. DNAPac PA100 can resolve full length from n-1, n+1, and other failure sequences.



Particle Size 13µm



## Oligonucleotides



### DNAPac PA100, 13µm, 250 x 4.0mm

Mobile Phase: 410-510mM NaCl  
in 25mM Tris-Cl, pH 8.0  
Flow Rate: 1.5mL/min  
Detection: UV, 260nm  
Sample: pd(A)<sub>40-50</sub>

## DNAPac PA100

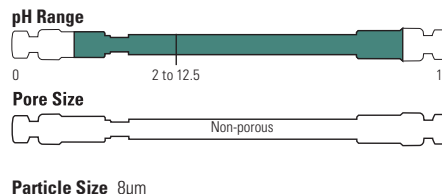
| Particle Size (µm) | Format       | Length (mm) | 2.0mm ID | 4.0mm ID | 9.0mm ID | 22.0mm ID |
|--------------------|--------------|-------------|----------|----------|----------|-----------|
| 13                 | Guard Column | 50          | 088761   | 043018   | 088764   | 088765    |
|                    | HPLC Column  | 250         | 088760   | 043010   | 043011   | 088759    |

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

## DNAPac PA200

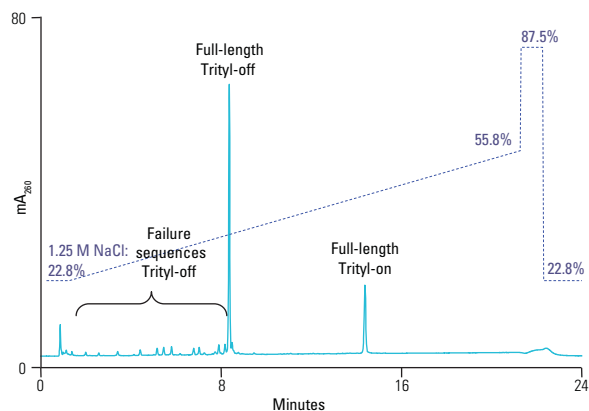
A strong anion exchange column developed to provide the best resolution for analysis and purification of synthetic oligonucleotides

- Achieve n, n-1 resolution for oligonucleotides
- Resolve oligonucleotides with secondary structures
- Assay phosphorothioate purity
- Selectivity control with eluent pH, salt, and solvent
- Resolve RNA with aberrant (2', 5') links from normal ssRNA
- Separate individual phosphorothioate diastereoisomers
- HR/AM AXLC/MS via automated desalting
- 9-fold more stable to high pH than DNAPac PA100

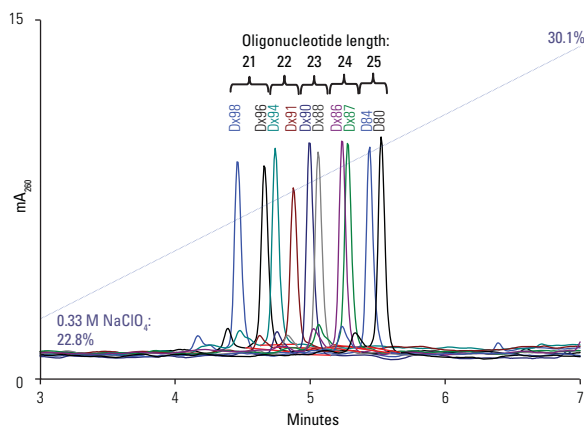


The DNAPac PA200 is packed with a pellicular anion-exchange resin composed of an 8µm diameter nonporous polymeric substrate to which quaternary amine-functionalized Dionex MicroBeads are bound. The rapid mass transport characteristics of this resin result in high-resolution oligonucleotide separations. DNAPac PA200 can resolve full length from n-1, n+1, and other failure sequences not possible with other columns.

### Target, failure and trityl-on oligonucleotides



### Separation of oligonucleotides by length



#### DNAPac PA200, 8µm, 250 x 4.0mm

|                   |  |
|-------------------|--|
| Mobile Phase:     | NaClO <sub>4</sub> , pH 6.5<br>with 20% CH <sub>3</sub> CN |
| Flow Rate:        | 1.2mL/min  |
| Injection Volume: | 8µL  |
| Detection:        | UV, 260nm  |

#### DNAPac PA200

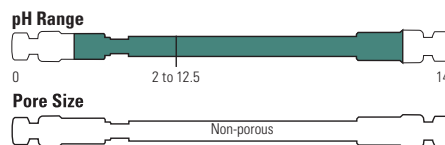
| Particle Size (µm) | Format       | Length (mm) | 2.0mm ID | 4.0mm ID | 9.0mm ID | 22.0mm ID |
|--------------------|--------------|-------------|----------|----------|----------|-----------|
| 8                  | Guard Column | 50          | 063423   | 062998   | 063419   | 088780    |
|                    | HPLC Column  | 250         | 063425   | 063000   | 063421   | 088781    |

## DNAPac PA200 RS

UHPLC Solutions for nucleic acid analysis

- Provide single base resolution of oligonucleotides
- Higher efficiency to improve resolution
- Improved throughput
- Ruggedness consistent with the DNAPac PA200 column line
- Stable to 10,000 psi

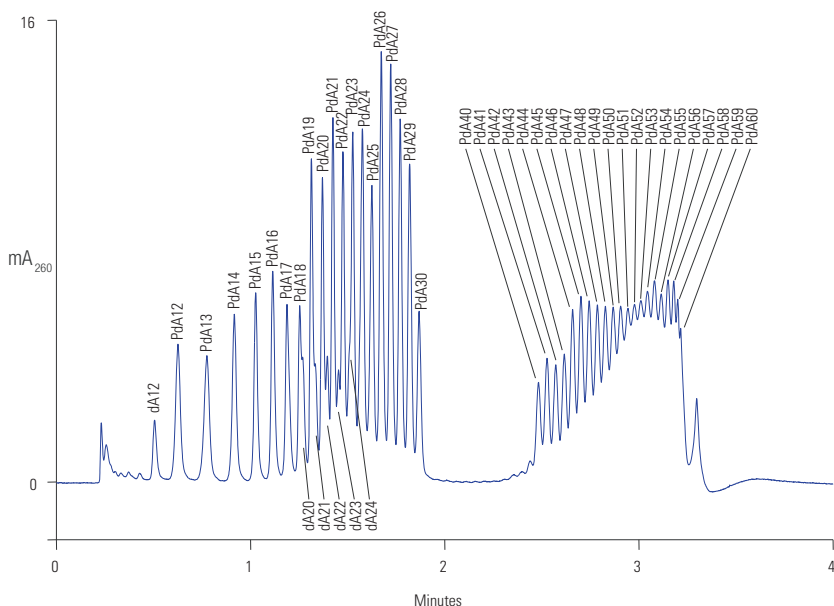
DNAPac PA200 RS columns are packed with smaller, 4µm particles, for improved resolution and better performance. The smaller particles also allow shorter columns to provide significantly higher throughput. These columns are packed in Bio-Inert PEEK-lined stainless steel (SST) bodies, designed to protect from unwanted interactions of eluents and analytes with metals, while maintaining 10,000 psi stability. These columns offer exceptional resolution of oligonucleotides, including isomer separations; and are able to resolve full length oligonucleotides from n-1 and n+1 oligonucleotides and other failure sequences.



Particle Size 4µm



### Partial resolution of 46 oligonucleotides



#### DNAPac PA200 RS, 4µm, 50 x 4.6mm

Mobile Phase A: 20 mM Tris pH 8  
 Mobile Phase B: A + 1.25 M NaCl  
 Gradient: 28–43% B in 4 CV\*  
 (2.56 min) curve 3\*\*  
 Temperature: 30°C  
 Flow Rate: 1.30mL/min  
 Injection Volume: 2.5µL  
 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

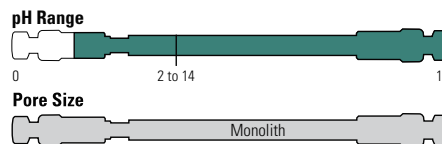
| Particle Size (µm) | Format       | Length (mm) | 4.6mm ID |
|--------------------|--------------|-------------|----------|
| 4                  | BioRS column | 50          | 082508   |
|                    |              | 150         | 082509   |
|                    |              | 250         | 082510   |

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

## DNASwift SAX-1S

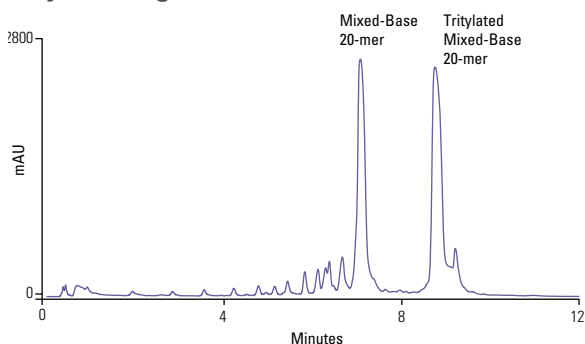
A strong anion exchange monolith column that provides improved capacity and industry-leading oligonucleotide yield-purity performance.

- Micromole purifications in a 5mm ID column body
- Substantial capacity in a small format
- Tunable selectivity control, like the DNAPac PA200 columns, for high resolution
- Compatible with high pH mobile phases, solvents, or high temperatures
- Ideal for therapeutic and diagnostic oligonucleotide research
- Purify difficult oligonucleotide products



The DNASwift column is a unique porous polymer monolith coated with functionalized latex nanobeads, optimized for oligonucleotide separations. The monolith, a polymer cylinder with interconnected flow through channels, provides fast mass transfer, low back pressure (for increased flow rates), very high capacity, and refined selectivity control.

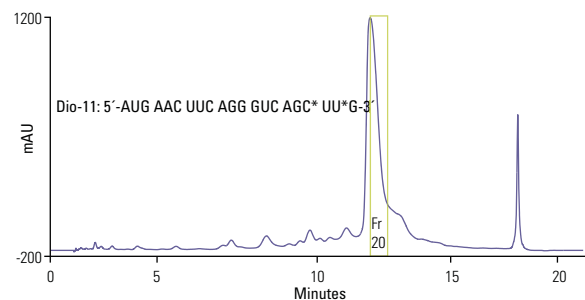
### Tritylated oligonucleotide



#### DNASwift SAX-1S, 150 x 5.0mm

|                   |                                       |
|-------------------|---------------------------------------|
| Mobile Phases A:  | 15mM Tris, pH 8                       |
| Mobile Phases B:  | 15mM Tris, pH 8, 1.25 M NaCl          |
| Gradient:         | 8–64% B in 10 min                     |
| Flow Rate:        | 1.5mL/min                             |
| Injection Volume: | 20µL                                  |
| Detection:        | UV, 260nm                             |
| Sample:           | Derivatized mixed-base 20mer, 20mg/mL |

### 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 5.0mm

|                   |                               |
|-------------------|-------------------------------|
| Mobile Phase A:   | 40mM Tris, pH 7               |
| Mobile Phase B:   | 40mM Tris, pH 7 + 1.25 M NaCl |
| Gradient:         | 26–42% B in 10 column volumes |
| Temperature:      | 30°C                          |
| Flow Rate:        | 1.5mL/min                     |
| Injection Volume: | 125µg                         |
| Detection:        | UV, 260nm                     |

### DNASwift SAX-1S

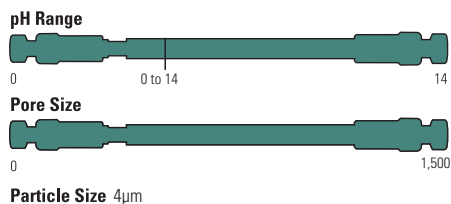
|                    |                 |
|--------------------|-----------------|
| <b>Length (mm)</b> | <b>5.0mm ID</b> |
| 150                | 066766          |

## DNAPac RP

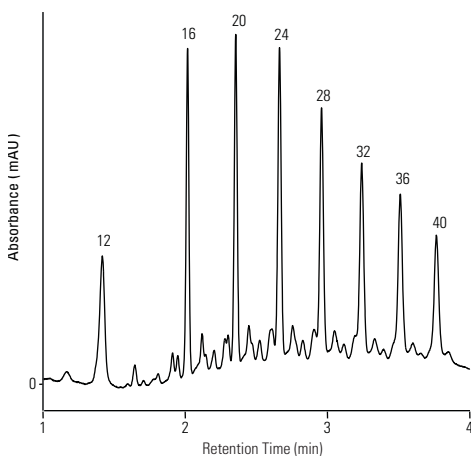
Reverse phase (RP) column specifically for analysis of oligonucleotides and double stranded (ds) DNA and RNA fragments.

- Excellent MS compatibility
- Wide operating pH range: 0–14
- High temperature stability: up to 100°C
- High throughput

The DNAPac RP is a column designed for analysis of oligonucleotides and ds DNA and RNA fragments using LC/UV or LC/MS. The unique column chemistry provides excellent performance under a broad range of pH, temperature, and mobile phase compositions. In addition, the large pore size of the resin provides excellent separation of small to large oligonucleotides.



### Fast analysis of mixed base DNA



#### DNAPac RP, 4µm, 50 x 2.1mm

Mobile Phase A: 25 mM HAA, pH 8.5  
Mobile Phase B: 25 mM HAA, pH 8.5 / Acetonitrile (50:50 v/v)

| 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 |
| 8.5       |    | 67         | 33 |

|                   |               |
|-------------------|---------------|
| Gradient Curve:   | 3             |
| Temperature:      | 65°C          |
| Flow Rate:        | 0.8mL/min     |
| Injection Volume: | 4µL           |
| Detection:        | UV, 260 nm    |
| Sample:           | 8-Combo DNA   |
| Peak Label:       | Length of DNA |

### DNAPac RP

| Particle Size (µm) | Format                   | Length (mm) | 2.1mm ID | 3.0mm ID |
|--------------------|--------------------------|-------------|----------|----------|
| 4                  | Guard Cartridges (2/ pk) | 10          | 088925   | 088921   |
|                    |                          | 50          | 088924   | 088920   |
|                    | HPLC Column              | 100         | 088923   | 088919   |
|                    | Guard Cartridge Holder   |             | 069580   | 069580   |

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



# Nano, capillary and micro LC columns

Delivering high performance separations to -omics research

Our columns have been specifically designed to combine high performance with ease of use. From the “plug and spray” EASY-Spray columns to the innovative nanoViper fitted Acclaim PepMap range and the Monolithic PepSwift and ProSwift columns.

## LC-MS compatible formats

- Offering the highest sensitivity

## 1200s bar compatible nano columns

- With increased length to increase peak capacity

## Monolithic polymer phases

- For high throughput peptide and protein analysis

For more information visit [thermofisher.com/biolc](https://www.thermofisher.com/biolc)

## EASY-Spray columns

“Plug and Spray” nano LC columns for routine and robust performance.

- Simple to use format
- Routine research methodology
- Excellent performance for peptide separations
- Available with wide pore phases and monoliths for the separation of intact proteins

### Acclaim PepMap C18 100Å

| Particle size (µm) | Length (mm) | 50µm ID | 75µm ID | 150µm ID |
|--------------------|-------------|---------|---------|----------|
| 2                  | 150         | ES801A  | ES804A  | ES806A   |
|                    | 250         | –       | ES802A  |          |
|                    | 500         | –       | ES803A  |          |
|                    | 750         | –       | ES805A  |          |
| 3                  | 150         | –       | ES800A  |          |

### Accucore 150-C4

| Particle size (µm) | Length (mm) | 50µm ID | 75µm ID |
|--------------------|-------------|---------|---------|
| 2.6                | 150         | –       | ES811A  |

### PepSwift

| Length (mm) | 200µm ID |
|-------------|----------|
| 250         | ES810A   |

## EASY-Spray emitters

Integrated sprayer coupled with a transfer line.

- Pre-made connections
- Easy installation in the MS Ion Source
- No chromatography required

### EASY-Spray emitters

| Description  | Cat. No. |
|--|----------|
| EASY-Spray Emitter, nanoflow (Emitter ID 7µm, Transfer line ID 20µm, Transfer line length 500mm)   | ES791A   |
| EASY-Spray Emitter, microflow (Emitter ID 20µm, Transfer line ID 75µm, Transfer line length 500mm) | ES792A   |

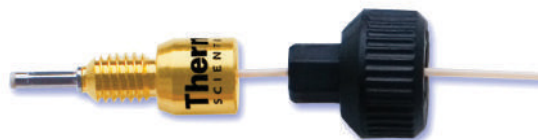
Learn more at [thermofisher.com/easyspray](http://thermofisher.com/easyspray)



## nanoViper fingertight fittings

Designed to be a virtually dead volume-free fingertight UHPLC fitting system.

- Provides virtually zero-dead-volume connections
- Compatible with backpressures up to 1000 bar (14,500 psi)
- Suitable for temperatures up to 80°C
- Easy to use 1/32" PEEK sheathed fused silica and fingertight design
- Works with virtually any valve and any column from any manufacturer



The nanoViper connections come preassembled and high pressure tested. The fittings do not “grab” the tubing at a single point. It seals at the tip and not with a ferrule. Nor does it “grab” the tubing at a single point. It is this feature that gives nanoViper fittings their UHPLC, virtually dead-volume-free capabilities.

### nanoViper fingertight fittings

| Length (mm) | Green<br>10µm ID | Orange<br>20µm ID | Brown<br>50µm ID | Black<br>75µm ID | Red<br>100µm ID | Purple<br>150µm ID |
|-------------|------------------|-------------------|------------------|------------------|-----------------|--------------------|
| 70          | -                | 6041.5120         | 6041.5123        | 6041.5126        | 6041.5810       | 6041.5817          |
| 150         | 6041.5118*       | 6041.5121         | 6041.5124        | 6041.5127        | 6041.5811       | 6041.5818          |
| 250         | -                | -                 | -                | 6041.5730        | 6041.5812       | 6041.5819          |
| 350         | -                | 6041.5240         | 6041.5540        | 6041.5735        | 6041.5813       | 6041.5820          |
| 450         | -                | -                 | -                | -                | 6041.5814       | 6041.5821          |
| 550         | -                | 6041.5260         | 6041.5560        | 6041.5760        | 6041.5815       | 6041.5822          |
| 650         | -                | 6041.5275         | 6041.5575        | 6041.5775        | 6041.5824       | -                  |
| 750         | -                | 6041.5280         | 6041.5580        | 6041.5780        | 6041.5816       | 6041.5823          |
| 850         | -                | -                 | -                | 6041.5785        | -               | -                  |
| 950         | -                | 6041.5122         | 6041.5125        | 6041.5128        | -               | -                  |
| 1100        | -                | -                 | -                | 6041.5711        | -               | -                  |

\*180mm Length

### Trap column cartridges holders with nanoViper fittings

| Description  | Cartridge Length<br>(mm) | Fitting ID (µm) | Cat. No. |
|--|--------------------------|-----------------|----------|
| µ-Precolumn holder for trap cartridges with 2 x<br>100mm length nanoViper fittings | 5                        | 30              | 164649   |
|  | 15                       | 75              | 164650   |

### Sample loops with nanoViper fittings

| Volume (µL) | Cat. No.  | Quantity |
|-------------|-----------|----------|
| 1           | 6826.2401 | 1 Each   |
| 5           | 6826.2405 | 1 Each   |
| 10          | 6826.2410 | 1 Each   |
| 20          | 6826.2420 | 1 Each   |
| 50          | 6826.2450 | 1 Each   |
| 125         | 6826.2412 | 1 Each   |

## nanoViper application kits

nanoViper fittings are also included in tubing and application kits designed for use with the Thermo Scientific™ UltiMate™ 3000 RSLCnano systems.

### nanoViper fitting kits for UltiMate 3000 RSLCnano systems

| Description  | Tubing | Samples | Trap Column | Separation Column | RSLCnano Systems |
|--|--------|---------|-------------|-------------------|------------------|
| Direct Injection nano LC Kit   | Y      | Y       | –           | Y                 | 6720.0300        |
| Direct Injection capillary LC Kit  | Y      | Y       | –           | Y                 | 6720.0305        |
| Preconcentration nano LC kit   | Y      | Y       | Y           | Y                 | 6720.0310        |
| Preconcentration capillary LC kit  | Y      | Y       | Y           | Y                 | 6720.0315        |
| Preconcentration monolithic LC kit   | Y      | Y       | Y           | Y                 | 6720.0320        |
| 2D salt plugs kit  | Y      | Y       | Y           | Y                 | 6720.0325        |
| Automated off line SCX-RP peptides kit   | Y      | Y       | Y           | Y                 | 6720.0330        |
| Automated off line RP-RP peptides kit  | Y      | Y       | Y           | Y                 | 6720.0340        |
| Tandem nano LC kit   | Y      | Y       | Y           | Y                 | 6720.0335        |
| FLM nanoViper tubing kit<br>(All tubing for nano LC preconcentration)                | Y      | –       | –           | –                 | 6041.5100        |
| MS connection kit  | Y      | –       | –           | –                 | 6720.0345        |
| EASY-Spray connection kit<br>(Supports direct injection as well as preconcentration) | Y      | Y       | Y           | –                 | 6720.0395        |

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



## Acclaim PepMap NanoLC columns

The standard for peptide separations in proteomics

- High-resolution protein identification
- Highest sensitivity in LC-MS
- Fitted with nanoViper fittings as standard



### Acclaim PepMap C18 100Å

| Particle size (µm) | Length (mm) | nanoViper Column |         |          |           |
|--------------------|-------------|------------------|---------|----------|-----------|
|                    |             | 50µm ID          | 75µm ID | 300µm ID | 1000µm ID |
| 2                  | 50          | 164561           | 164563  | 164560   | 164454    |
|                    | 150         | 164943*          | 164940  | 164537   | 164711    |
|                    | 250         | 164944*          | 164941* | –        | –         |
|                    | 500         | 164945*          | 164942  | –        | –         |
|                    | 750         | –                | 164939* | –        | –         |
| 3                  | 50          | 164712           | 164567  | 164716   | 164717    |
|                    | 150         | 164713           | 164738  | 164571   | 164572    |
|                    | 250         | 164714           | 164569  | –        | –         |
|                    | 500         | 164715           | 164739  | –        | –         |
|                    | 750         | –                | –       | –        | –         |
| 5                  | 50          | –                | –       | 164901   | 164899    |
|                    | 150         | –                | –       | 164902   | 164900    |

Note: \* denotes capable of operating to 1200 bar

### Acclaim PepMap C8 100Å

| Particle size (µm) | Length (mm) | nanoViper Column |         |          |           |
|--------------------|-------------|------------------|---------|----------|-----------|
|                    |             | 50µm ID          | 75µm ID | 300µm ID | 1000µm ID |
| 3                  | 150         | –                | 164706  | 164722   | 164723    |

### Acclaim PepMap C4 300Å

| Particle size (µm) | Length (mm) | nanoViper Column |         |          |           |
|--------------------|-------------|------------------|---------|----------|-----------|
|                    |             | 50µm ID          | 75µm ID | 300µm ID | 1000µm ID |
| 5                  | 150         | –                | 164707  | 164720   | 164721    |

### Acclaim PepMap C18 300 Å

| Particle size (µm) | Length (mm) | nanoViper Column |         |          |           |
|--------------------|-------------|------------------|---------|----------|-----------|
|                    |             | 50µm ID          | 75µm ID | 300µm ID | 1000µm ID |
| 5                  | 150         | –                | 164708  | 164718   | 164719    |

## Accucore NanoLC columns

### Accucore 150-C18

|                                 |             | nanoViper Column    |
|---------------------------------|-------------|---------------------|
| Particle size ( $\mu\text{m}$ ) | Length (mm) | 75 $\mu\text{m}$ ID |
| 2.6                             | 150         | 16126-157569        |
|                                 | 500         | 16126-507569        |

### Accucore 150-C4

|                                 |             | nanoViper Column    |
|---------------------------------|-------------|---------------------|
| Particle size ( $\mu\text{m}$ ) | Length (mm) | 75 $\mu\text{m}$ ID |
| 2.6                             | 150         | 16526-157569        |
|                                 | 500         | 16526-507569        |

### Accucore 150-Amide-HILIC

|                                 |             | nanoViper Column    |
|---------------------------------|-------------|---------------------|
| Particle size ( $\mu\text{m}$ ) | Length (mm) | 75 $\mu\text{m}$ ID |
| 2.6                             | 150         | 16726-157569        |



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

## Monolithic Capillary and Micro HPLC columns

High-speed peptide and protein separations

- High-resolution for protein identification, biomarker discovery, and systems biology
- High column-to-column reproducibility
- nanoViper fittings for easy column installation

The monolithic structure offers a high-quality alternative to traditional microparticulate sorbents, providing important advantages to the chromatographic separation. High-sensitivity proteomics and biotech applications are easily performed using these columns.



### PepSwift

| Length (mm) | PepSwift |          |          |
|-------------|----------|----------|----------|
|             | 100µm ID | 200µm ID | 500µm ID |
| 5           | –        | 164558   | –        |
| 50          | 164584   | 164557   | 164585   |
| 250         | 164543   | 164542   | –        |

### ProSwift RP-4H

| Length (mm) | ProSwift |          |          |
|-------------|----------|----------|----------|
|             | 100µm ID | 200µm ID | 500µm ID |
| 100         | –        | –        | 164925   |
| 250         | 164922   | 164923   | –        |
| 500         | 164921   | –        | –        |

### ProSwift C4 RP-5H

| Length (mm) | ProSwift |          |          |
|-------------|----------|----------|----------|
|             | 100µm ID | 200µm ID | 500µm ID |
| 100         | –        | –        | 164931   |
| 250         | 164929   | 164930   | 164932   |
| 500         | 164928   | –        | –        |



## Trap columns – nano trap design

### Acclaim PepMap C18 100Å

| Type             | Part number | Particle Size | ID  | Bed Length (mm) | Total Length | Quantity |
|------------------|-------------|---------------|-----|-----------------|--------------|----------|
| nanoViper Column | 164535      | 3             | 75  | 20              | 150          | 2 Pack   |
|                  | 164705      | 3             | 75  | 20              | 70           | 2 Pack   |
|                  | 164564      | 5             | 100 | 20              | 150          | 2 Pack   |
| Classic Column   | 164197      | 5             | 100 | 10              | 150          | 2 Pack   |
|                  | 164199      | 5             | 100 | 20              | 150          | 2 Pack   |
|                  | 164213      | 5             | 200 | 20              | 150          | 2 Pack   |

Note: 164705 is a shorter total length used for vented column set up for example with EASY nLC 1000

## Trap columns – cartridge (Set of 5)



### Acclaim PepMap C18 100Å

| Length (mm) | 300µm ID | 1000µm ID |
|-------------|----------|-----------|
| 5           | 160454   | 160434    |
| 15          | –        | 160438    |

### Acclaim PepMap C8 100Å

| Length (mm) | 300µm ID |
|-------------|----------|
| 5           | 161194   |

### Acclaim PepMap C4 300Å

| Length (mm) | 300µm ID |
|-------------|----------|
| 5           | 163591   |

### Acclaim PepMap C18 300Å

| Length (mm) | 300µm ID |
|-------------|----------|
| 5           | 163589   |

### Accucore 150-C4

| Length (mm) | 300µm ID     |
|-------------|--------------|
| 5           | 16526-900379 |

### Accucore 150-Amide-HILIC

| Length (mm) | 300µm ID     |
|-------------|--------------|
| 5           | 16726-900379 |



### µ-Precolumn™ holder, 5mm, with 30µm ID connecting tubing, nanoViper fittings

| Length (mm) | 300µm ID |
|-------------|----------|
| 5           | 164649   |

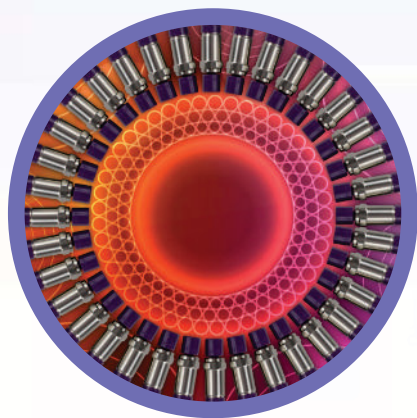




# LC columns and accessories

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.

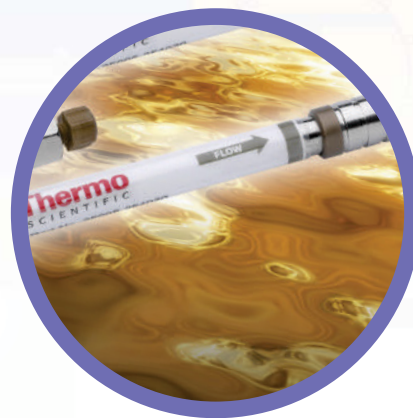
## Featured products



### Thermo Scientific™ Accucore™ columns

Solid core particles enabling high speed, high resolution separations with back pressures significantly lower than those associated with UHPLC.

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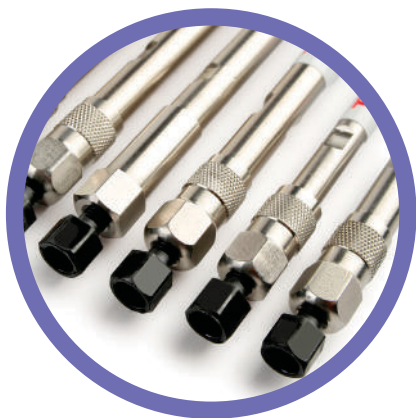
### Hypersil GOLD

Thermo Scientific™ Hypersil GOLD™ columns offers chromatographers outstanding peak shape for reversed phase, ion exchange, HILIC or normal phase chromatography.

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## Section contents

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| Accucore HPLC and UHPLC columns                  | 4-003 |
| Acclaim HPLC and UHPLC columns                   | 4-032 |
| Application Specific HPLC columns                | 4-045 |
| Synchronis HPLC and UHPLC columns                | 4-058 |
| Hypersil BDS and Hypersil classical HPLC columns | 4-066 |
| LC accessories                                   | 4-077 |
| LC reagents                                      | 4-098 |
| Preparative HPLC columns                         | 4-106 |



### 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.

Page 4-032



### Thermo Scientific™ Viper™ fittings

Maximize liquid chromatography (LC) performance and get zero-dead-volume connections to ensure optimal separations.

Page 4-019

# Accucore Vanquish

Powerful separations are our core performance

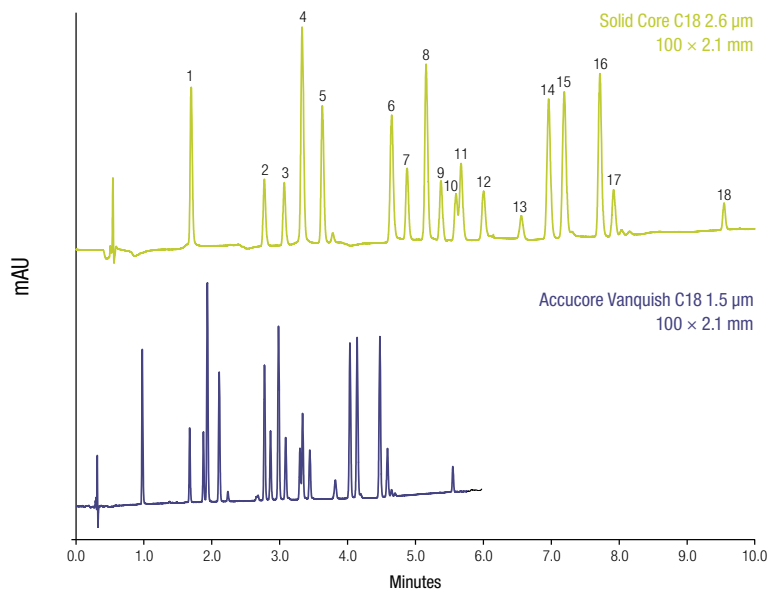
Thermo Scientific™ Accucore™ Vanquish™ UHPLC columns provide a robust chromatography solution to enhance laboratory workflows and productivity. These columns, in combination with Vanquish UHPLC systems, deliver powerful separations to solve your analytical challenges faster and more effectively.

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

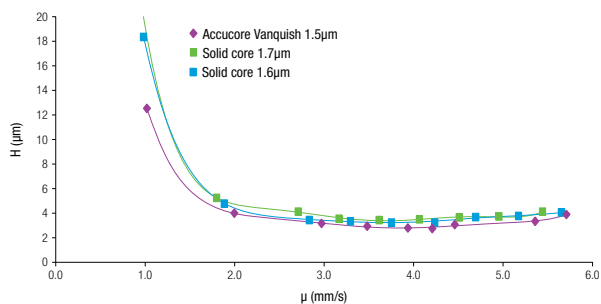
### Mobile Phase B:Acetonitrile

|                   |   |
|-------------------|---|
| 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<br>100 x 2.1mm = 380µL/min   |
|                   | Accucore Vanquish C18 1.5µm<br>100 x 2.1mm = 650µL/min  |
| Injection Volume: | 0.5µL   |
| Detection:        | UV, 230nm (0.1s rise time, 50Hz)  |
| Analytes:         | 1. Desethylatrazine 10. Diuron<br>2. Metoxuron 11. Isoproturon<br>3. Hexazinone 12. Metobromuron<br>4. Simazine 13. Metazachlor<br>5. Cyanazine 14. Sebutylazlin<br>6. Methabenzthiazuron<br>15. Propazine<br>7. Chlorotoluron 16. Terbutylazine<br>8. Atrazine 17. Linuron<br>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, 1.5 $\mu$ m**

Solid Core C18 1.7 $\mu$ m

Solid Core C18 1.6 $\mu$ m

Mobile Phase: Water:acetonitrile (50:50)

Temperature: 30°C

Flow Rate: 0.1 to 0.6mL/min

**Accucore Vanquish**

| Particle Size ( $\mu$ m) | 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

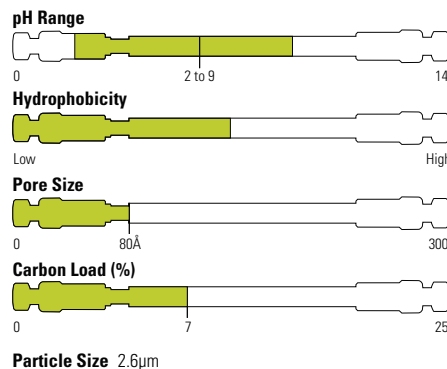
| Description                | Particle Size | Length (mm) | Diameter (ID) | Part Number    |
|----------------------------|---------------|-------------|---------------|----------------|
| Accucore Vanquish C18+     | 1.5           | 50          | 2.1           | 27101-052130   |
|                            |               | 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

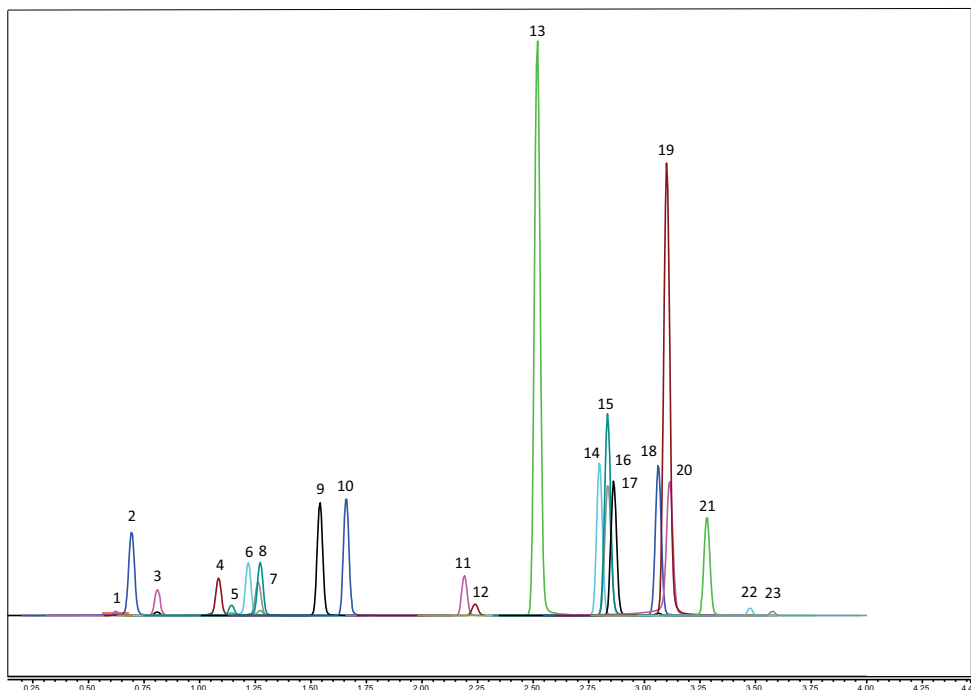
Generally C18 columns offer the ability to resolve a wide variety of analytes without issues. However, there are times when alternative chemistry is required for the separation of aromatic and moderately polar analytes. Biphenyl chemistry offers complementary selectivity to a C18 column, resolving analytes 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          |
|                   | 2.6μm 50 × 2.1mm           |
| Injection Volume: | 2μL                        |
| 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       |

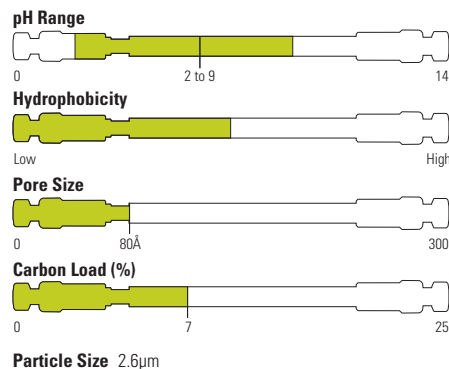
## Accucore RP-MS

- Optimized for MS detection
- Excellent peak shapes
- Excellent combination of speed and efficiency

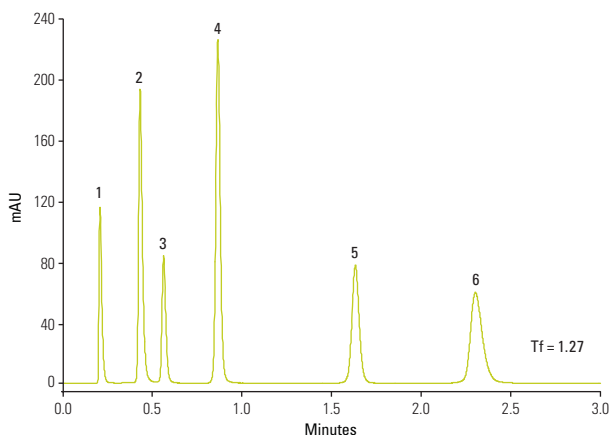
Accucore RP-MS uses an optimized alkyl chain length for more effective coverage of the silica surface. This coverage results in a significant reduction in non-hydrophobic interactions and thus highly efficient peaks with very low tailing.

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<br>2. Propranolol<br>3. Butylparaben<br>4. Naphthalene<br>5. Acenaphthene<br>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)

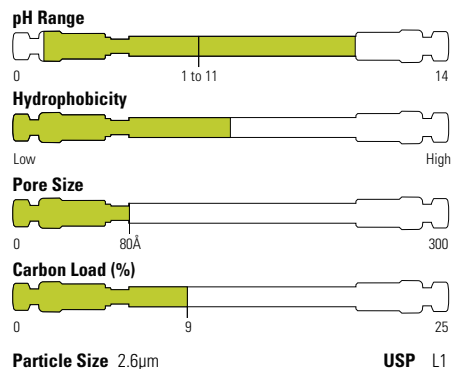


## Accucore C18

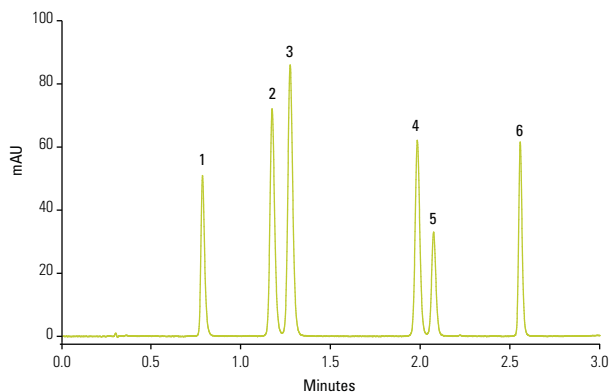
- Optimum retention of non-polar compounds
- Hydrophobic interaction mechanism
- Separates a broad range of analytes

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

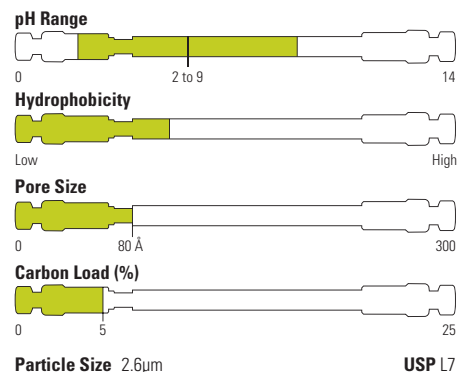
| Particle Size (µm) | Format                                  | Length (mm) | 1mm ID       |              |              | 2.1mm ID     |        |          | 3.0mm ID |          |        | 4.6mm ID |          |          |
|--------------------|---|-------------|--------------|--------------|--------------|--------------|--------|----------|----------|----------|--------|----------|----------|----------|
|                    |   |             | 1mm ID       | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     | 1mm ID | 2.1mm ID | 3.0mm ID | 4.6mm ID | 1mm ID | 2.1mm ID | 3.0mm ID | 4.6mm ID |
| 2.6                | Defender Guard (4/pk)                   | 10          | -            | 17126-012105 | 17126-013005 | 17126-014005 |        |          |          |          |        |          |          |          |
|                    |   | 30          | -            | 17126-032130 | -            | -            |        |          |          |          |        |          |          |          |
|                    | HPLC Column                             | 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

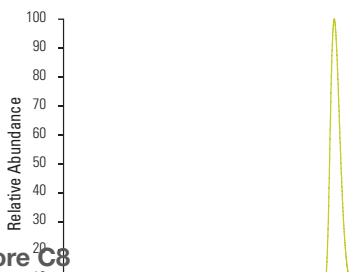
- Lower hydrophobic retention
- Complementary steric selectivity to C18
- Low levels of secondary interactions
- Recommended for moderately polar analytes

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       |

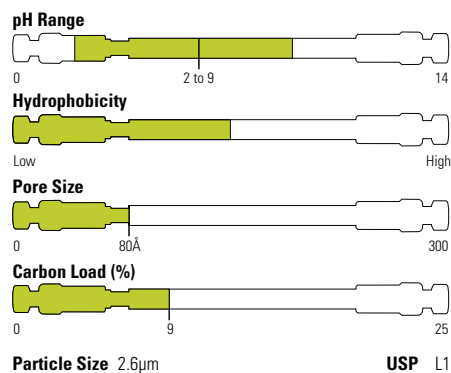
For more information, visit [thermofisher.com/accucore](http://thermofisher.com/accucore)

## Accucore aQ

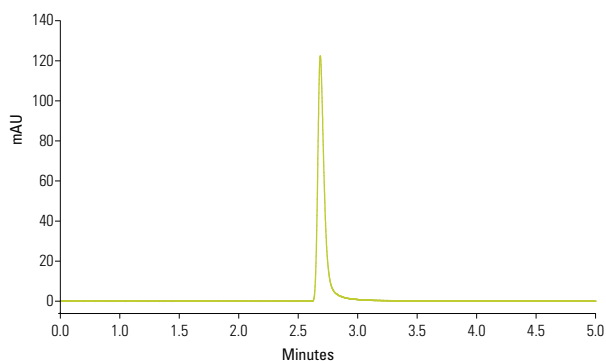
- Retention and resolution of polar analytes
- Polar endcapped C18 stationary phase for alternative selectivity
- Ideal for highly aqueous mobile phases

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 $t_r$   | 0.00  |
| %RSD Peak area   | 1.72  |
| (%RSD calculated from 6 replicate injections)            |   |
| USP acceptance criteria: % RSD ( $t_r$ , Peak Area) <2.0 |   |

### Accucore aQ

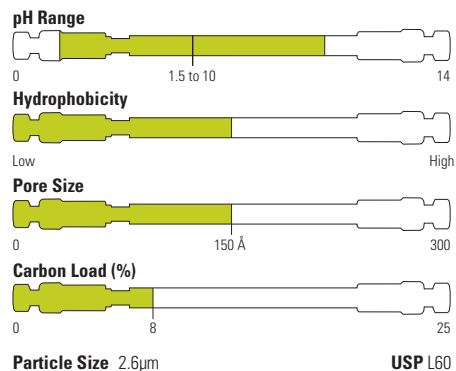
| Particle Size (µm)                      | Format                | Length (mm) | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|---|-----------------------|-------------|--------------|--------------|--------------|
| 2.6                                     | Defender Guard (4/pk) | 10          | 17326-012105 | 17326-013005 | 17326-014005 |
|   |                       | 30          | 17326-032130 | -            | -            |
|   | HPLC Column           | 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

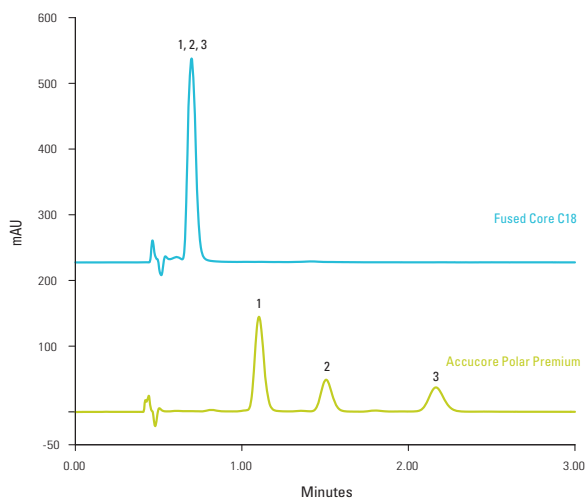
- Rugged amide-embedded C18 phase
- Selectivity complementary to conventional C18 phases
- Stable over a wide pH range and compatible with 100% aqueous mobile phase

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<br>2. Desmethoxycurcumin<br>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) | 10          | 28026-012105 | -            | -            |
|   | HPLC Column           | 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       |              |

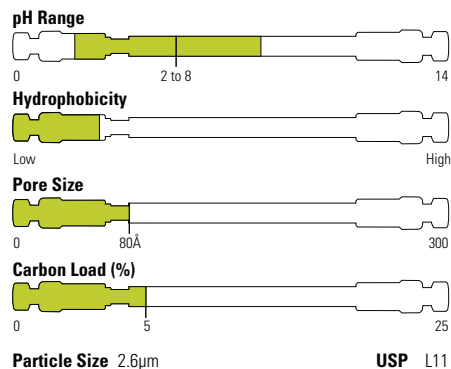
For more information, visit [thermofisher.com/accucore](http://thermofisher.com/accucore)

## Accucore Phenyl-Hexyl

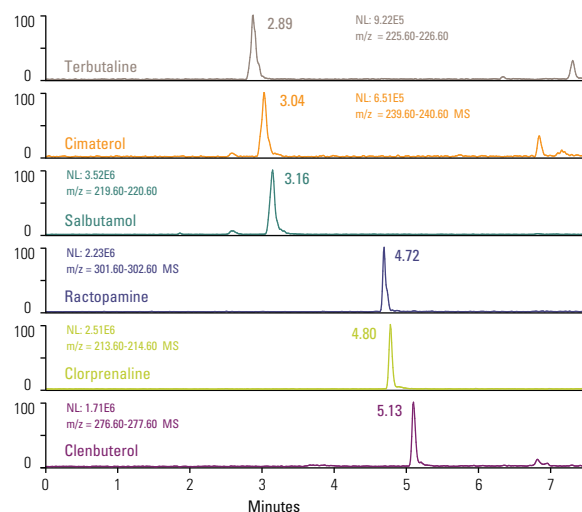
- Mixed-mode selectivity for aromatic and moderately polar analytes
- Enhanced pi-pi interactions with aromatics
- Moderate hydrophobicity

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 | Time (min) |
|----|------------|
| 0  | 5          |
| 1  | 5          |
| 10 | 100        |

Temperature: 40°C

Flow Rate: 0.25mL/min

Injection Volume: 1µL

Backpressure: 120 bar (at t<sub>0</sub>)

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 | -            | -            |
|                    | 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       | 850-00       |

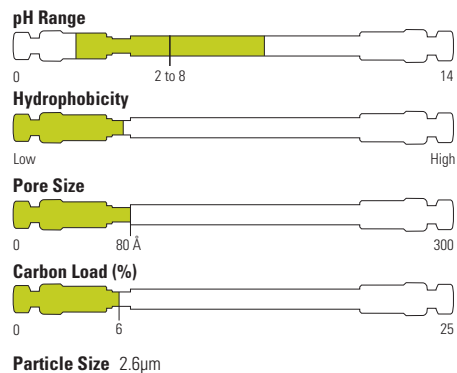
## Accucore Phenyl-X

- Unique reversed-phase shape selectivity
- Enhanced selectivity for aromatic compounds
- Compatible with highly aqueous mobile phases
- Robust, high-efficiency, low column bleed

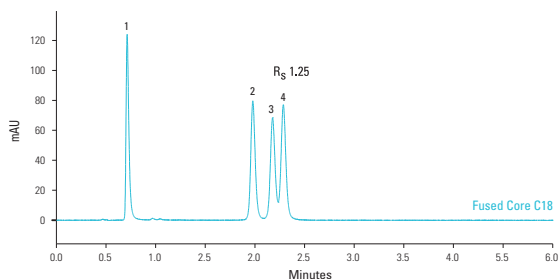
The proprietary Accucore Phenyl-X alkyl aromatic bonded phase provides a unique selectivity when compared to other reversed phase materials such as C18 or Phenyl.

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 2.6µm, 100 x 2.1mm  
Fused Core C18, 100 x 2.1mm**

Mobile Phase: 15:40:45 (v/v)

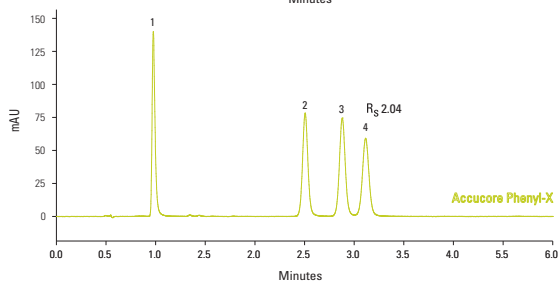
Acetonitrile:Methano:Water

Temperature: 40°C

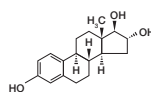
Flow Rate: 400µL/min

Injection Volume: 1µL

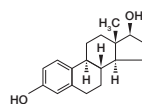
Detection: UV, 220nm



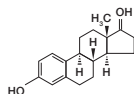
1. Estriol (E3)



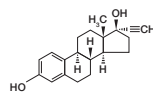
2. Estradiol (E2)



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       |

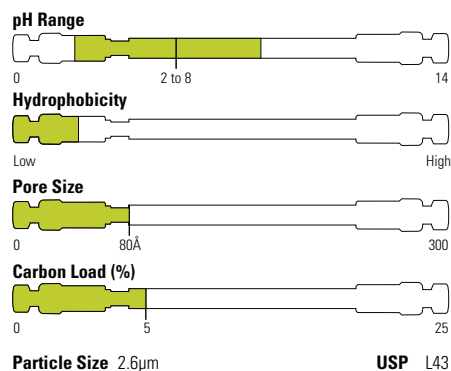
For more information, visit [thermofisher.com/accucore](http://thermofisher.com/accucore)

## Accucore PFP

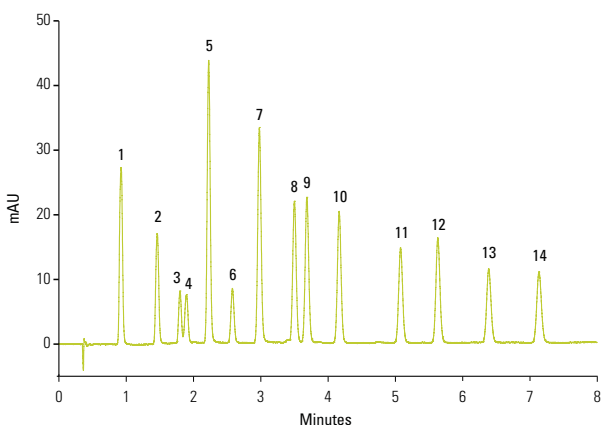
- Alternative selectivity to C18
- Extra retention for halogenated species
- Unique selectivity for non-halogenated polar compounds

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<br>2. 2,6 - Dimethoxyphenol<br>3. 2,6 - Difluorophenol<br>4. 3,5 - Dimethoxyphenol<br>5. 2,4 - Difluorophenol<br>6. 2,3 - Difluorophenol<br>7. 3,4 - Difluorophenol<br>8. 3,5 - Dimethylphenol<br>9. 2,6 - Dimethylphenol<br>10. 2,6 - Dichlorophenol<br>11. 4 - Chloro-3-Methylphenol<br>12. 4 - Chloro-2-Methylphenol<br>13. 3,4 - Dichlorophenol<br>14. 3,5 - Dichlorophenol |

### Accucore PFP

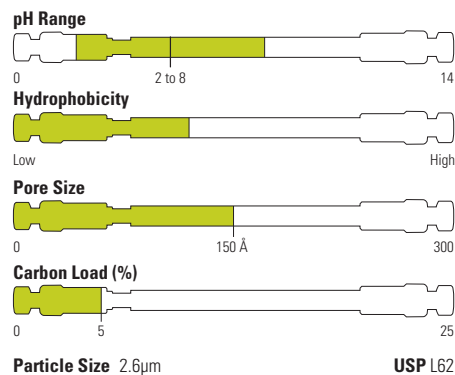
| Particle Size (µm) | Format                                  | Length (mm)  | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---|--------------|--------------|--------------|--------------|
| 2.6                | Defender Guard (4/pk)                   | 10           | 17426-012105 | 17426-013005 | 17426-014005 |
|                    |   | 30           | 17426-032130 | -            | -            |
|                    | 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

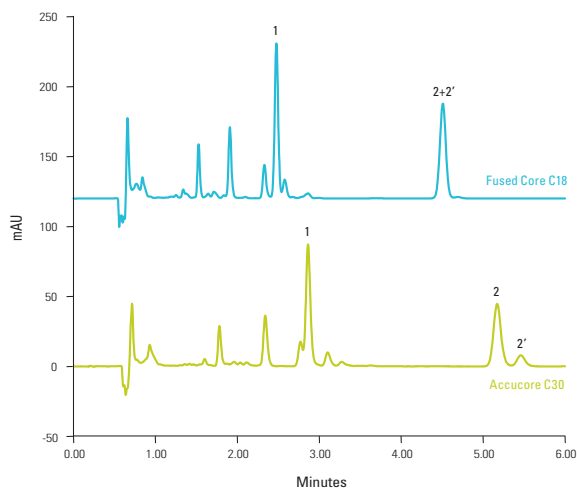
- Ideal for separation of hydrophobic, long alkyl chain compounds
- High shape selectivity for structurally related isomers
- Excellent aqueous-compatibility

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

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Mobile Phase: Methanol: 2mM Ammonium Acetate, 98:2

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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       | 850-00       |



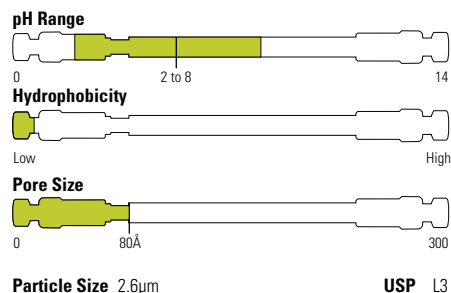
## Accucore HILIC

- Enhanced retention of polar and hydrophilic analytes
- Alternative selectivity to C18 without ion-pair or derivatization

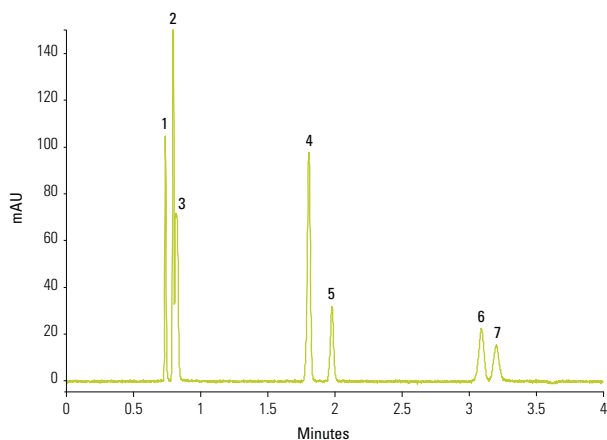
In HILIC mode the separation occurs through two mechanisms. The primary mechanism is a partitioning effect due to the enriched water layer around the polar or charged substrate material. The secondary mechanism involves interaction between the analyte and the active surface moiety.

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<br>2. 5-HIAA<br>3. DOPAC<br>4. Serotonin<br>5. L-tyrosine<br>6. Dopamine<br>7. L-DOPA |

### Accucore HILIC

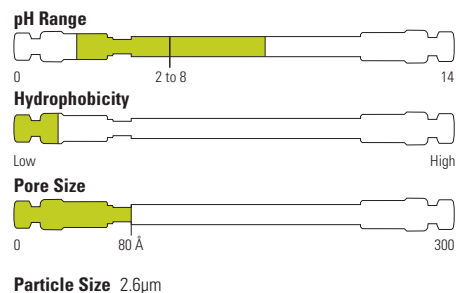
| Particle Size (µm) | Format                                  | Length (mm) | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---|-------------|--------------|--------------|--------------|
| 2.6                | Defender Guard (4/pk)                   | 10          | 17526-012105 | 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

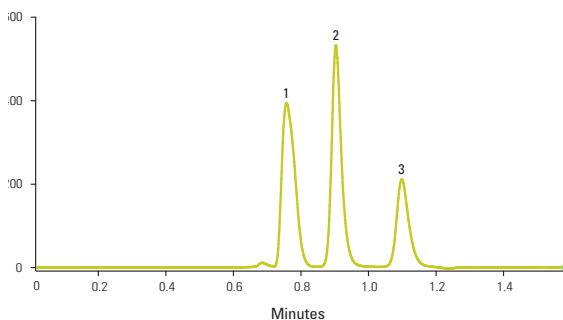
- Bonded hydrophilic stationary phase
- Unique selectivity compared to other HILIC phases
- Low ion exchange activity

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

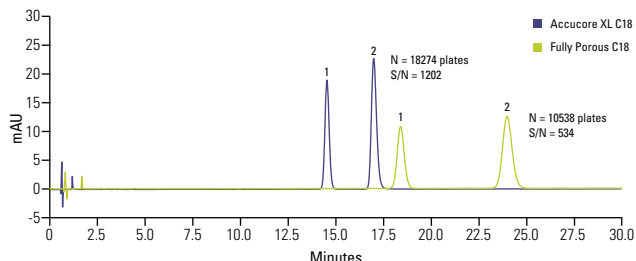
| Particle Size (μm) | Format                                  | Length (mm) | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---|-------------|--------------|--------------|--------------|
| 2.6                | Defender Guard (4/pk)                   | 10          | 27726-012105 | -            | -            |
|                    | 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)

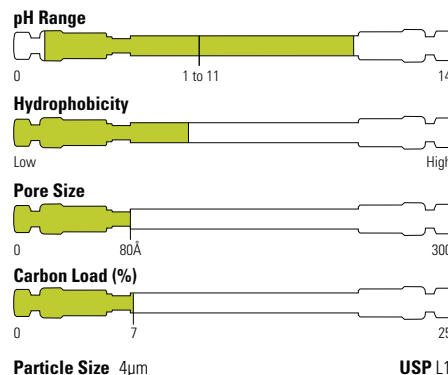
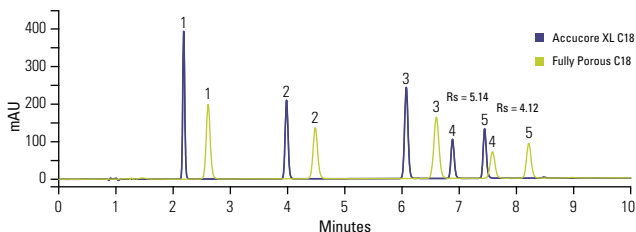


## Accucore XL C8

- Similar selectivity to C18 with lower retention
- Recommended for analytes with moderate hydrophobicity

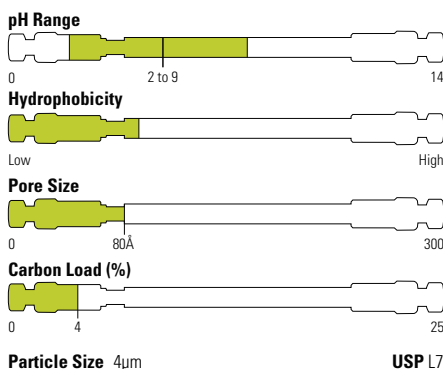
Accucore XL C8 is recommended for analytes with moderate hydrophobicity, or when a less hydrophobic phase provides optimum retention.

### 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<br>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<br>2.Simazine 4.Diuron 5.Bisphenol A |

### Accucore XL

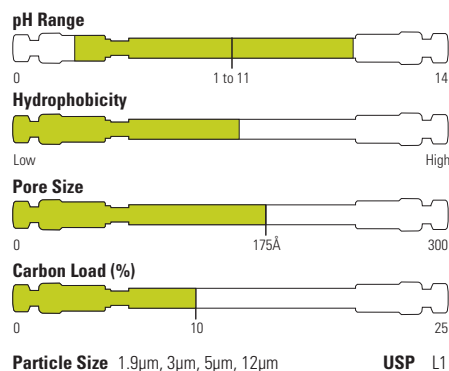
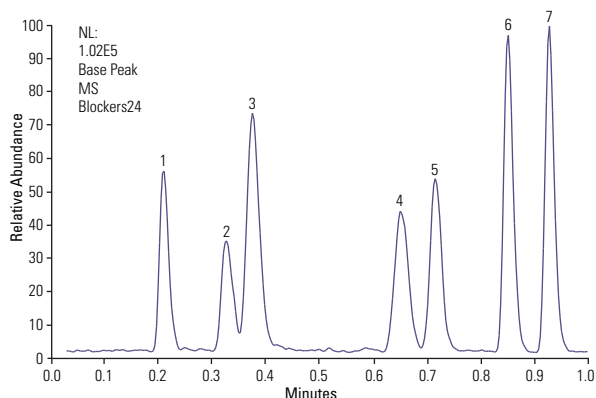
| Particle Size (µm) | Format               | Chemistry | Length (mm)  | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|----------------------|-----------|--------------|--------------|--------------|--------------|
| 4                  | Drop-in Guard (4/pk) | C18       | 10           | 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](http://thermofisher.com/hypersilgold)

## Hypersil GOLD preparative

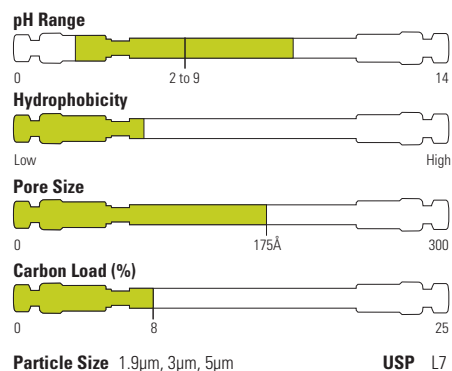
| Particle Size (µm) | Format                             | Length (mm) | 10mm ID       | 20mm ID       | 21mm ID       | 30mm ID       | 50mm ID       |
|--------------------|------------------------------------|-------------|---------------|---------------|---------------|---------------|---------------|
| 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 |



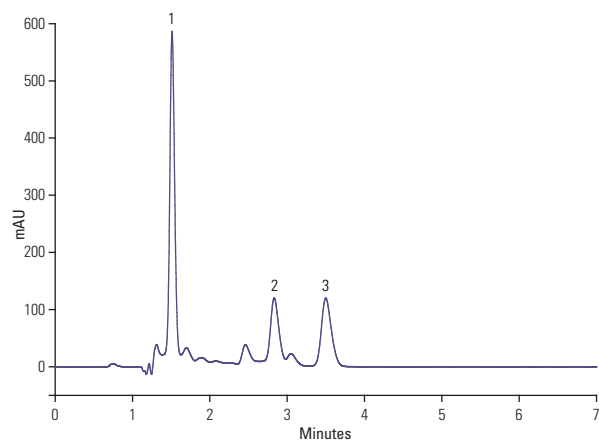
## Hypersil GOLD C8

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<br>2. Lycopene<br>3. β-Carotene |

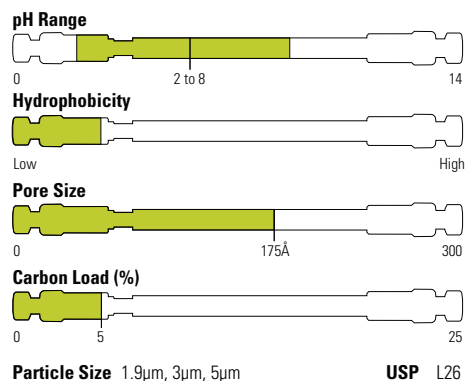
### Hypersil GOLD C8

| 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 |
|                    |   | 150         | 25203-051030 | 25203-152130 | 25203-153030 | -            | 25203-154630 |
| 5                  | Drop-in Guard (4/pk)                    | 10          | -            | 25205-012101 | 25205-013001 | 25205-014001 | 25205-014001 |
|                    |   | HPLC Column | 50           | 25205-051030 | 25205-052130 | 25205-053030 | -            |
|                    | 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       |

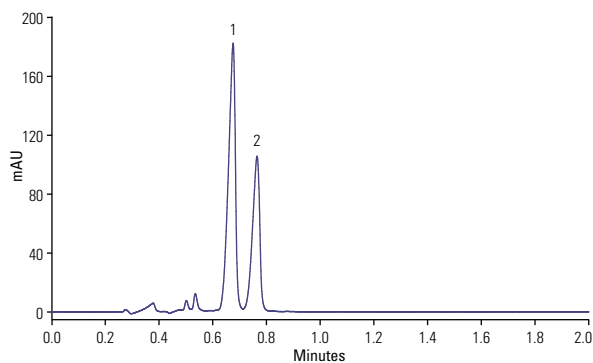
## Hypersil GOLD C4

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<br>2. Linoleic acid |

### Hypersil GOLD C4

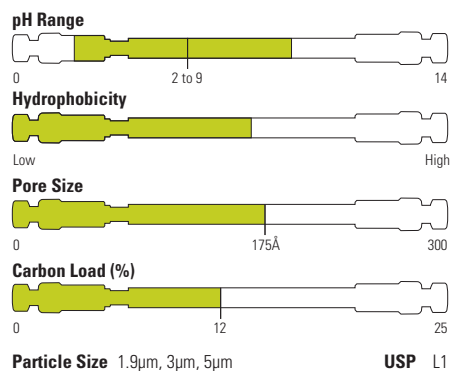
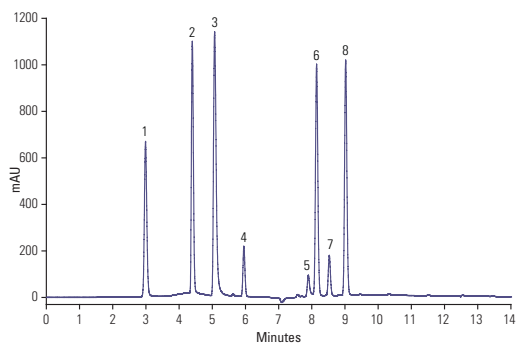
| Particle Size (µm) | Format                                  | Length (mm)  | 1.0mm ID     | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---|--------------|--------------|--------------|--------------|--------------|
| 1.9                | UHPLC Column                            | 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)

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 |

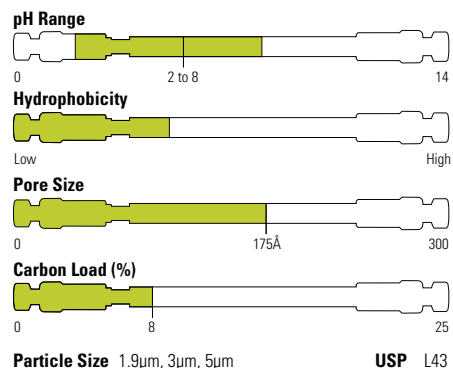
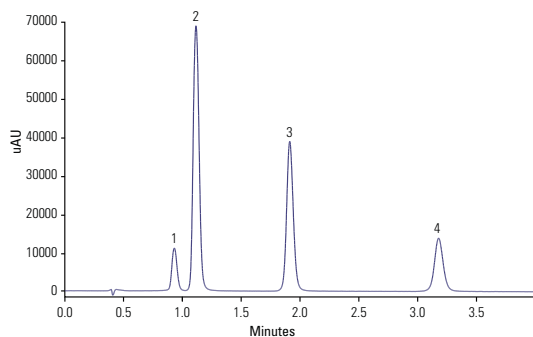


## Hypersil GOLD PFP

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<br>2. Hydroquinone<br>3. Resorcinol<br>4. Phenol |

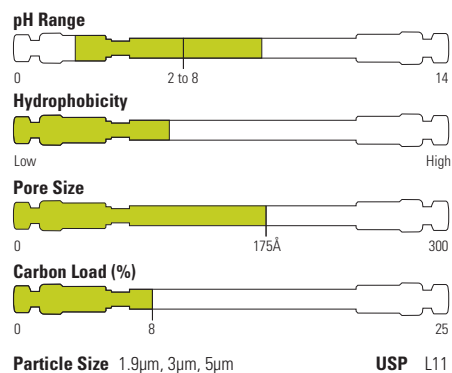
### Hypersil GOLD PFP

| 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       |

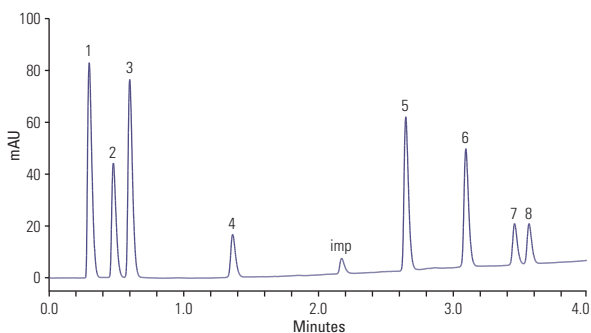
## Hypersil GOLD Phenyl

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,<br>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<br>2. Acetaminophen<br>3. p-Hydroxybenzoic acid<br>4. o-Hydroxybenzoic acid<br>5. Oxazepam<br>6. Diazepam<br>7. Di-isopropyl phthalate<br>8. Di-n-propyl phthalate |

### Hypersil GOLD Phenyl

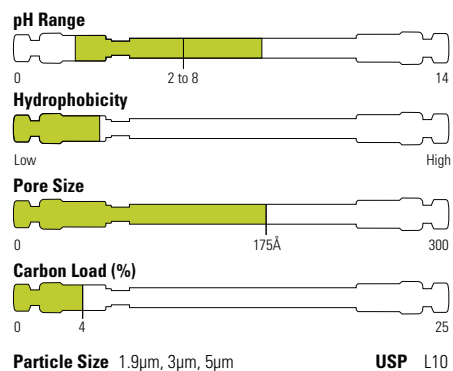
| Particle Size (µm) | Format                                  | Length (mm) | 1.0mm ID     | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---|-------------|--------------|--------------|--------------|--------------|
| 1.9                | UHPLC Column                            | 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)

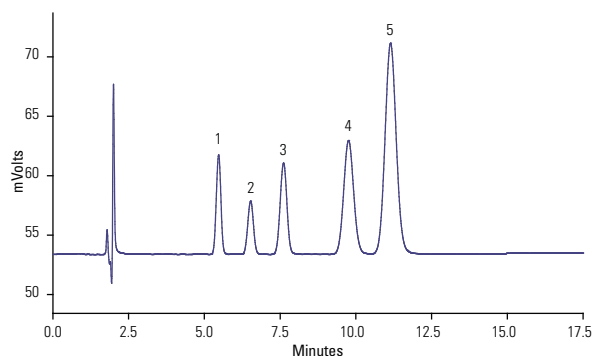
## Hypersil GOLD CN

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               |

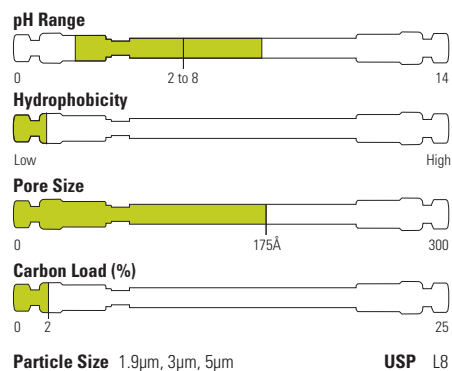
### Hypersil GOLD CN

| 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       |

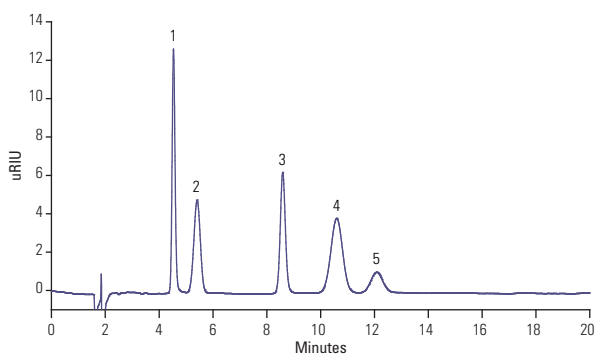
## Hypersil GOLD Amino

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         |

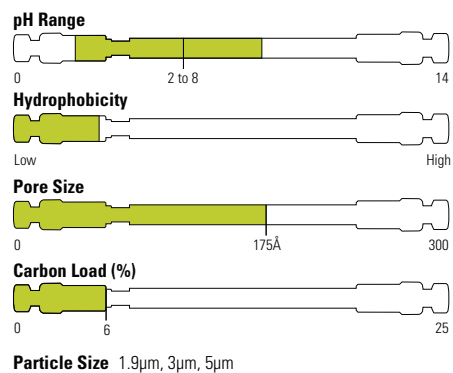
## Hypersil GOLD Amino

| 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       | 850-00       |

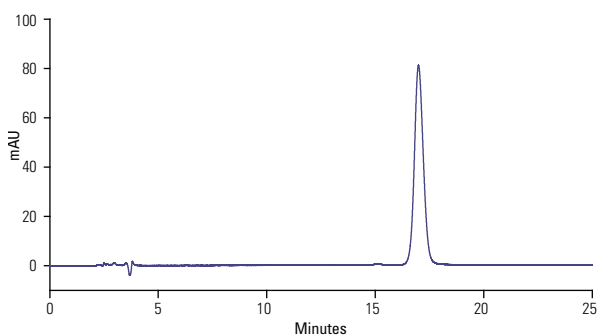
## Hypersil GOLD AX

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



#### Hypersil GOLD AX 5µm, 100 x 4.6mm

Mobile Phase: 100 mM Ammonium Acetate  
pH 6.8/  
MeCN (30:70)

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Temperature: 30°C

---

Flow Rate: 0.5mL/min

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Injection Volume: 50µL

---

Detection: UV, 240nm

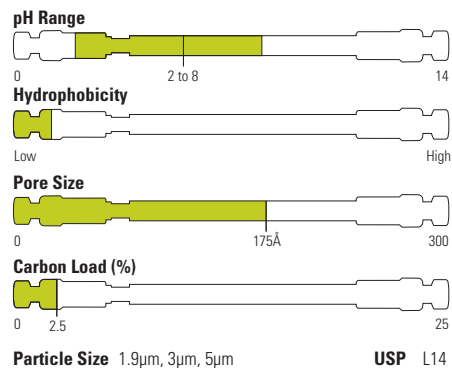
### Hypersil GOLD AX

| 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       |

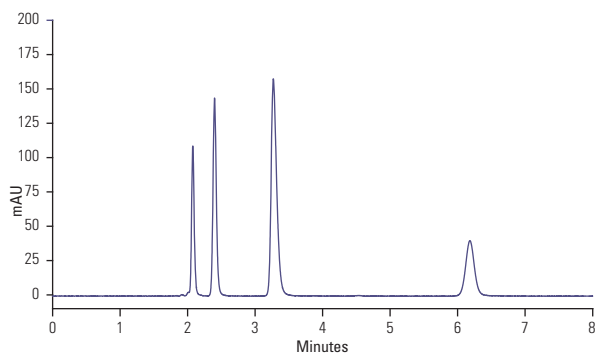
## Hypersil GOLD SAX

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: 1.0 mL/min  
 Injection Volume: 10 µL  
 Detection: UV, 254 nm

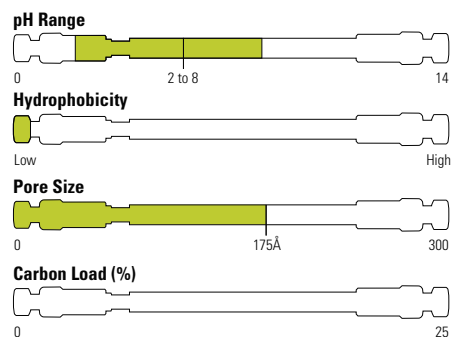
### Hypersil GOLD SAX

| 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

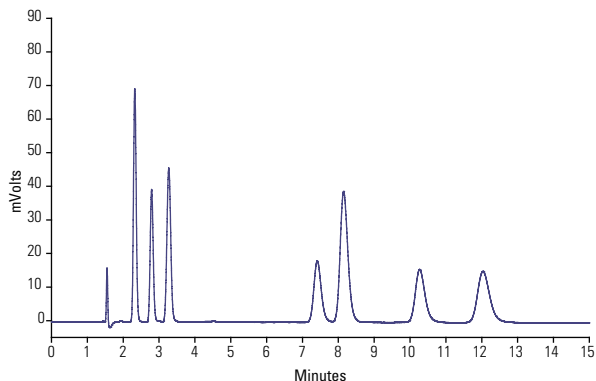


**Particle Size** 1.9µm, 3µm, 5µm **USP** L3

### 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-<math>\alpha</math>-Hydroxyprogesterone</li> <li>4. Cortisone</li> <li>5. 11-<math>\alpha</math>-Hydroxyprogesterone</li> <li>6. Corticosterone</li> <li>7. Hydrocortisone</li> </ol> |

### Steroids



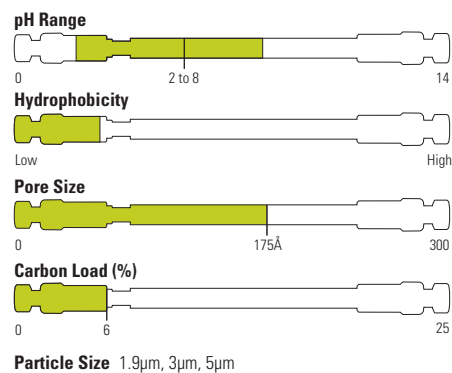
### Hypersil GOLD Silica

| 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       |

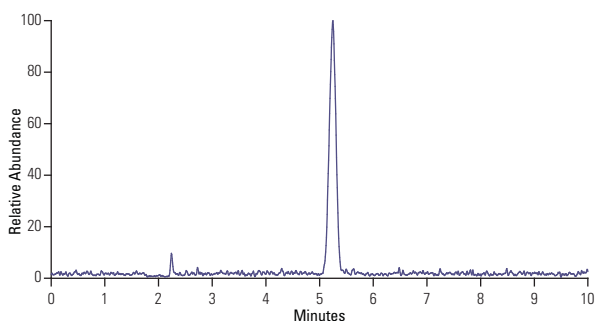
## Hypersil GOLD HILIC

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)<br>+ 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         | -            | 26505-151030 | -            | 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](#)

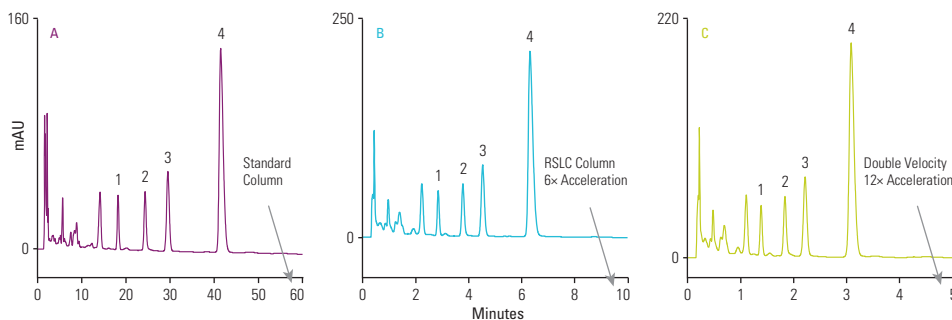
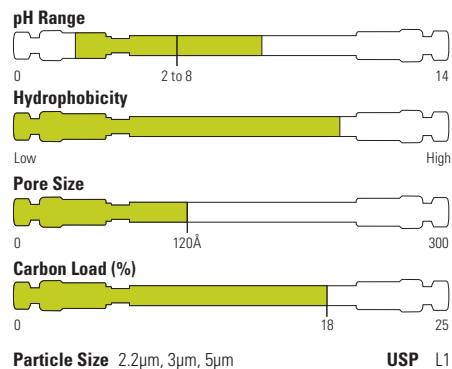
For more information, visit [thermofisher.com/acclaim](https://thermofisher.com/acclaim)

## 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<br>in 10% (v/v) MeOH   |
| Temperature:      | 20°C  |
| Flow Rate:        | A: 1.00mL/min<br>B: 0.41mL/min<br>C: 0.82mL/min   |
| Injection Volume: | A: 10µL<br>B: 1.2µL<br>C: 1.2µL   |
| Detection:        | UV, 254 nm,<br>A: 1 Hz data rate<br>B: 5 Hz data rate<br>C: 10 Hz data rate             |
| Analytes:         | 1. p-Hydroxybenzoic acid<br>2. p-Hydroxybenzaldehyde<br>3. Vanillic acid<br>4. Vanillin |
| Sample:           | Commercial vanilla extract in<br>40% ethanol, filtered                                  |
| Reference:        | AOAC Official Method 990.25   |

### Acclaim 120 C18

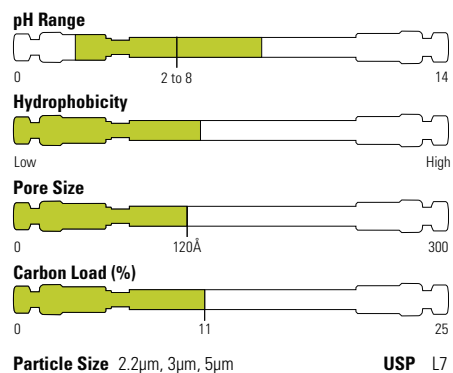
| Particle Size (µm) | Format                 | Length (mm) | 2.1mm ID | 3.0mm ID | 4.6mm ID |
|--------------------|------------------------|-------------|----------|----------|----------|
| 2.2                | RSLC Column            | 30          | 071400   | 071606   | -        |
|                    |                        | 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

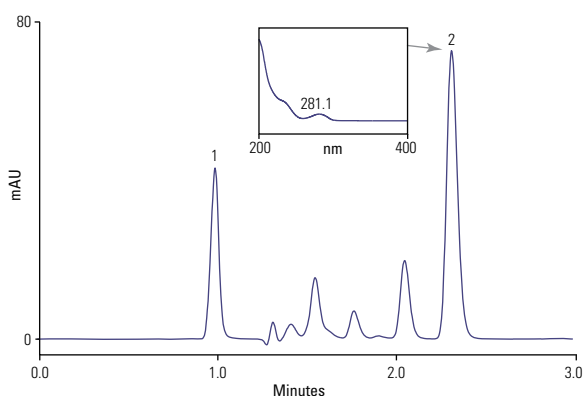
High performance reversed-phase columns with intermediate hydrophobic retention

- 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<br>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   |

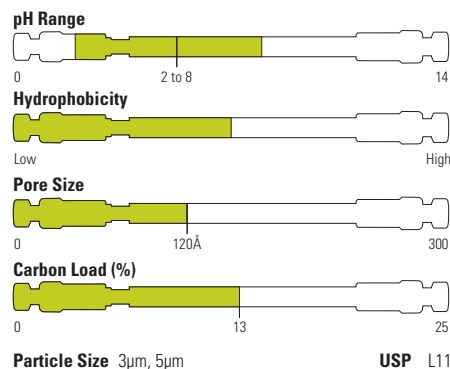
## Acclaim Phenyl-1

A unique reversed-phase column with high aromatic selectivity

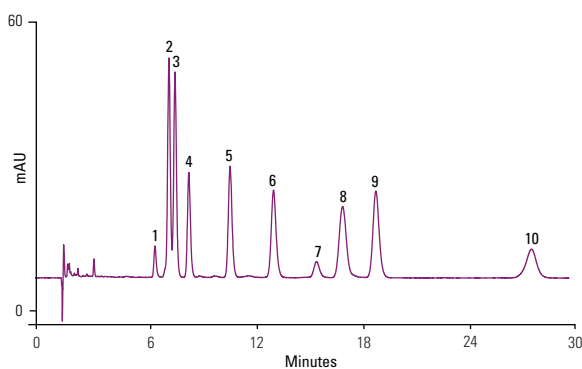
- High aromatic selectivity
- High hydrophobic retention
- Unique and complementary selectivity compared to any other phenyl type column
- Compatibility with highly aqueous mobile phase
- High efficiency and rugged packing

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   |

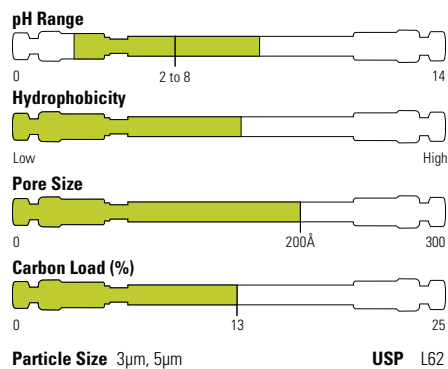
Learn more at [thermofisher.com/acclaim](https://www.thermofisher.com/acclaim)

## Acclaim C30

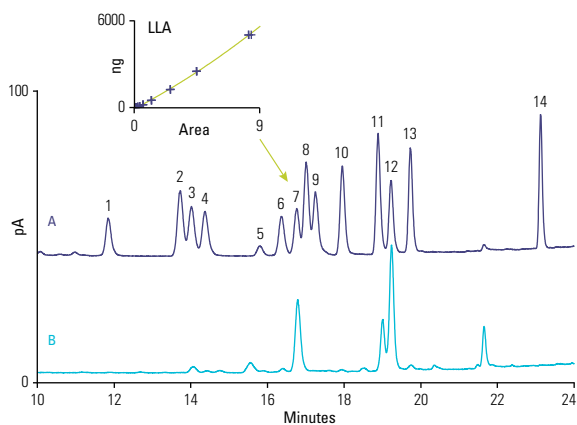
Columns for separating structurally related isomers

- 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

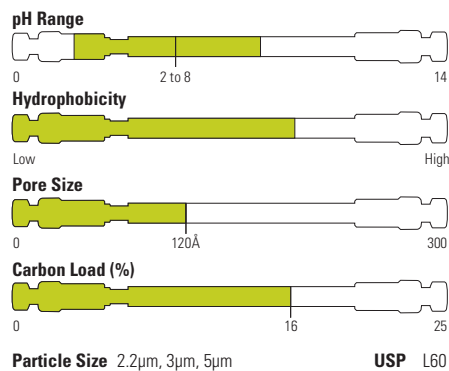
| Format                                     | Cat. No. |
|--|----------|
| Acclaim Guard Cartridge Holder V-2         | 069580   |
| Acclaim Guard Kit (Holder and Coupler) V-2 | 069707   |
| Guard to Analytical Column Coupler V-2     | 074188   |

## Acclaim PolarAdvantage

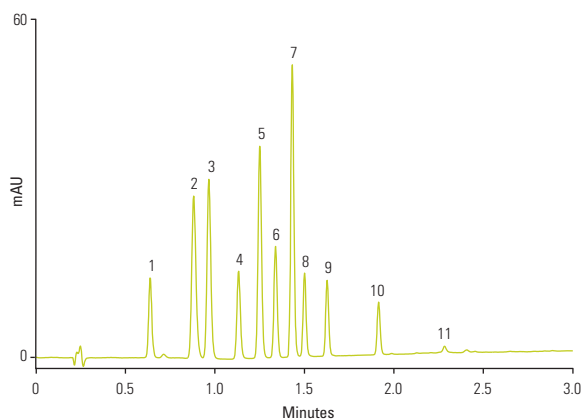
Novel polar-embedded reversed-phase columns with unique selectivity

- 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)

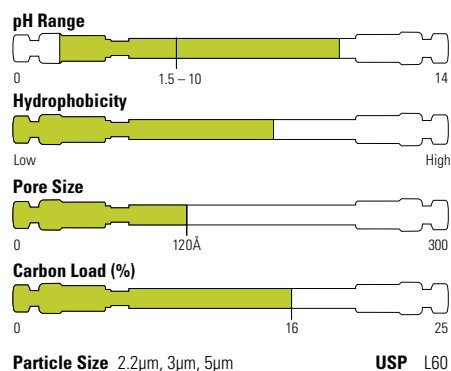
## Acclaim PolarAdvantage II

Complementary selectivity and enhanced hydrolytic stability

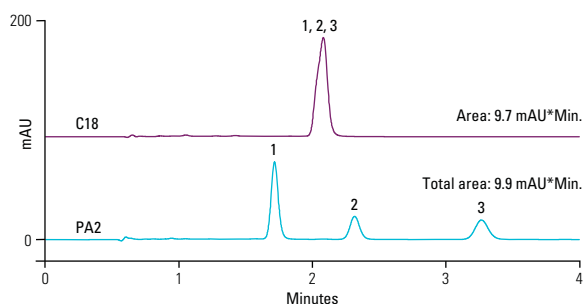
- Unique selectivity complementary to the C18 column
- Novel polar-embedded column chemistry for hydrolytic stability
- Compatible with 100% aqueous mobile phase
- Low bleed for MS compatibility
- Wide range of applications

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)<br>PA2: 80% B (v/v)                            |
| Temperature:    | 30°C  |
| Flow Rate:      | 0.41mL/min  |
| Detection:      | UV, 428nm   |
| Analytes:       | 1. Curcumin<br>2. Demethoxycurcumin<br>3. Bis-demethoxycurcumin |
| Sample:         | Turmeric extract  |

### Acclaim PolarAdvantage II

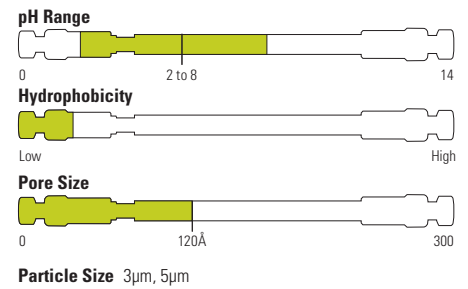
| Particle Size (µm) | Format          | Length (mm) | 2.1mm ID | 3.0mm ID | 4.6mm ID |
|--------------------|-----------------|-------------|----------|----------|----------|
| 2.2                | RSLC Column     | 30          | 071402   | -        | -        |
|                    |                 | 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

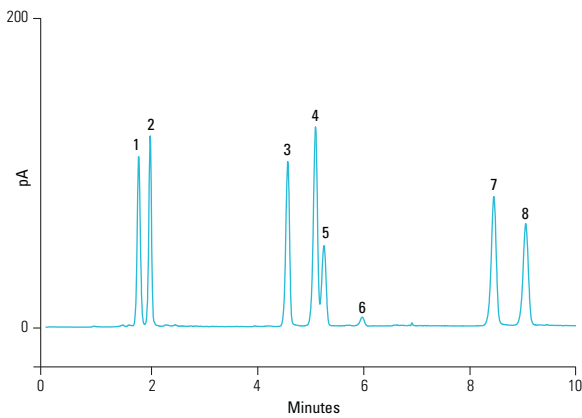
Designed with unique selectivity for hydrophilic molecules

- 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<br>2. Trilaurin<br>3. Distearin isomer 1<br>4. Dilaurin isomer 1<br>5. Distearin isomer 2<br>6. Dilaurin isomer 2<br>7. Monostearin<br>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://thermofisher.com/acclaim)



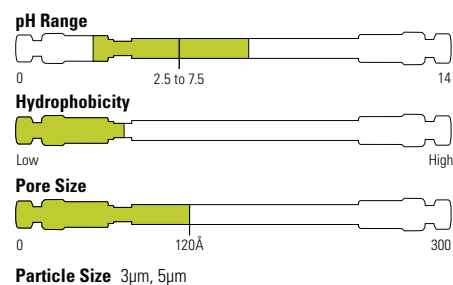
## Acclaim Mixed-Mode HILIC-1

Uniquely designed for both reversed-phase and HILIC operations

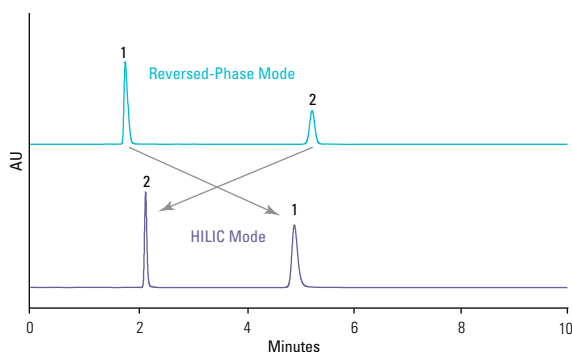
- Can operate in both RP and HILIC modes
- Retains highly polar molecules
- Unique selectivity complementary to RP columns
- Broader application range compared with conventional diol-based columns
- High-efficiency column for high-resolution separations

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

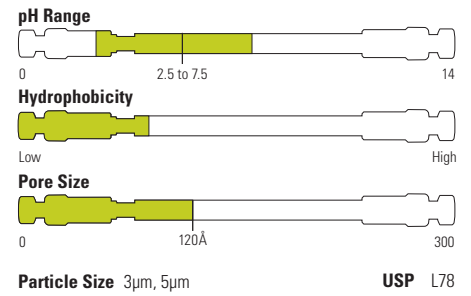
| Format                                     | Cat. No. |
|--|----------|
| Acclaim Guard Cartridge Holder V-2         | 069580   |
| Acclaim Guard Kit (Holder and Coupler) V-2 | 069707   |
| Guard to Analytical Column Coupler V-2     | 074188   |

## Acclaim Mixed-Mode WAX-1

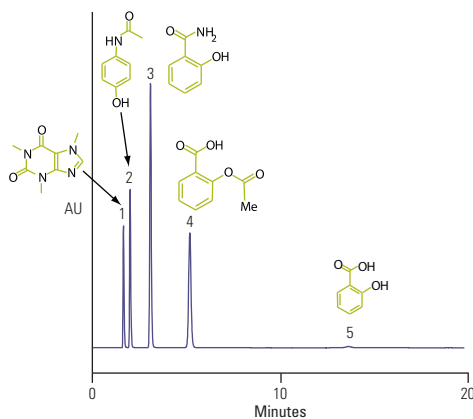
Designed for separating anionic molecules with powerful adjustable selectivity control

- 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<br>(6.8 g potassium monophosphate and<br>0.5 g pyrophosphate in 1000 g D.I. H <sub>2</sub> O,<br>pH is adjusted to 6.0 with NaOH) |
| Temperature:      | 30°C  |
| Flow Rate:        | 1mL/min   |
| Injection Volume: | 1µL   |
| Detection:        | UV, 220nm   |
| Analytes:         | 1. Caffeine<br>2. Acetaminophen<br>3. Salicylamide<br>4. Acetyl salicylic acid (Aspirin)<br>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

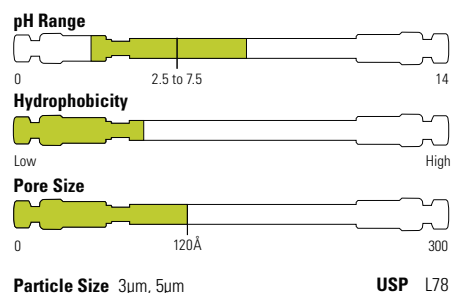
| Format                                     | Cat. No. |
|--|----------|
| Acclaim Guard Cartridge Holder V-2         | 069580   |
| Acclaim Guard Kit (Holder and Coupler) V-2 | 069707   |
| Guard to Analytical Column Coupler V-2     | 074188   |

## Acclaim Mixed-Mode WCX-1

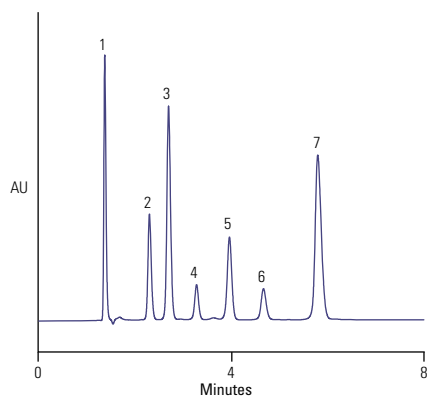
Designed for separating cationic molecules with adjustable selectivity control

- 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   |

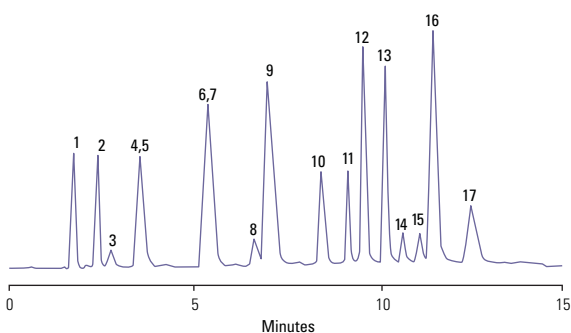
## OmniPac

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/<br>Hydrochloric Acid Gradient   |
| Flow Rate:    | 1.0mL/min   |
| Detection:    | UV, 254nm   |
| Analytes:     | <ol style="list-style-type: none"> <li>Orotic Acid</li> <li>4-Hydroxybenzamide</li> <li>Luminol Impurity</li> <li>Luminol</li> <li>Pyridine</li> <li>PABA</li> <li>2,2'-Bipyridine</li> <li>p-Phenylenediamine</li> <li>Naphthylamine</li> <li>Nitrobenzoic Acid</li> <li>Tribenzylamine</li> <li>p-Nitroaniline</li> <li>2,4-Dinitroaniline</li> <li>Dibenzylamine</li> <li>N-Methyl-N-nitrosoaniline</li> <li>4-Chloro-2-nitroaniline</li> <li>2,6-Dichloro-4-nitroaniline</li> </ol> |

#### 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

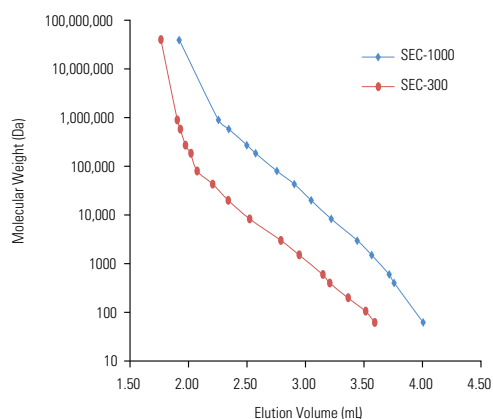
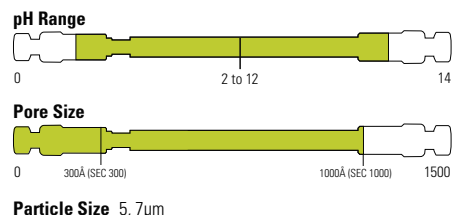
| Description | Porosity    | Length (mm) | 4.0mm ID |
|-------------|-------------|-------------|----------|
| PCX-100     | Microporous | 50          | 042193   |
|             |             | 250         | 042189   |
| PCX-500     | Microporous | 50          | 042195   |
|             |             | 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

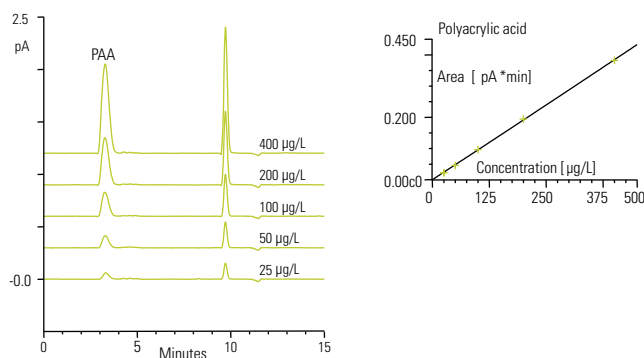
Thermo Scientific™ Acclaim™ SEC-300 and SEC-1000 are a family of resin based, high performance size exclusion chromatography columns specifically designed for the separation of water soluble polymers and oligomers.



**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 explosives

- Separation of explosive residues

## Acclaim Trinity P1 and P2

- API & counterion analysis

## Acclaim Trinity Q1

- Diquat and paraquat analysis

## Acclaim organic acid

- Fast organic acid analysis

## Acclaim Carbamate

- The separation of carbamate pesticides

## Acclaim surfactant and surfactant plus

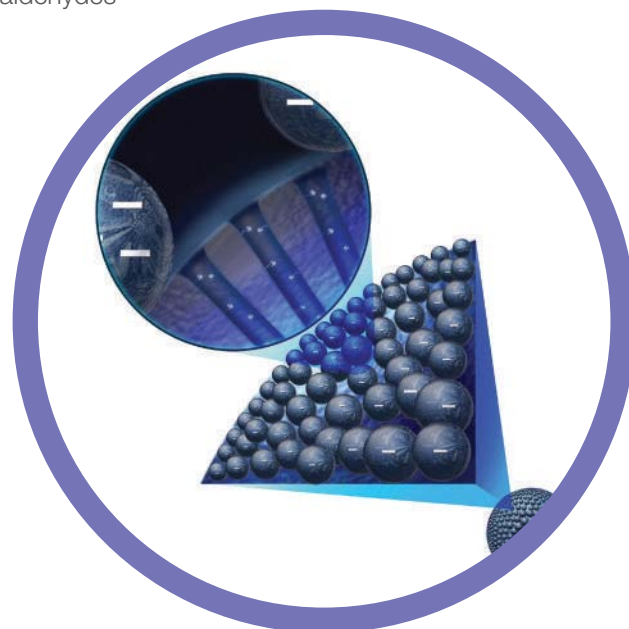
- Separation of surfactants

## 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.

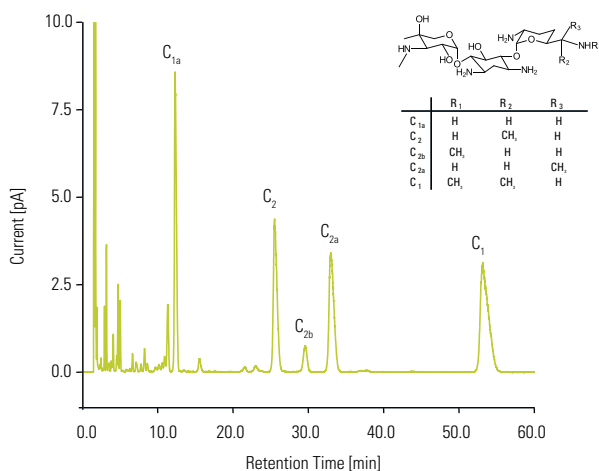
- Rugged and reproducible
- Excellent selectivity for the HPLC of aminoglycosides
- Superior resistance to acidic conditions for long column lifetime
- Easy to use with only aqueous mobile phase; TFA only, or TFA/HFBA or PFPA is needed
- Compatible with simple rugged methods; no solvents are required
- 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)  |

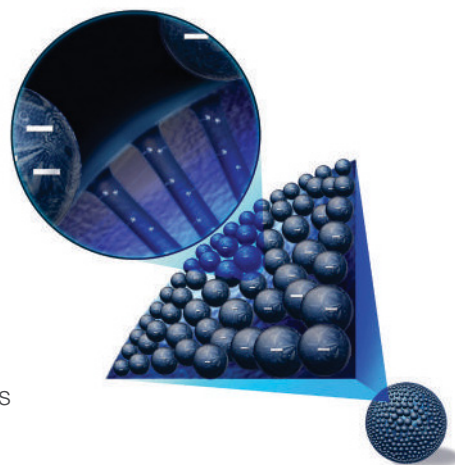
### Acclaim AmG C18

| 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

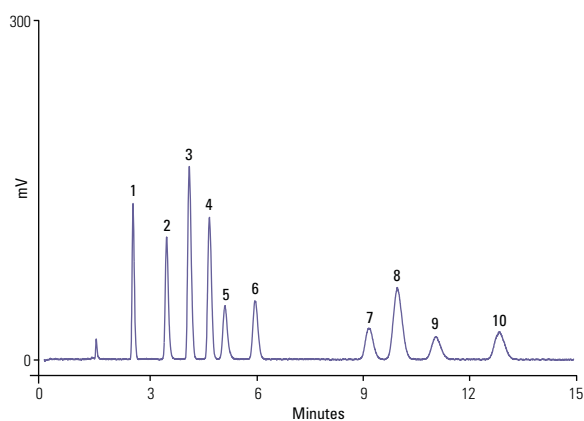
- Ideal selectivity for simultaneous separation of API and counterion
- Adjustable selectivity by mobile phase ionic strength, electrolyte type, pH, and organic solvent
- Low bleed; compatible with MS, CAD and ELSD
- Retention of hydrophilic ionic and ionizable analytes without ion-pairing reagents
- 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   |
|                    |                         | 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   |

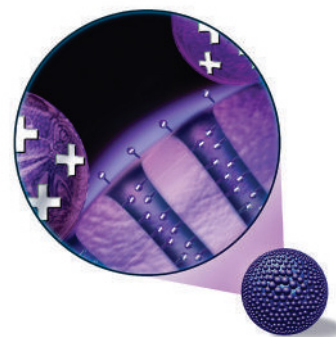
For more information, visit [thermofisher.com/acclaim](http://thermofisher.com/acclaim)



## Acclaim Trinity P2

Mixed-mode column technology; hydrophilic interaction combining HILIC, anion exchange and cation exchange functionalities

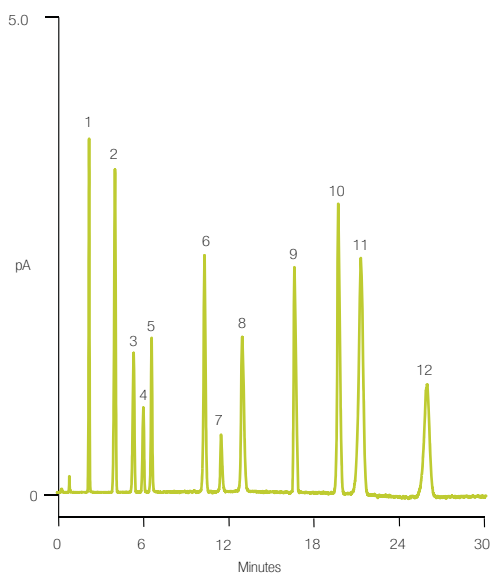
- Ideal for separating pharmaceutical counterions, including monovalent and divalent cations or anions
- Selectivity complementary to the Trinity P1 column
- Low column bleed, compatible with CAD and MS
- Hydrolytically stable
- High efficiency



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: 1. Phosphate  
2. Sodium  
3. Potassium  
4. Chloride  
5. Malate  
6. Bromide  
7. Nitrate  
8. Citrate  
9. Fumarate  
10. Sulfate  
11. Magnesium  
12. Calcium

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

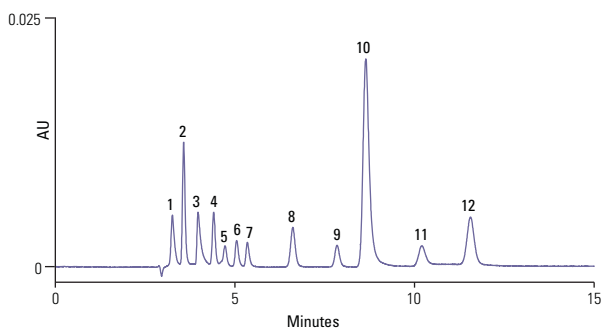
Optimized and application-tested for the analysis of hydrophilic organic acids

- 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/pk) | 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

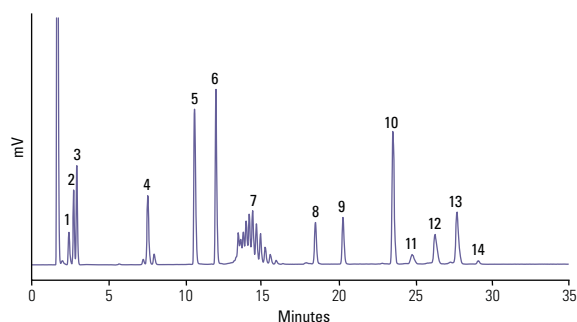
- Ideal selectivity for separation of anionic, nonionic, cationic and amphoteric surfactants
- Excellent peak shapes, especially for cationic surfactants
- Compatible with highly aqueous mobile phases
- Improved resolution for ethoxylated surfactants
- Rugged separations under a variety of conditions



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,<br>then hold 85% A for 10min   |
| Temperature:      | 30°C  |
| Flow Rate:        | 1mL/min   |
| Injection Volume: | 25µL  |
| Detection:        | ELS detector  |
| Analytes:         | 1. Chloride<br>2. Bromide<br>3. Nitrate<br>4. Xylene sulfonate<br>5. Laurylpyridinium chloride<br>6. Lauryldimethylbenzyl-ammonium chloride<br>7. Triton X-100<br>8. Cetyl betaine<br>9. Decyl sulfate<br>10. Dodecyl sulfate<br>11. C <sub>10</sub> -LAS<br>12. C <sub>11</sub> -LAS<br>13. C <sub>12</sub> -LAS<br>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   |

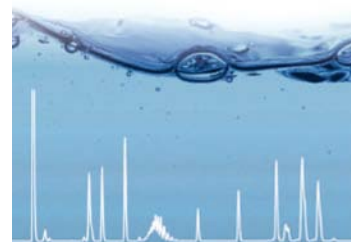
### Acclaim guard holder

| 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

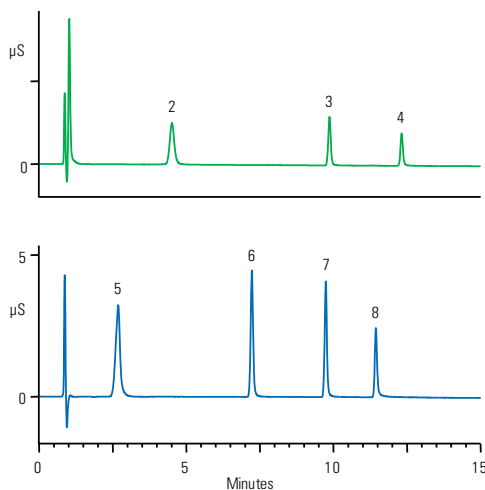
- Ideal selectivity for simultaneous separation of anionic, nonionic, cationic, and amphoteric surfactants
- Compatible with multiple detectors including MS, CAD, ELSD and UV
- Well suited for the determination of cationic surfactants
- High efficiency and fast analysis
- Rugged separations under a variety 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)

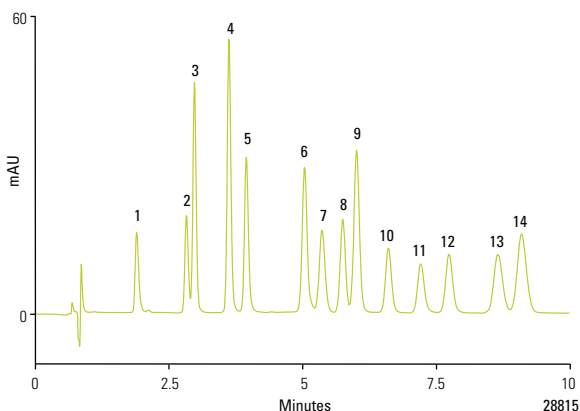
- Acclaim E2 columns provide baseline resolution of all 14 compounds targeted by EPA Method 8330
- Columns available in 2.2, 3 and 5µm particle size
- Simple isocratic elution conditions
- Rugged columns with good lot-to-lot reproducibility



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:         | 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

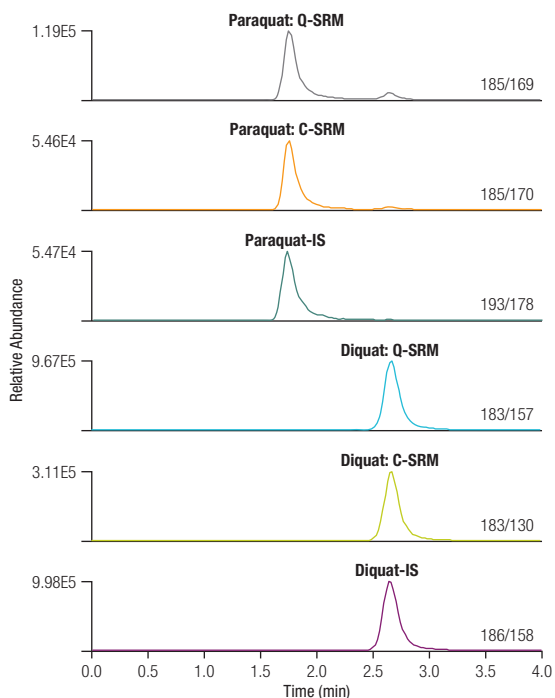
For trace analysis of diquat and paraquat

- 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, 3µm, 50 x 3.0mm

|                                       |  |                        |                        |
|---------------------------------------|--|------------------------|------------------------|
| Mobile Phase:                         | 25% ammonium acetate (100mM, pH 5.0); 75% acetonitrile   |                        |                        |
| Temperature:                          | Ambient  |                        |                        |
| Flow Rate:                            | 0.5mL/min  |                        |                        |
| Injection Volume:                     | 5µL  |                        |                        |
| 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 SRM (CID) | Confirmative 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

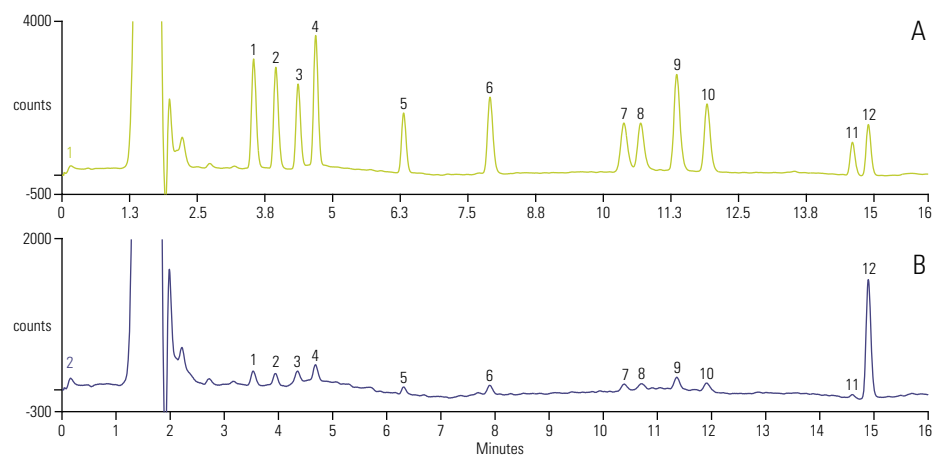
Designed for baseline separation of carbamate pesticides specified in US EPA Method 531.2

- 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

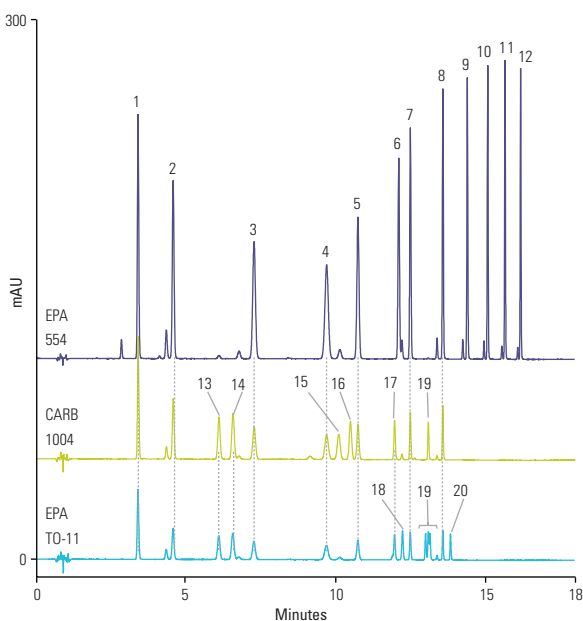
- Ideal selectivity for baseline resolution of DNPH derivatives of aldehydes and ketones regulated by various official methods, including EPA 554, EPA 8315, EPA 1667, EPA TO-11, and CARB 1004
- High efficiency for UHPLC performance
- Rugged columns with good lot-to-lot reproducibility
- Proven robust 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, 2.2µm, 150 x 2.1mm

|                   |   |
|-------------------|---|
| Mobile Phase A:   | D.I. water  |
| Mobile Phase B:   | Acetonitrile  |
| Gradient (min):   | -4.50.0 8.3 15.018.0  |
|                   | %A 48 48 48 0 0   |
|                   | %B 52 52 52 100 100   |
| Flow Rate:        | 0.400mL/min   |
| Injection Volume: | 1µL   |
| Temperature:      | 28°C  |
| Detection:        | UV, 360nm   |
| Samples:          | Calibration mixes diluted in methanol   |
| Analytes:         | 1. Formaldehyde DNPH<br>2. Acetaldehyde DNPH<br>3. Propionaldehyde DNPH<br>4. Crotonaldehyde DNPH<br>5. Butyraldehyde DNPH<br>6. Cyclohexanone DNPH<br>7. Valeraldehyde DNPH<br>8. Hexanal DNPH<br>9. Heptanal DNPH<br>10. Octanal DNPH<br>11. Nonanal DNPH<br>12. Decanal DNPH<br>13. Acetone DNPH<br>14. Acrolein DNPH<br>15. Butanone DNPH<br>16. Methacrolein DNPH<br>17. Benzaldehyde DNPH<br>18. Isovaleraldehyde DNPH<br>19. Toluvaldehyde DNPH<br>20. Xylvaldehyde DNPH |

### Acclaim Carbonyl C18

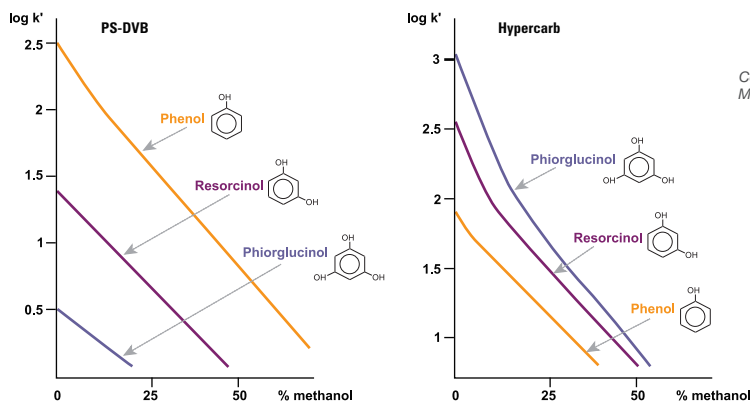
| Particle Size (µm) | Format                 | Length (mm) | 2.1mm ID | 3.0mm ID | 4.6mm ID |
|--------------------|------------------------|-------------|----------|----------|----------|
| 2.2                | RSLC Column            | 100         | 077972   | 077974   | –        |
|                    |                        | 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



Retention on Hypercarb columns increases as polarity of the analyte increases, which is the opposite of typical reversed phase materials such as PS-DVB

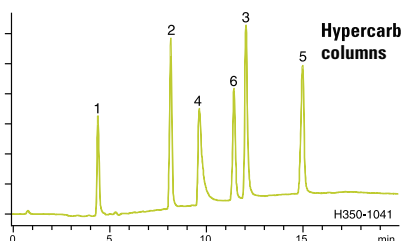
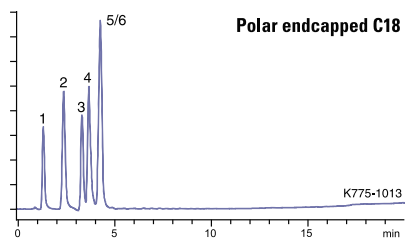
Courtesy V. Coquart and M-C. Henion, J. Chrom., 1992

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

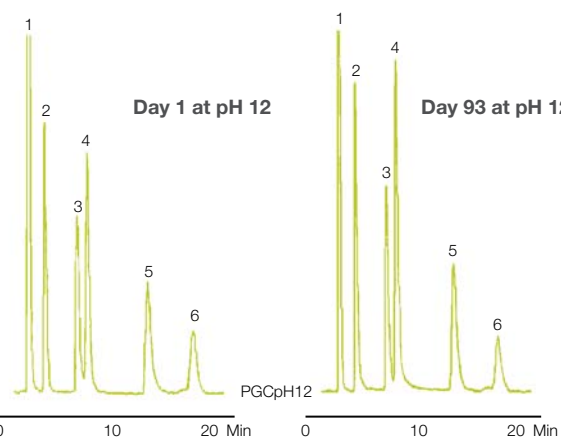
physical attack. Due to the unique characteristics of the media, it can withstand chemical attack across the entire pH range of 0 to 14, allowing applications to be run at pH levels that are incompatible with typical silica-based columns. Hypercarb columns offer more choice in buffer selection while 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   |
| Analyses:       | 1. Cytosine<br>2. Uracil<br>3. Guanine<br>4. Adenine<br>5. Xanthine<br>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  |
| Analyses:     | 1. Acetone<br>2. Phenol<br>3. p-Cresol<br>4. Anisol<br>5. Phenetole<br>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           | 35003-104630 |
|                         |                              | 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           | 35003-104646 |
|                         |                              | 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

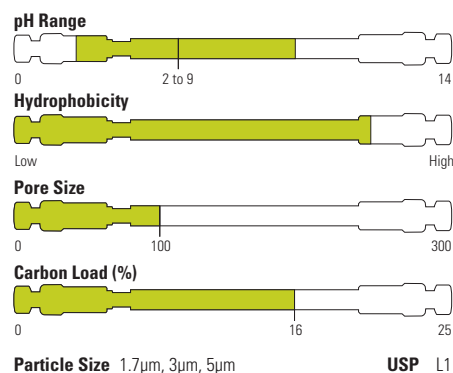


For more information,  
visit [thermofisher.com/synchronis](https://www.thermofisher.com/synchronis)

## Synchronis C18

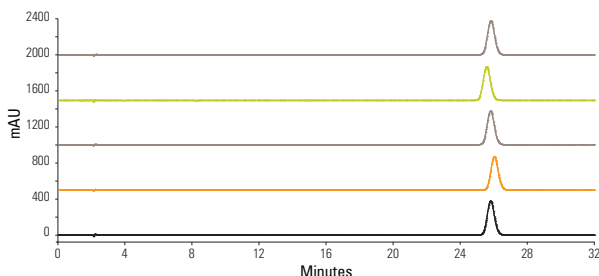
Synchronis C18 columns deliver remarkable separations, time after time

- 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

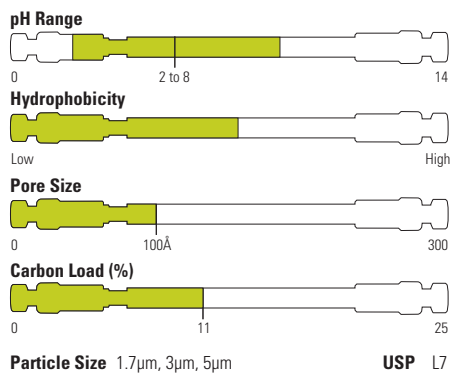
| Particle Size (µm) | Format                                  | Length (mm) | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---|-------------|--------------|--------------|--------------|
| 1.7                | UHPLC Column                            | 30          | 97102-032130 | -            | -            |
|                    |   | 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       | 850-00       |

For more information, visit [thermofisher.com/synchronis](http://thermofisher.com/synchronis)

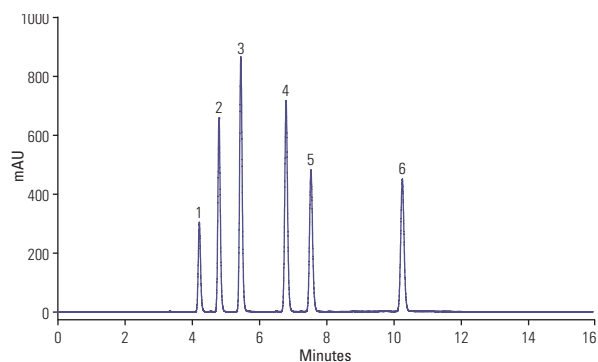
## Synchronis C8

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<br>2. Metoxuron<br>3. Monuron<br>4. Chlorotoluron<br>5. Diuron<br>6. Linuron |

### Synchronis C8

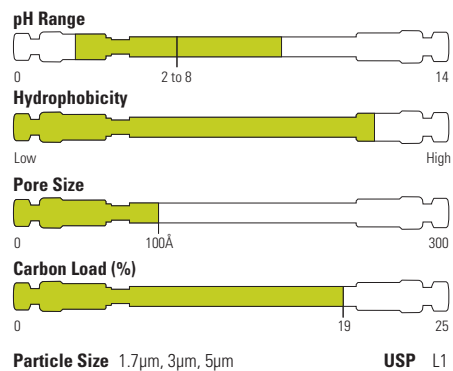
| Particle Size (µm) | Format                                  | Length (mm) | 2.1mm ID     | 3.0mm ID     | 4.6mm ID     |
|--------------------|---|-------------|--------------|--------------|--------------|
| 1.7                | UHPLC Column                            | 50          | 97202-052130 | -            | -            |
|                    |   | 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

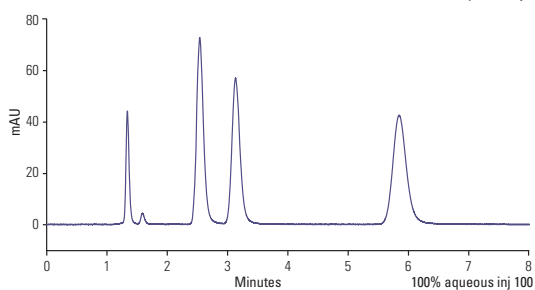
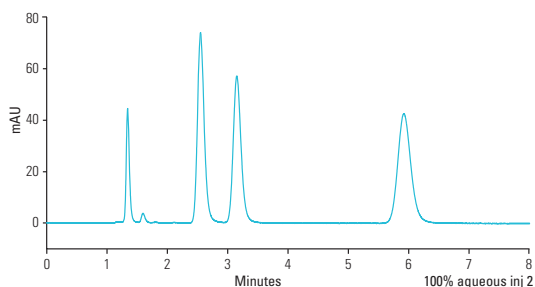
Polar endcapped Synchronis aQ columns provide a controlled interaction mechanism that retains and resolves polar analytes

- 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 <sub>2</sub> HPO <sub>4</sub> (pH 6)  |
| Temperature:      | 30°C   |
| Flow Rate:        | 0.7mL/min  |
| Injection Volume: | 2µL  |
| Detection:        | 260nm  |
| Analytes:         | 1. Cytidine-5'-diphosphate<br>2. Adenosine-5'-triphosphate<br>3. Adenosine-5'-diphosphate<br>4. Adenosine-5'-monophosphate |

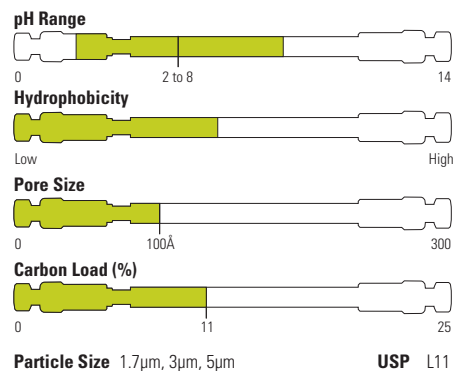
### Synchronis aQ

| 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       |

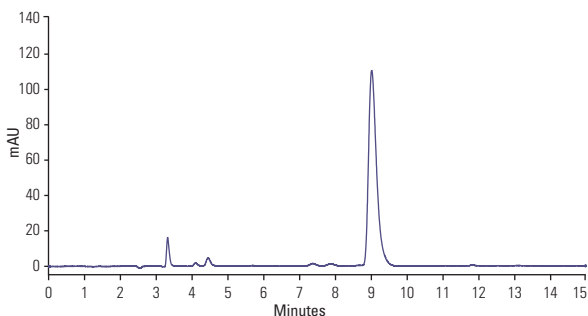
## Synchronis phenyl

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)

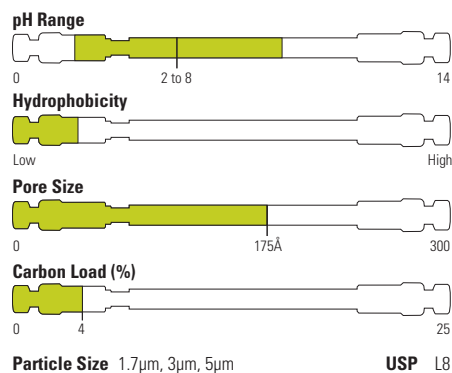
## Synchronis Phenyl

| 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           | -        | -            |
|                    |   | 150         | 97905-152130 | -        | 97905-154630 |
|                    |   | 250         | -            | -        | 97905-254630 |
|                    | Uniguard Drop-in Guard Cartridge Holder | 10          | 852-00       | 852-00   | 850-00       |

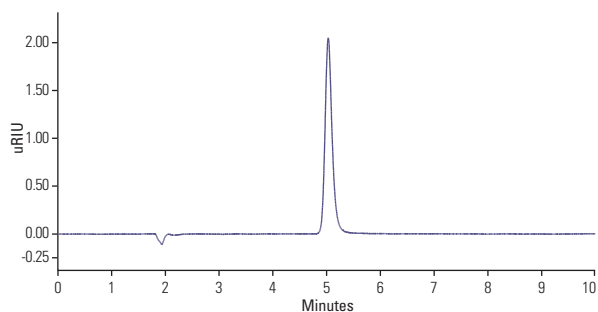
## Synchronis amino

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)

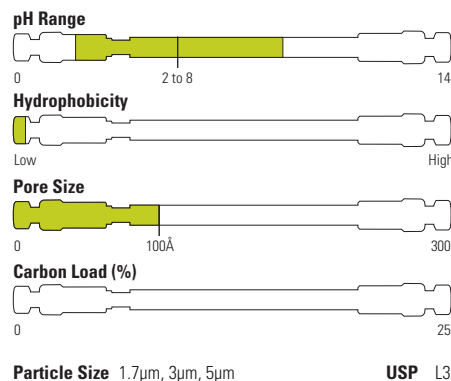
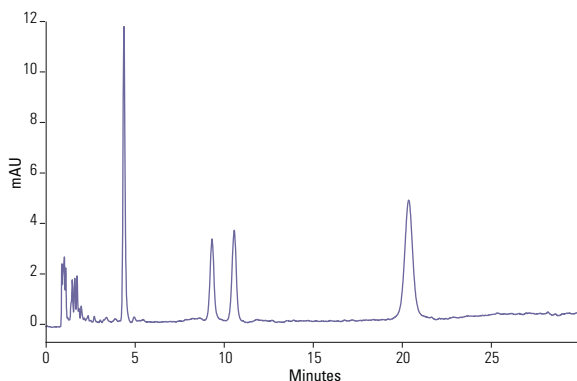


## Synchronis silica

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



#### 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<br>b-tocopherol<br>g-tocopherol<br>d-tocopherol |

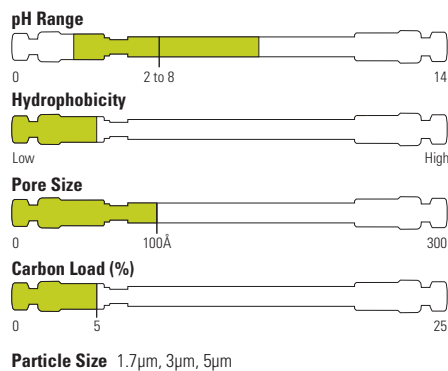
### Synchronis silica

| 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       |

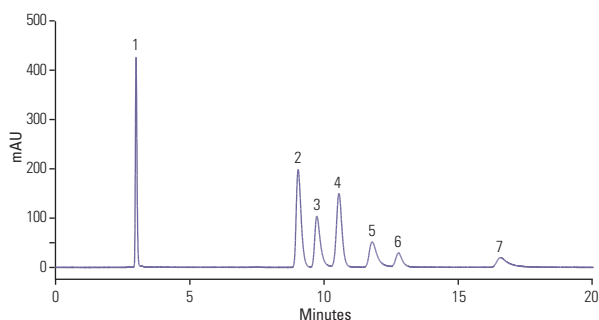
## Synchronis HILIC

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<br>2. 5-HIAA<br>3. DOPAC<br>4. serotonin<br>5. tyrosine<br>6. dopamine<br>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](https://www.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://www.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 |              |              |
|                    |                      |                      | 4.6                  | 28103-154630 | 28203-154630 | 28903-154630 | 28803-154630 |              |              |
|                    |                      | 5                    | Drop-in Guard (4/pk) | 10           | 2.1          | 28105-012101 | 28205-012101 | -            | -            |
|                    |                      |                      |                      |              | 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           | 3.0                  | 30103-053030 |              |              |
|                    |                      |              |                      | 30103-054630 |              |              |
|                    |                      |              | 100                  | 2.1          | 30103-102130 |              |
|                    |                      |              |                      | 3.0          | 30103-103030 |              |
|                    |                      |              |                      | 4.0          | 30103-104030 |              |
|                    |                      |              | 125                  | 4.6          | 30103-104630 |              |
|                    |                      | 4.0          |                      | 30103-124030 |              |              |
|                    |                      | 4.6          |                      | 30103-124630 |              |              |
|                    |                      | 150          | 2.1                  | 30103-152130 |              |              |
|                    |                      |              |                      | 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                   |              | 3.0                  | 30105-053030 |              |              |
|                    |                      |              | 4.6                  | 30105-054630 |              |              |
|                    | 100                  |              | 2.1                  | 30105-102130 |              |              |
|                    |                      |              | 3.0                  | 30105-103030 |              |              |
|                    |                      |              | 4.0                  | 30105-104030 |              |              |
|                    | 125                  |              | 4.6                  | 30105-104630 |              |              |
|                    |                      |              | 3.0                  | 30105-123030 |              |              |
|                    |                      |              | 4.0                  | 30105-124030 |              |              |
|                    | 150                  |              | 4.6                  | 30105-124630 |              |              |
|                    |                      |              | 2.1                  | 30105-152130 |              |              |
|                    |                      |              | 3.0                  | 30105-153030 |              |              |
|                    | 200                  |              | 4.0                  | 30105-154030 |              |              |
|                    |                      |              |                      | 4.6          | 30105-154630 |              |
|                    |                      |              | 2.1                  | 30105-202130 |              |              |
|                    |                      |              |                      | 4.0          | 30105-204030 |              |
|                    |                      |              | 4.6                  | 30105-204630 |              |              |
|                    |                      |              |                      | 2.1          | 30105-252130 |              |
|                    | 250                  |              | 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 |              |
|                    |                      | HPLC Column | 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 |              |
|                    |                      | HPLC Column | 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 |
|                    |                      | HPLC Column | 50      | 4.6          |
|                    | HPLC Column          | 100         | 4.6     | 30205-104630 |
|                    |                      | 150         | 4.6     | 30205-154630 |
|                    |                      | 250         | 4.0     | 30205-254030 |
|                    |                      |             |         | 4.6          |

## 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 |
|                    |                      | HPLC Column | 150     | 4.6          |
|                    | HPLC Column          | 250         | 4.0     | 30305-254030 |
|                    |                      |             |         | 4.6          |

## 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 |
|                    |                      | HPLC Column | 150     | 4.6          |
|                    | 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 |
|                    |                      | HPLC Column | 50mm         | -            | -            |
|                    | HPLC Column          | 150mm       | 30903-153030 | -            | 30903-154630 |
| 5                  | Drop-in Guard (4/pk) | 10mm        | -            | 30905-014001 | -            |
|                    |                      | HPLC Column | 50mm         | -            | -            |
|                    | 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 |
|                    |                      | HPLC Column | 150     | 4.6          |
|                    | 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 |
|                    |                      |             | 100          | 30703-102130 |
|                    |                      |             | 150          | 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 |
|                    |                      |             | 150          | 30705-154630 |
|                    |                      |             | 250          | 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          | 4.6     | 31105-014001 |
|                    | HPLC Column     | 100         | 4.6     | 31105-104630 |
|                    |                 | 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 |
|        | 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 |
|        |                    |                       | 250mm        | -            | -            | -            | 70205-254630 |
|        |                    |                       | 250mm        | -            | -            | -            | 70205-254630 |
| 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 | -            | -            | -            | -            |
|                  |   | HPLC Column          | 150mm        | -            | -            | -            | -            | 70605-154630 |
|                  |   | HPLC Column          | 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/<br>Hexyl | 3 | Drop-in Guard (4/pk) | 10mm         | 73003-012101 | -            | -            | -            |              |
|                  |   | HPLC Column          | 50mm         | 73003-052130 | 73003-053030 | -            | -            |              |
|                  |   |                      | 100mm        | -            | 73003-103030 | -            | 73003-104630 |              |
|                  |   |                      | HPLC Column  | 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 |              |              |
|                  |   | HPLC Column          | 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.

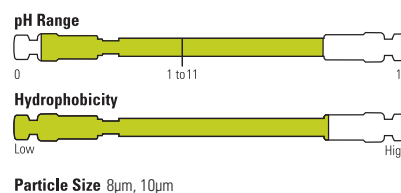
### IonPac NS1 and NS2

| Description | Particle Size (µm) | Format       | Length (mm) | 2.0mm ID | 4.0mm ID |
|-------------|--------------------|--------------|-------------|----------|----------|
| IonPac NS1  | 5                  | HPLC Column  | 150         | -        | 039568   |
|             |                    | Guard Column | 35          | -        | 039567   |
|             | 10                 | Guard Column | 50          | 088763   | -        |
|             |                    | HPLC Column  | 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/<br>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 | -            | -            | -            |
|                    |                       | 20mm        | 77505-022130 | -            | -            | -            |
|                    | HPLC Column           | 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    | 3                    | HPLC Column           | 50mm         | 71403-052130 | -         | -            | -            |
|       |                      |                       | 100mm        | -            | -         | -            | -            |
|       |                      |                       | 150mm        | -            | -         | -            | 71403-154630 |
| 5     | Drop-in Guard (4/pk) | Javelin Guards (4/pk) | 10mm         | 71405-012101 | -         | -            | -            |
|       |                      |                       | 10mm         | 71405-012106 | -         | 71405-014001 | -            |
|       | HPLC Column          | 20mm                  | 71405-022106 | -            | -         | -            |              |
|       |                      | 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 |
|        |       |                       | -            | -            | -            | -            | -            |

# 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

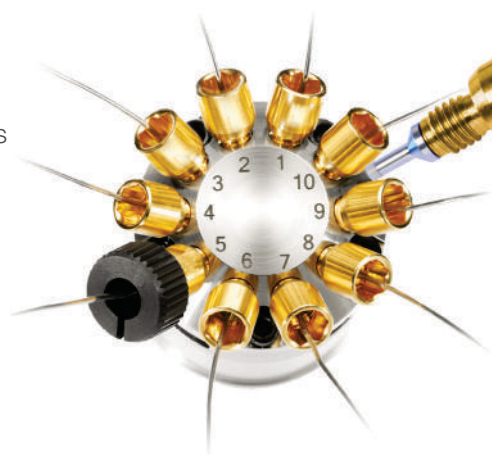


For more information, visit [thermofisher.com/LCaccessories](https://www.thermofisher.com/LCaccessories)

## 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

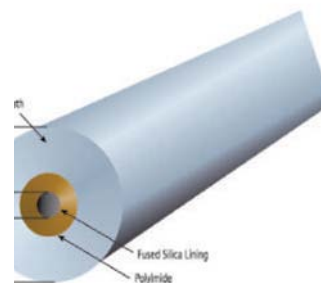
### Solvent filters

|   | 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




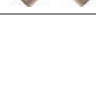
|   | Description  | Through Hole (in) | Swept Volume (μL) | Cat. No. | Quantity |
|---|--|-------------------|-------------------|----------|----------|
|    | Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless steel nuts and ferrules | 0.010             | 0.025             | 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 50µL 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 | 5µL    | 0.20 / 0.008 | 8020     | 1 Each   |
|                                 | 10µL   | 0.20 / 0.008 | 8021     | 1 Each   |
|                                 | 20µL   | 0.25 / 0.010 | 8022     | 1 Each   |
|                                 | 50µL   | 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 5 $\mu$ L 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 | 5 $\mu$ L   | 0.18 / 0.007 | 7020     | 1 Each   |
|  | 10 $\mu$ L  | 0.30 / 0.012 | 7021     | 1 Each   |
|  | 20 $\mu$ L  | 0.30 / 0.012 | 7022     | 1 Each   |
|  | 50 $\mu$ L  | 0.51 / 0.020 | 7023     | 1 Each   |
|  | 100 $\mu$ L | 0.51 / 0.020 | 7024     | 1 Each   |
|  | 200 $\mu$ L | 0.76 / 0.030 | 7025     | 1 Each   |
|  | 500 $\mu$ L | 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

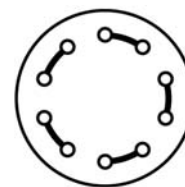
| Type                         | Cat. No. | Quantity |
|------------------------------|----------|----------|
| Fitting set, standard length | 6000-054 | 5 Pack   |
| Fitting set, short           | 6000-055 | 5 Pack   |
| Fitting set, X-long          | 6000-066 | 1 Each   |
| Replacement ferrules         | 6000-051 | 5 Pack   |

For more information, visit [thermofisher.com/LCaccessories](https://www.thermofisher.com/LCaccessories)

## 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](https://www.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 | 365RNLT1 | 1 Each   |
| LCQ MS                   | 365RNLT2 | 1 Each   |
| LCQ XSQ                  | 365RNLT3 | 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

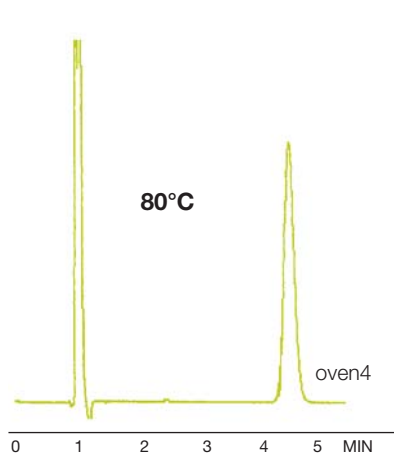
- Easy to install and use with a variety of column lengths
- Dual display of both actual and set point temperature
- HOT POCKET range from just above ambient to 85°C
- COOL POCKET range from 5°C to 55°C
- Explore sample selectivity and stability on both sides of ambient



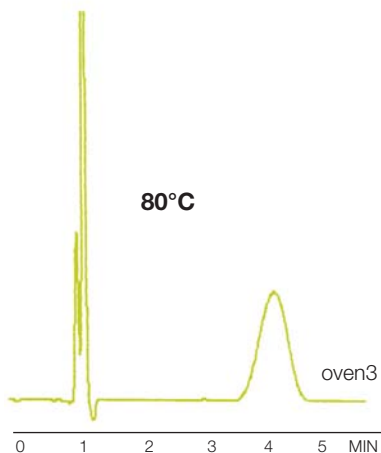
## Product specifications

|                                      | 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](https://www.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://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

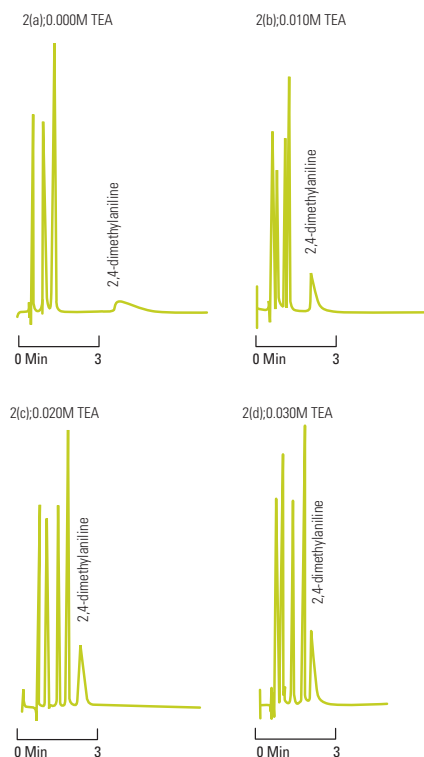
### Properties of triethylamine

- 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://www.thermofisher.com/LCreagents)

## Formic acid ampules

Well suited for HPLC and mass spectrometry applications

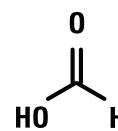
Formic acid is a component found in reverse-phase mobile phases to provide protons for LC-MS analysis. The presence of a low concentration of formic acid in the mobile phase is also known to improve the peak shapes of the resulting separation. Unlike trifluoroacetic acid (TFA), formic acid is not an 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)

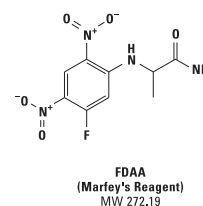
| Description                            | Quantity | Cat. No.   | Quantity |
|--|----------|------------|----------|
| Trifluoroacetic Acid, Sequencing Grade | 500mL    | X TS-28901 | 1 Each   |
| Trifluoroacetic Acid, Sequencing Grade | 100g     | X TS-28903 | 1 Each   |
| Trifluoroacetic Acid, Sequencing 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

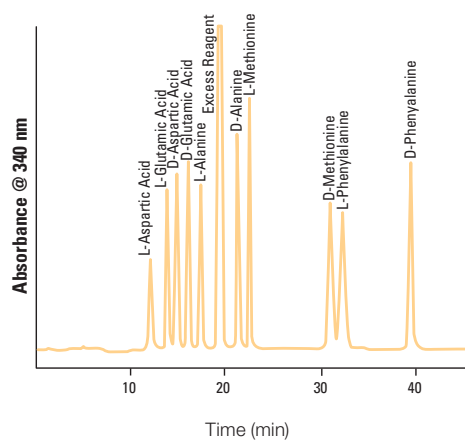
Makes separation and quantitation of optical isomers of amino acids by reversed-phase chromatography quick and easy

- 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

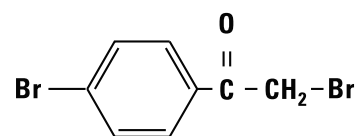
| Description            | Quantity | Cat. No. | Quantity |
|------------------------|----------|----------|----------|
| FDAA, Marfey's Reagent | 50mg     | TS-48895 | 1 Each   |



## 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)

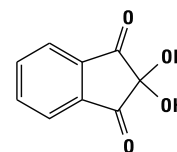


## Amino acid detection reagents

### 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

- $\text{HCON}(\text{CH}_3)_2$
- Purity (GC): ≥99%
- MW: 73.09
- Density: 0.944
- B.P. 153°C
- Water: 0.1%

#### Dimethylsulfoxide (DMSO), sequencing grade, physical properties

- $\text{C}_2\text{H}_6\text{OS}$
- Purity (GC): >99.5%
- MW: 78.13
- Density: 1.101
- Water: ≤0.2%

#### Pyridine, physical properties

- $\text{C}_5\text{H}_5\text{N}$
- Purity (GC): ≥99%
- MW: 79.10
- Density: 0.978
- B.P. 115°C

#### HPLC and spectrophotometric grade solvents

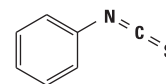
| Description              | Quantity | Cat. No.   | Quantity |
|--------------------------|----------|------------|----------|
| Acetonitrile             | 1L       | X TS-51101 | 1 Each   |
| Water                    | 1L       | TS-51140   | 1 Each   |
| Dimethylformamide (DMF)  | 50mL     | X TS-20673 | 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 x 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://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  |
| Syncronis C18            | Syncronis C18 columns have highly pure, high surface area silica that is double end-capped for robust and high-resolution separations  |
| Syncronis HILIC          | Syncronis 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                |
| Synchronis C18           | 100                   | 320                              | 16              | L1       | 2 to 9                 |
| Synchronis 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    |                |  |
|                    |             | 250         | 25005-259070A  | 25205-259070A  | 25305-259070A    |                  | 25905-259070A    | 35005-259070A        | 97105-259070A  |                |                  |                |  |
|                    |             | 20          | 50             | 25005-059270A  |                  |                  |                  |                      |                | 35005-059270A  |                  |                |  |
|                    |             |             | 100            | 25005-109270A  |                  | 25305-109270A    | 25505-109270A    |                      |                | 35005-109270A  |                  |                |  |
|                    |             |             | 150            | 25005-159270A  |                  | 25305-159270A    |                  |                      |                | 35005-159270A  | 97105-159270A    |                |  |
|                    |             | 250         | 25005-259270A  | 25205-259270A  | 25305-259270A    | 25505-259270A    |                  |                      | 35005-259270A  | 97105-259270A  | 97505-259270A    |                |  |
|                    |             | 22          | 250            |                |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             |             | 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   |                |  |
|                    | 250         |             | 25005-259270XL | 25205-259270XL | 25305-259270XL   | 25505-259270XL   |                  |                      | 35005-259270XL | 97105-259270XL | 97505-259270XL   |                |  |
|                    | 30          |             | 100            |                |                  |                  | 25305-109370XL   |                      |                | 35005-109370XL |                  |                |  |
|                    |             |             | 150            | 25005-159370XL |                  | 25305-159370XL   |                  |                      |                | 35005-159370XL | 97105-159370XL   |                |  |
|                    |             |             | 250            | 25005-259370XL |                  | 25305-259370XL   |                  |                      |                |                |                  | 97505-259370XL |  |
|                    | 50          |             | 100            |                |                  |                  | 25305-109570XL   |                      |                |                |                  |                |  |
|                    |             |             | 150            |                |                  |                  | 25305-159570XL   |                      |                |                |                  |                |  |
|                    |             |             | 250            |                |                  |                  | 25305-259570XL   |                      |                |                |                  | 97505-259570XL |  |
|                    | 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  |                  |                |  |
|                    |             |             | 20             |                |                  |                  |                  |                      |                | 35007-029023A  |                  |                |  |
|                    | Guard 1/16" | 30          | 10             |                |                  |                  |                  |                      |                | 35007-019323A  |                  |                |  |
|                    |             |             | 20             |                |                  |                  |                  |                      |                | 35007-029323A  |                  |                |  |
| Guard 1/8"         | 30          | 10          |                |                |                  |                  |                  |                      | 35007-019323B  |                |                  |                |  |
|                    |             | 20          |                |                |                  |                  |                  |                      | 35007-029323B  |                |                  |                |  |
| 8                  | Standard    | 22          | 250            |                |                  |                  |                  |                      |                |                |                  |                |  |
| 10                 | Standard    | 9           | 250            |                |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             | 22          | 250            |                |                  |                  |                  |                      |                |                |                  |                |  |
| 12                 | Standard    | 10          | 250            | 25012-259070A  |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             |             | 150            | 25012-159270A  |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             |             | 250            | 25012-259270A  |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             | 30          | 150            | 25012-159370A  |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             |             | 250            | 25012-259370A  |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             | 50          | 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  |                |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             | 20          | 25012-029023A  |                |                  |                  |                  |                      |                |                |                  |                |  |
|                    | Guard 1/16" | 30          | 10             | 25012-019323A  |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             |             | 20             | 25012-029323A  |                  |                  |                  |                      |                |                |                  |                |  |
|                    | Guard 1/8"  | 30          | 10             | 25012-019323B  |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             |             | 20             | 25012-029323B  |                  |                  |                  |                      |                |                |                  |                |  |
| 13.5               | Standard    | 9           | 50             |                |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             | 22          | 50             |                |                  |                  |                  |                      |                |                |                  |                |  |
|                    |             | 250         |                |                |                  |                  |                  |                      |                |                |                  |                |  |



# Premium prep columns

| Format      | i.d.<br>(mm) | Length<br>(mm) | Hypersil PREP<br>C18 BDS | Hypersil PREP<br>C8 BDS | Hypersil PREP<br>ODS | Hypersil PREP<br>Si BDS | Hypersil PREP<br>Si | Hypersil PREP<br>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)

## 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.

Find out more at [thermofisher.com/PrepLC](http://thermofisher.com/PrepLC)



# 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.

For more information, visit [thermofisher.com/GCcolumns](http://thermofisher.com/GCcolumns)

## Featured products



### LinerGOLD GC liners

The GOLD standard in GC liner performance, providing enhanced inertness, leading to increased accuracy and precision in analysis.

Page 5-017



### TraceGOLD GC columns

The premium standard in GC column performance, delivering low bleed, excellent reproducibility and high levels of inertness.

Page 5-034

## Section contents

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| Gas management              | 5-005 | TraceGOLD GC columns                                     | 5-034 |
| Syringes for GC instruments | 5-008 | TRACE GC columns   | 5-062 |
| Injection port septa        | 5-015 | TracePLOT GC columns                                     | 5-074 |
| Injection port liners       | 5-017 | GC reagents  | 5-077 |
| Ferrules                    | 5-022 | Reacti-Therm heating, stirring<br>and evaporation system | 5-089 |
| Capillary accessories       | 5-025 | GC and GC-MS instruments                                 | 5-095 |
| GC tools                    | 5-030 |  |       |
| GC columns                  | 5-033 |  |       |



### GC derivatization reagents

Making the undetectable detectable. Thermo Scientific GC Derivatization reagents provide high levels of purity and reproducibility in analysis.

Page 5-077



### Reacti-Therm sample derivatization system

Heating, stirring and evaporation in a single system, offering a complete solution for derivatization and other small-scale reactions.

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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



GC syringes

Vials and closures

GC liners

GC septa

GC ferrules

GC columns

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




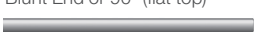

| Injection Method   | Injection Requirements  | Liner Requirements  |
|--|---|---|
| <br>Split     | Enables rapid vaporization and effective mixing of sample   | <ul style="list-style-type: none"> <li>Typically open-ended</li> <li>Large surface area &amp; volume</li> <li>Design to aid mixing</li> <li>Low activity</li> </ul>                                   |
| <br>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>   |
| <br>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.<br>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  |
|---|--|
| <br>Cone (Tapered tip)                                    | Most versatile needle for autosampler use and resist coring of vial and inlet septa                  |
| <br>Bevel (Sharp tip)                                     | Typically used for manual injections. The tip shape helps reduce septa coring                        |
| <br>Side Hole (Dome tip with a side hole for sample exit) | Usually used for headspace and large volume injections   |
| <br>Blunt End or 90° (flat top)                           | Used for injectors that do not contain an inlet septa such as Merlin MicroSeal™                      |
| <br>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™ SiTite™ | 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<br>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

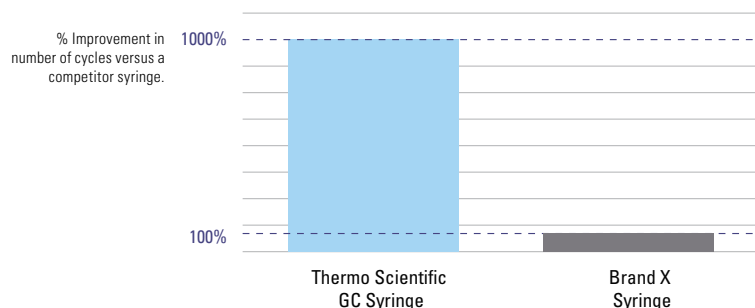
## Providing durability, clarity and accuracy for your sample

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.

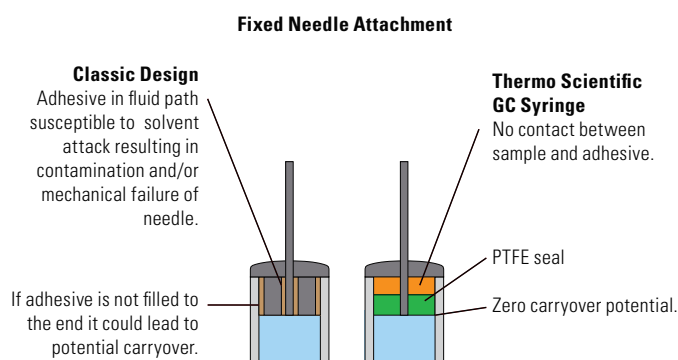


### Accuracy in your GC syringe

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   |
|             | 57          | 23    | Side Hole | Large Volume Injection, PTV   | 365H2181* | 1 Each   |
| 250         | 85          | 26    | Cone      | LV OC   | 365I2321  | 1 Each   |
|             | 57          | 26    | Cone      | LV Splitless  | 365I2331  | 1 Each   |
|             | 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   |
| 500         | 85          | 26    | Cone      | LV OC   | 365J2411  | 1 Each   |
|             | 57          | 26    | Cone      | Sample Preparation, i.e. dilution, derivatization   | 365J2421  | 1 Each   |
|             | 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   |
| 1000        | 57          | 22    | LC        | Sample Preparation, i.e. dilution, derivatization   | 365K2811  | 1 Each   |
|             | 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      |          |          |                             |          |
|             | 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 a(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**

| <i>Volume (µL)</i> | <i>Cat. No.</i> | <i>Quantity</i> | <i>Needle<br/>Cat. No.</i> | <i>Quantity</i> |
|--------------------|-----------------|-----------------|----------------------------|-----------------|
| 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**

| <b>Volume (µL)</b> | <b>Cat. No.</b> | <b>Quantity</b> |
|--------------------|-----------------|-----------------|
| 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<br>(Cross Version) | 0.8     | 290GA084 | 10 Pack  |
| Single Column Installation<br>(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<br>(Cross Version) | 0.8     | 290GA094 | 10 Pack  |
| Single Column Installation<br>(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.

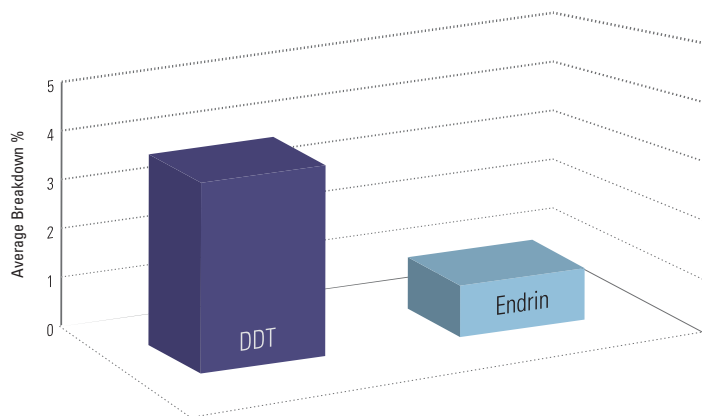


Figure 1: Endrin and DDT breakdown test results showing the lot-to-lot reproducibility and low levels of inertness of LinerGOLD

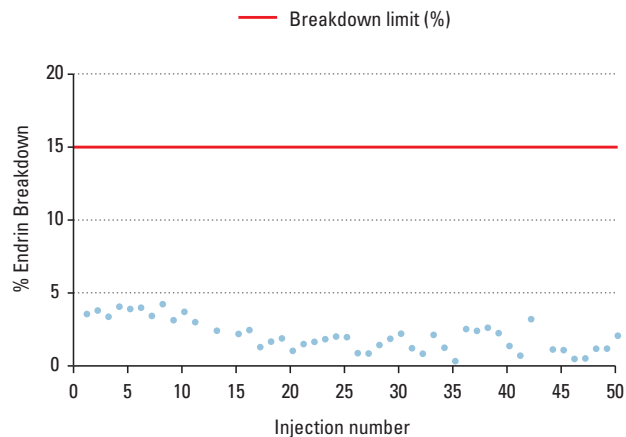
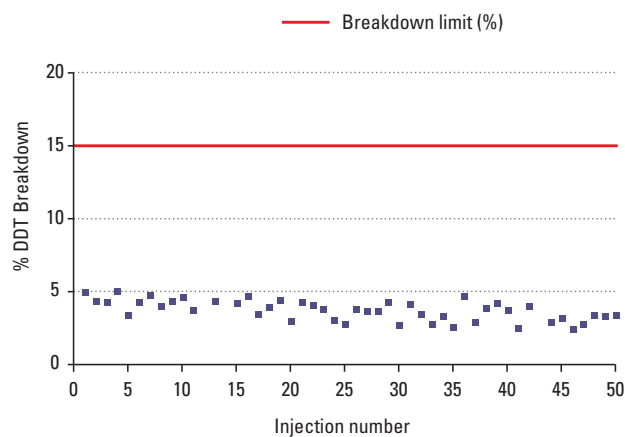
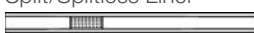




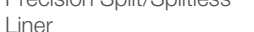


Figure 2: Compound degradation after 50 injections – LinerGOLD exhibits minimal breakdown

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<br>                   | 4 x 6.3      | 78.5        | Quartz Wool | 453A2265-UI     | 453A1262-UI      |
| Split/Splitless Straight Liner<br>          | 4 x 6.3      | 78.5        | No          | 453A1295-UI     | 453A2292-UI      |
| Splitless/Split Liner with Single Taper<br> | 4 x 6.3      | 78.5        | No          | 453A1345-UI     | 453A2342-UI      |
| Splitless/Split Liner with Single Taper<br> | 4 x 6.3      | 78.5        | Quartz Wool | 453A1925-UI     | 453A2922-UI      |
| Splitless Liner with Double Taper<br>       | 4 x 6.3      | 78.5        | No          | 453A1355-UI     | 453A2352-UI      |
| Precision Split/Splitless Liner<br>         | 4 x 6.3      | 78.5        | Quartz Wool | 453A1255-UI     | 453A1252-UI      |
| Direct Straight Liner<br>                   | 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<br>     | 5 x 8        | 105         | No          | 45350030-UI     | 45354030-UI      |
| Split Straight Liner<br>      | 3 x 8        | 105         | No          | 45350031-UI     | 45354031-UI      |
| Splitless Liner<br>           | 3 x 8        | 105         | No          | 45350032-UI     | 45354032-UI      |
| Splitless Liner<br>           | 5 x 8        | 105         | No          | 45350033-UI     | 45354033-UI      |
| Precision Liner<br>           | 5 x 8        | 105         | Quartz Wool | 453T1905-UI     | 453T4905-UI      |
| Splitless Precision Liner<br> | 5 x 8        | 105         | Quartz Wool | 453T2999-UI     | 453T4999-UI      |
| Baffled PTV Liner  | 2 x 2.75     | 120         | No          | 453T2845-UI     | 453T4845-UI      |









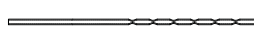

## Injection port liners for Thermo Scientific instruments

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



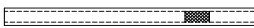



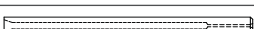
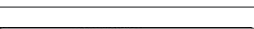
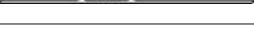


|  | Injection Type                          | ID x OD (mm) | Length (mm) | Packing     | Cat. No. 2 Pack | Cat. No. 5 Pack | Cat. No. 25 Pack |
|--|---|--------------|-------------|-------------|-----------------|-----------------|------------------|
|  | PTV Straight Liner                      | 1 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](http://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   |





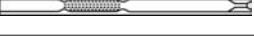











## Liners for Thermo Scientific TRACE ULTRA and FOCUS SSL instruments, SSL injector

|  | 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 (SiITite) | 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.



## SiITite Metal Ferrules

The SiITite 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, SiITite 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 | SiITite |
|---|---------------|--------------------------|---------|
| 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   |
| SiITite Kit for Thermo Scientific TRACE 1300/1310 GC SSL injectors                                  | SiITite Metal                          | 0.1-0.25                      | 290MA215      | 1 Each** |
|   |  | 0.32                          | 290MA216      | 1 Each** |
|   |  | 0.53                          | 290MA217      | 1 Each** |
| SiITite Kit for Thermo Scientific ISQ GC-MS interface   | SiITite Metal                          | 0.1-0.25                      | 290MA194      | 1 Each** |
|   |  | 0.32                          | 290MA195      | 1 Each** |
|   |  | 0.53                          | 290MA196      | 1 Each** |
| Replacement SiITite Ferrules for Thermo Scientific TRACE 1300/1310 SSL and ISQ GC-MS interface kits | SiITite Metal                          | 0.1-0.25                      | 290MA201      | 10 Pack  |
|   |  | 0.32                          | 290MA202      | 10 Pack  |
|   |  | 0.53                          | 290MA203      | 10 Pack  |
| SiITite Nuts for MS interface   |  |                               | 290MA205      | 5 Pack   |
| SiITite Nuts for SSL injectors  |  |                               | 290MA207      | 5 Pack   |
| SiITite Kits for Thermo Scientific DSQ GC-MS interface  | SiITite Metal                          | 0.1-0.25                      | 290MT229      | 1 Each** |
|   |  | 0.32                          | 290MT230      | 1 Each** |
|   |  | 0.53                          | 290MT231      | 1 Each** |
|   |  | Replacement SiITite Nuts      | 290MT211      | 5 Pack   |
| Replacement SiITite Ferrules for Thermo Scientific DSQ GC-MS interface kits                         | SiITite 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

\*\* SiITite Kits contain 2 SiITite 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  |
| SiTite Kits for Agilent SSL injectors                   | SiTite Metal            | 0.1-0.25                      | 290MA215 | 1 Each*  |
|   |                         | 0.32                          | 290MA216 | 1 Each*  |
|   |                         | 0.53                          | 290MA217 | 1 Each*  |
| SiTite Nuts for MS interface                            |                         |                               | 290MA205 | 5 Pack   |
| SiTite Kit for Agilent MS detectors                     | SiTite Metal            | 0.1-0.25                      | 290MA194 | 1 Each** |
|   |                         | 0.32                          | 290MA195 | 1 Each** |
|   |                         | 0.53                          | 290MA196 | 1 Each** |
| Replacement SiTite Ferrules for all SiTite Kits         | SiTite Metal            | 0.1-0.25                      | 290MA201 | 10 Pack  |
|   |                         | 0.32                          | 290MA202 | 10 Pack  |
|   |                         | 0.53                          | 290MA203 | 10 Pack  |
| SiTite 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<br>Cat. No. (1 Each) | SilTite $\mu$ -Union Ferrules<br>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<br>Cat. No. (1 Each) | SilTite Ferrules<br>Cat. No. (10 Pack) | Replacement SilTite Connector Nuts*<br>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 [thermofisher.com/GCparts](https://thermofisher.com/GCparts)

## SWAP-IT GC-MS interface system

Easy to install for quick column changeovers

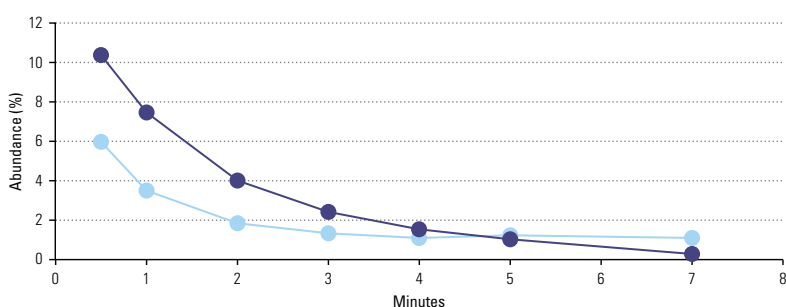
The SWAP-IT GC-MS Interface provides a powerful tool for switching capillary columns without the need to vent the MS

- 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  |



● Mass 28, nitrogen

● Mass 18, water

Removal of water and nitrogen to levels less than 2% is obtained within 3-4 minutes after column replacement

## 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   |

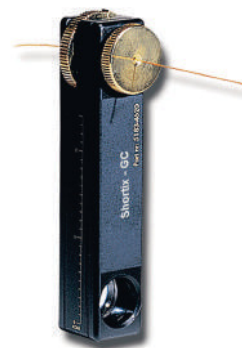


# GC tools

## 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

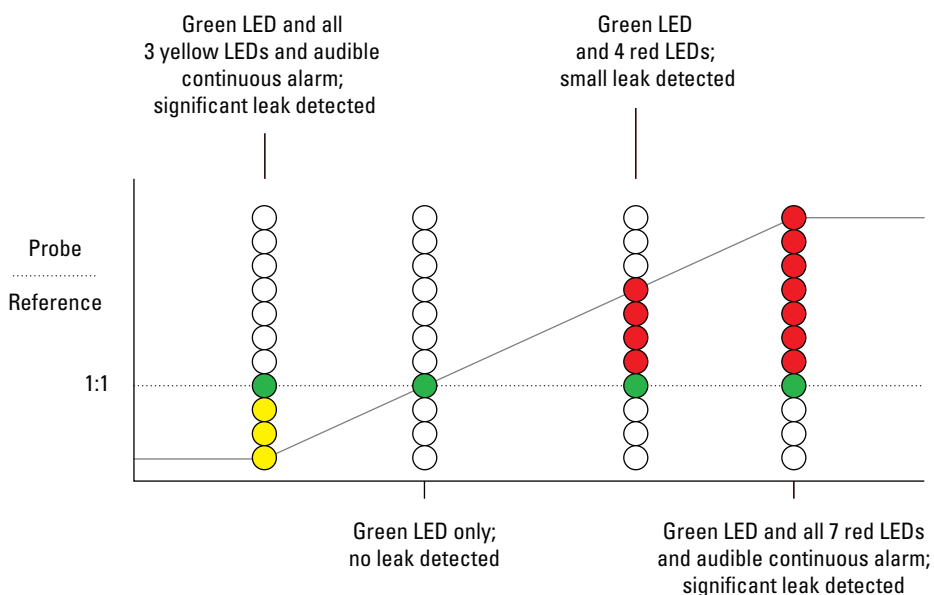
The Thermo Scientific™ GLD Pro Gas Leak Detector is specifically designed for use with gas chromatography instruments. Detection of leaks allows the user to reduce detector noise, provide a stable baseline, reduce carrier gas by minimizing waste, and maximize the lifetime of the analytical column by 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://thermofisher.com/GCtools)

## GFM pro electronic flowmeter

Measure and monitor flow quickly and efficiently

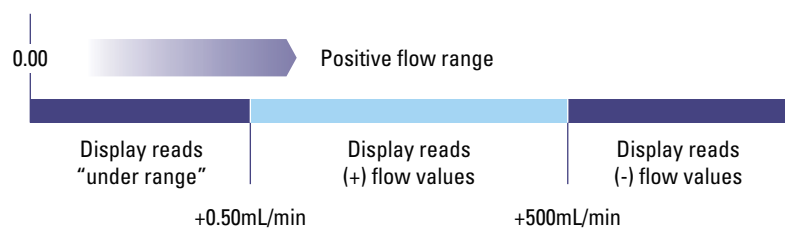
The Thermo Scientific™ GFM Pro Flowmeter is specifically designed for use with gas chromatography instruments. This versatile product is an electronic device capable of measuring volumetric flow for all types of gases. Real-time measurements can be made for various types of flow paths including continually 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://www.thermofisher.com/GCcolumns)



# TraceGOLD GC columns

TraceGOLD GC columns offer you a leap forward in column performance delivering low bleed and superior inertness ideally suited to MS applications.

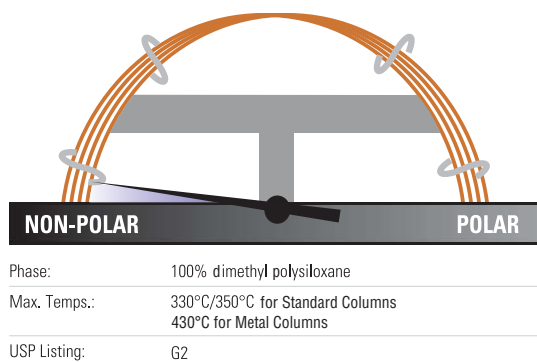
|               |     |             |     |                                   |     |
|---------------|-----|-------------|-----|-----------------------------------|-----|
| TG-1MS        | 035 | TG-624SiIMS | 045 | TG-XLBMS                          | 055 |
| TG-5MS        | 036 | TG-1701MS   | 046 | TG-VRX                            | 056 |
| TG-5SiIMS     | 037 | TG-17MS     | 047 | TG-VMS                            | 057 |
| TG-5MS AMINE  | 038 | TG-17SiIMS  | 048 | TG-OCP I / TG OCP II              | 058 |
| TG-5HT        | 039 | TG-225MS    | 049 | TG-OPP I / TG-OPP II              | 059 |
| TG-SQC        | 040 | TG-200MS    | 050 | TG-ALC Plus I /<br>TG-ALC Plus II | 060 |
| TG-35MS       | 041 | TG-WaxMS    | 051 | TG-Dioxin                         | 061 |
| TG-35MS AMINE | 042 | TG-WaxMS A  | 052 |                                   |     |
| TG-1301MS     | 043 | TG-WaxMS B  | 053 |                                   |     |
| TG-624        | 043 | TG-POLAR    | 054 |                                   |     |



## TraceGOLD TG-1MS GC columns

Exceptionally low bleed for optimal signal-to-noise ratio, sensitivity and MS integrity

- Non-polar
- Equivalent to USP 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     |
|                      |            | 0.5                  | 26099-2350 | 1 Each     |
|                      |            | 1.0                  | 26099-3080 | 1 Each     |
| 0.32                 | 15         | 0.25                 | 26099-1310 | 1 Each     |
|                      |            | 1.0                  | 26099-2850 | 1 Each     |
|                      | 30         | 0.25                 | 26099-1430 | 1 Each     |
|                      |            | 0.5                  | 26099-2240 | 1 Each     |
|                      |            | 1.0                  | 26099-2970 | 1 Each     |
|                      |            | 3.0                  | 26099-4840 | 1 Each     |
|                      |            | 60                   | 0.25       | 26099-1550 |
|                      | 60         | 0.5                  | 26099-2360 | 1 Each     |
|                      |            | 1.0                  | 26099-3090 | 1 Each     |
|                      |            | 0.5                  | 26099-2130 | 1 Each     |
|                      |            | 1.0                  | 26099-2860 | 1 Each     |
|                      |            | 1.5                  | 26099-3340 | 1 Each     |
| 0.53                 |            | 15                   | 0.5        | 26099-2130 |
|                      | 1.0        |                      | 26099-2860 | 1 Each     |
|                      | 1.5        |                      | 26099-3340 | 1 Each     |
|                      | 30         | 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

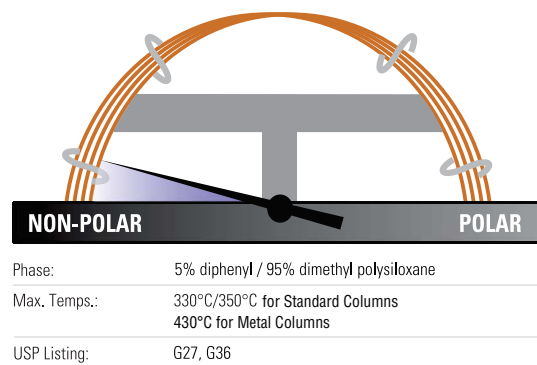
### TraceGOLD TG-1MT Metal GC columns

| 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   |
|         |                      | 0.25                | 26098-1305 | 1 Each   |
|         | 30                   | 0.25                | 26098-1420 | 1 Each   |
|         |                      | 0.5                 | 26098-2230 | 1 Each   |
|         | 30 with 5m SafeGuard | 1.0                 | 26098-2960 | 1 Each   |
|         |                      | 0.1                 | 26098-0475 | 1 Each   |
| 0.32    | 60                   | 0.25                | 26098-1425 | 1 Each   |
|         |                      | 0.5                 | 26098-2350 | 1 Each   |
|         | 15                   | 1.0                 | 26098-3080 | 1 Each   |
|         |                      | 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   |
|         |                      | 1.0                 | 26098-3090 | 1 Each   |
|         | 30 with 5m SafeGuard | 0.25                | 26098-1435 | 1 Each   |
|         | 60                   | 0.25                | 26098-1550 | 1 Each   |
| 0.53    | 60                   | 0.5                 | 26098-2360 | 1 Each   |
|         |                      | 1.0                 | 26098-3090 | 1 Each   |
|         | 30                   | 0.5                 | 26098-2130 | 1 Each   |
|         |                      | 1.0                 | 26098-2860 | 1 Each   |
|         | 60                   | 1.5                 | 26098-3340 | 1 Each   |
|         |                      | 0.25                | 26098-1440 | 1 Each   |
|         |                      | 0.5                 | 26098-2250 | 1 Each   |
|         |                      | 1.0                 | 26098-2980 | 1 Each   |
|         | 60                   | 1.5                 | 26098-3360 | 1 Each   |
|         |                      | 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   |
|         | 60         | 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



|              |   |
|--------------|---|
| Phase:       | 5% phenyl / 95% dimethyl arylene polysiloxane |
| Max. Temps.: | 330°C/350°C                                   |
| USP Listing: | G27, G36                                      |

### 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   |
| 0.25    | 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

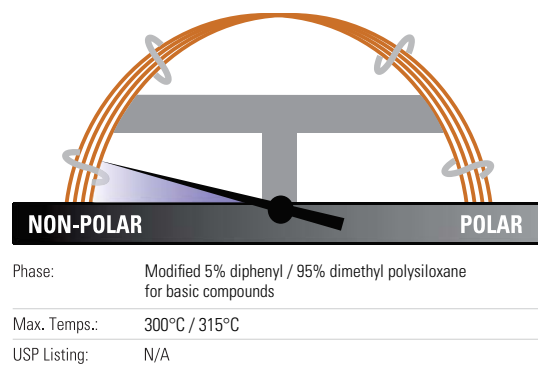
Learn more at [thermofisher.com/GCcolumns](https://www.thermofisher.com/GCcolumns)



## 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



### 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     |        |

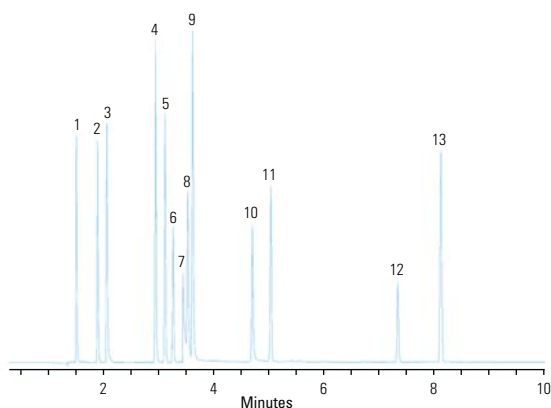
#### Applications:

- 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%



|              |   |
|--------------|---|
| 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   |
|         | 30         | 0.25                | 26095-1430 | 1 Each   |
|         |            | 0.15                | 26095-1640 | 1 Each   |
| 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:

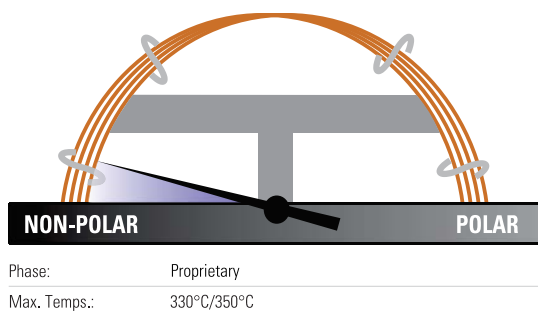
- Rxi-5HT
- BP-5HT
- VF-5HT
- ZB-5HT

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

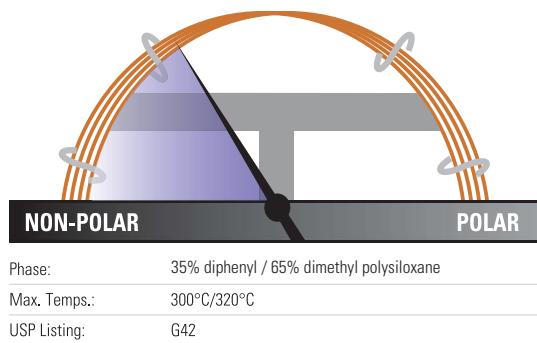
- System Qualification Tests (Thermo Scientific GC-MS)



## TraceGOLD TG-35MS GC columns

Higher phenyl content for useful elution order and retention time changes

- Mid-polarity phase
- Equivalent to USP G42 phase



### TraceGOLD TG-35MS GC columns

| ID (mm) | Length (m) | Film Thickness (µm) | Cat. No.   | Quantity |
|---------|------------|---------------------|------------|----------|
| 0.25    | 15         | 0.25                | 26094-1300 | 1 Each   |
|         | 30         | 0.25                | 26094-1420 | 1 Each   |
|         |            | 0.5                 | 26094-2230 | 1 Each   |
| 0.32    | 30         | 0.25                | 26094-1430 | 1 Each   |
|         |            | 0.5                 | 26094-2240 | 1 Each   |
|         |            | 0.5                 | 26094-2130 | 1 Each   |
| 0.53    | 15         | 0.5                 | 26094-2130 | 1 Each   |
|         | 30         | 1.0                 | 26094-2980 | 1 Each   |
|         |            | 1.5                 | 26094-3360 | 1 Each   |

### Applications:

- Organochlorine pesticides and herbicides
- Pharmaceuticals
- PCB congeners
- Aroclor mixes
- Sterols
- Rosin acids
- Phthalate esters

### Similar to:

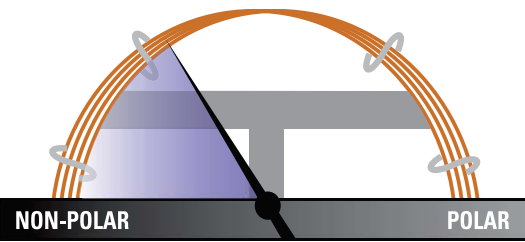
- Rtx-35
- BP-35
- HP-35
- SPB-35
- SPB-608

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



| NON-POLAR    |  | POLAR |  |
|--------------|--|-------|--|
| Phase:       | Modified 35% diphenyl / 65% dimethylpolysiloxane for basic compounds |       |  |
| Max. Temps.: | 220°C  |       |  |
| USP Listing: | N/A  |       |  |

### 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   |
|         |            | 1.0                 | 26092-2860 | 1 Each   |
| 0.53    | 15         | 1.0                 | 26092-2860 | 1 Each   |
|         | 30         | 1.0                 | 26092-2980 | 1 Each   |

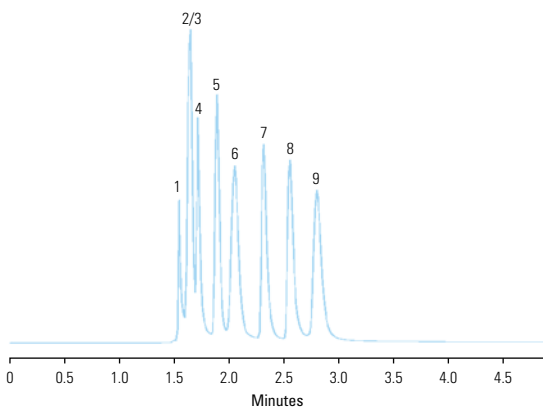
### Applications:

- 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

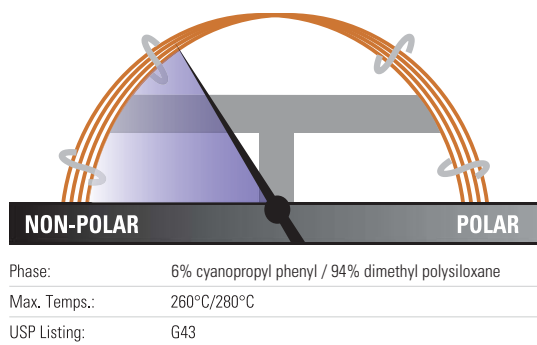
|                   |                                 |
|-------------------|---------------------------------|
| Temperature:      | 35°C (5 minute hold) Isothermal |
| Detector Type:    | FID                             |
| Carrier Gas:      | He                              |
| Flow Rate:        | 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



### 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   |
|         |            | 1.8                 | 26091-3390 | 1 Each   |
|         | 60         | 1.8                 | 26091-3410 | 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:

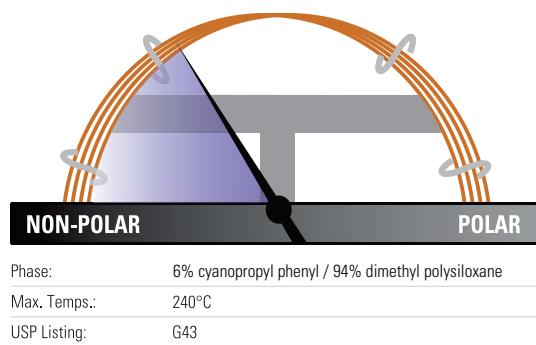
- Rtx-1301
- DB-1301
- BP-624
- HP-1301
- HP-624
- SPB-1301
- SPB-624
- VP-1301
- BF-624ms
- CP-1301
- CP-Select™ 624 CB

Learn more at [thermofisher.com/GCcolumns](http://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   |

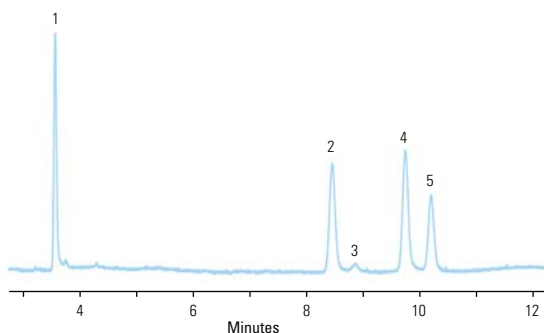
### Applications:

- 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: 1µL

Injection Mode: Headspace, Split (1:5), 140°C

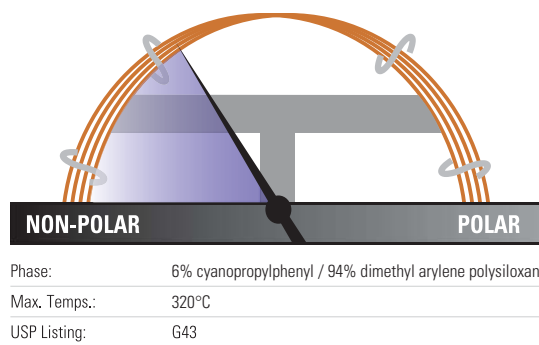
- 1,1-dichloroethane
- 1,1,1-trichloroethane
- carbon tetrachloride
- benzene
- 1,2-dichloroethane



## 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   |

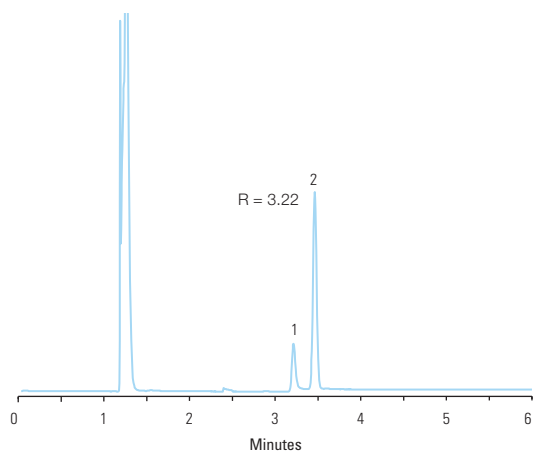
#### Applications:

- 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

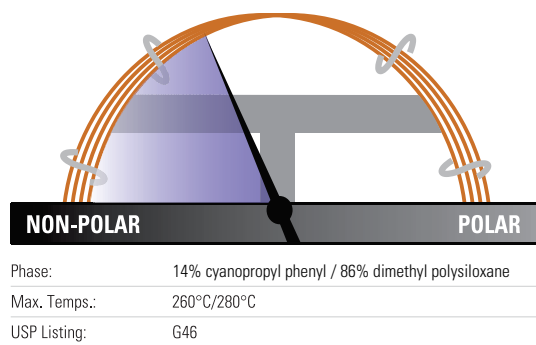
Learn more at [thermofisher.com/GCcolumns](http://thermofisher.com/GCcolumns)



## 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     |
|         | 30         | 0.25                | 26090-1430 | 1 Each     |
|         |            | 0.5                 | 26090-2240 | 1 Each     |
|         |            | 1.0                 | 26090-2970 | 1 Each     |
|         | 60         | 0.25                | 26090-1550 | 1 Each     |
|         |            | 1.0                 | 26090-3090 | 1 Each     |
| 0.53    |            | 30                  | 0.25       | 26090-1440 |
|         | 1.0        |                     | 26090-2980 | 1 Each     |
|         | 3.0        |                     | 26090-3960 | 1 Each     |

### Applications:

- Alcohols
- Pesticides
- Oxygenates
- PCB congeners
- Aroclor mixes

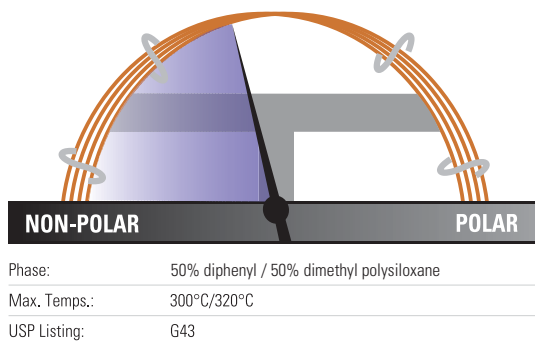
### Similar to:

- 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   |
|         |            | 0.25                | 26089-1420 | 1 Each   |
|         | 30         | 0.5                 | 26089-2230 | 1 Each   |
|         |            | 1.0                 | 26089-2960 | 1 Each   |
|         |            | 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   |

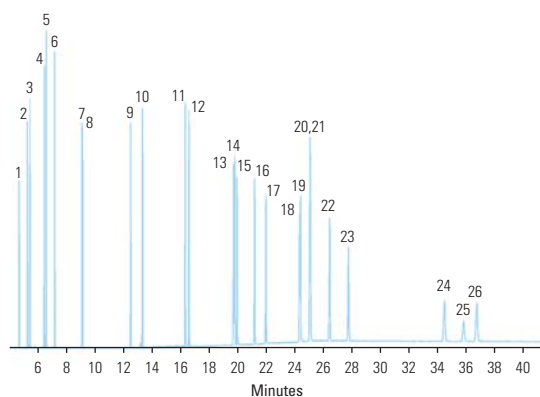
### Applications:

- 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

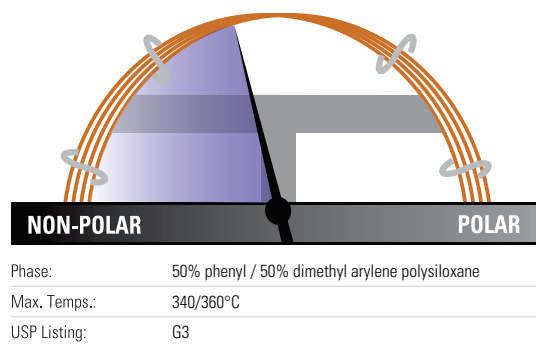
- |                          |                              |
|--------------------------|------------------------------|
| 1. naphthalene           | 15. benzo(j)fluoranthene     |
| 2. 1-methylnaphthalene   | 16. benzo(a)pyrene           |
| 3. 2-methylnaphthalene   | 17. 3-methylcholanthrene     |
| 4. acenaphthylene        | 18. dibenzo(a,h)acridine     |
| 5. acenaphthene          | 19. dibenzo(a,i)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

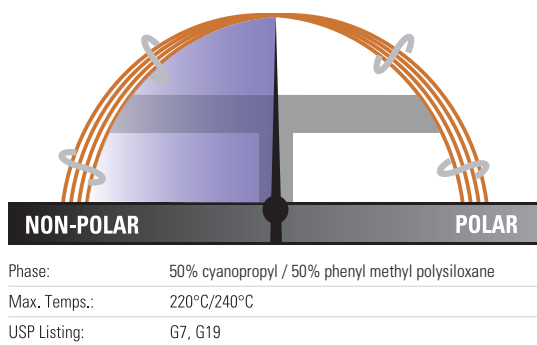
Learn more at [thermofisher.com/GCcolumns](https://www.thermofisher.com/GCcolumns)



## 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



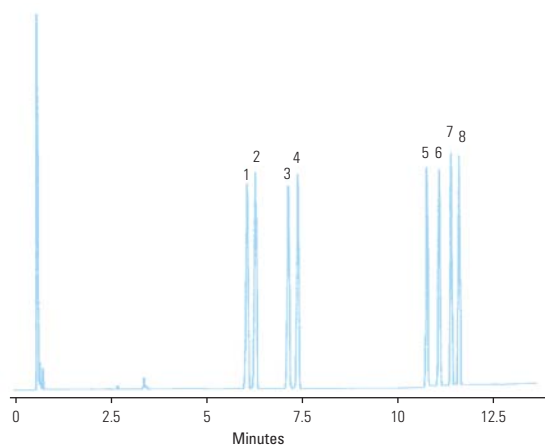
### TraceGOLD TG-225MS GC columns

| 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:

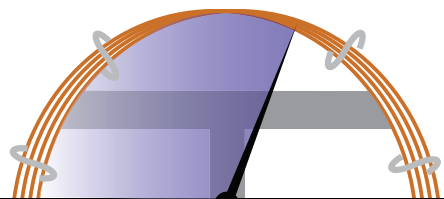
- Rtx-225
- DB-225
- HP-225
- SPB-225

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 methyl polysiloxane 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



|              |                                    |
|--------------|------------------------------------|
| Phase:       | Trifluoropropylmethyl Polysiloxane |
| Max. Temps.: | 320°C/340°C                        |
| USP Listing: | G6                                 |

### 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:

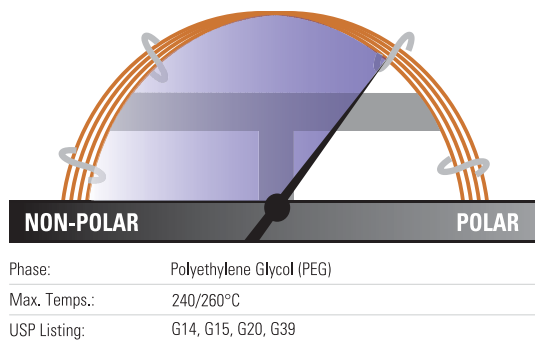
- Rtx-200MS
- DB-200
- DB-210



## 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     |        |
| 0.32    | 15         | 0.5                   | 26088-2120 | 1 Each     |        |
|         |            | 0.25                  | 26088-1430 | 1 Each     |        |
|         |            | 0.5                   | 26088-2240 | 1 Each     |        |
|         | 30         | 1.0                   | 26088-2970 | 1 Each     |        |
|         |            | 30m with 5m SafeGuard | 0.25       | 26088-1435 | 1 Each |
|         |            | 60                    | 0.25       | 26088-1550 | 1 Each |
|         |            | 0.5                   | 26088-2360 | 1 Each     |        |
|         | 0.53       | 15                    | 1.0        | 26088-3090 | 1 Each |
|         |            |                       | 0.5        | 26088-2130 | 1 Each |
|         |            | 30                    | 1.0        | 26088-2860 | 1 Each |
| 0.25    |            |                       | 26088-1440 | 1 Each     |        |
| 0.5     |            |                       | 26088-2250 | 1 Each     |        |
| 1.0     |            |                       | 26088-2980 | 1 Each     |        |
| 1.5     |            |                       | 26088-3360 | 1 Each     |        |
| 0.25    |            |                       | 26088-1560 | 1 Each     |        |
| 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

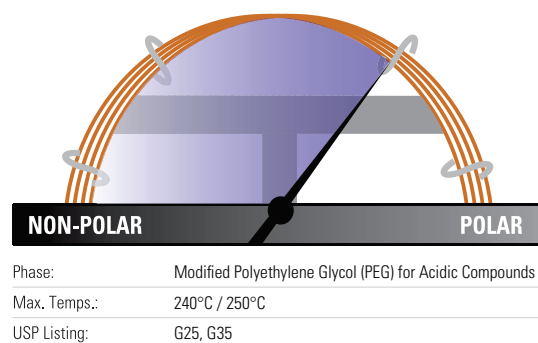
| ID (mm) | Length (m) | Film Thickness (µm) | Cat. No.   | Quantity |
|---------|------------|---------------------|------------|----------|
| 0.25    | 30         | 0.25                | 26M88-1420 | 1 Each   |
|         | 60         | 0.25                | 26M88-1540 | 1 Each   |

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   |

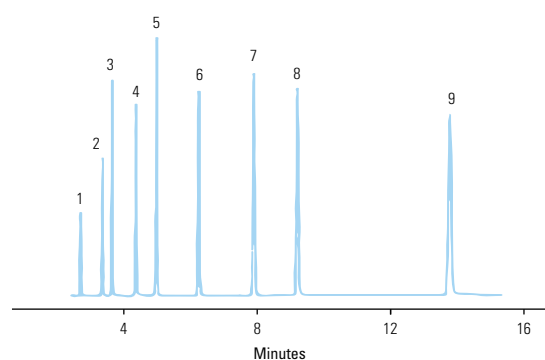
#### Applications:

- 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

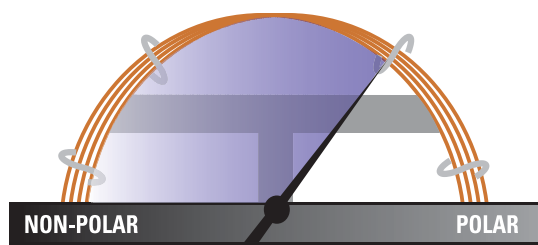
|                   |                     |
|-------------------|---------------------|
| Temperature:      | 145°C Isothermal    |
| Detector Type:    | FID                 |
| Carrier Gas:      | Hydrogen            |
| Flow Rate:        | 40cm/sec            |
| Injection Volume: | 1.0µL               |
| 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



|              |  |
|--------------|--|
| Phase:       | Modified Polyethylene Glycol (PEG) for Basic Compounds |
| Max. Temps.: | 200°C/220°C  |
| USP Listing: | N/A  |

### 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   |

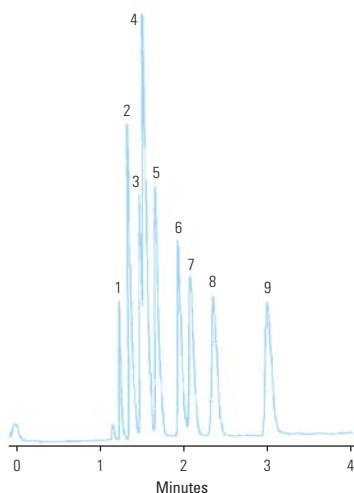
#### Applications:

- 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  |                    |

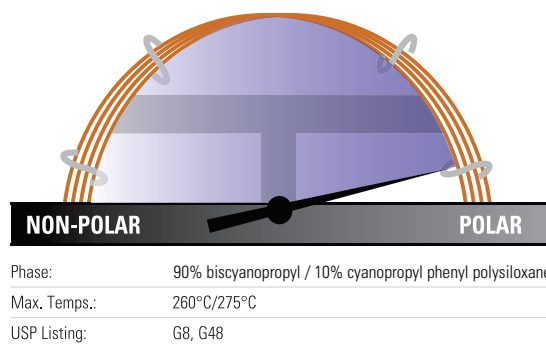
Learn more at [thermofisher.com/GCcolumns](https://www.thermofisher.com/GCcolumns)



## 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



### 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   |

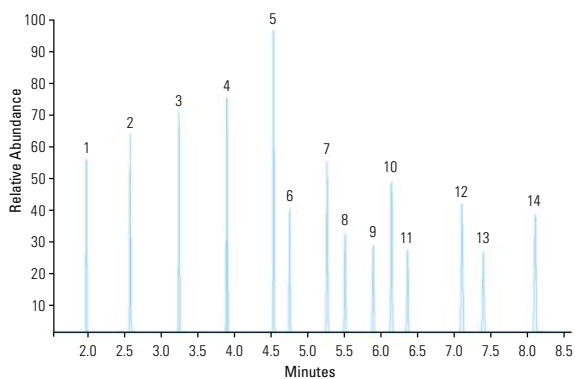
#### Applications:

- 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-docosenoate |
| 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



|              |             |
|--------------|-------------|
| Phase:       | Proprietary |
| Max. Temps.: | 340°C/360°C |
| USP Listing: | N/A         |

### 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

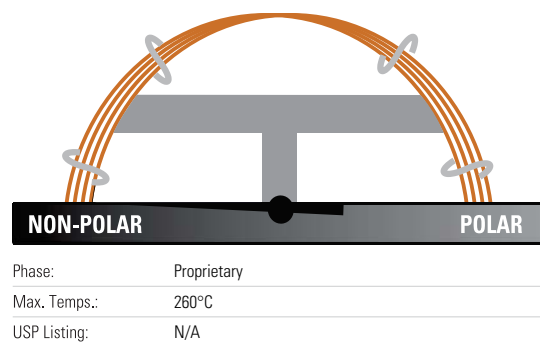
| Description  | Cat. No     | Quantity |
|--|-------------|----------|
| Semi-Volatile Organic Compounds (SVOC) Application kit     | 60181-736   | 1 Each   |
| <b>Contains the following:</b>                             |             |          |
| TG-5MS GC COLUMN 30MX0.25MMX 0.50MM                        | 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

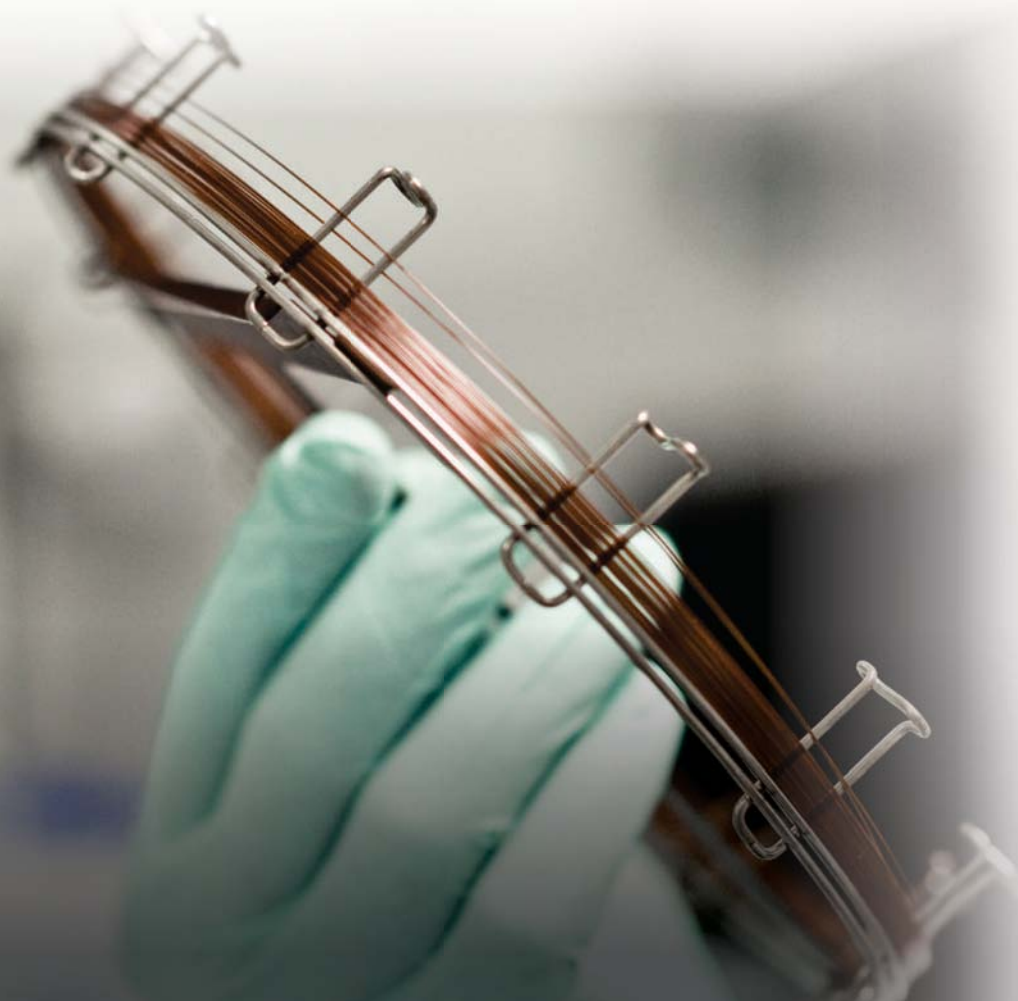
| ID (mm) | Length (m) | Film Thickness (µm) | Cat. No.   | Quantity |
|---------|------------|---------------------|------------|----------|
| 0.18    | 20         | 1.0                 | 26081-4950 | 1 Each   |
|         | 40         | 1.0                 | 26081-4960 | 1 Each   |
| 0.25    | 30         | 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:

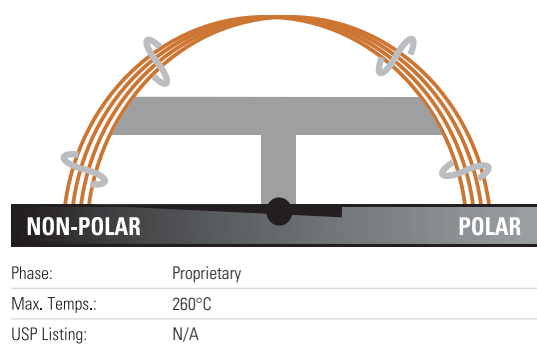
- Rtx-VRX
- DB-VRX



## 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

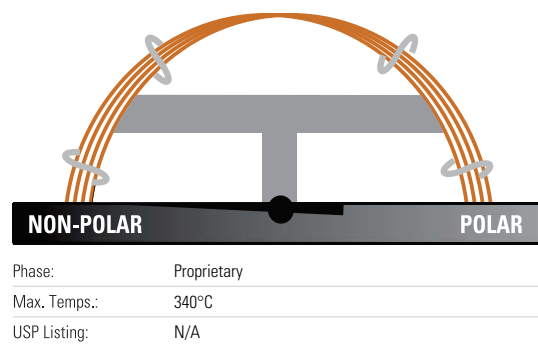
| Description  | Cat. No.    | Quantity |
|--|-------------|----------|
| Volatile Organic Compound(VOC) Apps Kit                    | 60181-734   | 1 Each   |
| <b>Contains the following:</b>                             |             |          |
| TG-VMS GC Column, 20m x 0.18mm x 1.00µm                    | 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 & SSLBackflush                          | 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://www.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

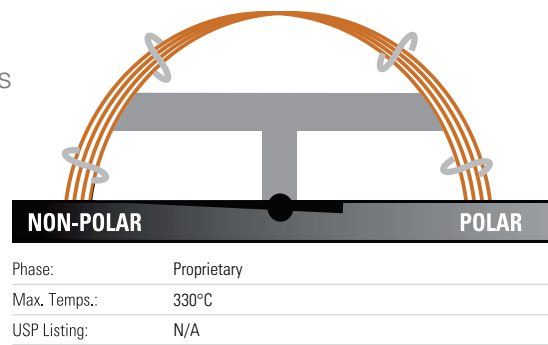
### TraceGOLD TG-OCP II GC columns

| 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

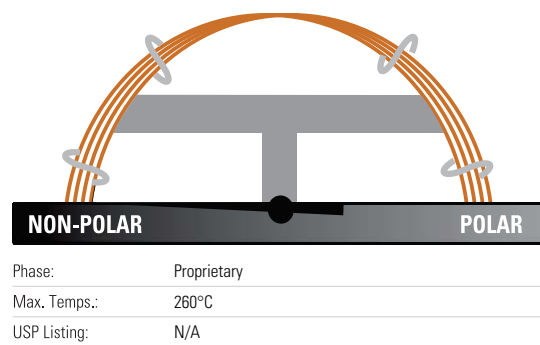
Learn more at [thermofisher.com/GCcolumns](https://www.thermofisher.com/GCcolumns)



## 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:

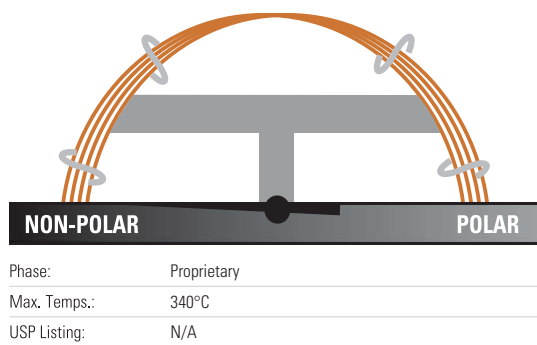
- Rtx BAC Plus 1 / Rtx BAC Plus 2



## 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://www.thermofisher.com/GCcolumns)

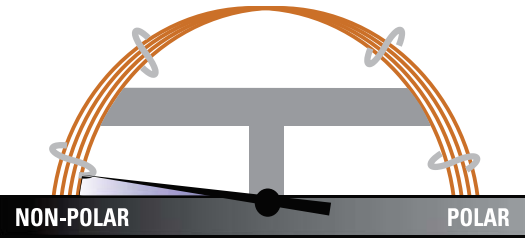


# TRACE GC columns

## 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   |

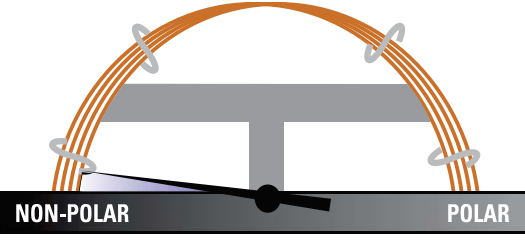
#### Applications:

- 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   |
|         | 60         | 0.25                | 260B154P | 1 Each   |
| 0.32    | 30         | 0.25                | 260B143P | 1 Each   |
|         | 60         | 0.25                | 260B155P | 1 Each   |
|         |            | 1.0                 | 260B309P | 1 Each   |

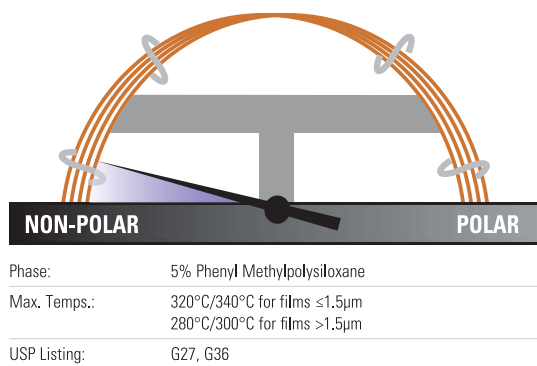
#### Applications:

- 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



### 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   |
|         | 60         | 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   |

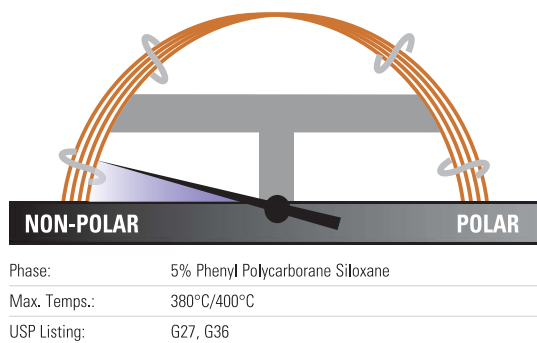
#### Applications:

- 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



### 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:

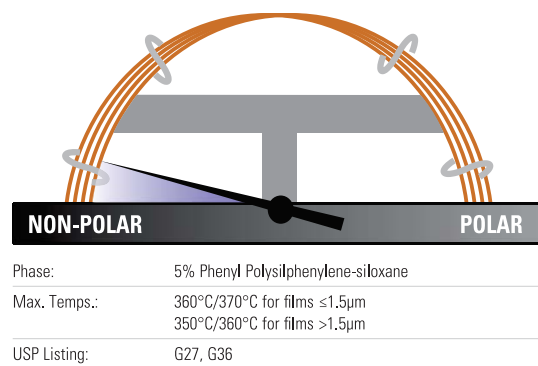
- Hydrocarbons
- Solvents
- Pesticides
- Herbicides
- Phenols
- Amines

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 |
| 15      |            | 0.25                | 260F154P | 1 Each   |        |
|         |            | 1.0                 | 260F308P | 1 Each   |        |
| 0.32    | 15         | 1.0                 | 260F285P | 1 Each   |        |
|         |            | 0.25                | 260F143P | 1 Each   |        |
|         | 30         | 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   |        |

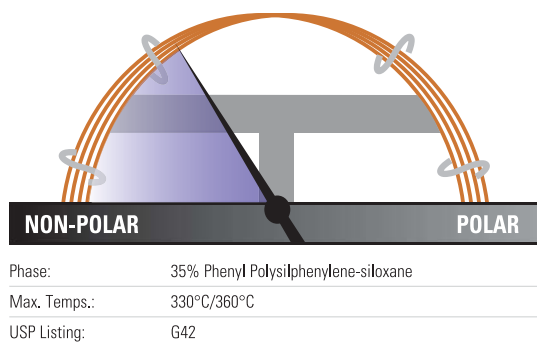
#### Applications:

- 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         | 1.0                 | 260C286P | 1 Each   |
|         | 30         | 1.0                 | 260C298P | 1 Each   |

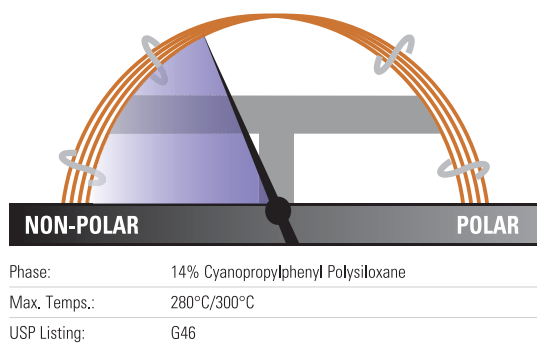
#### Applications:

- 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   |
| 0.53    | 30         | 0.25                | 260Q155P | 1 Each   |
|         |            | 1.0                 | 260Q298P | 1 Each   |

#### Applications:

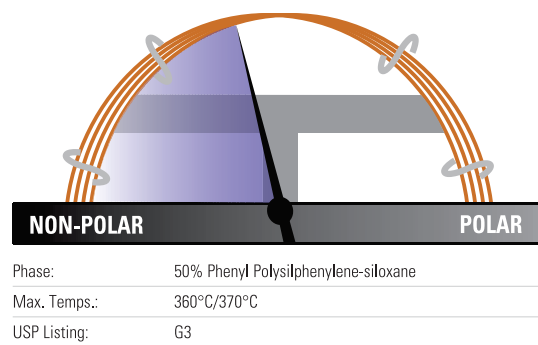
- Pesticides
- PCBs
- PAHs
- Organic acids
- Drugs
- Steroids
- EPA 608, 8081

Learn more at [thermofisher/GCcolumns](https://www.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   |

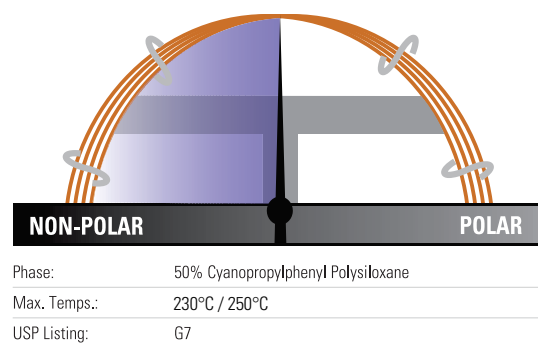
#### Applications:

- 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   |

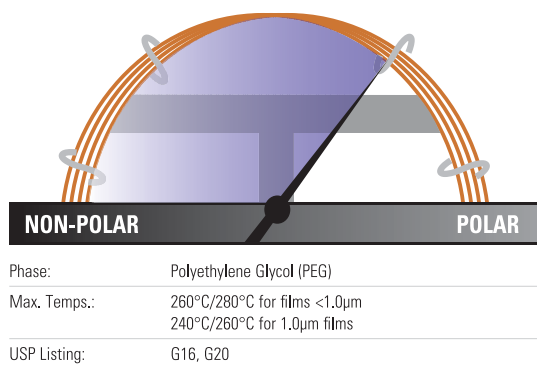
#### Applications:

- 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



### 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   |
| 0.32    | 60         | 0.25                | 260W154P | 1 Each   |
|         |            | 0.25                | 260W131P | 1 Each   |
|         | 30         | 0.25                | 260W143P | 1 Each   |
|         |            | 0.5                 | 260W224P | 1 Each   |
|         |            | 1.0                 | 260W297P | 1 Each   |
|         | 60         | 0.25                | 260W155P | 1 Each   |
| 1.0     |            | 260W309P            | 1 Each   |          |
| 0.25    |            | 260W286P            | 1 Each   |          |
| 0.53    | 15         | 1.0                 | 260W286P | 1 Each   |
|         |            | 0.5                 | 260W225P | 1 Each   |
|         | 30         | 1.0                 | 260W298P | 1 Each   |
|         |            | 1.0                 | 260W310P | 1 Each   |

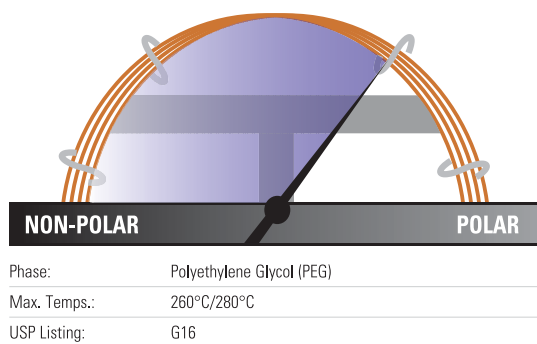
#### Applications:

- 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



### 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   |        |
| 60      | 0.25       | 260X154P            | 1 Each   |          |        |
|         | 0.32       | 30                  | 0.25     | 260X143P | 1 Each |
|         |            | 0.5                 | 260X224P | 1 Each   |        |
| 60      | 0.25       | 260X155P            | 1 Each   |          |        |

#### Applications:

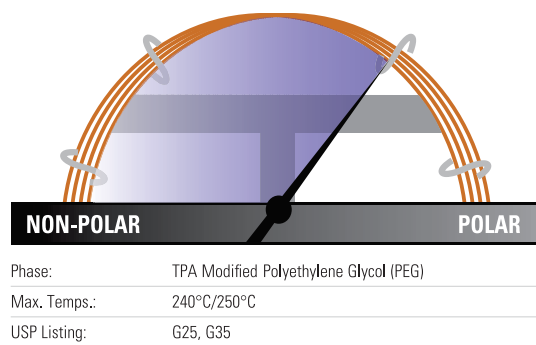
- Aromatic hydrocarbons
- Food additives
- Essential oils
- Alcohols
- Esters
- Aldehydes
- Ketones

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   |

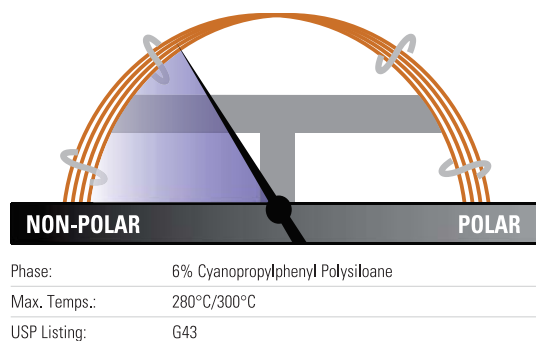
#### Applications:

- 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   |

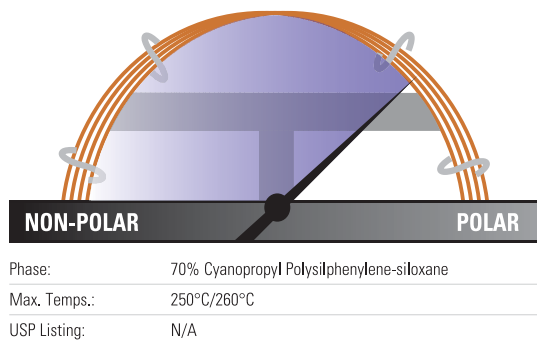
#### Applications:

- 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 |
| 0.25    | 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 |
| 0.32    | 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://www.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](http://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.

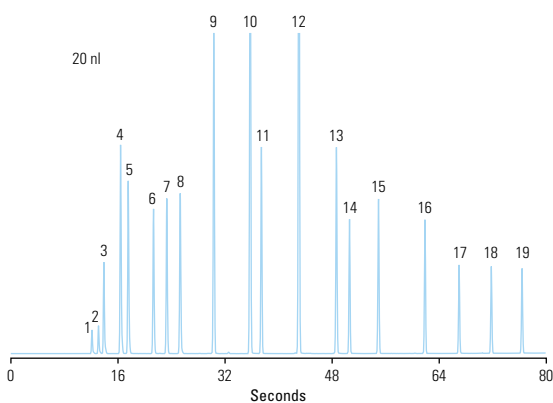
### Benefits of Thermo Scientific™ UltraFast™ GC columns

- Dramatically shorter analysis times – typically a minute or less
- Ideal for applications in petrochemical and environmental markets
- Long column lifetimes

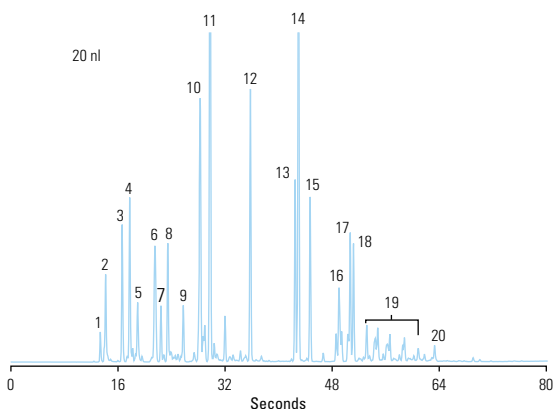
#### UFC-1 10m x 0.32mm x 3µm

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 (μm) | 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://www.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://www.thermofisher.com/GCreagents)

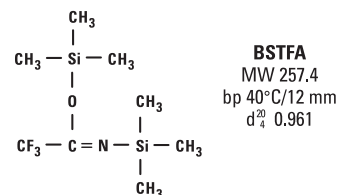


## Silylation reagents

### 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 BSA
- Excellent for derivatizing fatty acid amides, slightly hindered hydroxyls and other compounds
- Catalyzed formulation is stronger than BSTFA alone



#### BSTFA and BSTFA + TMCS

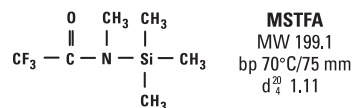
| Description      | Quantity         | Cat. No.   | Quantity |
|------------------|------------------|------------|----------|
| BSTFA            | 10 × 1mL ampules | TS-38830   | 1 Pack   |
|                  | 25g              | TS-38828   | 1 Each   |
|                  | 100g             | X TS-38829 | 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

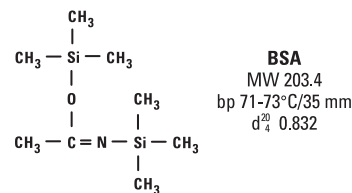
| Description     | Quantity         | Cat. No.   | Quantity |
|-----------------|------------------|------------|----------|
| MSTFA           | 10 × 1mL ampules | TS-48910   | 1 Pack   |
|                 | 10g              | TS-48911   | 1 Each   |
|                 | 25mL             | TS-48913   | 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



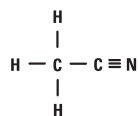
### BSA

| Description | Quantity | Cat. No. | Quantity |
|-------------|----------|----------|----------|
| BSA         | 10 x 1mL | TS-38836 | 1 Pack   |

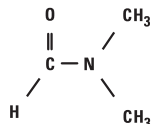
## Silylation grade solvents

Manufactured to meet your exact silylation needs

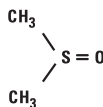
- Purified, dried and packaged under nitrogen in convenient 50mL Hypo-Vial Sample Storage Vials
- Supplied with elastomer septa, allowing immediate access to the sample without exposure to moisture and oxygen
- Use polar solvents (acetonitrile, dimethylformamide, dimethylsulfoxide, pyridine, tetrahydrofuran) to facilitate reactions; nonpolar organic solvents may be used, but they will not accelerate the rate of reaction



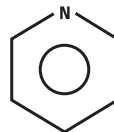
**Acetonitrile**  
MW 41.05  
bp 81.6°C



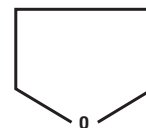
**Dimethylformamide**  
MW 73.09  
bp 153°C



**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   |

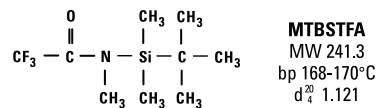
X in the ordering table indicates that hazardous shipping charges apply.

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



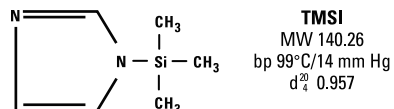
### MTBSTFA and MTBSTFA + 1% TBDMCS

| Description         | Quantity    | Cat. No. | Quantity |
|---------------------|-------------|----------|----------|
| MTBSTFA             | 5mL ampules | TS-48920 | 1 Each   |
| MTBSTFA + 1% TBDMCS | 10 × 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



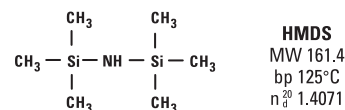
### TMSI

| Description                         | Quantity            | Cat. No. | Quantity |
|-------------------------------------|---------------------|----------|----------|
| TMSI<br>(N-Trimethylsilylimidazole) | 10 × 1mL<br>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



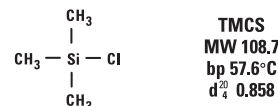
### HMDS

| Description                    | Quantity | Cat. No. | Quantity |
|--------------------------------|----------|----------|----------|
| HMDS<br>(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<br>(2% methoxyamine HCl in<br>pyridine) | 10mL     | TS-45950 | 1 Each   |

Learn more at [thermofisher.com/GCsreagents](https://www.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<br>HMDS:TMCS:Pyridine (2:1:10) | 10 × 1mL<br>ampules | TS-48999   | 1 Pack   |
| Tri-Sil HTP Reagent<br>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<br>(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<br>TMSI:BSA:TMCS (3:3:2) | 10 × 1mL<br>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:<br>Pyridine (1:4) | 10 × 1mL<br>ampules | TS-49230 | 1 Pack   |
| Tri-Sil TP Reagent TMSI:<br>Pyridine (1:4) | 25mL                | TS-49231 | 1 Each   |

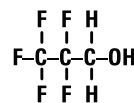
Learn more at [thermofisher.com/GCsreagents](https://www.thermofisher.com/GCsreagents)

## 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

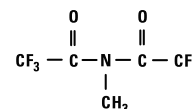
#### Pentafluoropropanol

| Description         | Quantity         | Cat. No. | Quantity |
|---------------------|------------------|----------|----------|
| Pentafluoropropanol | 10 x 1mL ampules | TS-65195 | 1 Pack   |

### MBTFA

For trifluoroacylating 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

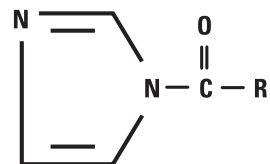
| Description                                     | Quantity         | Cat. No.   | Quantity |
|---|------------------|------------|----------|
| MBTFA<br>[N-Methyl-<br>bis(trifluoroacetamide)] | 10 x 1mL ampules | TS-49700   | 1 Pack   |
|   | 25mL             | TS-49703   | 1 Each   |
|   | 100mL            | 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)

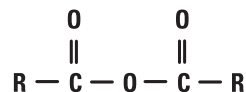
| Description | Quantity         | Cat. No.   | Quantity |
|-------------|------------------|------------|----------|
| HFBI        | 5g               | * TS-44211 | 1 Each   |
| TFAI        | 10 x 1mL ampules | TS-48882   | 1 Pack   |

\* 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.

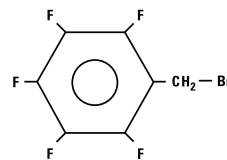


## Alkylation reagents

### Pentafluorobenzyl bromide (PFBBr)

For electron capture GC analysis of carboxylic acids, phenols and sulfonamides

- Fast reaction times for extraction alkylation technique: ~20 minutes
- Derivatives are highly EC-sensitive
- Analysis of trace organics in asphalt



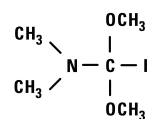
**PFBBr**  
MW 260.9  
bp 174-175°C  
d<sub>4</sub><sup>20</sup> 1.86

### 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<br>(N, N-Dimethylformamide<br>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   |

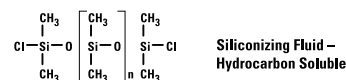
X in the ordering table indicates that hazardous shipping charges apply.

### 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<br>Holds 13 x 0.3mL or 1mL Reacti-Vials; 13 holes/14mm dia. x 23mm deep    |  | TS-18801 |
| Reacti-Block B-1<br>Holds 9 x 3mL or 5mL Reacti-Vials; 9 holes/21mm dia. x 32mm deep        |  | TS-18802 |
| Reacti-Block C-1<br>Holds 13 x 3.5mL Screw Cap Septum Vials; 13 holes/15mm dia. x 34mm deep |  | TS-18803 |
| Reacti-Block Z-1<br>Holds 9 x 0.1mm Reacti-Vials; 9 holes/12mm dia. x 21mm deep             |  | TS-18804 |
| Reacti-Block M-1<br>Holds 6 x 27.5mL Reacti-Vials; 6 holes/28.5mm dia. x 70mm deep          |  | TS-18811 |
| Reacti-Block S-1<br>Holds 13 x 13mm dia. Test Tubes; 13 holes/14mm dia. x 45mm deep         |  | TS-18816 |
| Reacti-Block T-1<br>Holds 9 x 16mm dia. Test Tubes; 9 holes/17mm dia. x 45mm deep           |  | TS-18817 |
| Reacti-Block U-1<br>Holds 8 x 20mm dia. Test Tubes; 8 holes/21mm dia. x 45mm deep           |  | TS-18818 |
| Reacti-Block V-1<br>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<br>Holds 8 x 6mL Vacuum Hydrolysis Tubes; 8 holes/10mm dia. x 64mm deep  |  | TS-18806 |
| Reacti-Block G<br>Holds 4 x 18mL Vacuum Hydrolysis Tubes; 4 holes/19mm dia. x 64mm deep |  | TS-18807 |
| Reacti-Block J<br>Blank/no holes (for custom drilling) 7.6cm tall                       |  | TS-18809 |
| Reacti-Block K<br>Blank/no holes (for custom drilling) 5.1cm tall                       |  | TS-18810 |
| Reacti-Block L<br>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<br>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   |

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

## 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 Dis



### 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.

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



## 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.

Visit [thermofisher.com/GC](http://thermofisher.com/GC)



## 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  $\mu$ 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.

Visit [thermofisher.com/qexactivegc](http://thermofisher.com/qexactivegc)



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| AVCS                               | GlycanPac         | Micro-V      | Synchronis          |
| BetaBasic                          | GOLD              | Mininert     | Target              |
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| DNAPac                             | Kappa             | Reacti-Block | Vari-Clean          |
| DNASwift                           | LinerGOLD         | Reacti-Therm | Verify              |
| EASY-Column                        | LTQ FT            | Reacti-Vap   | Viper               |
| EASY-Spray                         | LTQ Velos         | Reacti-Vial  | Virtuoso            |
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|----------------------|-------------------------------------|---------------------------|-------------------------------------|-----------------|---|
| Aeris                | Phenomenex, Inc                     | Hamilton                  | Hamilton Company                    | Septa BTO       | Chromatography Research Supplies            |
| Agilent              | Agilent Technologies, Inc           | Hitachi                   | Hitachi, Ltd.                       | Shimadzu        | Shimadzu                                    |
| Agilent Technologies | Agilent Technologies, Inc           | HP                        | Hewlett-Packard Development Company | Shodex          | Showa Denko                                 |
| Alltima              | Merc, Inc.                          | Inertsil                  | GL Sciences, Inc                    | Shortix         | Scientific Glass Technology Exploitatie B.V |
| Altex                | Beckman Coulter                     | IntegraFrit               | New Objective, Inc                  | SilFlow         | SGE Analytical Science                      |
| Aminex               | Bio-Rad Laboratories, Inc           | ISOLUTE                   | Biotage AB                          | SilTek          | Silcotek                                    |
| Ascentis Express     | Merc, Inc                           | Jasco                     | Jasco, Inc.                         | SilTite         | SGE Analytical Science                      |
| ASTM                 | ASTM International                  | J'Sphere                  | YMC CO., LTD                        | Spherisorb      | Waters Corporation                          |
| Atlantis             | Waters Corporation                  | Jupiter                   | Phenomenex, Inc                     | SSI             | Scientific Systems                          |
| BAKERBOND            | Mallinckrodt Baker, Inc.            | Kel-F                     | 3M                                  | Strata          | Phenomenex, Inc                             |
| Beckman Coulter      | Beckman Coulter                     | Kinetex                   | Phenomenex, Inc                     | Styre Screen    | United Chemical Technologies                |
| Bio-Inert            | Pall Corporation                    | Knauer                    | Knauer                              | SunFire         | Waters Corporation                          |
| Bond Elut            | Agilent Technologies, Inc           | Kromasil                  | AkzoNobel                           | Sunshell        | ChromaNik                                   |
| Bottom-of-the-Bottle | Merc, Inc                           | Leap                      | Leap Technologies, Inc              | Supelclean      | Supelco, Inc                                |
| Capcell              | Shiseido                            | LiChrospher               | Merck                               | Supelco         | Merc, Inc                                   |
| Carbowax             | Dow Chemical Company                | Luer-Lok                  | Becton Dickinson                    | Supelcosil      | Supelco, Inc                                |
| Cellosolve           | Dow Chemical Company                | Luna                      | Phenomenex, Inc                     | Super Clean     | Scientific Glass Technology Exploitatie B.V |
| Cheminert            | Victrex plc                         | Merlin                    | Merlin Instrument Company           | Symmetry        | Waters Corporation                          |
| ChloroFiltr          | United Chemical Technologies        | Merlin Microseal          | Merlin Instrument Company           | Synergi         | Phenomenex, Inc                             |
| CHROMABOND           | Macherey-Nagel                      | MP35N                     | SPS Technology                      | Teledyne/Tekmar | Teledyne Tekmar Company                     |
| Clean-Up             | United Chemical Technologies        | NUCLEODUR                 | Macherey-Nagel                      | Tosoh           | Tosoh Corporation                           |
| CLICK-ON             | Scientific Glass Technology         | Nucleoshell               | Macherey-Nagel                      | TRITON X-100    | Dow Chemical Company                        |
| Combi-Pal            | LEAP Technologies, Inc.             | Nucleosil                 | Macherey-Nagel                      | TSKgel          | Tosoh Corporation                           |
| Cortecs              | Waters Corporation                  | Oasis                     | Waters Corporation                  | Valco           | Valco Instruments                           |
| CP-PoraBOND U        | Waters Corporation                  | Parker                    | Parker Hannefin Corporation         | Velcro          | Velcro Industries                           |
| CP-PoraPLOT          | Waters Corporation                  | PE                        | PerkinElmer                         | Vespel          | DuPont de Nemours, Inc.                     |
| CP-Select            | Waters Corporation                  | PEEK (Scientific Systems) | Victrex plc                         | Viva            | Restek Corporation                          |
| CP-Sil               | Waters Corporation                  | PEEKsil                   | SGE Analytical Science              | VOCOL           | Merc, Inc                                   |
| CTC                  | LEAP Technologies, Inc.             | PerkinElmer               | PE Corp.                            | Vydac           | Millipore                                   |
| Discovery            | Gilson Inc.                         | Phenomenex                | Phenomenex, Inc                     | Waters          | Waters Corporation                          |
| Discovery            | Merc, Inc                           | PicoFrit                  | New Objective                       | Waters Corp.    | Waters Corporation                          |
| eVol                 | Trajan Scientific Australia Pty Ltd | Pinnacle                  | Restek Corporation                  | WISP            | Waters Corporation                          |
| EVOLUTE              | Biotage AB                          | Polar Plus                | Mallinckrodt Baker, Inc             | Xbridge         | Waters Corporation                          |
| Florisil             | U.S. Silica Holdings Inc.           | Poroshell                 | Agilent Technologies, Inc           | XCHANGE         | SGE Analytical Science                      |
| Gemini               | Phenomenex, Inc                     | Primesep                  | SIELC Technologies                  | Xterra          | Waters Corporation                          |
| Genesis              | Merc, Inc                           | Prodigy                   | Phenomenex, Inc                     | YMCbasic        | YMC, Inc                                    |
| Gilson               | YMC Ltd.                            | Purospher                 | Merc, inc                           | YMC-Pack        | YMC, Inc                                    |
| GOAL                 | Dow AgroSciences                    | RheBuild                  | Waters Corporation                  | Zorbax          | Agilent Technologies, Inc                   |
| Halo                 | Advanced Materials Technology       | RheFlex                   | Rheodyne LLC                        | μ-Bondapak      | Waters Corporation                          |
|                      |                                     | Rheodyne                  | Rheodyne LLC                        |                 |   |
|                      |                                     | SampliQ                   | Agilent Technologies, Inc           |                 |   |
|                      |                                     | Sep-Pak                   | Waters Corporation                  |                 |   |

# Resources for chromatographers



## Chromatography resource center

Our web-based resource centers provide technical support, applications, technical tips and literature to help move your separations forward.

For more information visit: [thermofisher.com/chromatography](https://thermofisher.com/chromatography)



## Technical support

For support, please visit our website: [thermoscientific.com/chromexpert](https://thermoscientific.com/chromexpert)



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