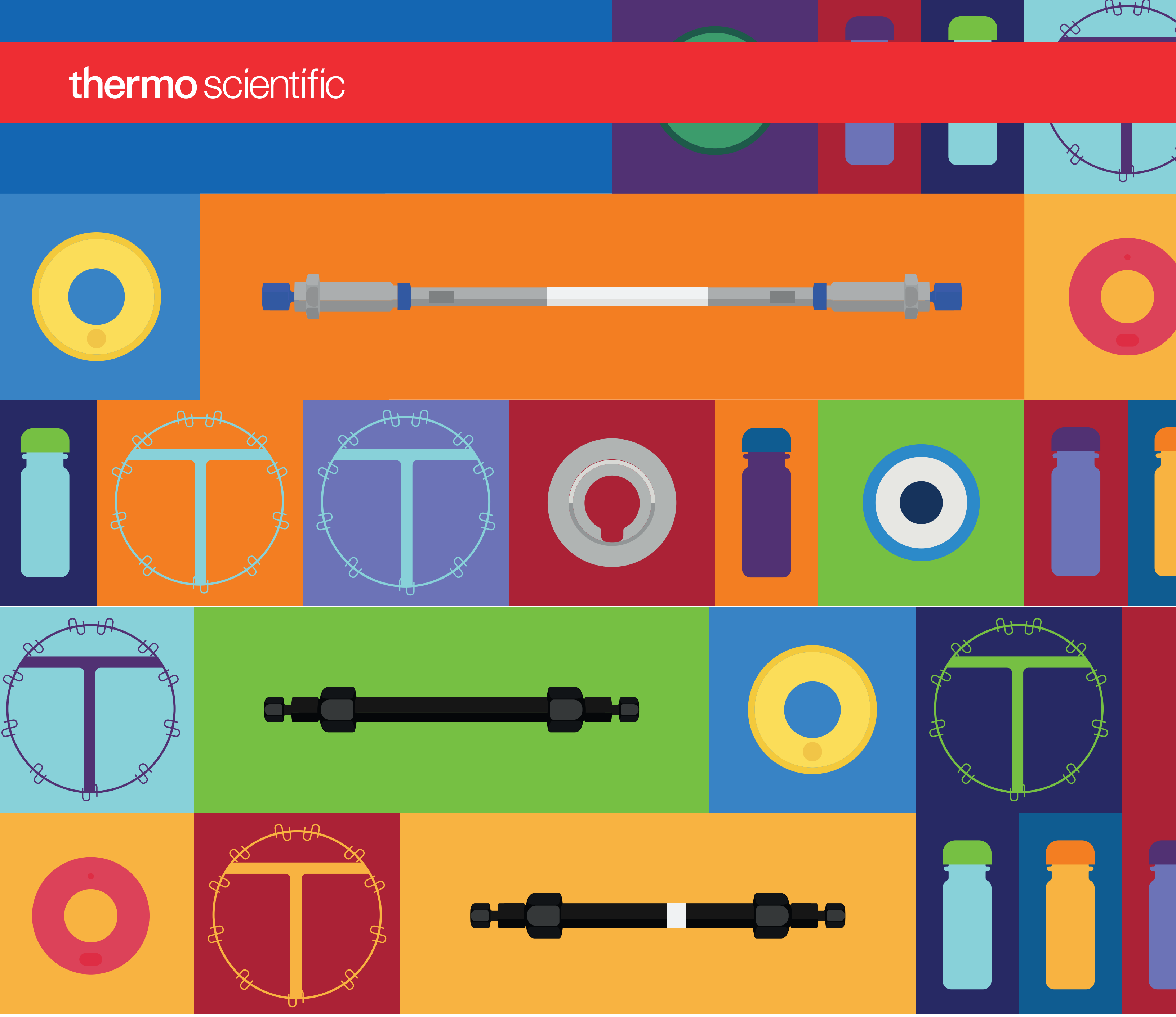


Connected chromatography solutions

2019/2021 Chromatography Consumables Catalog

ThermoFisher SCIENTIFIC

thermo 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.

GC IC LC
C CDS SP
UNITY LAB SERVICES

Find out more at **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**

Or, for more information on our Instrumentation and key applications, please visit **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**

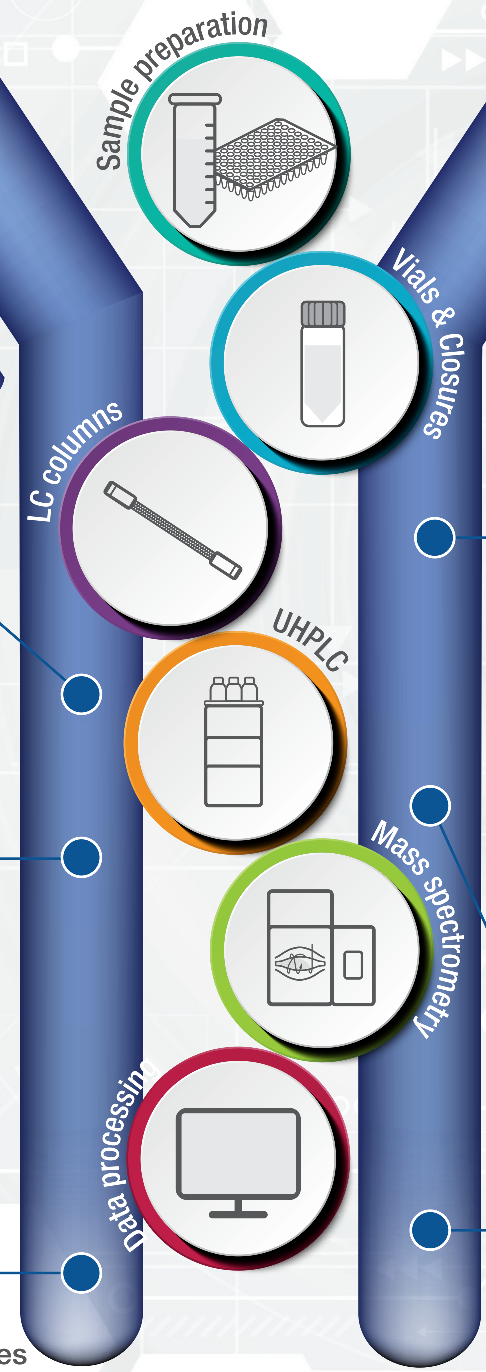
A collaboration built for Biopharma

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**

thermo scientific

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

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

Find out more about consumables for your Biopharma workflow here

ThermoFisher SCIENTIFIC

thermoscientific

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

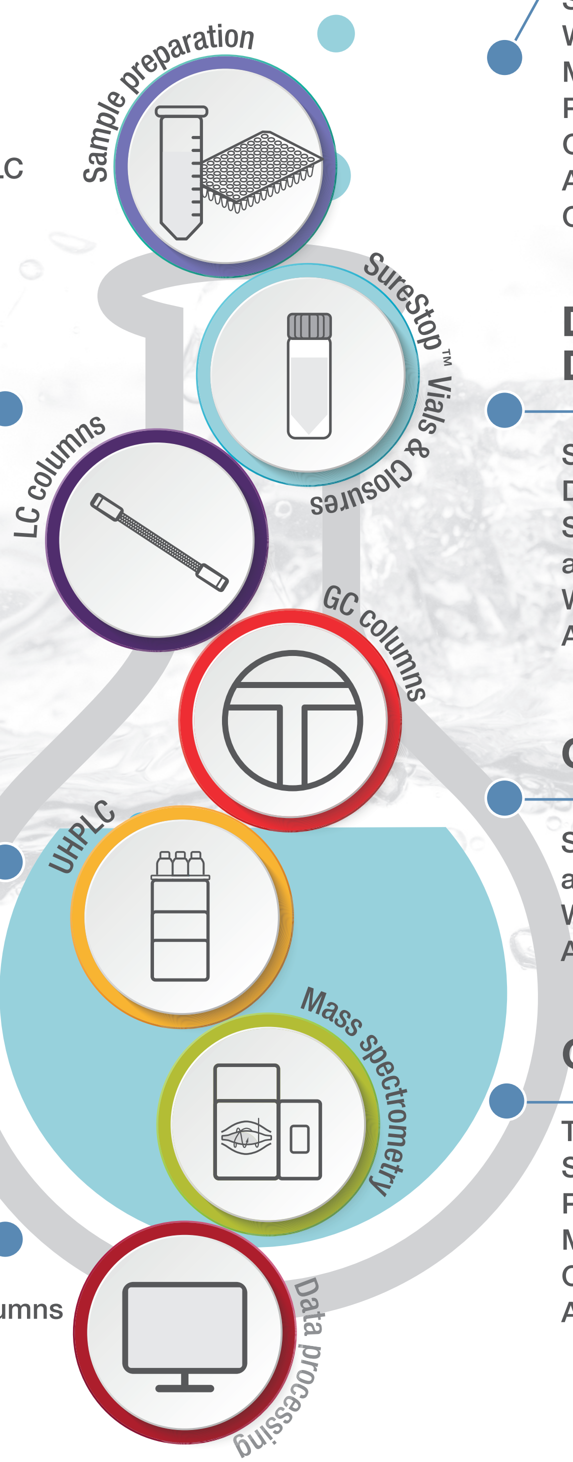
SOLA™/SOLAμ™ SPE Plates and Cartridges
WebSeal Well Plates and Mats
HyperSep SPE Cartridges and Plates
Accucore C18 LC Columns
Accucore Biphenyl LC Columns
Hypersil GOLD™ VANQUISH™ C18 UHPLC Columns

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

Find out more about consumables for your Pharmaceutical workflow here

ThermoFisher SCIENTIFIC

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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

Find out more about consumables for your Food & Beverage workflow here

ThermoFisher SCIENTIFIC

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Thermo Scientific™ Environmental workflow enablers

Persistent Organic Pollutants (POP)

HyperSep™ Cartridges
TraceGOLD™ GC Columns
LinerGOLD™ GC Liners
BTO Septa
GC Consumables and Accessories

Semi-Volatile Organic Compounds (SVOC)

HyperSep Cartridges
SPME Arrow
TraceGOLD TG-XLBMS, TG-5SilMS, TG-PAH, TG-XLBMS, TG-OCP, TG-OPP TR-Pesticide, and TR-8270 GC Columns
LinerGOLD Liners
BTO Septa
GC Consumables and Accessories

Volatile Organic Compounds (VOC)

SPME Arrow
TraceGOLD TG-VMS, TG-VRX, TG-624, TG-624SilMS, TG-VVOC B, TRACE™ TR-V1, TR-524, and TracePLOT GC Columns
LinerGOLD Liners
BTO Septa
GC Consumables and Accessories

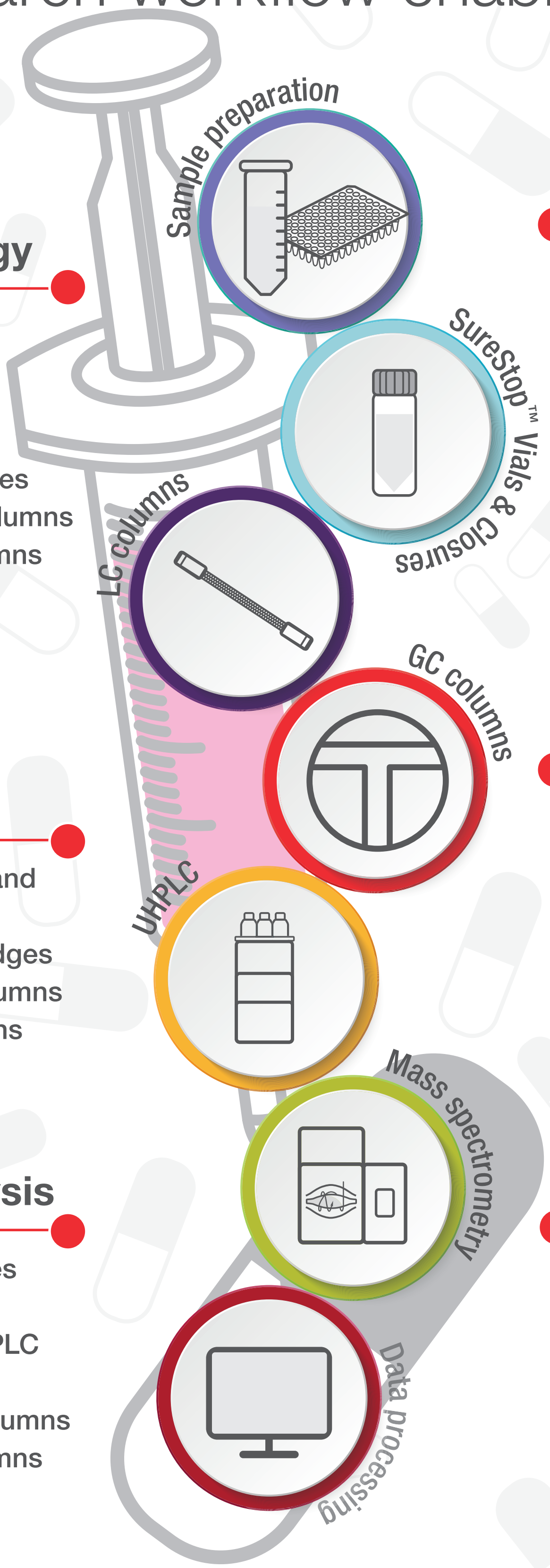
Microcystins

HyperSep Cartridges
Hypersil GOLD™ aQ LC Columns
Accucore™ C18 LC Columns

Find out more about consumables for your Environmental workflow here

ThermoFisher SCIENTIFIC

Thermo Scientific™ Clinical research workflow enablers



Forensic toxicology

SOLA™/SOLAµ™ 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/SOLAµ 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
SOLAµ SPE Plates and Cartridges
EASY-Spray™ LC Columns
PepMap™ RSLC Columns
WebSeal™ Well Plates and Mats

Drug monitoring research

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

Find out more about consumables for your Clinical workflow here

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Section one
Sample preparation products

Section two
Sample handling products

Section three
Bio LC columns and accessories

Section four
LC columns and accessories

Section five
GC columns and accessories

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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.

Page 1-003

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.

Page 1-008

Section contents

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.

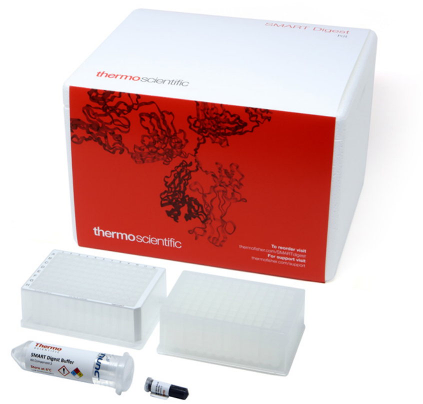
Page 1-031

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

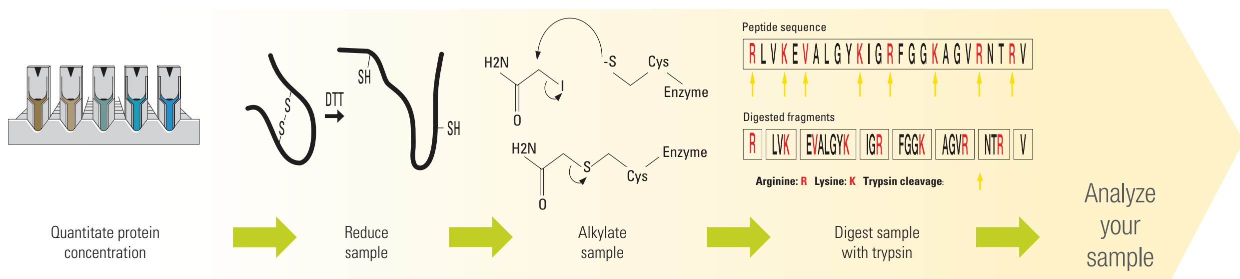
The SMART Digest kits improve workflows by quickly and efficiently digesting proteins for characterization and quantitation applications, achieved due to the heat-stable immobilized trypsin design.

Simplicity of use with SMART Digest kits

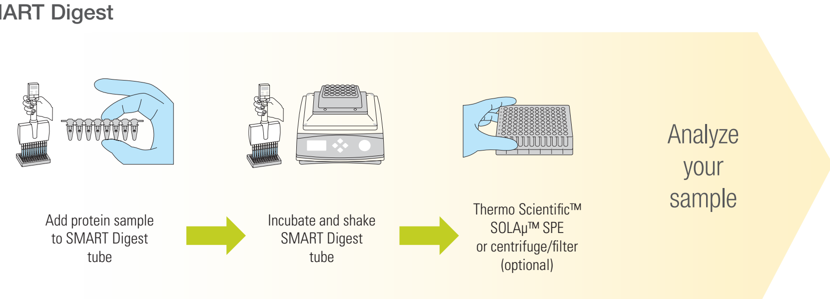
Current sample preparation protocols for the digestion of proteins are multifaceted and laborious. Without a single source solution, errors are far more likely to occur. Therefore, the overall protocol is subject to irreproducibility and significant sample processing time.

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

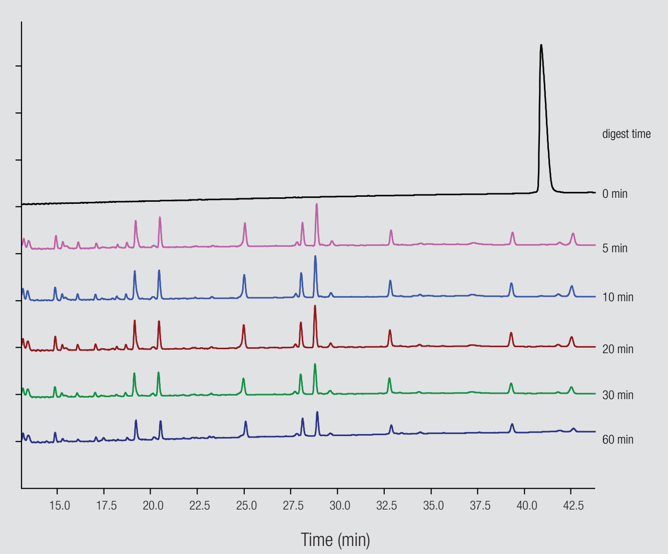


Fast digestion with SMART Digest kits

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.

Carbonic Anhydrase, 29 KDa

Time course experiment for digestion optimization

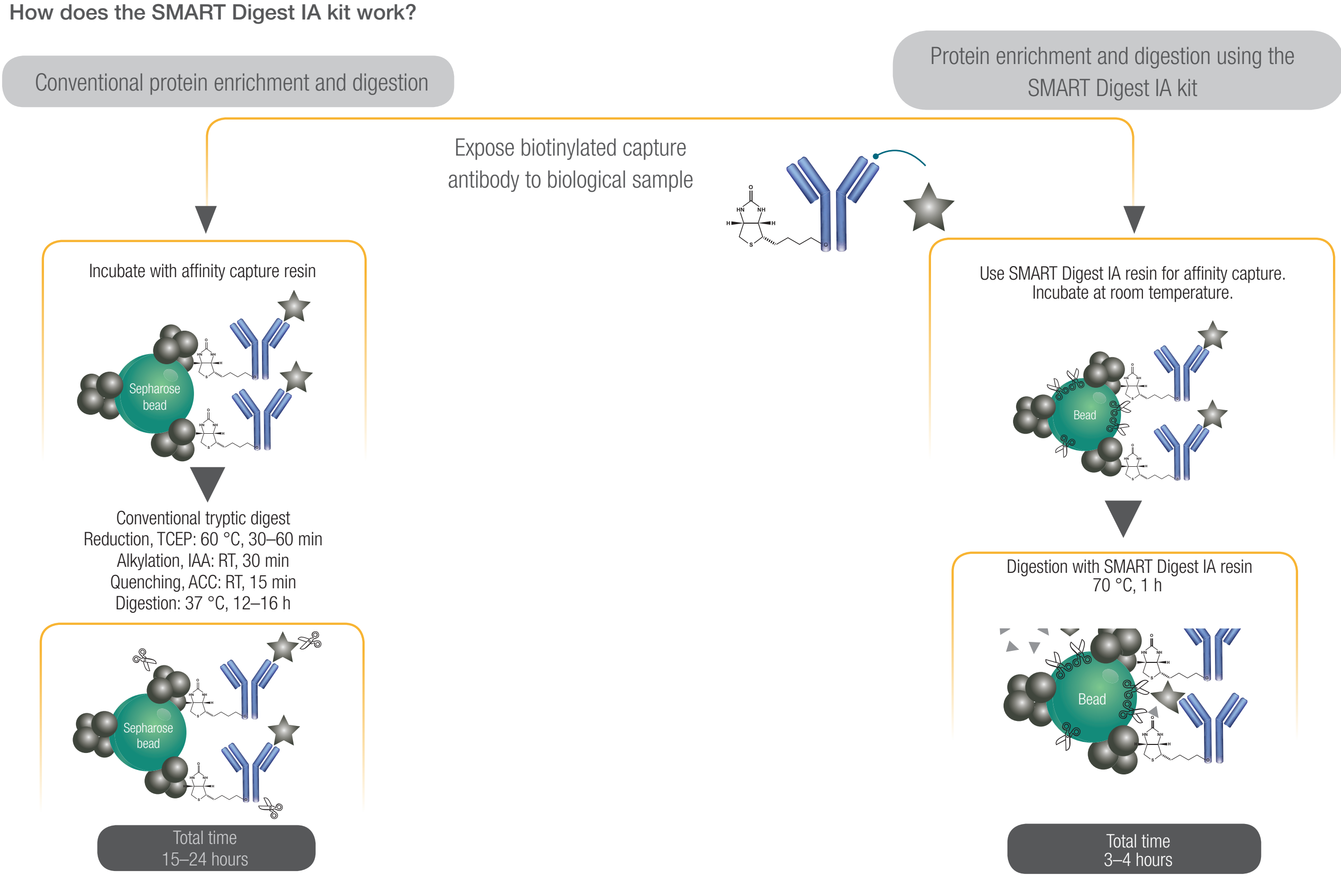


Typical Digestion Times

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

200 µL protein solution (100 µg/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 SOLAµ SPE and collection plate
60110-103	SMART Digest IA Kit, Av magnetic with SOLAµ 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 SOLAµ SPE and collection plate
60111-103	SMART Digest IA Kit, Protein A magnetic with SOLAµ 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 SOLAµ SPE and collection plate
60112-103	SMART Digest IA Kit, Protein G magnetic with SOLAµ 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

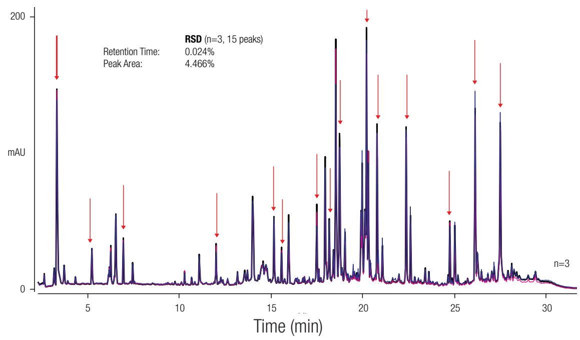
SMART Digest and SMART Digest IA kits provide a significant change in protein sample preparation, by delivering workflows that are:

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

Reproducibility of digestion with the SMART Digest kits

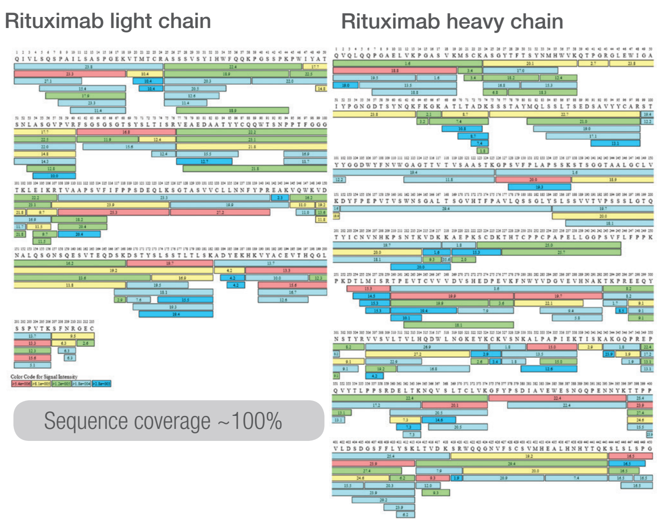
The SMART Digest kit provides significant improvements in reproducibility over existing protocols, which results in fewer sample failures, higher throughput and the ability to more easily interrogate data.

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%.



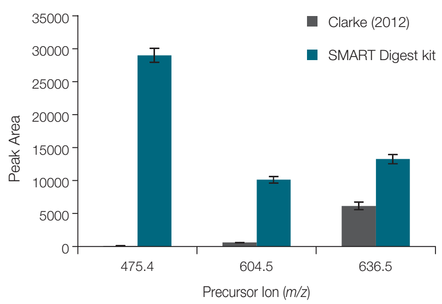
Characterization

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.

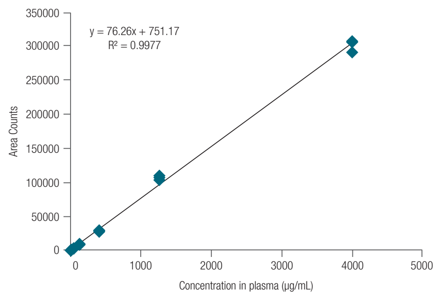


Quantitation

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.



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
SMART Digest Kits	
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
SMART Digest Kits	
60109-105-MB	SMART Digest Kit Chymotrypsin, magnetic bulk resin option with filter/collection plate
60109-106	SMART Digest Kit Chymotrypsin, SOLAµ/collection plate
60109-106-B	SMART Digest Kit Chymotrypsin, bulk resin option with SOLAµ/collection plate
60109-106-MB	SMART Digest Kit Chymotrypsin, magnetic bulk resin option with SOLAµ/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, SOLAµ/collection plate
60109-109-B	SMART Digest Kit Proteinase K, bulk resin option with SOLAµ/collection plate
60109-109-MB	SMART Digest Kit Proteinase K, magnetic bulk resin option with SOLAµ/collection plate

Part Number	Description
SMART Digest IA Kits	
60110-101	SMART Digest IA Kit, Streptavidin (Av) non-magnetic
60110-102	SMART Digest IA Kit, Av non-magnetic with SOLAµ SPE and collection plate
60110-103	SMART Digest IA Kit, Av magnetic with SOLAµ 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 SOLAµ SPE and collection plate
60111-103	SMART Digest IA Kit, Protein A magnetic with SOLAµ 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 SOLAµ SPE and collection plate
60112-103	SMART Digest IA Kit, Protein G magnetic with SOLAµ 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	SOLAµ 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**

SOLA SPE products

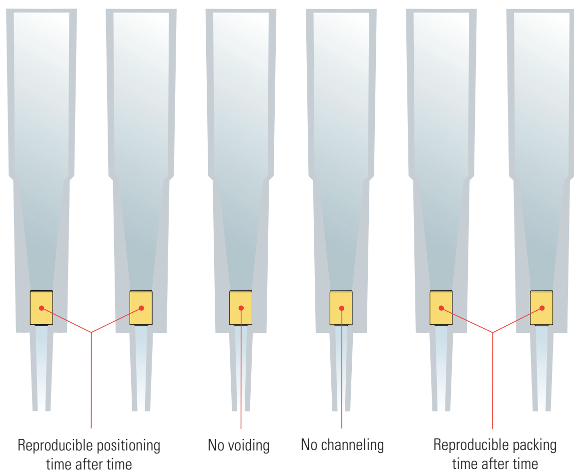
Consistent excellence for bioanalysis

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.

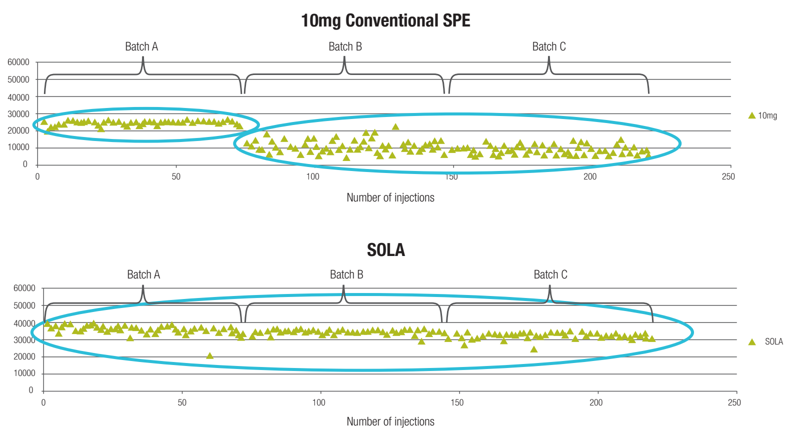


SOLAμ SPE fritless design – limiting issues associated with conventional SPE formats

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

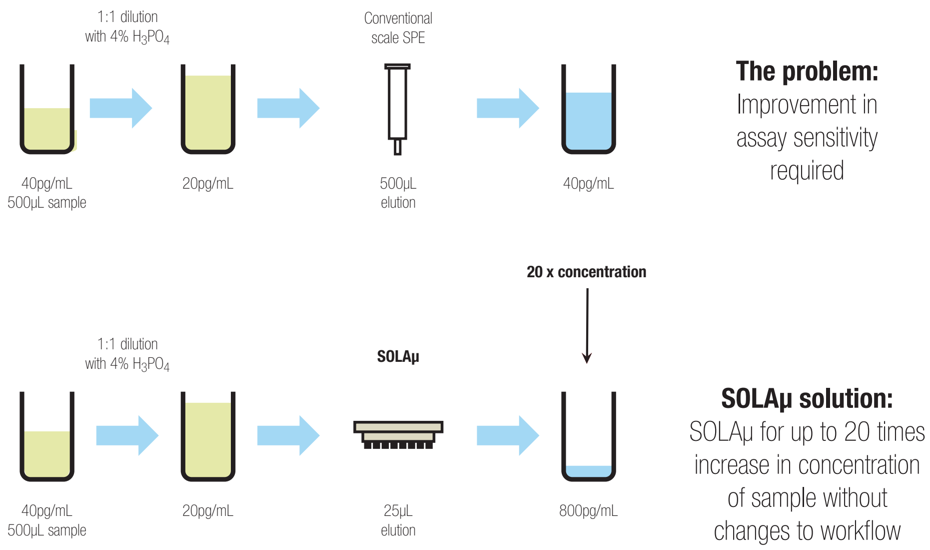


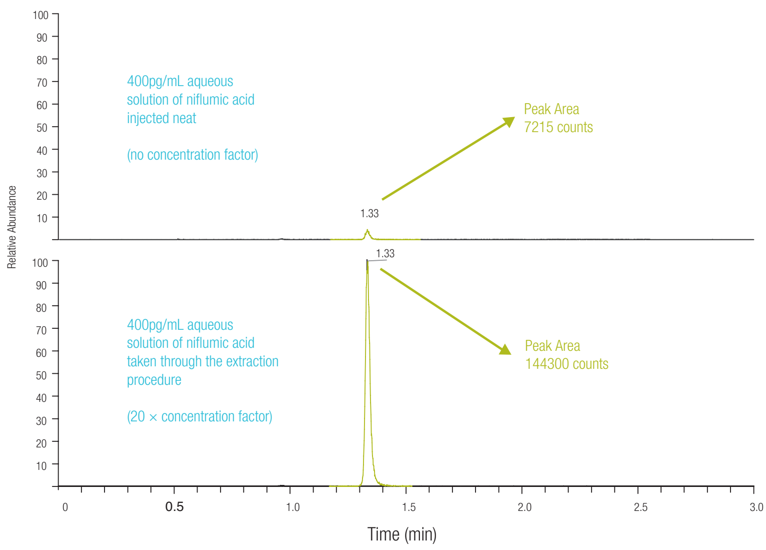
Batch to batch reproducibility of SOLA compared to a conventional SPE product

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 500µL of human plasma was loaded onto the SOLAµ plate for the analysis of niflumic acid. The compound was eluted in 25µL, providing a 20 times increase in concentration whilst maintaining excellent precision.



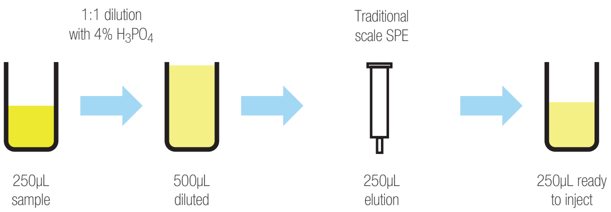


	Precision Data for Niflumic Acid Peak Area Ratio (%RSD) n = 18	Recovery of Niflumic Acid (%)	Matrix Effects (%)
QC Low (0.4ng/mL)	1.31	89.9	8.63
QC High (30ng/mL)	1.06	94.0	3.21

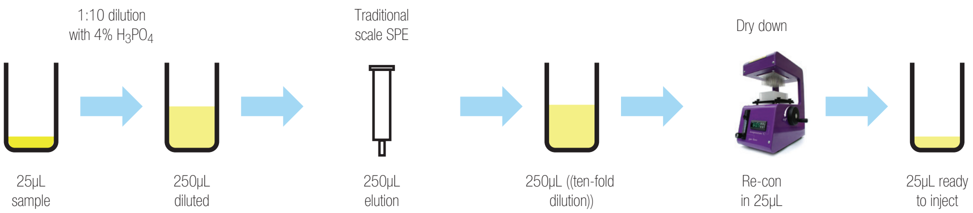
Sample limited assays

SOLAµ 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.

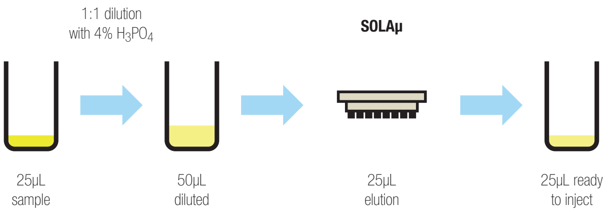
The following example shows that by loading 25µL of niflumic acid sample onto the SOLAµ plate and eluting in a total volume of 25µL, a ten-fold decrease in sample volume was achieved when compared to a traditional scale higher bed weight product. Equivalent method performance and high levels of reproducibility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



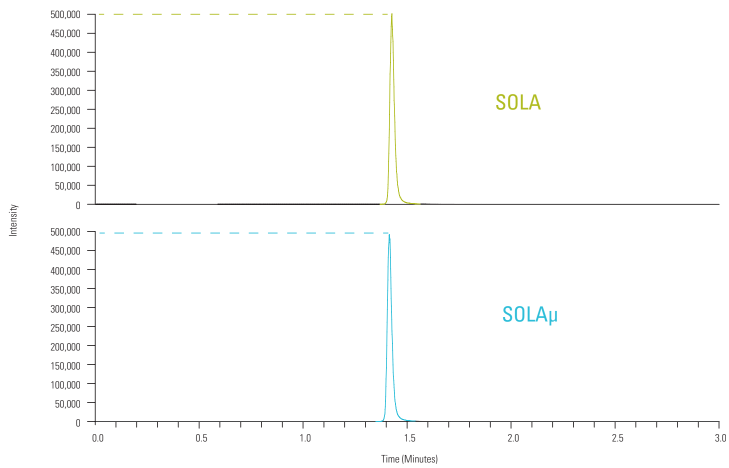
Problem:
Large sample volume
requires reduction



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 SOLAµ using 25µL of sample compared with 250µL of sample with a 10x11 SOLA SPE device

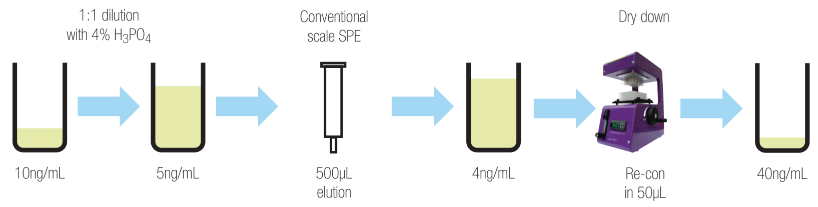
Precision Data for Niflumic Acid		
	Analyte Peak Area (%RSD)	Peak Area Ratio (%RSD)
Low QC	7.32	0.356
High QC	5.33	0.195

Increased workflow efficiency

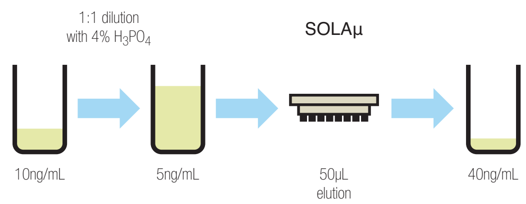
With traditional SPE the eluted sample is typically dried down to increase the concentration of the sample and thus improve the sensitivity. This causes an issue for certain compound types which can be lost during this step, resulting in reduced sensitivity.

SOLAμ 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.

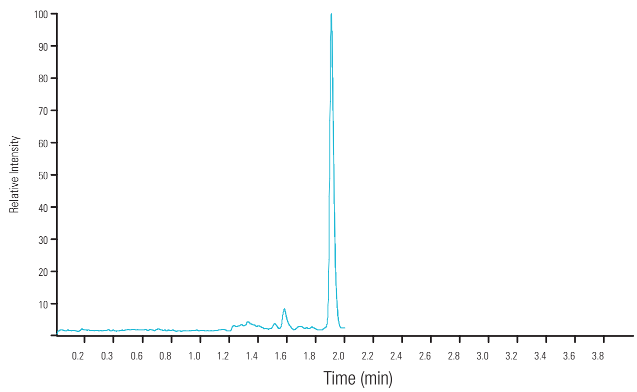
In the case of extraction of ibuprofen a four-fold pre-concentration was achieved without the need for dry down by loading 200μL of sample onto the SOLAμ plate and eluting in a total of 50μL. The results demonstrate that even with this low elution volume, excellent reproducibility was achieved.



The problem:
Workflow requires dry down to achieve sensitivity



SOLAμ 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 SOLAµ meet bioanalytical needs by providing:

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

SOLAµ 96 Well Plates

Description	Bed Weight (mg)	Column Volume (mL)	Cat. No.	Quantity
SOLAµ HRP	2	1	60209-001	1 Each
SOLAµ SCX	2	1	60209-002	1 Each
SOLAµ SAX	2	1	60209-003	1 Each
SOLAµ WCX	2	1	60209-004	1 Each
SOLAµ 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**

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**

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. (5-7µL Bed Volume)	Cat. No. (40µL 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. (1-10µL Capacity)	Cat. No. (10-200µL 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 2µm wide slit at the bottom that permits the liquid to pass through but retains the chromatographic material (20 to 30µm)
- 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. (1-10µL Capacity)	Cat. No. (10-200µL 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**

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**

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

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

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

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

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

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

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**

HyperSep universal vacuum manifold

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

Universal Manifold
Base/Gauge

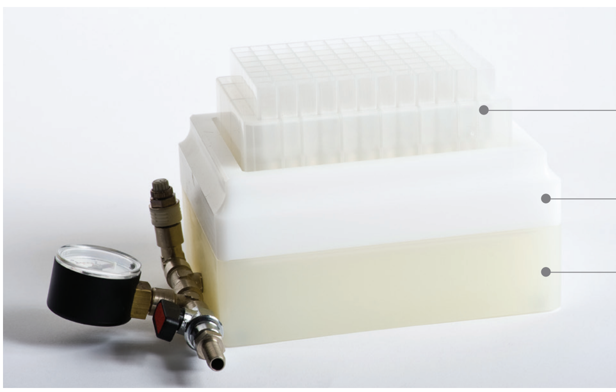
HyperSep universal vacuum manifold

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

Manifold Lid

Manifold Base

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

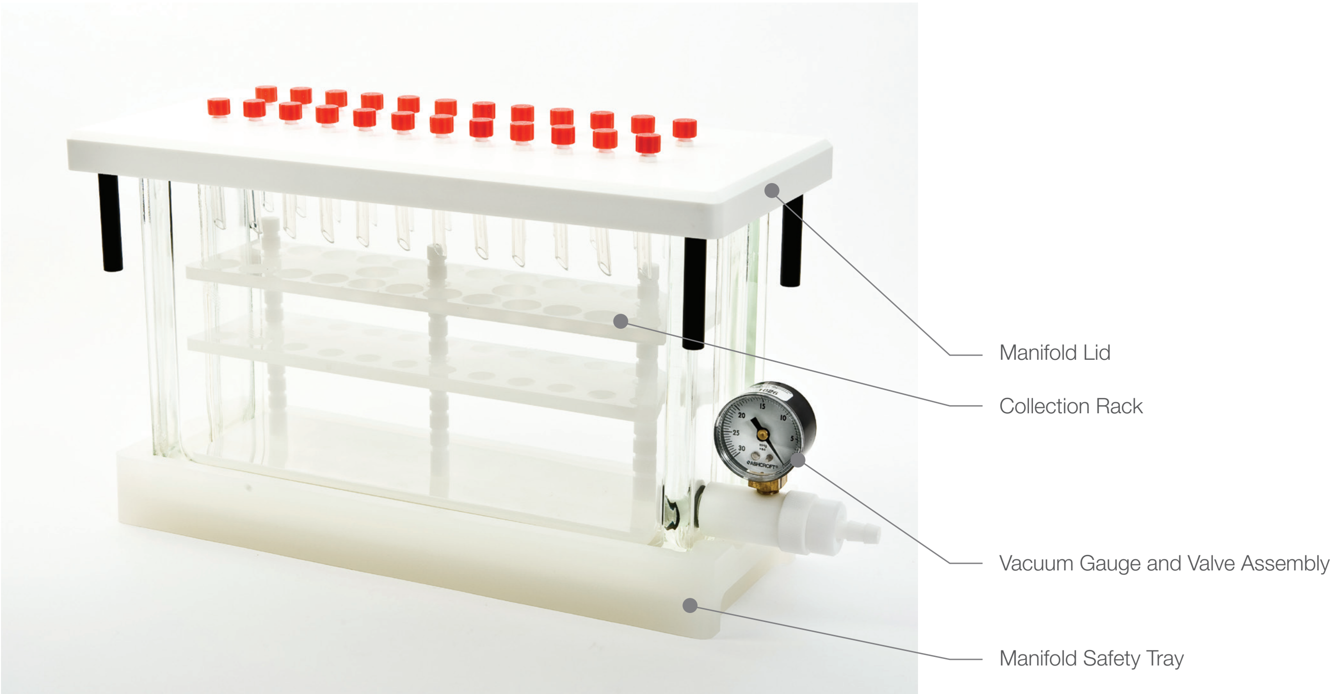
HyperSep glass block manifolds

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)

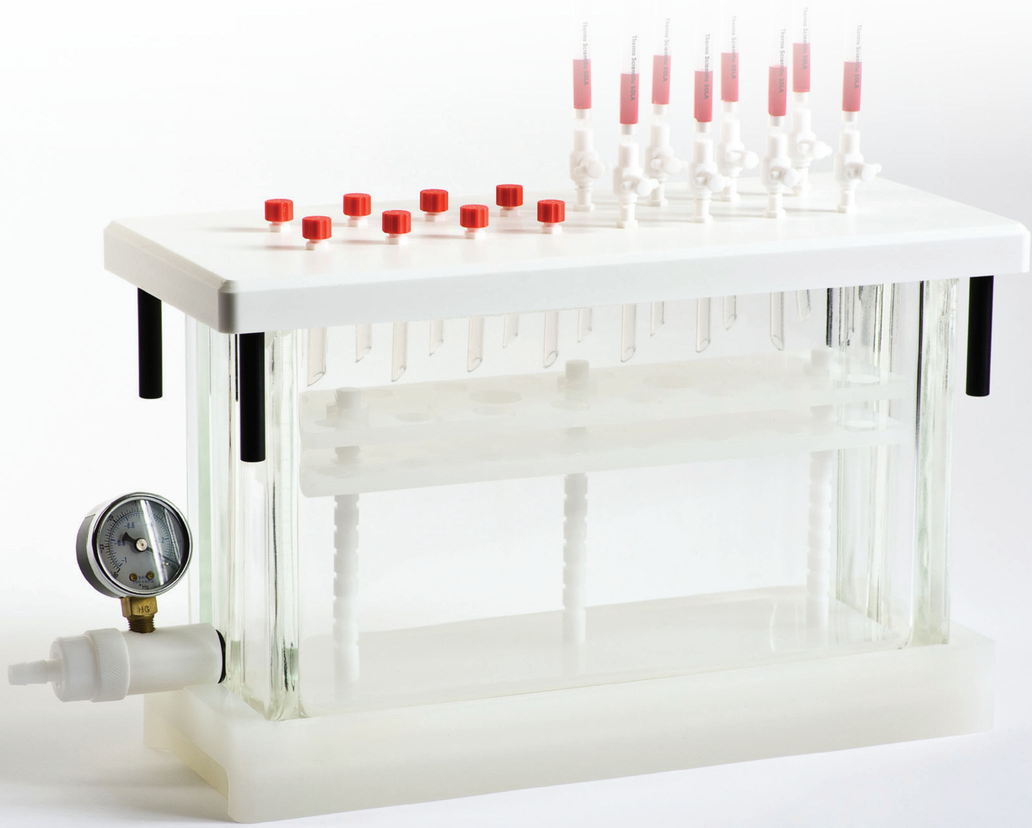
Valve Assembly
(Cat. No. 60104-261)

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**

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

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 Cucumber Melon	Magnesium sulfate, PSA
Fatty Matrices	Milk Cereals Fish	Magnesium sulfate, PSA, C18
Pigmented Matrices	Lettuce Carrot Wine	Magnesium sulfate, PSA, C18, GCB
High Pigmented Matrices	Spinach 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 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 Ensure sample is hydrated to 80% or higher 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
Graphatized 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/syringefilters**

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

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

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

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.

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

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

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:
- 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

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

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

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

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

Applications:
- Dissolution testing
- General filtration

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

Applications:
- Filtration of biological samples
- Filtration of aggressive organic solutions

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:
- Tissue culture media filtration, sensitive biological samples

Titan2 syringe filters

HPLC perforce 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
	0.45	No	F2500-3	100 Pack
		Yes	F2502-3	100 Pack
	1.0	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
Luer-Slip Syringes		
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
Luer Lock Syringes		
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**

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**

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.

Page 2-004

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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Section contents

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

Page 2-093

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

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

MS certified vials

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

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/inertvals

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**

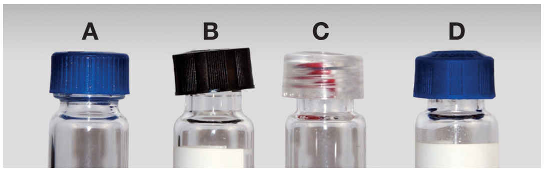
AVCS closures and SureStop vials

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

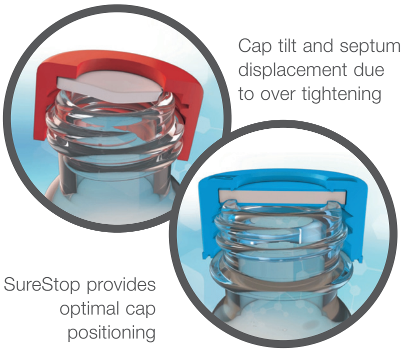
Top reasons why chemists should consider Advanced Vial Closure System (AVCS) Closures and SureStop Vials

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.



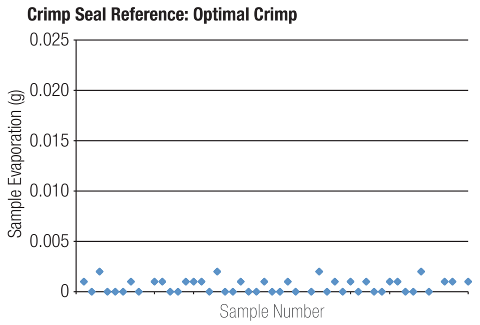
Examples of vial and closure misalignment/deformation. (A) SureStop vial self-aligning cap; (B) generic vial, cap tilt; (C) generic vial, septum dislodged; and (D) generic vial, deformed top.

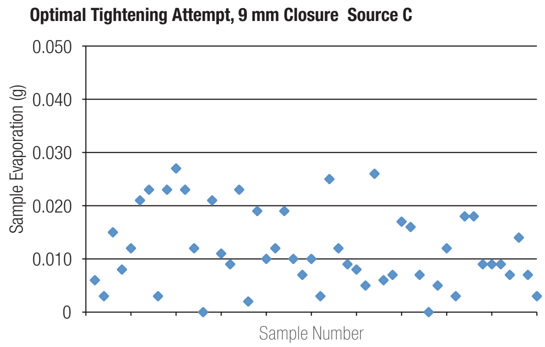


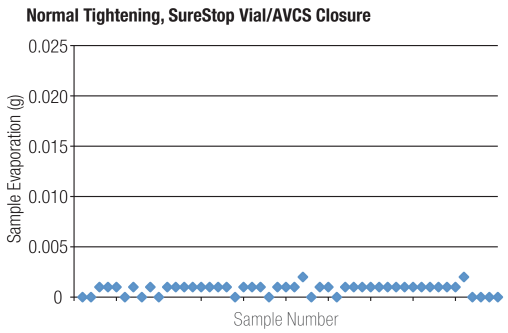
A study of the effects of the typical operator response to evaporative sample loss and septum dislodging during the use of 9 mm screw thread and 11 mm crimp vials and closures were conducted. Sample losses were measured for both overtightened vials and for vials perceived to be optimally tightened and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

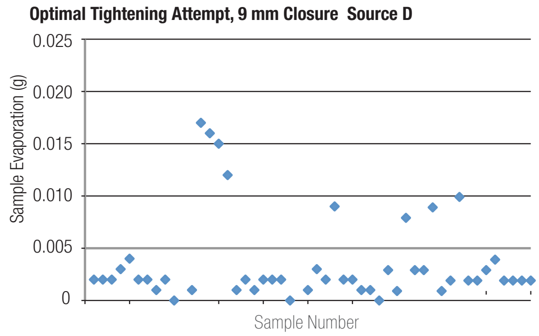
Test conditions

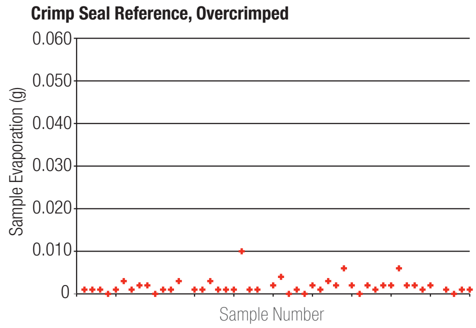
- 1.3 mL of pure methanol was added to each vial (always 50 in total)
- All vials were incubated at a temperature of 40 °C for 72 hours
- After 72 hours the final weight was taken and subtracted from the initial 40 °C temperature weight to yield the sample loss in grams

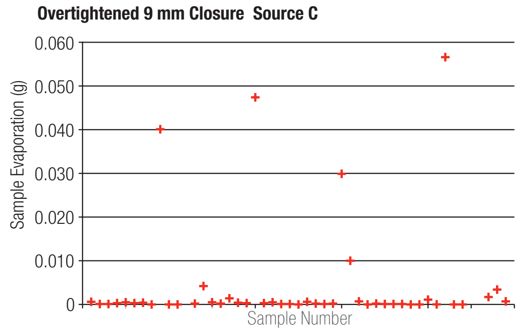


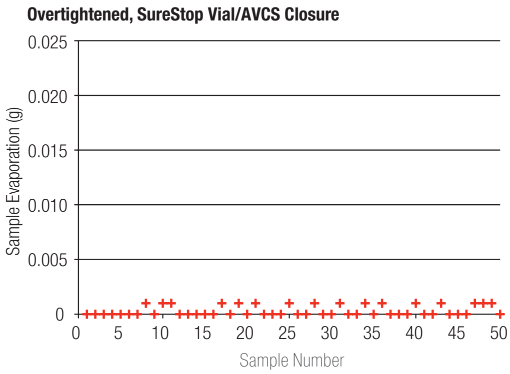


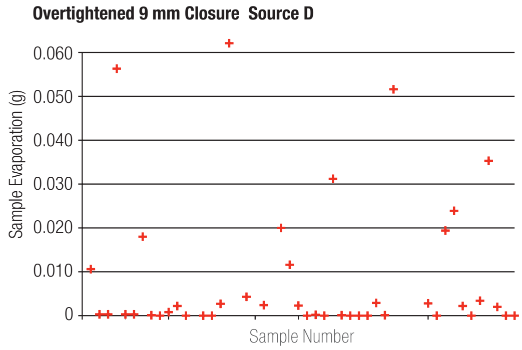












Are you currently using crimp caps?

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 variably 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**

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**

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**

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**

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**

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**

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

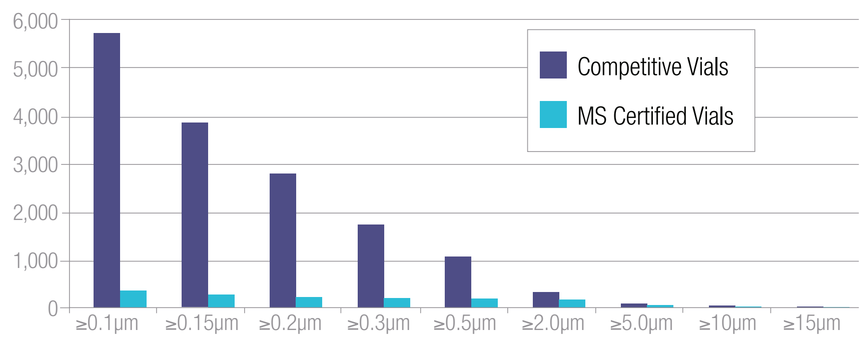
The presence of inorganic sub-micron particles in all glass vials as a byproduct of the manufacturing process is a little known phenomenon that has not been extensively studied. Gas chromatographers depend on injection port liners to act as traps for particulates while the HPLC chromatographer takes 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 0.5µm. 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	≥0.1µm	≥0.15µm	≥0.2µm	≥0.2µm	≥0.5µm	≥2.0µm	≥5.0µm	≥10µm	≥15µm
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**

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, silanized	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**

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**

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

C4008-1A

C4008-2A

C4008-4A


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

C4008-100

C4008-102


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**

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
8mm Open Top Cap, 5.5mm hole	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

Convenience Kit

Assembled Kit

Assembled Kit, in Polybag

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/ 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/ 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/ C4013-10	C4013-010A	100

For more information, visit **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	100
	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**

National 9mm screw thread vials convenience kits

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

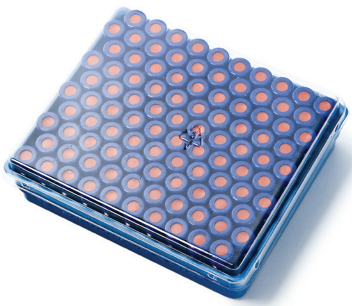
Unassembled kits

- 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

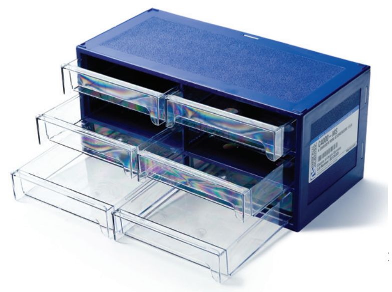
National 9mm wide opening screw thread vials convenience kits

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



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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**

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**

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

Convenience Kit

Assembled Kit

Assembled Kit, in Polybag

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

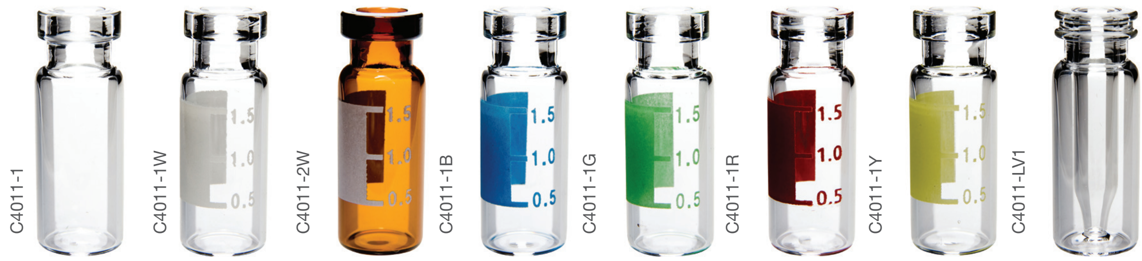
National 11mm crimp top vials

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
	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**

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

C4012-100

C4012-102

C4012-100SS


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

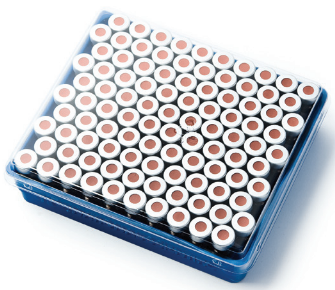
Unassembled kits

- 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

Assembled kits

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

Convenience Kit

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/ 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

C4011-688W

C4000-MS

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

C4011-25

C4012-25

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**

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**

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

Convenience Kit

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**

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

C4015-4

C4015-638

C4015-643


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

C4015-1AP


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

C4013-100


C4013-102


C4013-100SS


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**

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**

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

Assembled kits

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

C4015-88

C4015-21

C4015-017

Items not shown to scale

National 4ml screw thread 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	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

Images shown are 90% to scale

National headspace vials

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
	Clear	23x75	Square Rim	Flat Bottom	21.5	20	C4020-25	1000
	Clear	30x60	Beveled Edge	Flat Bottom	27	25	C4020-27	1000
18mm Screw Top Headspace Vial	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

C4020-100

C4020-101

C4020-102

C4020-100SS

Items not shown to scale

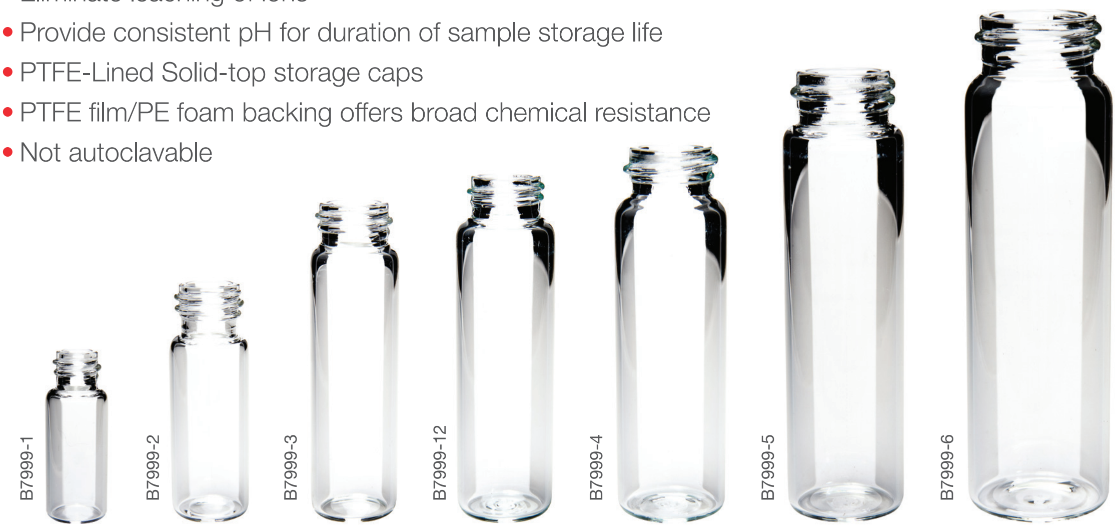
National 20mm headspace crimping and decrimping tools

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/ Polyethylene 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/ Polyethylene 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/ B7995-13	B7990-2	100
	Clear	8	Black	Polypropylene		B7999-3	B7807-15/ B7995-15	B7990-3	200
	Clear	12	Black	Polypropylene		B7999-12	B7807-15/ B7995-15	B7990-12	200
	Clear	22	Black	Polypropylene		B7999-5	B7807-20/ B7995-20	B7990-5	200
	Clear	40	White	Polypropylene		B7999-6	B7807-24/ B7995-24	B7990-6	100
	Amber	12	Black	Polypropylene		B7999-12A	B7807-15/ B7995-15	B7990-12A	200
	Amber	40	White	Polypropylene		B7999-6A	B7807-24/ B7995-24	B7990-6A	100

For more information, visit **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

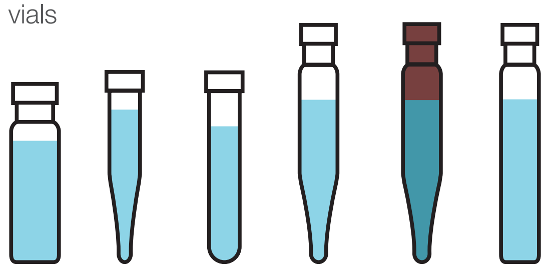
*60% to scale

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

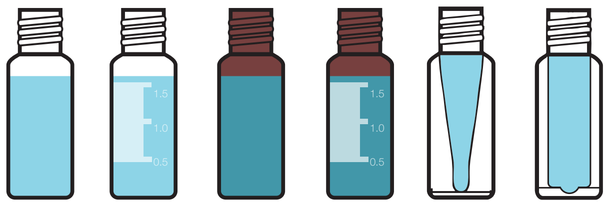
*Drawing is valid for: C4000-1B, C4000-1G, C4000-1R, C4000-1Y
Images shown are 80% to scale

8mm crimp top vials



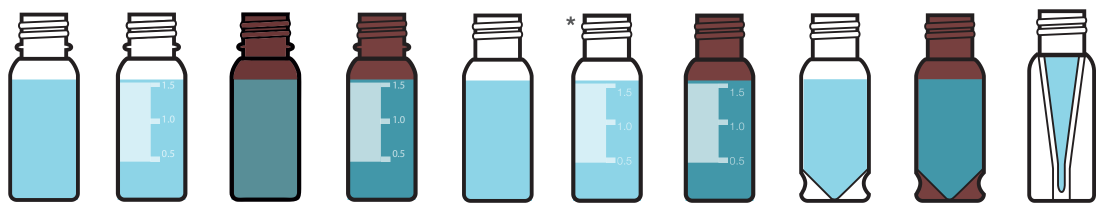
Part No.	C4008-1	C4008-632C	C4008-632R	C4008-739	C4008-740	C4008-741
Dimensions	8x30	6x32	6x32	7x40	7x40	7x40
Common Description	0.8mL	0.2mL	0.3mL	0.7mL	0.7mL	0.8mL
Approx. Total Capacity	1mL	250µL	325µL	575µL	575µL	775µL
Rec. Usable Volume	0.8mL	200µL	250µL	450µL	450µL	650µL
Residual Volume	<80µL	<3µL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

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



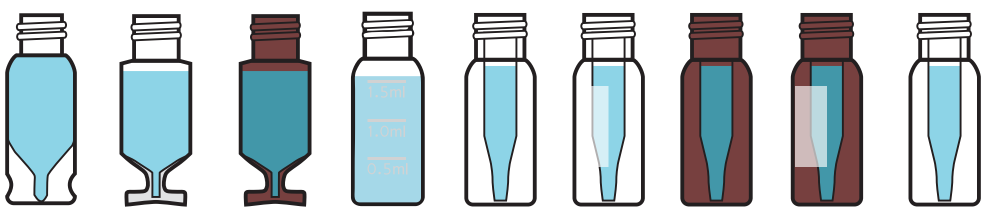
Part No.	C4013-1	C4013-1W	C4013-2	C4013-2W	C4013-11	C4013-13
Common Description	2mL	2mL	2mL	2mL	250µL	600µL
Approx. Total Capacity	1.9mL	1.9mL	1.9mL	1.9mL	475µL	850µL
Rec. Usable Volume	1.5mL	1.5mL	1.5mL	1.5mL	250µL	675µL
Residual Volume	<170µL	<170µL	<170µL	<170µL	<3µL	<8µL
Composition	Glass	Glass	Amber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

Target DP 9mm screw vials 12x32mm



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

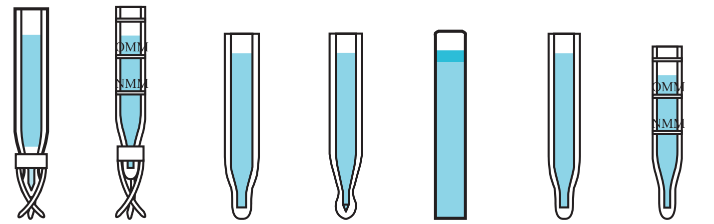
Target DP 9mm screw vials 12x32mm



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

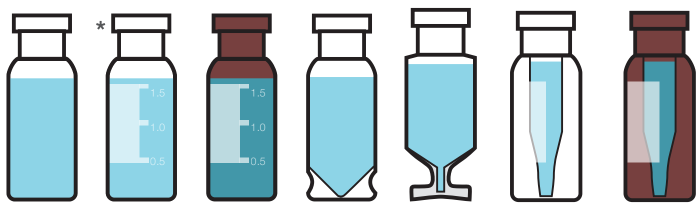


Part No.	C4010-630	C4010-630P	C4010-627L	C4010-629L	C4011-631	C4010-629	C4010-629P
Dimensions	6x29mm	6x30mm	6x31mm	6x31mm	6x31mm	6x29mm	6x30mm
Common Description	300µL	300µL	350µL	350µL	400µL	300µL	300µL
Approx. Total Capacity	375µL	325µL	400µL	400µL	500µL	375µL	325µL
Rec. Usable Volume	300µL	250µL	350µL	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

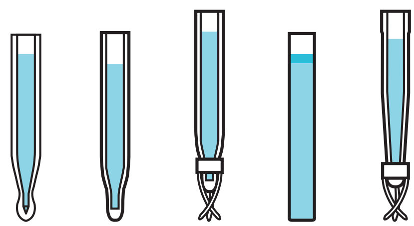


Part No.	C4011-1	C4011-1W	C4011-2W	C4011-9	C4011-V1	C4011-LV1W	C4011-LV2W
Common Description	2mL	2mL	2mL	1.5mL	1.5mL	250µL	250µL
Approx. Total Capacity	2mL	2mL	2mL	1.7mL	1.5mL	500µL	500µL
Rec. Usable Volume	1.5mL	1.5mL	1.5mL	1.3mL	1.1mL	350µL	350µL
Residual Volume	<170µL	<170µL	<170µL	<4µL	<4µL	<2µL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

11mm standard-opening crimp vials 12x32mm

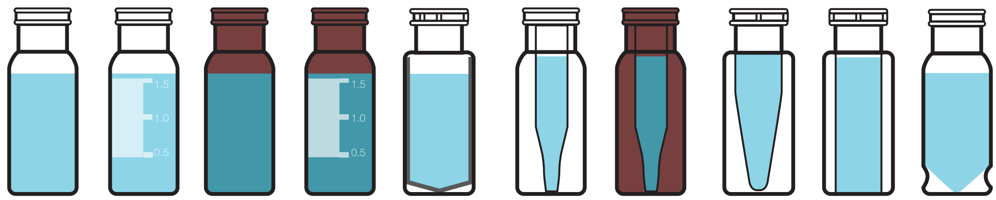
Part No.	C4012-1	C4012-1W	C4012-2	C4012-2W
Common Description	2mL	2mL	2mL	2mL
Approx. Total Capacity	2mL	2mL	2mL	2mL
Rec. Usable Volume	1.5mL	1.5mL	1.5mL	1.5mL
Residual Volume	<170µL	<170µL	<170µL	<170µL
Composition	Glass	Glass	Amber	Amber

Standard microvolume inserts



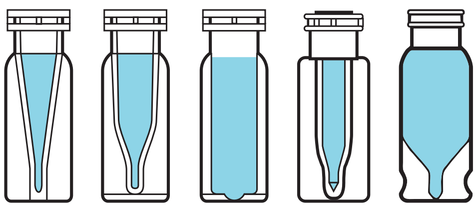
Part No.	C4012-529	C4012-529L	C4012-530	C4012-465	C4012-530P
Dimensions	5x29mm	5x31mm	5x29mm	5x31mm	5x30mm
Common Description	150µL	150µL	150µL	200µL	125µL
Approx. Total Capacity	200µL	200µL	200µL	250µL	175µL
Rec. Usable Volume	175µL	170µL	170µL	200µL	150µL
Residual Volume	<3µL	<2µL	<1µL	<12µL	<2µL
Composition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

11mm Snap-It-vials – 12x32mm



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

11mm Snap-It-vials – 12x32mm



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

Headspace vials

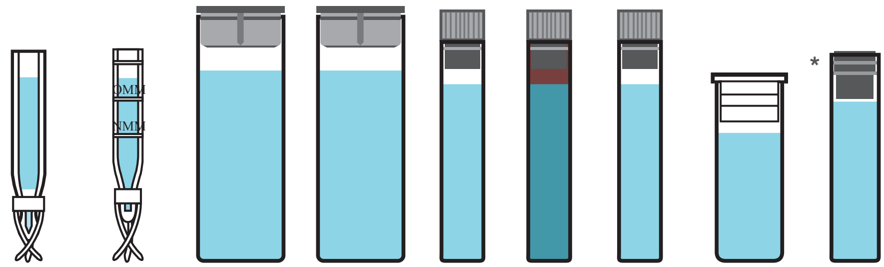
Part No.	C4020-6	C4020-60	C4020-27
Common Description	6mL	6mL	27mL
Approx. Total Capacity	9mL	9mL	27mL
Composition	Glass	Glass	Glass

Headspace vials

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

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

Shell vials and inserts

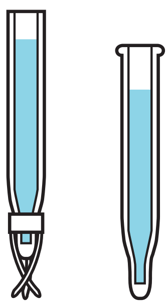


Part No.	C4015-96A	C4015-96PA	C4015-48	C4015-47P	C4015-96	C4015-99	C4015-95P	C4011-80	C4008-50*
Dimensions	5x34mm	5x29mm	–	–	–	–	–	–	8x35mm
Common Description	250µL	275µL	4mL	4mL	1mL	1mL	1mL	2mL	1mL
Approx. Total Capacity	375µL	375µL	5.5mL	5.5mL	1.25mL	1.25mL	1.25mL	2.4mL	1mL
Rec. Usable Volume	210µL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

15x45mm screw thread vials

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

Microvolume inserts for 15x45mm 4ml vials



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

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	Confidence in results with highest quality vial	A vial that reduces the cost of analysis
• Highest recovery rates; even with critical compounds (e.g. trisubstituted N-atoms, tertiary amines) in trace concentrations. • Highly reproducible; consistent peak heights and symmetry	• 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.	• 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**

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_2	B_2O_3	Al_2O_3	CaO	MgO	Na_2O	K_2O	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

8-AC-ST15


8-AC-ST101


8-ACT


8-PEC1

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

CR-8C


DCB-8C


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 300µL 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 (µL)	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	250µL	<3	03-PPSV	500
200µL Insert	Clear Glass	No	5x31	Flat Bottom	250µL	200µL	<12	02-NV	1000
	Clear Glass	No	5x30	Conical	200µL	160µL	<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)+ 8-ST101	2-SV101-CP	100
IS Kit, Standard Opening Screw Vial for Thermo Scientific LC Autosamplers	Clear	Yes	Black	White Silicone/ Red PTFE	2-SV	8-SC-ST15	TSL	100

For more information, visit **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
0.6Ml Pe Screw Top Vial W Cylindrical Insert	Polyethylene	----	12x32	Insert Vial	600µL			06-PESVW	500
0.6Ml Pe Screw Top Vial W Cylindrical Insert	Polypropylene	----	12x32	Insert Vial	600µL			06-PPSVW	500

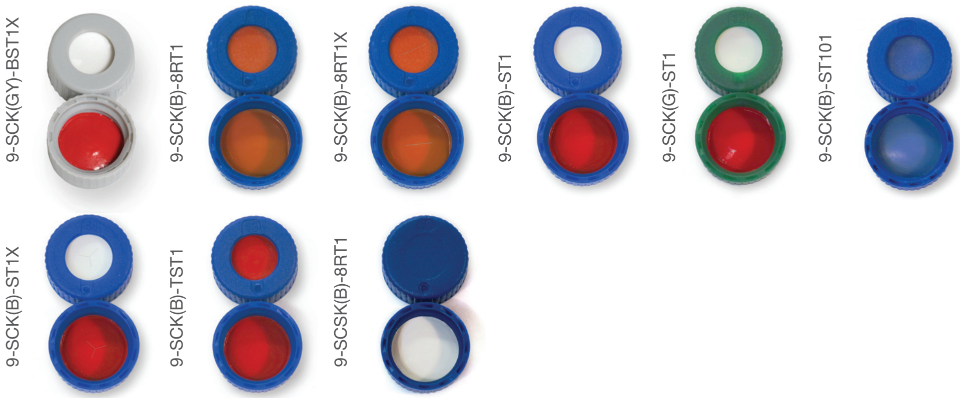
Chromacol 9mm screw thread closures

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
	Blue	Polypropylene	Red PTFE/White Silicone/ Red PTFE	57	1.0	9-SCK(B)-TST1	500
9mm Solid Top Short Screw AVCS Cap	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**

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**

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**

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**

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

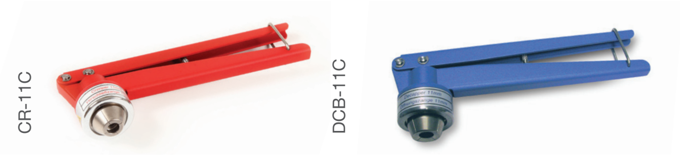
Chromacol 11mm crimp top convenience and instrument select (IS) kits

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/ 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/ Clear PTFE, Type 7	2-CV	11-AC7	HPG	100

For more information, visit **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



Items not shown to scale

Chromacol 11mm Crimpers and Decrimpers

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

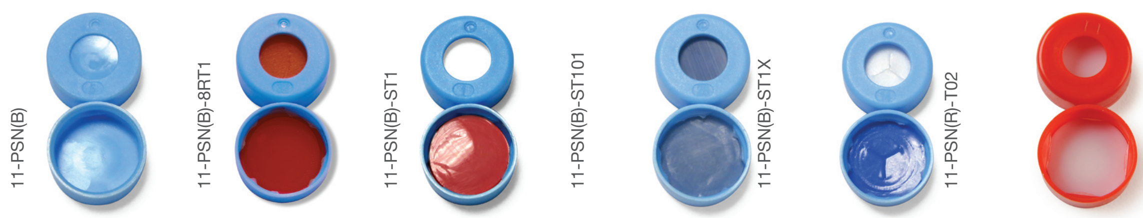
- Superior quality 1st hydrolytic class glass (Type 1) in clear and amber
- Available with a graduated, write-on patch for convenient sample identification
- Wide neck opening design, allows easy filling; requires Micro-Inserts with diameter of 6mm
- Microsampling and High Recovery Vials allow maximum 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
600Ul Crimp Top Vial Polyethylene Insert	Polypropylene		12x32	Insert Vial	600µL			06-PECV 06-PERV	500
600Ul 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

12-SC


12-SCS


12-6RT1


12-ST2


12-ST101


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

13-SC-ST15


12-SC-8RT1


12-SC-ST2


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**

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

20-ACB

20-MCB

20-MCBC

18-MSC

20-B3P

20-CB3

20-CBT3


20-LLX

20-ST3

20-ST3HT

20-ST101


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/ Tinplate	–	–	–	20-MCBC(R)	500
18mm Magnetic Screw Cap, 8mm hole	Silver	Steel	–	–	–	18-MSC	125

18-ST101


20-MCBC-ST3


20-MCBC(R)-ST3


20-MCB-ST3


20-AC-CBT3


20-AC-ST3


18-MSC-CBT3


18-MSC-ST201


18-MSC-ST3HT


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/ Gray PTFE	52	3.0	20-CBT3	1000
	–	–	20mm Molded Black Bromobutyl/Gray PTFE, Bellows Type	52	3.0	20-CBT3B	1000
	–	–	20mm Silicone/ 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, 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/ Tinplate	20mm Blue Silicone/Natural PTFE	45	3.0	20-MCBC-ST3	500
	Red	Alu/ Tinplate	20mm Molded Gray Chlorobutyl	52	3.0	20-MCBC(R)-CBT3	500
	Red	Alu/ 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/ 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/ 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, high temperature (300°C)	45	3.1	20-MCB-ST3HT	500
18mm Magnetic Screw Cap, 8mm hole	Silver	Steel	18mm Red Silicone/Natural PTFE, 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/ 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

20-HSVST201-CP

20-CVST3-CP

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-MSC-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**

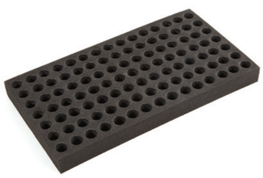
Chromacol vial racks and storage boxes

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

B-100

T-28

T-105



60180-1232

60180-0632

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, -90ºC to 121ºC	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

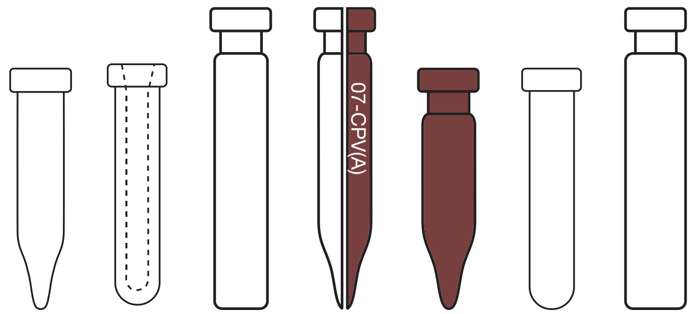
Chromacol TOC vial kits (assembled)

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

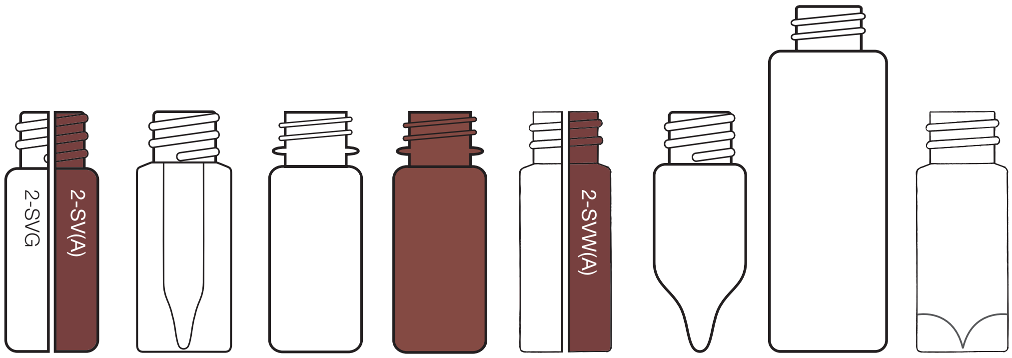
Chromacol scintillation vial kit

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

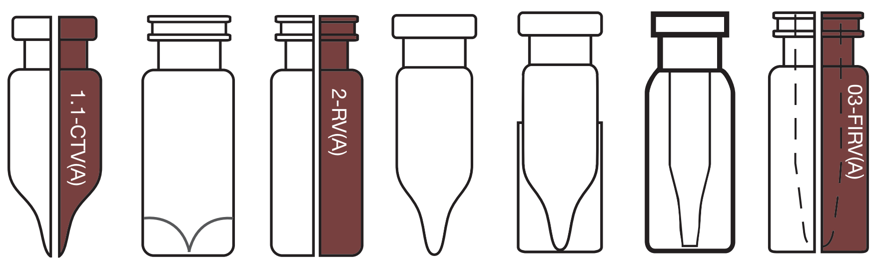


Part No.	02-CTVG	01-CVG	08-CPV	07-CPV	06-CTV(A)	03-CVG	1.2-CWV
Dimensions	6x32mm	6x32mm	7x40mm	7x40mm	7x32mm	6x32mm	8x40mm

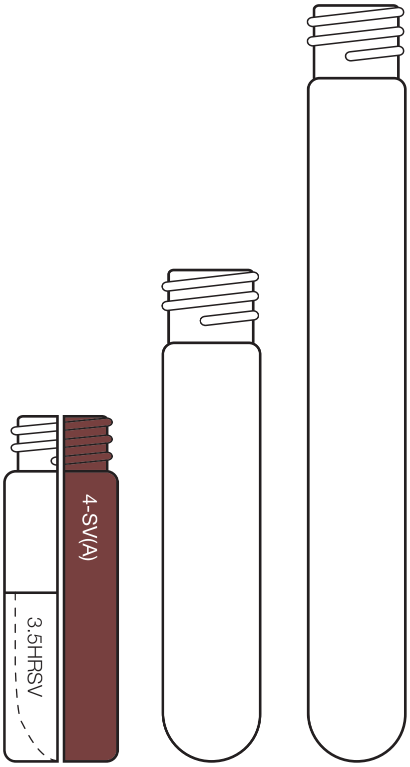


Part No.	2-SV	03-PPSV	2-SVWGK	2-SVWK(A)	2-SVW	1.1-STVG	4-SVQ	1.5-HRSV
Dimensions	12x32mm	12x32mm	12x32mm	12x32mm	12x32mm	12x32mm	15x46mm	12x32mm

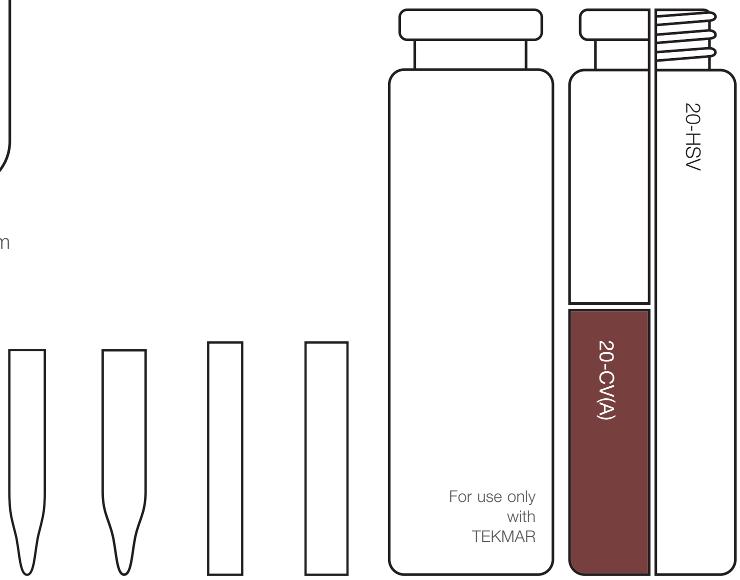
Part No.	03-FIV	03-FISV	1.2-UHRSV	02-FISVG	2.5-CV	4-CV	2-CV	2-CRV
Dimensions	12x32mm	12x32mm	12x32mm	12x32mm	12x40mm	15x46mm	12x32mm	12x32mm



Part No.	1.1-CTVG	1.5-HRRV	2-RV	09-CTV	09-FIV	02-FIVG	03-FIRV
Dimensions	12x32mm	12x32mm	12x32mm	10x32mm	12x32mm	12x32mm	12x32mm



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/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

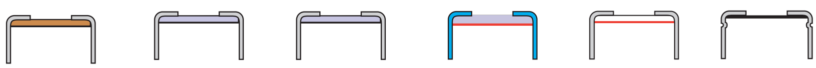
Chromacol caps and septa comparison chart

Part No.	8-AC-ST15	8-AC-ST101
Dimensions	8x5mm	8x5mm

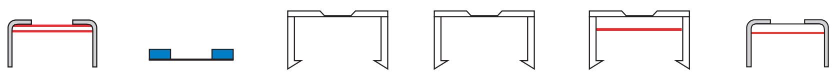
Part No.	8-ACT	8-PEC1	*8-SC	*8-SCJ	8-SC-8RT1	8-SC-ST15
Dimensions	8x5mm	8x5mm	8x9mm	8x9mm	8x9mm	8x9mm

Part No.	8-ST14	8-ST14X	8-ST143	8-ST144	8-6RT1	8-ST101	8-T02	8-TST1	8-ST15
Dimensions	8x1.4mm	8x1.4mm	8x1.5mm	8x1.4mm	8x1mm	8x1mm	8x0.25mm	8x1mm	8x1.5mm

Part No.	*9-SCK(B)-8RT1	9-SCK(B) ST101	*9-SCK(B)-ST1	9-SCK(B)-TST1	9-SCSK-8RT1	*11-AC6
Dimensions	9x6.5mm	9x6.5mm	9x6.5mm	9x6.5mm	9x6.5mm	11x6mm

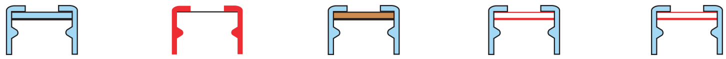


Part No.	*11-AC7	11-AC-ST101	11-AC-ST101X	11-AC(B)-ST144	11-AC-ST15	11-ACT
Dimensions	11x6mm	11x6mm	11x6mm	11x6mm	11x6mm	11x6mm



Part No.	11-AC-TST1	11-LLX	11-PEC1	11-PEC1X	11-PEC-ST1	11-MC-ST15
Dimensions	11x6mm	11x3mm	11x6mm	11x6mm	11x7mm	

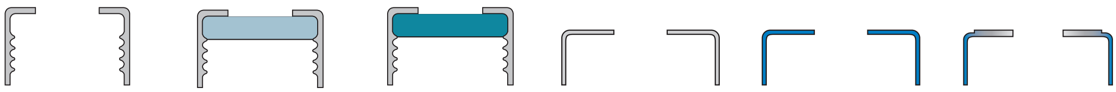
* Cap available in alternative colors.
See below for more details



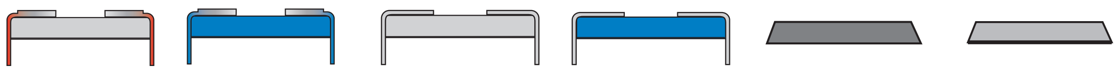
Part No.	11-PSN(B)-ST101	*11-PSN(R)-T02	11-PSN(B)-8RT1	*11-PSN(B)-ST1X	11-PSN(B)-ST1
Dimensions	11x6.5mm	11x6.5mm	11x6.5mm	11x6.5mm	11x6.5mm

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**

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 *Including 11mm Crimp Head and 11mm Decrimp Head*	60180-ECRH11KIT	1
Programmable Electronic High Power Crimper Kit 11mm *Including 13mm Crimp Head and 13mm Decrimp Head*	60180-ECRH13KIT	1
Programmable Electronic High Power Crimper Kit 20mm *Including 20mm Crimp Head and 20mm Decrimp Head*	60180-ECRH20KIT	1

Accessories for High-Power Crimper

Description	Cat. No.	Pack of
Accessory Base for Electronic Crimpers *Height adjustable and solvent resistant* *(consists of base plate and bar)*	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-ECDB13**	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**

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° 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
- Low binding PP for homogenous assays and storage

60180-P130

60180-P104

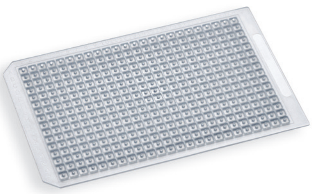
60180-P105

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

Description	Material	Total Height	Well Format	Total Volume (µL)	Working Volume Range µL/ 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	96
	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)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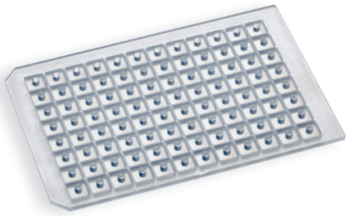
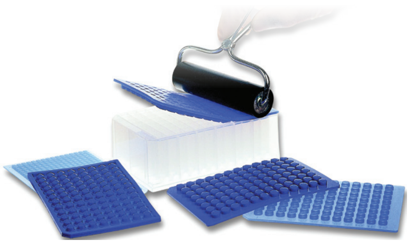

60180-M121


60180-M123


60180-M999

For more information, visit **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

60180-P201

60180-P202

60180-P204

For more information, visit **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

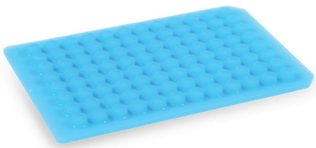
WebSeal mats, non-sterile

- 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

60180-M149

60180-M121

60180-M123



60180-M112

60180-M111

60180-M120

For more information, visit **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**

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

60180-K100

60180-K101

60180-K104

60180-K105

60180-K106

60180-K107

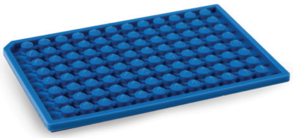
WebSeal glass inserted plate kits with 96-position mats

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

60180-M151

60180-M154



60180-P400

60180-P401

60180-V100

60180-V101

60180-V104

60180-V105

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

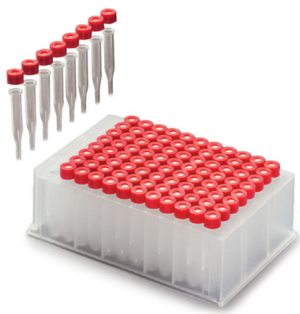
WebSeal kit accessories

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		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


60180-K200


60180-K201


60180-K203


60180-K204

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**

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

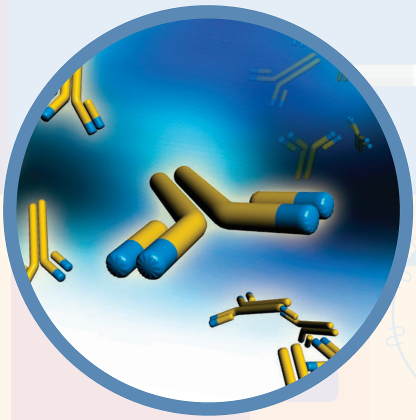
Description	Material	Total Height	Well Format	Total Volume µL/Well	Working Volume Range µL/Well	Cat. No.	Pack of
96 Well Microplate, Round Well, Barcoded	Polypropylene	14.7	U-Shape, 7mm Diameter	270	10-250	60180-P206B	100
	Polypropylene	14.7	U-Shape, 7mm Diameter	270	10-250	60180-P216B	10
	Polypropylene	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**

Featured products



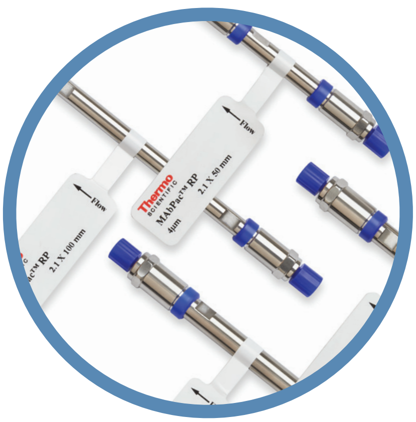
MAbPac SEC-1
A size exclusion chromatography (SEC) column specifically designed for the high-resolution separation and characterization of monoclonal antibodies (mAbs) and their aggregates.

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.

Page 3-007

Section contents



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.

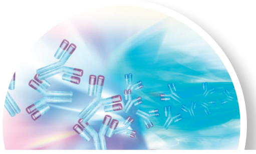
Page 3-019

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

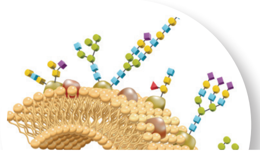
Columns for biomolecules

Proteins, mAbs, ADCs



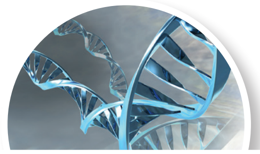
Thermo Scientific™ ProPac™ columns

- 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

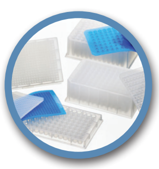


Thermo Scientific™ MAbPac™ columns

- 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



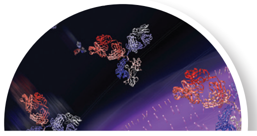
WebSeal Well Plates and Mats

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

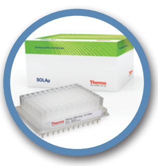
- Acclaim Amide HILIC
- GlycanPac AXH-1
- GlycanPac AXR-1

Nucleic Acids

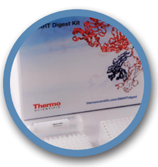
Thermo Scientific™ DNAPac™ columns

- DNAPac PA100, PA200
- DNASwift
- DNAPac PR

Associated products



SOLAμ SPE Plates



SMART Digest Kit

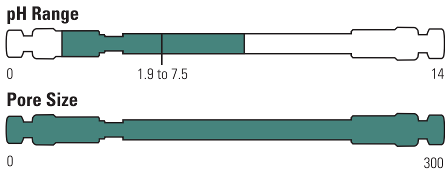
Viper Fingertight Fittings

MAbPac HPLC and UHPLC columns

MAbPac Protein A

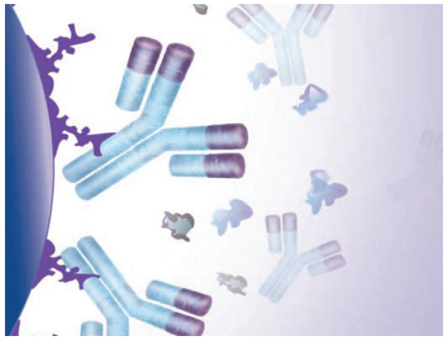
Fast mAb titer analysis

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

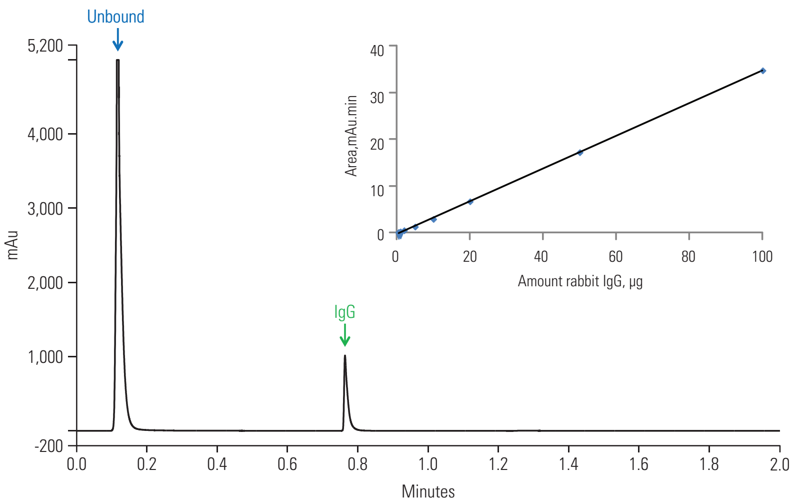


Particle Size 12µm

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

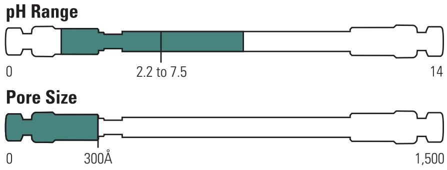
MAbPac Protein A

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

MAbPac SEC-1

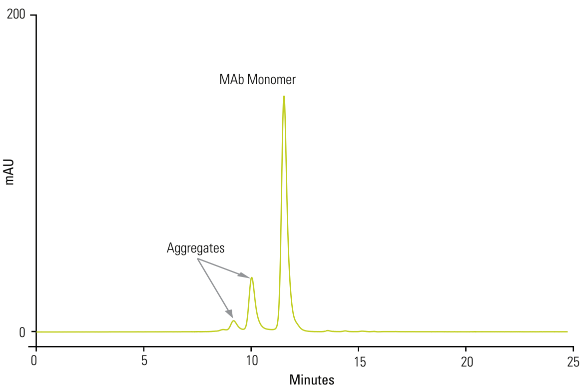
A size exclusion chromatography (SEC) column specifically designed for the high-resolution separation and characterization of monoclonal antibodies (mAbs) and their aggregates

- 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 nondesired 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



Particle Size 5µm

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

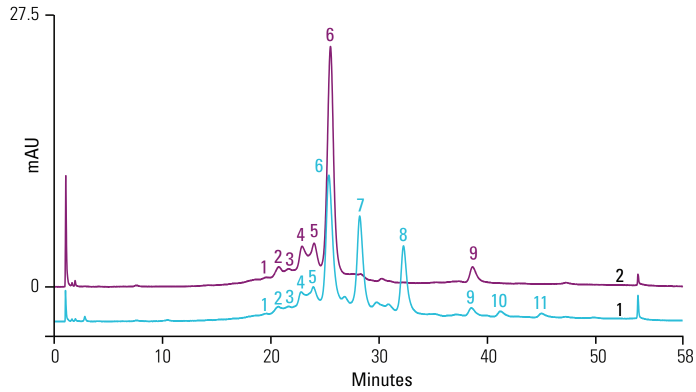
- Exceptionally high-resolution for monoclonal antibody charged variants separation
- Ideal for characterization and quality control assessment of monoclonal antibodies
- Unmatched column-to-column and lot-to-lot reproducibility
- Hydrophobic interactions greatly minimized
- Ideal for stability studies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

pH Range
0 — 2 to 12 — 14

Pore Size Non-porous

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) 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 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**

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 addresses 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 3µm silica particles for rapid analysis of complex protein digests. Compared to 5µm 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 diary 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 5µm, 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 5µm 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, 5µm 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 10µm, 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 flourescently 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
		ProSwift IEX
	Reversed Phase	BioBasic 18, 8, 4
		Acclaim 300 C18
		Accucore 150-C18, 150-C4
		ProSwift RP
	Hydrophobic Interaction	ProPac HIC-10
	Affinity	MAbPac Protein A
		ProPac IMAC-10
		ProSwift ConA-1S
Peptides	Proteomics	Acclaim PepMap
		PepSwift
		EASY-Spray Columns
	Analytical	EASY-Spray Columns
		BioBasic 18, 8, 4
		Acclaim 300
	Preparative	BioBasic
Amino Acids (derivatized)	Ion Exchange	AminoPac PA10
	Reversed phase	Hypersil GOLD
Amino Acids (underivatized)	Ion Exchange	AminoPac PA10
	Reversed phase	Hypercarb
Nucleotides	Anion Exchange	BioBasic AX
	Polar retention	Hypercarb
Oligonucleotides	Ion 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
		Accucore 150-Amide-HILIC
	Polar retention	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^2/g)	% Carbon	Endcapping	USP Code	Phase Code
Acclaim Phase								
300 C18	Spherical, fully porous silica	3	300	100	8	Yes	L1	–
Acclaim PepMap Phases								
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	–
Accucore Phases								
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
BioBasic Phases								
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
BioBasic Phases							
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^2/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. Incompatable 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	Divinlybenzene 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) 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) 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), 0.05-0.20	Most common organic solvents	1000psi (4.6mm) 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 (4 x 250mm)	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**

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 3µm: 60µg/mL 5µm: 40µg/mL 10µm: 20µg/mL MAbPac SCX-10 RS 5µm: 40 µg/mL	0.2-2.0mL/min (Depending on the particle size and column pressure limits)	50% Acetonitrile	3000psi (21MPa) 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^2/g)	% Carbon	Endcapping	USP Code	Phase Code
Thermo Scientifc™ HyperREZ™ XP Phases								
Carbohydrate H^+	Spherical, polymer	8	–	–	–	–	L17	690
Carbohydrate Pb^{2+}	Spherical, polymer	8	–	–	–	–	L34	691
Carbohydrate Ca^{2+}	Spherical, polymer	8	–	–	–	–	L19	692
Carbohydrate Na^+	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^2/g)	% Carbon	Endcapping	USP Code	Phase Code
GlycanPac Phases								
AXH-1	Spherical, fully porous silica	1.9	175	220	-	Yes	-	-
AXH-1	Spherical, fully porous silica	3	120	300	-	Yes	-	-
Accucore Phase								
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^2/g)	% Carbon	Endcapping	USP Code	Phase Code
ProSwift Phases								
ConA-1S	Concanavalin A binding (high mannose) glycans, glycopeptides and proteins	"Monolith;	175	220	-	Yes	-	-

Columns for oligonucleotide separations

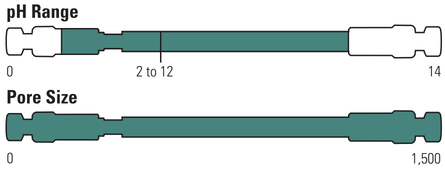
Column	Target Applications	Base Matrix Material	Substrate Crosslinking	Latex Crosslinking	Capacity	Recommended Eluents	Recommended Flow Rate	Solvent Compatibility	Maximum Backpressure	pH Range
DNAPac PA100	High resolution separations of single and double stranded DNA or RNA oligonucleotides	13µm diameter 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	$NaClO_4$ and NaCl	0.5-2.5mL	Most Common Organic Solvents	1500psi, 10MPa	6.0-12.4

Learn more at **thermofisher.com/lccolumns**

MAbPac SCX-10 RS

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

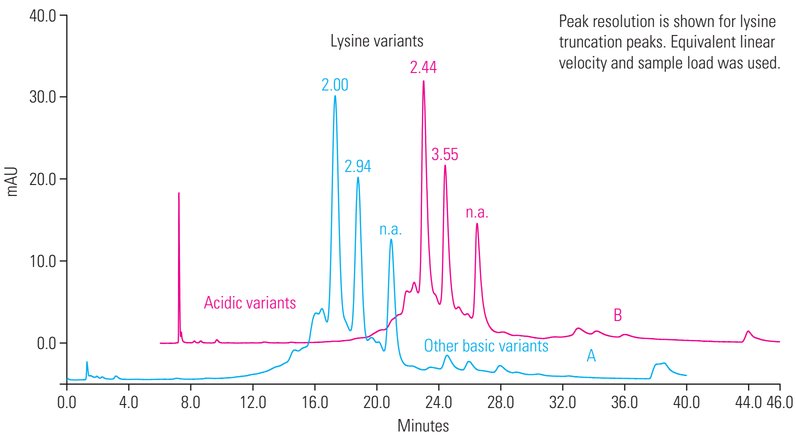
- UHPLC, high throughput analysis
- Specially developed Bio-Inert™ PEEK lined stainless steel column hardware
- High-pressure compatibility
- Suitable for operation up to 7,000 psi



Particle Size 3µm, 5µm, 10µm **USP** N/A

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
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

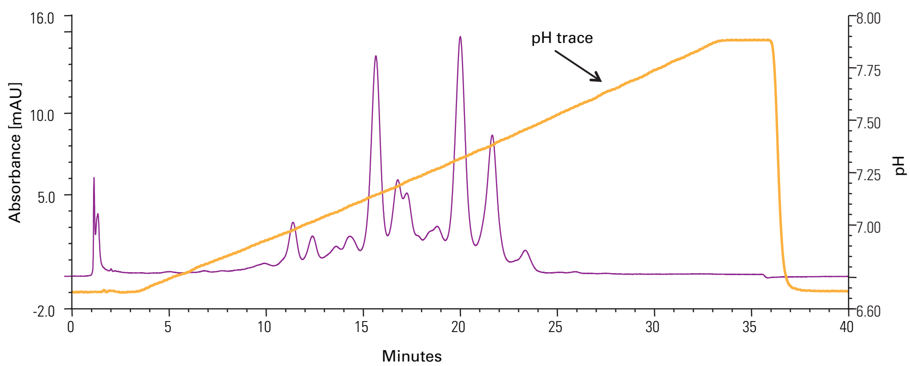
Ready-to-use buffers for simple method development during charge variant characterization

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	
Buffer	**125mL**	**250mL**	**500mL**
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 Bottle size	
Buffer	**MAbPac SCX-10 Column format**	**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**

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

pH Range

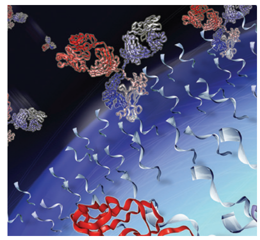
Pore Size

*Non-porous for the HIC-Butyl

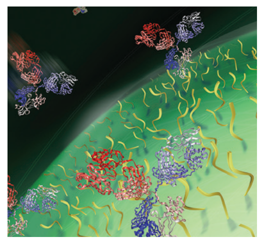
Particle Size 5µm

Applications

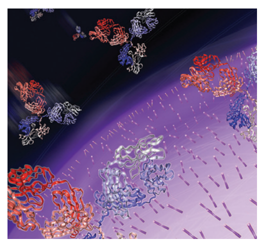
The MAbPac HIC-10 is the column of choice for intact mAbs/proteins and mAb aggregates while the MAbPac HIC-20 is suited to resolve mAb fragments, oxidized mAbs and bispecific mAbs. When it comes to ADCs, MAbPac HIC-Butyl is ideal for cystein-conjugated ADC while MAbPac HIC-10 and MAbPac HIC-20 have proven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



MAbPac HIC-10



MAbPac HIC-20



MAbPac HIC-Butyl

MAbPac HIC Selection Guide

Column	MAbPac HIC-10	MAbPac HIC-20	MAbPac HIC-Butyl
Intact mAbs/proteins	++++	+++	++
mAb aggregates	++++	+++	++
mAb fragments (F_{ab} and F_c)	+++	++++	+++
Oxidized mAbs	+++	++++	+++
Antibody Drug Conjugates (ADCs)	+++	+++	++++
Bispecific mAbs	+++	++++	++

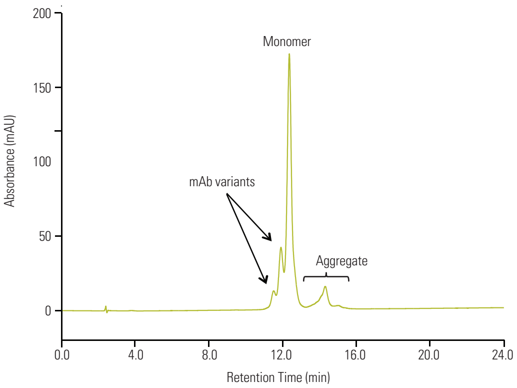
Greater number of ++++ denotes greater suitability

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**

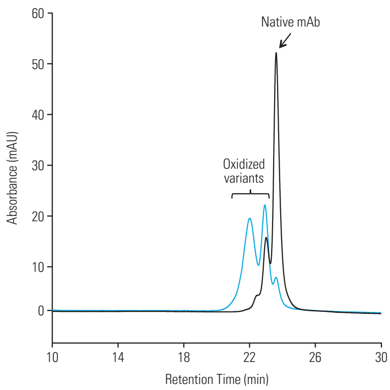
Separation of mAb Aggregates



MAbPac HIC-10, 5µm, 100 x 4.6mm

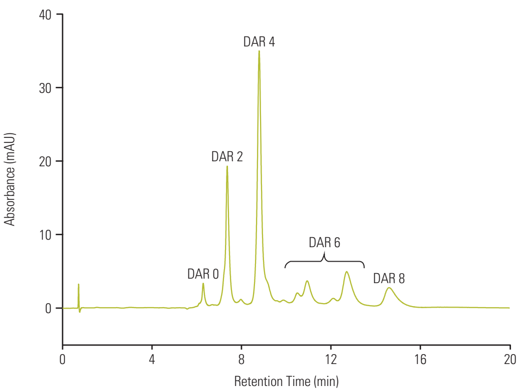
Mobile Phase A:	2 M ammonium sulfate, 100mM sodium phosphate, pH 7.0		
Mobile Phase B:	100mM sodium phosphate, pH 7.0		
Gradient:	Time (min)	%A	%B
	-5.0	60	40
	0.0	60	40
	1.0	60	40
	29.0	0	100
	34.0	0	100
Temperature:	20°C		
Flow Rate:	0.5mL/min		
Injection Volume:	10µL		
Detection:	UV, 280nm		
Sample:	Monoclonal antibody (4mg/mL)		

Separation of mAb Fragments



Column:	**MAbPac HIC-20, 5 µm**		
Format:	4.6 × 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_2O_2 oxidized mAb		

Separation of Antibody Drug Conjugates (ADCs)



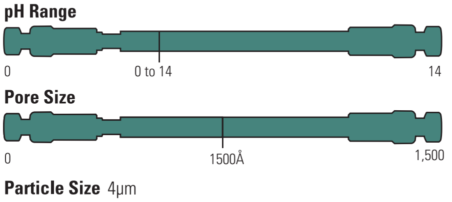
MAbPac HIC-Butyl, 5µm, 100 x 4.6mm

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: %B	Time (min)	%A	
	-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

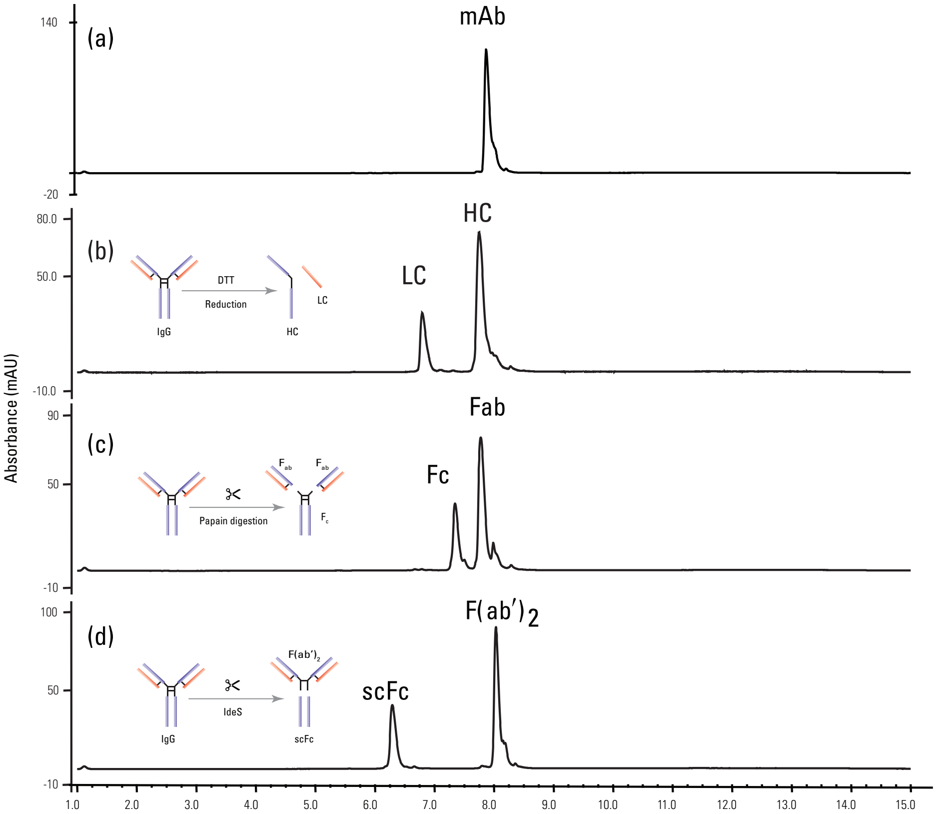
High resolution accurate mass determination of monoclonal antibody variants, antibody drug conjugates (ADC) and proteins

- 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')2 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, 4µm, 50 x 3.0mm

Mobile Phase A: H_2O/FA/TFA (99.88 : 0.1:0.02 v/v/v)
Mobile Phase B: MeCN/ H_2O/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:	5µL
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
4µm	50	303182
	100	303183
	150	303184

MAbPac RP

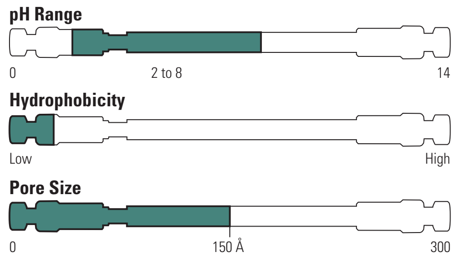
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID
4	Guard Cartridges (2/pk)	10	088649	088646
	HPLC Column	50	088648	088645
		100	088647	088644
		150	303270	303269
	Guard Cartridge Holder		069580	069580

Columns for glycan analysis

Accucore 150-amide-HILIC

HPLC column for neutral glycan analysis

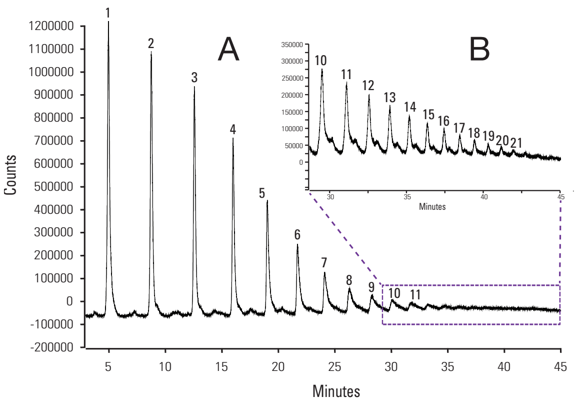
- Amide phase bonded onto 150 Å pore diameter solid core particles
- High retention of a broad range of hydrophilic analytes in HILIC mode
- Recommended for hydrophilic biomolecules such as glycans



Particle Size 2.6µm

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



(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, 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 50 % B for 5.0 minutes 50–20 % B in 0.5 minutes 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: wavelength; start	Fluorescence, 330nm excitation 420nm emission wavelength; acquisition after 3 min from gradient start.
Run Time:	50 minutes

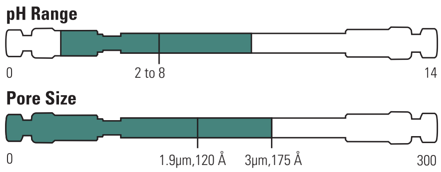
Accucore 150 amide-HILIC

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	16726-054630
		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

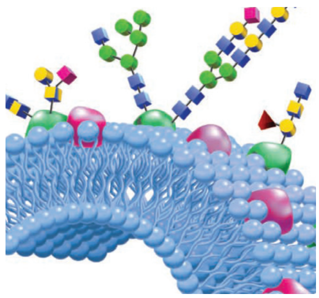
High-resolution columns for neutral and charged glycan analysis

- 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

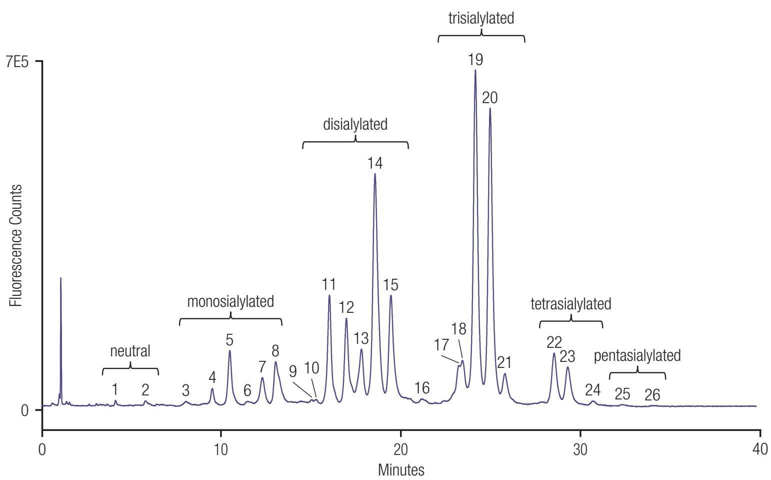


Particle Size 1.9µm, 3µm

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

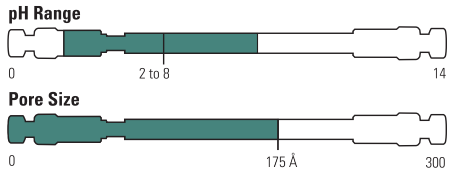
Mobile Phase A: Acetonitrile (100%)
Mobile Phase B: Water
Mobile Phase C: Ammonium formate (100mM, pH = 4.4)
Temperature: 30°C
Flow Rate: 0.4mL/min
Injection Volume: 50pmoles
Detection: Fluorescence, 320/420nm
Sample: 2AB labeled N-glycan from bovine fetuin

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



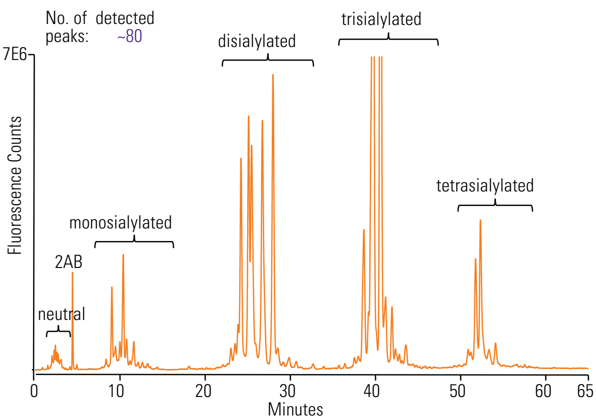
Particle Size 1.9µm, 3µm

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)	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.

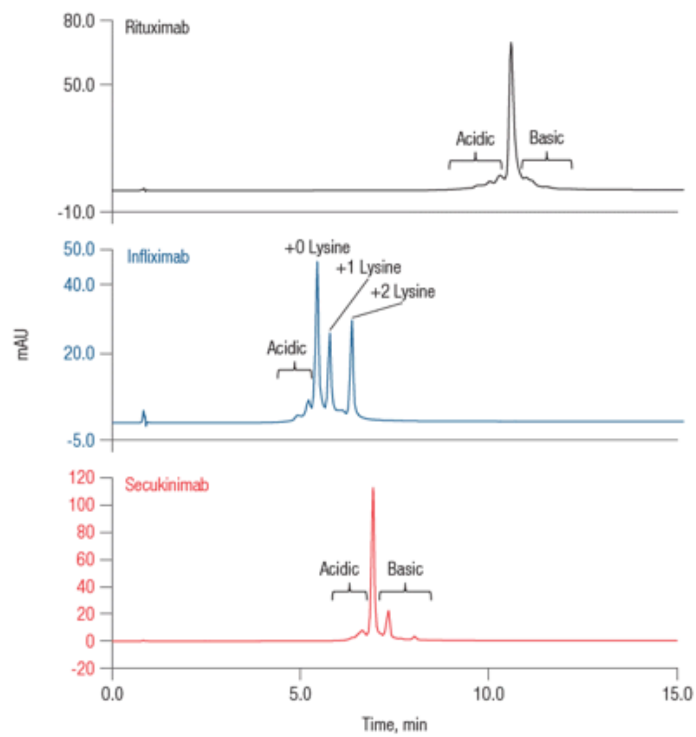
- Next Generation of the ProPac WCX-10
- High efficiency with low carry-over
- Excellent lot-to-lot reproducibility
- Wide operating pH range: 2-12
- High temperature stability: up to 60 °C
- High throughput
- Compatible with CX-1 pH gradient buffers

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

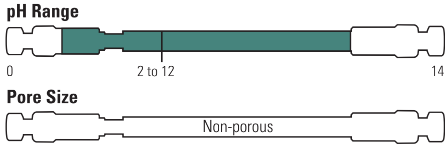
Flow Rate: 1.0 mL/min
Inj. Vol: 2 µL
Temp: 30 oC
Detection: UV, 280 nm
Sample: Top: Rituximab, 5 mg/mL
Middle: Infliximab, 5 mg/mL
Bottom: Secukinimab, 5 mg/mL

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

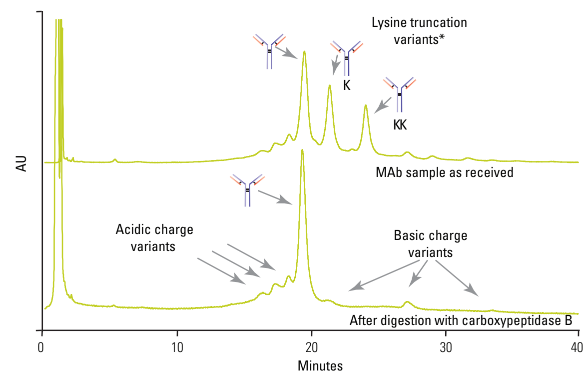
pH Range



Particle Size 10µm

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

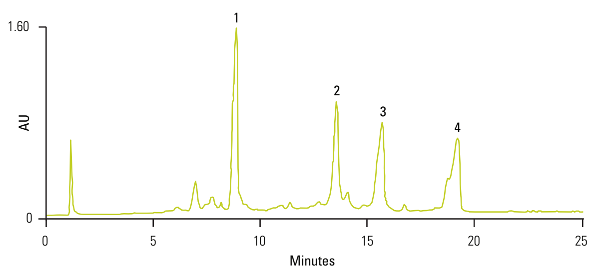


ProPac WCX-10, 10µm, 250 x 4.0mm

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

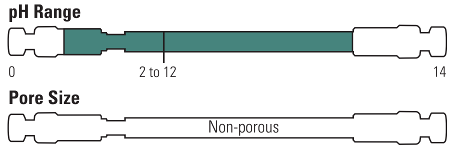
Part Number	Phase Description	Set Contents	Column Dimensions
088776	ProPac WAX-10 Lot Select Column Set	3 columns from 1 lot of resin	250 x 4.0mm
088777	ProPac WAX-10 Lot Select Column Set	3 lots of resin, 1 column from each lot	250 x 4.0mm
088774	ProPac SAX-10 Lot Select Column Set	3 columns from 1 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**

ProPac SCX-20

Strong cation-exchange column for high-resolution protein separations

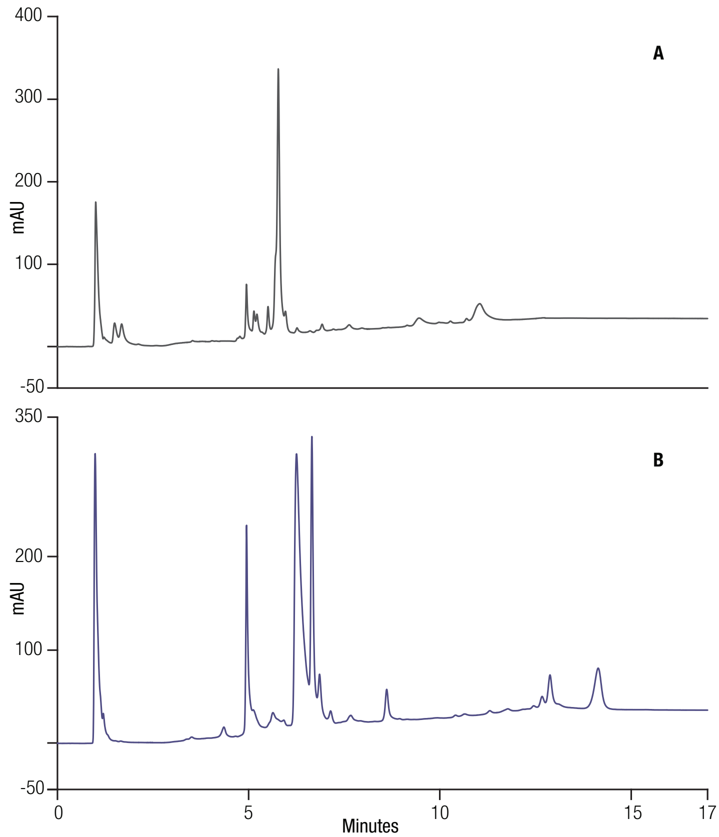
- Grafted cation-exchange surface provides pH-based selectivity control
- Fast mass transfer for high-efficiency separation



Particle Size 10µm

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: 1mg/mL	A. Snake Venom (Naja naja)
	B. Snake Venom (Russell's viper) 1mg/mL

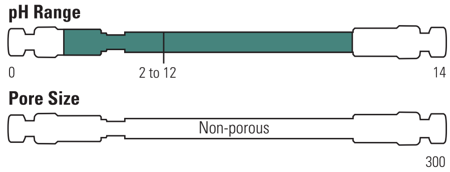
ProPac SCX-20

Particle Size (µm)	Description	Length (mm)	4.0mm ID
10	Guard Column	50	074643
	HPLC Column	250	074628

ProPac WAX-10 and SAX-10

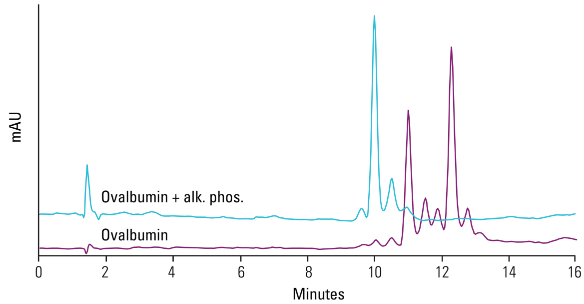
Weak and strong anion anion-exchange providing unequalled high resolution and efficiency in the separations of protein variants

- 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



Particle Size 10µm

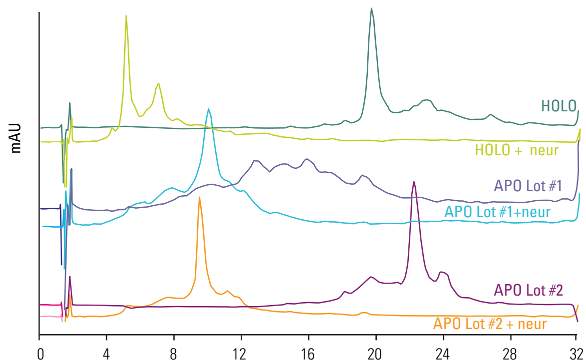
Resolution of phosphorylation variants of ovalbumin



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

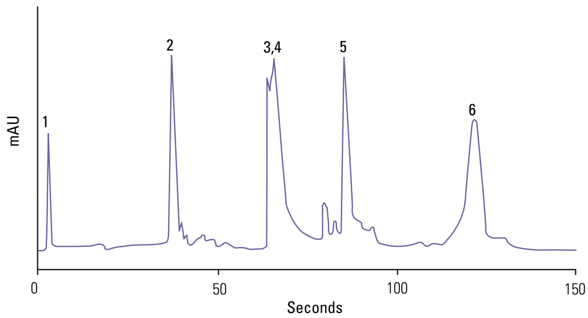
- Good for hydrophilic proteins and peptides
- Ideal for high-resolution separations of proteins with pI values from 3 to 11
- Available in semipreparative format
- Pellicular packing ensures high-efficiency and fast mass transport

pH Range

Pore Size

Particle Size 10µm

Gradient separation of protein standards



Column: ProPac PA1, 10µm, 50 x 4.0mm

Mobile Phase:	10 to 350mM NaCl in 1.0mM Tris, pH 8.2
Flow Rate:	5mL/min
Detection:	UV, 280nm
Analytes:	1. Horseheart Myoglobin 33µg 2. Contaminant – 3,4. Conalbumin 66 5. Ovalbumin 66 6. Soybean Trysin Inhibitor 66

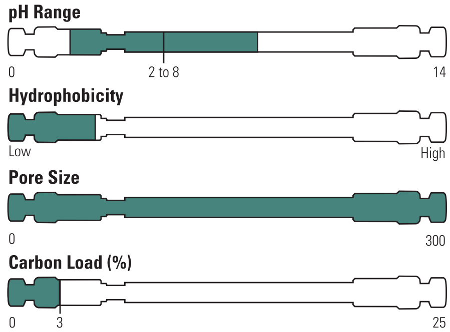
ProPac PA1

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



Particle Size 5µm **USP** N/A

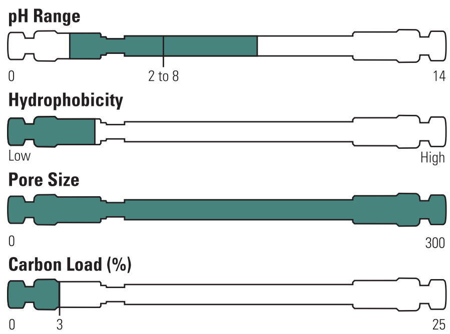
BioBasic AX

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



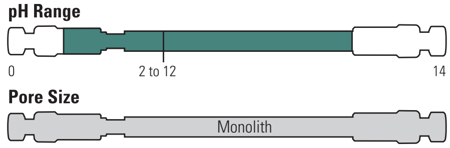
Particle Size 5µm **USP** L52

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**

ProSwift IEX

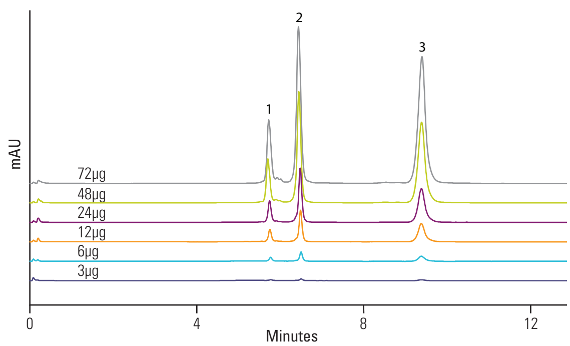


Monolith IEX columns for high-resolution and fast protein analysis

- 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.

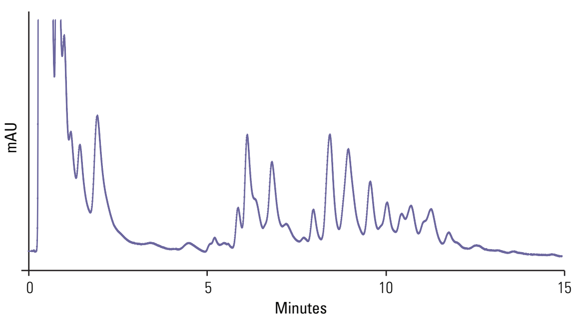
Dynamic protein loading capacity of ProSwift WCX-1S 50 x 1.0mm



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

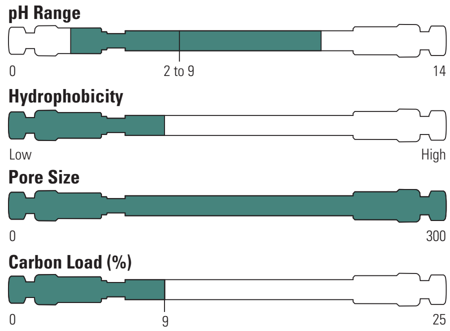
Functional Group	Length (mm)	1.0mm ID	4.6mm ID
WAX-1S	50	-	064294
WCX-1S	50	-	064295
SAX-1S	50	068459	064293
SCX-1S	50	-	066765

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



Particle Size 5µm, 10µm **USP** L1

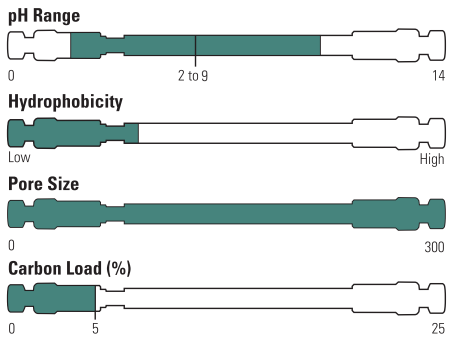
BioBasic 18

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



Particle Size 5µm **USP** L7

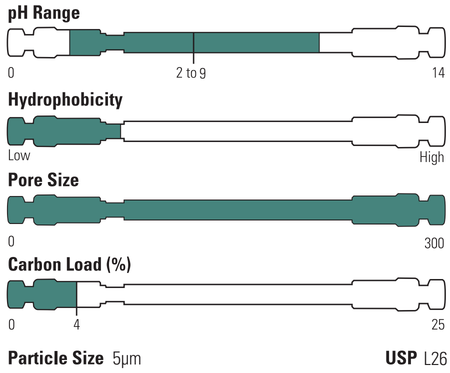
BioBasic 8

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**

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



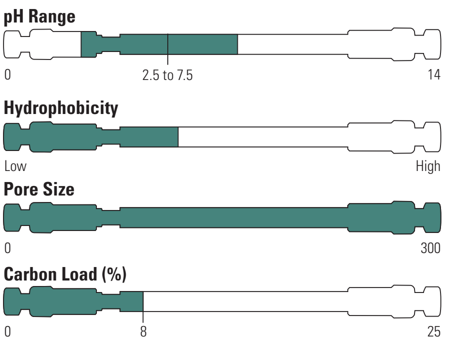
BioBasic 4

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

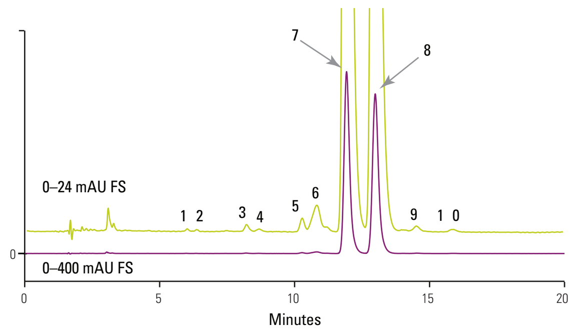
High-resolution reversed-phase separation of proteins and peptides

- 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



Particle Size 3µm **USP** L1

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. Analy.* 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

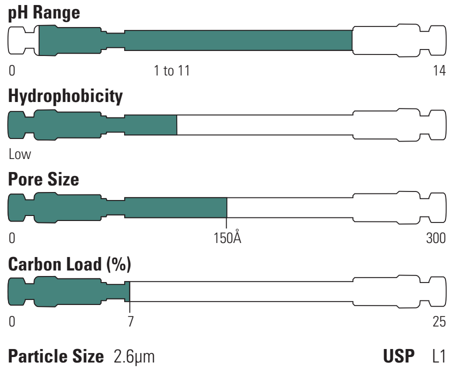
Acclaim guard holder

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**

Accucore 150-C18

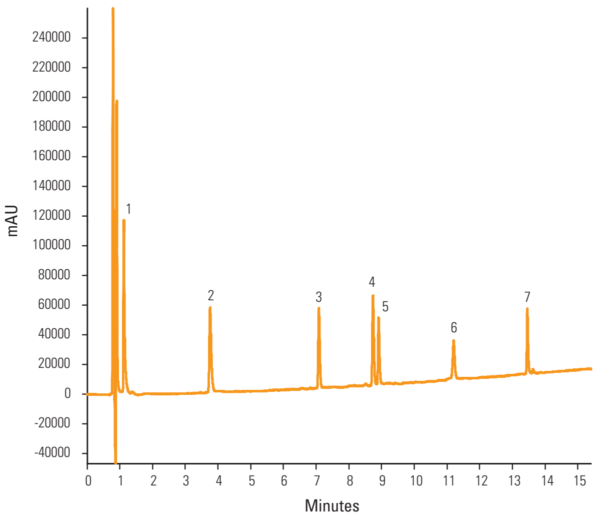
- Designed for the separation of peptides
- Outstanding resolution
- 150Å pore diameter material



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 <2μm 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

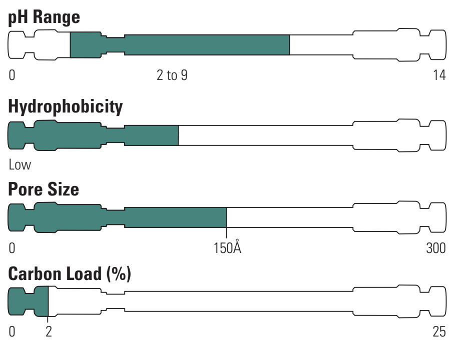
Accucore 150-C18

Particle Size (μm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Drop-in Guard (4/pk)	10	16126-012105	16126-013005	16126-014005
	HPLC Column	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

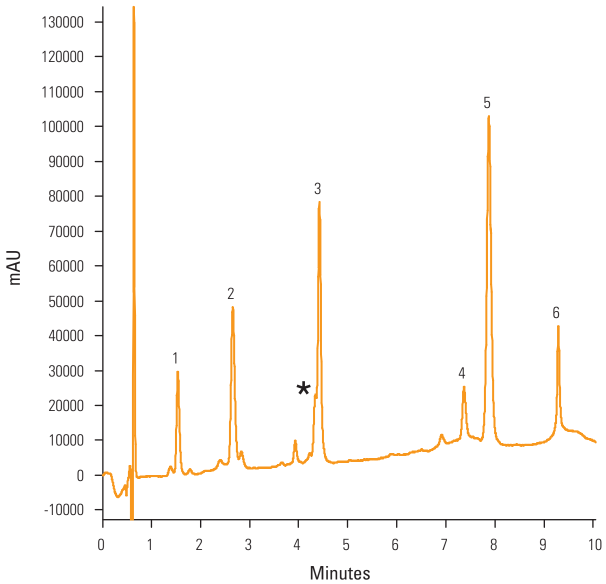
- Significantly lower hydrophobic retention than C18
- Ideal for retention of proteins and larger peptides

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.



Particle Size 2.6µm **USP** L26

Intact proteins



Accucore 150-C4, 2.6µm, 100 x 2.1mm

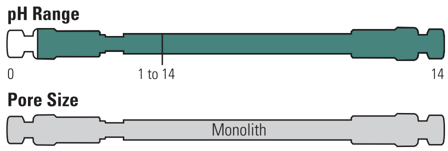
Mobile Phase A:	0.1% TFA in 30:70 acetonitrile:water
Mobile Phase B:	0.1% TFA in 98:2 acetonitrile:water
Gradient:	0-30% B over 8 mins 30-95% B over 2 mins 95% B hold for 1 min 0% B hold for 4 mins
Temperature:	40°C
Flow Rate:	400µL/min
Injection Volume:	2µL 10pmol/µL solution
Detection:	UV, 214 and 280nm
Analytes:	1. Insulin
	2. Cytochrome C
	3. Lysozyme
	4. Myoglobin
	5. Carbonic anhydrase
	6. Ovalbumin
	* 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**

ProSwift RP

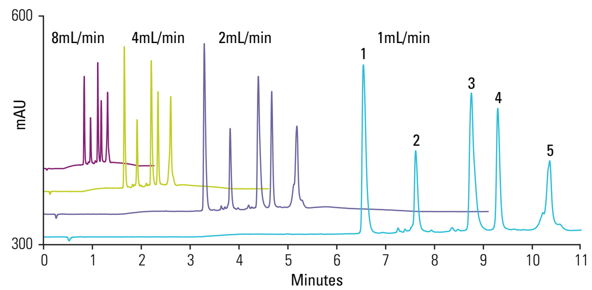


Reversed-phase monolith columns that uniquely provide the advantages of high resolution at exceptionally high flow rates for fast protein separations and analysis

- 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.

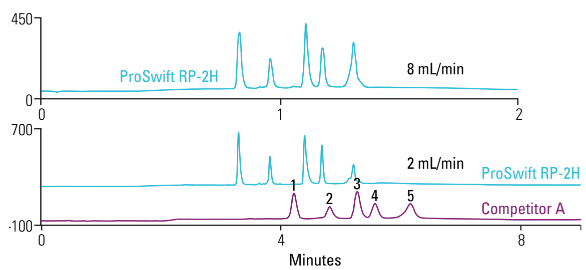
Proteins



ProSwift RP-2H, 50 x 4.6mm

Mobile Phase A:	DI H_2O/CH_3CN (95:5; V/V) + 0.1% TFA
Mobile Phase B:	DI H_2O/CH_3CN (5:95; V/V) + 0.1% TFA
Gradient:	1mL/min: 1-75% B in 12 min 2mL/min: 1-75% B in 6 min 4mL/min: 1-75% B in 3 min 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 2. Cytochrome C 0.5mg/mL 3. BSA 1.5mg/mL 4. Carbonic anhydrase 0.9mg/mL 5. Ovalbumin 1.5mg/mL

Competitive comparison



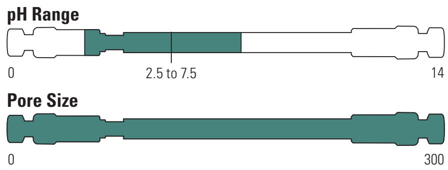
ProSwift RP

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

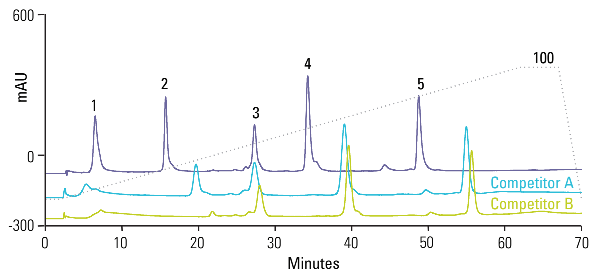
Hydrophobic Interaction Chromatography columns for the high-resolution separation of proteins and peptides

- 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



Particle Size 5µm **USP** L1

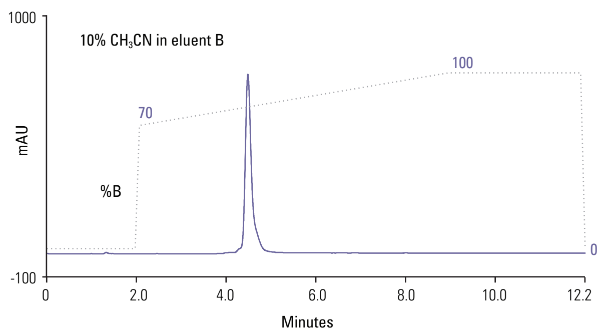
Protein mixture



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 2. Myoglobin 3. Ribonuclease A 4. Lysozyme 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

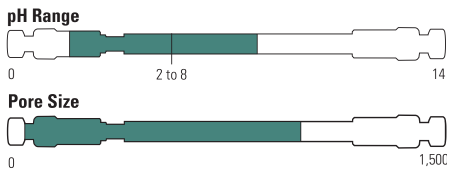
Particle Size (µm)	Format	Length (mm)	2.1mm ID	4.6mm ID	7.8mm ID
5	HPLC Column	75	–	–	063665
		100	063653	063655	–
		250	–	074197	–

Learn more at **thermofisher.com/LCcolumns**

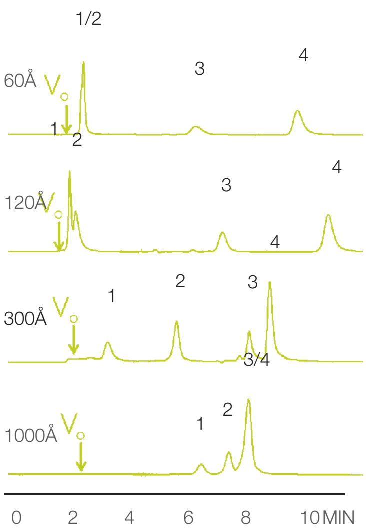
BioBasic SEC

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



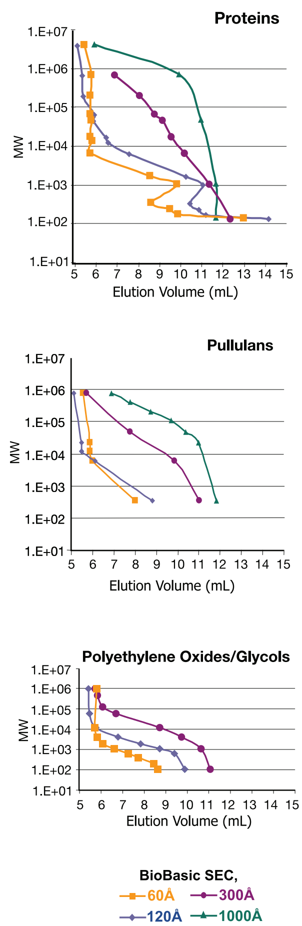
Particle Size 5µm



Effect of pore size on SEC resolution

BioBasic SEC, 5µm, 300 x 7.8mm

Mobile Phase:	0.1M KH_2PO_4 pH 7
Flow Rate:	1.0mL/min
Injection Volume:	20µL
Detection:	UV, 254nm
Analytes: (MW669,00)	1. Thyroglobulin
	2. Ovalbumin (MW 45,000)
1,046)	3. Angiotensin II (MW
	4. PABA (V_m) (MW 137)



Molecular weight calibration curves

BioBasic SEC

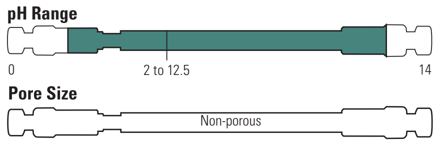
Pore Size (Å)	Description	ID (mm)	Length (mm)	Cat. No.
BioBasic SEC 60				
60	Guard Column	7.8	30	73305-037821
	HPLC Column	7.8	150	73305-157846
	HPLC Column	7.8	300	73305-307846
BioBasic SEC 120				
120	Guard Column	7.8	30	73405-037821
	HPLC Column	7.8	150	73405-157846
	HPLC Column	7.8	300	73405-307846
BioBasic SEC 300				
300	Guard Column	7.8	30	73505-037821
	HPLC Column	7.8	150	73505-157846
	HPLC Column	7.8	300	73505-307846
BioBasic SEC 1000				
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

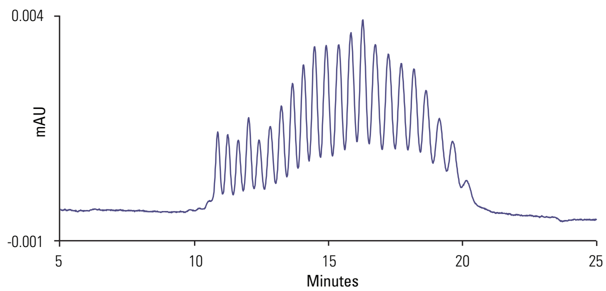
- High-resolution oligonucleotide separations
- Achieve n, n-1 resolution for oligonucleotides
- Resolves oligonucleotides with secondary structures
- Suitable for the analysis of phosphorothioate-based clinical samples
- Easy scale-up from 2.0mm to 22mm ID column (>100x)



Particle Size 13µm

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.

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)$_{40-60}$

DNAPac PA100

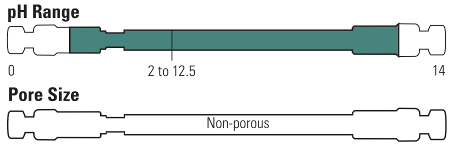
Particle Size (µm)	Format	Length (mm)	2.0mm ID	4.0mm ID	9.0mm ID	22.0mm ID
13	Guard Column	50	088761	043018	088764	088765
	HPLC Column	250	088760	043010	043011	088759

Learn more at **thermofisher.com/LCcolumns**

DNAPac PA200

A strong anion exchange column developed to provide the best resolution for analysis and purification of synthetic oligonucleotides

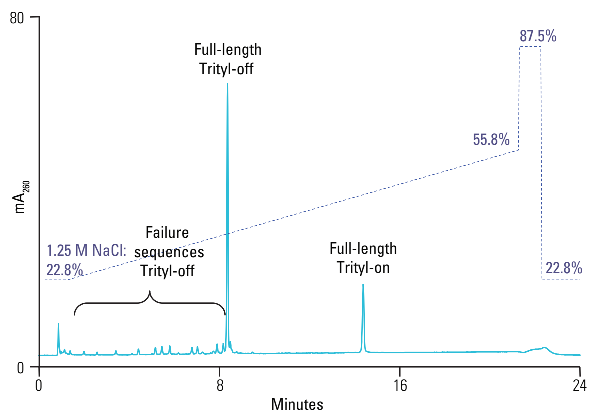
- Achieve n, n-1 resolution for oligonucleotides
- Resolve oligonucleotides with secondary structures
- Assay phosphorothioate purity
- Selectivity control with eluent pH, salt, and solvent
- Resolve RNA with aberrant (2', 5') links from normal ssRNA
- Separate individual phosphorothioate diastereoisomers
- HR/AM AXLC/MS via automated desalting
- 9-fold more stable to high pH than DNAPac PA100



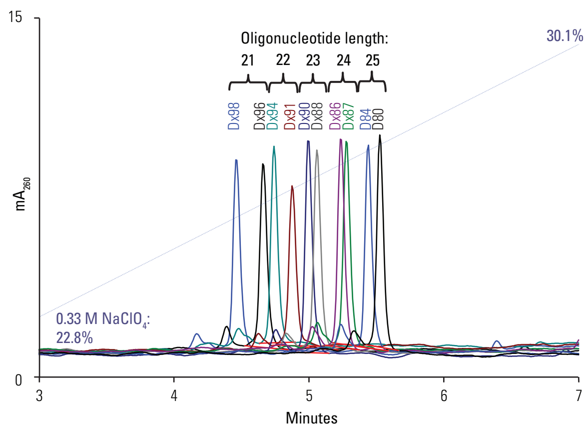
Particle Size 8µm

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:	$NaClO_4$, pH 6.5 with 20% CH_3CN
Flow Rate:	1.2mL/min
Injection Volume:	8µL
Detection:	UV, 260nm

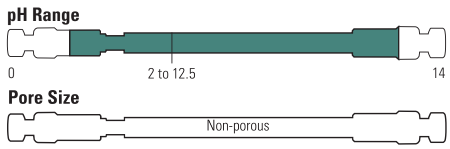
DNAPac PA200

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

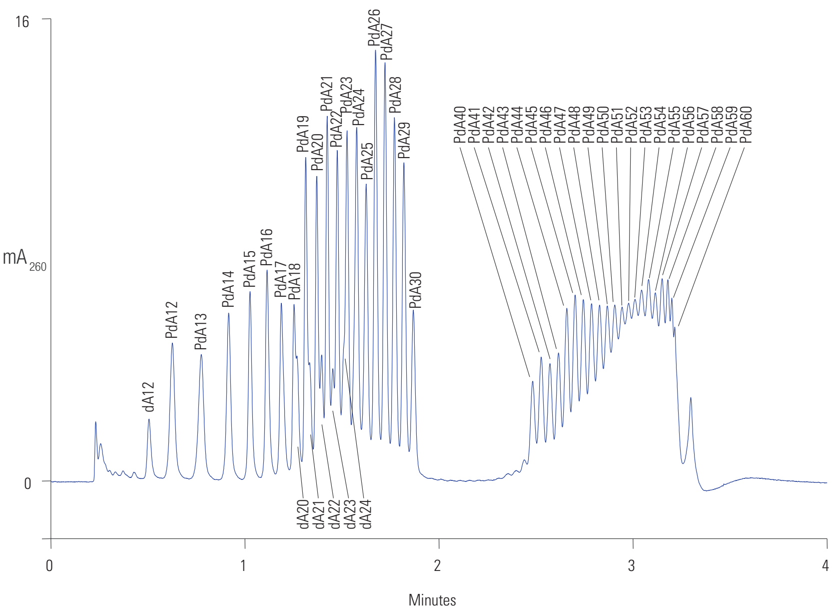
- Provide single base resolution of oligonucleotides
- Higher efficiency to improve resolution
- Improved throughput
- Ruggedness consistent with the DNAPac PA200 column line
- Stable to 10,000 psi



Particle Size 4µm

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.

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

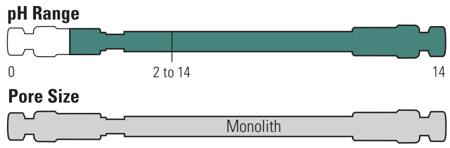
**Curve 3 indicates continuously changing gradient, asymptotically approaching a maximum salt concentration. Programed in Thermo Scientific™ Chromeleon™ 6.8.

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**

DNASwift SAX-1S

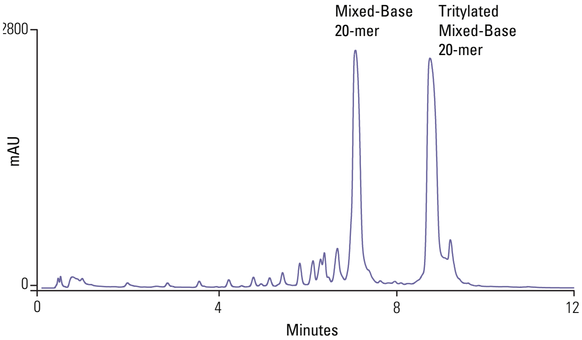


A strong anion exchange monolith column that provides improved capacity and industry-leading oligonucleotide yield-purity performance.

- 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.

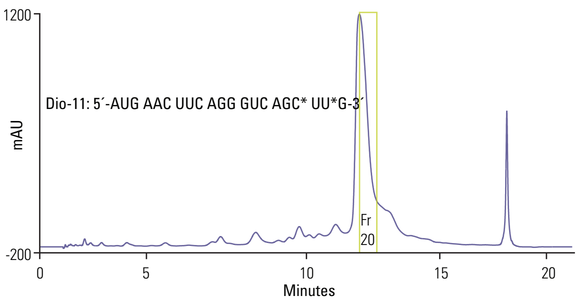
Tritylated oligonucleotide



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

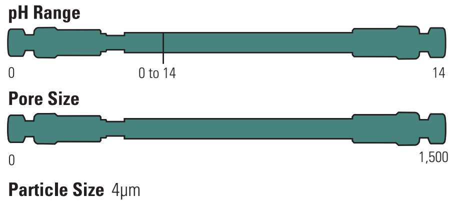
DNASwift SAX-1S

Length (mm)	5.0mm ID
150	066766

DNAPac RP

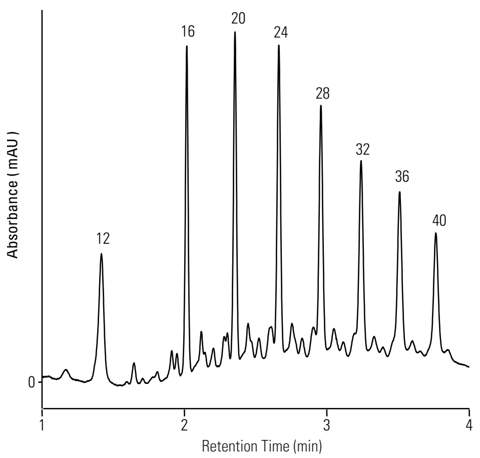
Reverse phase (RP) column specifically for analysis of oligonucleotides and double stranded (ds) DNA and RNA fragments.

- 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
	HPLC Column	50	088924	088920
		100	088923	088919
	Guard Cartridge Holder		069580	069580

Learn more at **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**

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

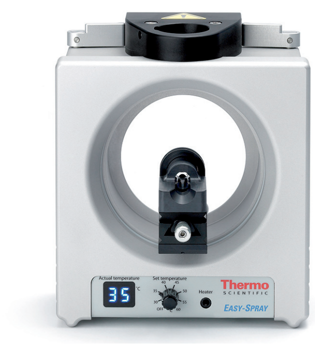
Particle size (µm)	Length (mm)	50µm ID	75µm ID	150µm ID
2	150	ES801A	ES804A	ES806A
	250	–	ES802A	
	500	–	ES803A	
	750	–	ES805A	
3	150	–	ES800A	

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

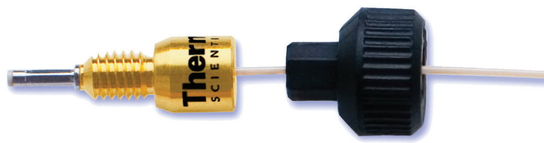
Description	Cat. No.
EASY-Spray Emitter, nanoflow (Emitter ID 7µm, Transfer line ID 20µm, Transfer line length 500mm)	ES791A
EASY-Spray Emitter, microflow (Emitter ID 20µm, Transfer line ID 75µm, Transfer line length 500mm)	ES792A

Learn more at **thermofisher.com/easyspray**

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 10µm ID	Orange 20µm ID	Brown 50µm ID	Black 75µm ID	Red 100µm ID	Purple 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 (mm)	Fitting ID (µm)	Cat. No.
µ-Precolumn holder for trap cartridges with 2 x 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

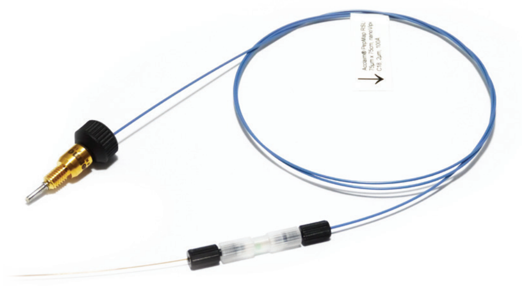
Description	Tubing	Samples	Trap Column	Separation Column	RSLCnano Systems
Direct Injection nano LC Kit	Y	Y	–	Y	6720.0300
Direct Injection capillary LC Kit	Y	Y	–	Y	6720.0305
Preconcentration nano LC kit	Y	Y	Y	Y	6720.0310
Preconcentration capillary LC kit	Y	Y	Y	Y	6720.0315
Preconcentration monolithic LC 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 (All tubing for nano LC preconcentration)	Y	–	–	–	6041.5100
MS connection kit	Y	–	–	–	6720.0345
EASY-Spray connection kit (Supports direct injection as well as preconcetration)	Y	Y	Y	–	6720.0395

Learn more at **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

		nanoViper Column			
Particle size (µm)	**Length (mm)**	**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

		nanoViper Column			
Particle size (µm)	**Length (mm)**	**50µm ID**	**75µm ID**	**300µm ID**	**1000µm ID**
3	150	–	164706	164722	164723

Acclaim PepMap C4 300Å

		nanoViper Column			
Particle size (µm)	**Length (mm)**	**50µm ID**	**75µm ID**	**300µm ID**	**1000µm ID**
5	150	–	164707	164720	164721

Acclaim PepMap C18 300 Å

		nanoViper Column			
Particle size (µm)	**Length (mm)**	**50µm ID**	**75µm ID**	**300µm ID**	**1000µm ID**
5	150	–	164708	164718	164719

Accucore NanoLC columns

Accucore 150-C18

		nanoViper Column
Particle size (µm)	**Length (mm)**	**75µm ID**
2.6	150	16126-157569
	500	16126-507569

Accucore 150-C4

		nanoViper Column
Particle size (µm)	**Length (mm)**	**75µm ID**
2.6	150	16526-157569
	500	16526-507569

Accucore 150-Amide-HILIC

		nanoViper Column
Particle size (µm)	**Length (mm)**	**75µm ID**
2.6	150	16726-157569

Learn more at **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

	PepSwift		
Length (mm)	**100µm ID**	**200µm ID**	**500µm ID**
5	–	164558	–
50	164584	164557	164585
250	164543	164542	–

ProSwift RP-4H

	ProSwift		
Length (mm)	**100µm ID**	**200µm ID**	**500µm ID**
100	–	–	164925
250	164922	164923	–
500	164921	–	–

ProSwift C4 RP-5H

	ProSwift		
Length (mm)	**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

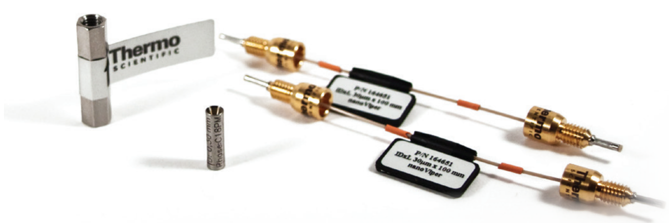
Length (mm)	300µm ID
5	163589

Accucore 150-C4

Length (mm)	300µm ID
5	16526-900379

Accucore 150-Amide-HILIC

Length (mm)	300µm ID
5	16726-900379



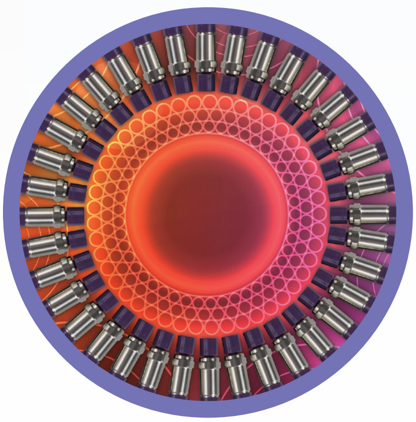
µ-Precolumn™ holder, 5mm, with 30µm ID connecting tubing, nanoViper fittings

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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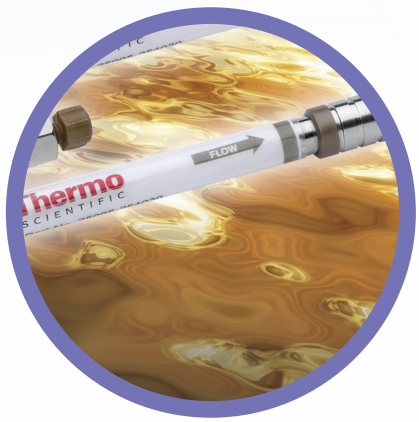

Hypersil GOLD
Thermo Scientific™ Hypersil GOLD™ columns offers chromatographers outstanding peak shape for reversed phase, ion exchange, HILIC or normal phase chromatography.

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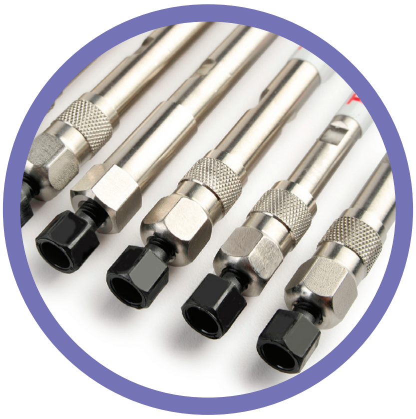
Section contents



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.

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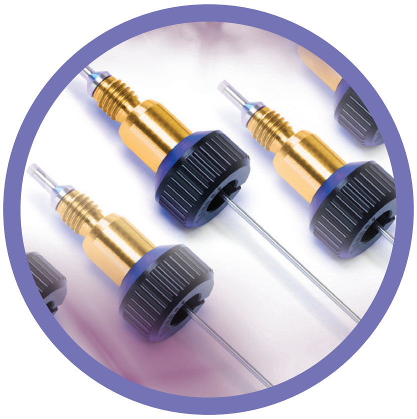


Thermo Scientific™ Viper™ fittings
Maximize liquid chromatography (LC) performance and get zero-dead-volume connections to ensure optimal separations.

Page 4-019

Accucore Vanquish

Powerful separations are our core performance

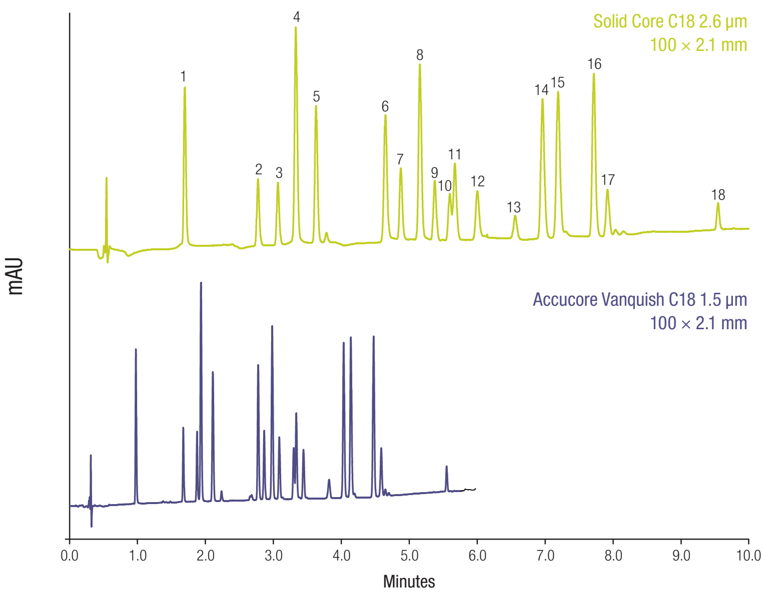
Thermo Scientific™ Accucore™ Vanquish™ UHPLC columns provide a robust chromatography solution to enhance laboratory workflows and productivity. These columns, in combination with Vanquish UHPLC systems, deliver powerful separations to solve your analytical challenges faster and more effectively.

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.



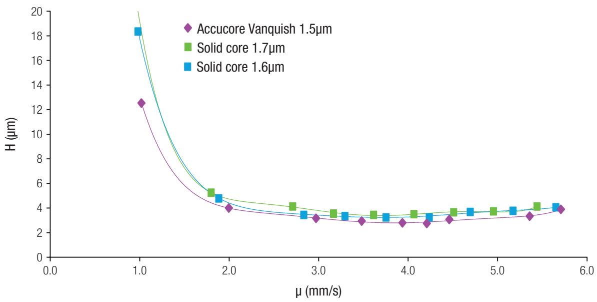
Comparison of separation of 18 pesticides using Accucore Vanquish 1.5µm column to a larger particle size solid core column

Mobile Phase A:Water		
Mobile Phase B:Acetonitrile		
Gradient:	Solid core C18 2.6µm 100 × 2.1mm	
	Time (min)	%B
	0	20
	6.9	40
	12.1	80
	Accucore Vanquish C18 1.5µm 100 × 2.1mm	
	Time (min)	%B
	0	20
	4	40
	7	80
Temperature:	43°C	
Flow Rate:	Solid Core C18 2.6µm 100 × 2.1mm = 380µL/min Accucore Vanquish C18 1.5µm 100 × 2.1mm = 650µL/min	
Injection Volume:	0.5µL	
Detection:	UV, 230nm (0.1s rise time, 50Hz)	
Analytes:	1. Desethylatrazine	10. Diuron
	2. Metoxuron	11. Isoproturon
	3. Hexazinone	12. Metobromuron
	4. Simazine	13. Metazachlor
	5. Cyanazine	14. Sebuthylazin
	6. Methabenzthiazuron	
15. Propazine		
	7. Chlorotoluron	16. Terbuthylazine
	8. Atrazine	17. Linuron
	9. Monolinuron	18. Metolachlor

For more information, visit **thermofisher.com/accucore**

More results

High efficiency is maintained even at high flow rates enabling fast reproducible separations.



Accucore Vanquish C18,1.5µm
Solid Core C18 1.7µm
Solid Core C18 1.6µm

Mobile Phase:	Water:acetonitrile (50:50)
Temperature:	30°C
Flow Rate:	0.1 to 0.6mL/min

Accucore Vanquish

Particle Size (µm)	Format	Length (mm)	ID (mm)	C18+
1.5	UHPLC Column	50	2.1	27101-052130
		100	2.1	27101-102130
		150	2.1	27101-152130

For more information, visit **thermofisher.com/vanquishcolumn**

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

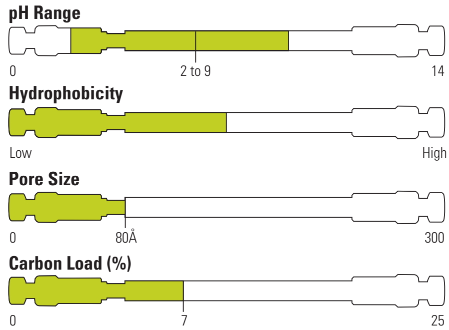
Description	Particle Size	Length (mm)	Diameter (ID)	Part Number
Accucore Vanquish C18+	1.5	50	2.1	27101-052130
		100	2.1	27101-102130
		150	2.1	27101-152130
Hypersil GOLD VANQUISH	1.9	50	2.1	25002-052130-V
		100	2.1	25002-102130-V
		150	2.1	25002-152130-V
Hypersil GOLD VANQUISH PFP	1.9	100	2.1	25402-102130-V
		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**

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 π-π interactions. This chemistry provides the ability to resolve isomeric compounds, such as drugs of abuse and steroids.

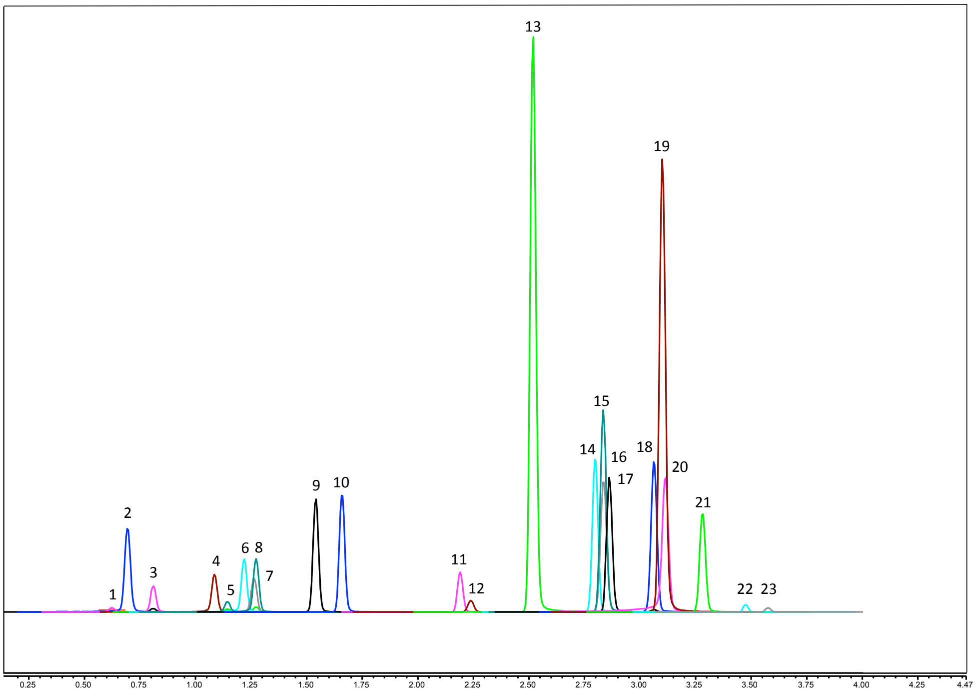
- Compatibility with 100% aqueous conditions
- Lower backpressure, UHPLC not required
- Great column lifetime
- Excellent lot-to-lot reproducibility
- Rugged column, suitable for a variety of matrices



Particle Size 2.6µm

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

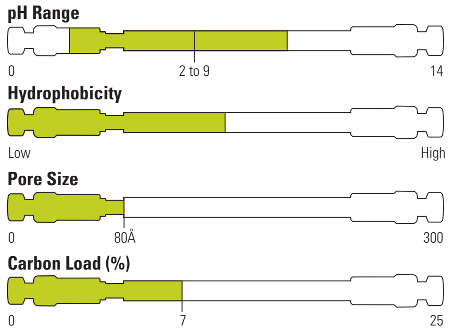


1	Morphine
2	Oxymorphone
3	Hydromorphone
4	Naloxone
5	Codeine
6	Oxycodone
7	Naltrexone
8	Hydrocodone
9	Tramadol
10	Meperidine
11	Fentanyl
12	Buprenorphine
13	Methadone
14	Lorazepam
15	Oxazepam
16	Nitrazepam
17	Clonazepam
18	Flunitrazepam
19	Temazepam
20	Alprazolam
21	Diazepam
22	11-Hydroxy-THC
23	11-Carboxy-THC

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



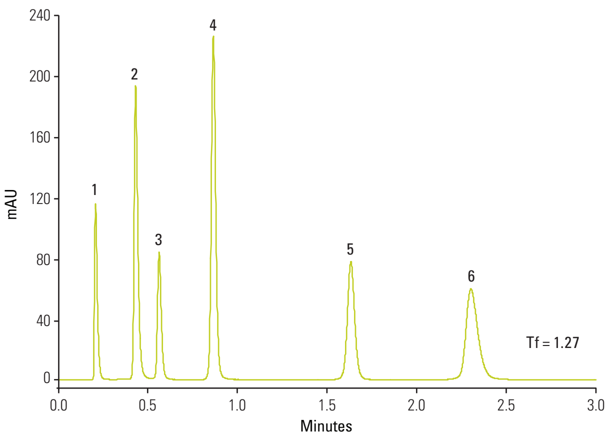
Particle Size 2.6µm

Accucore RP-MS uses an optimized alkyl chain length for more effective coverage of the silica surface. This coverage results in a significant reduction in non-hydrophobic interactions and thus highly efficient peaks with very low tailing.

RP-MS offers slightly lower retention than C18 and this combined with high efficiencies and low peak tailing make this the phase of choice for use with MS detection.

The selectivity offered by Accucore RP-MS matches that of C18 columns.

Bases



Accucore RP-MS 2.6µm, 50mm x 2.1mm

Mobile Phase:	65% Methanol / 35% 25mM Potassium Phosphate pH7.0
Temperature:	30°C
Flow Rate:	500µL/min
Injection Volume:	1µL
Backpressure:	232 bar
Detection:	UV, 215nm
Analytes:	1. Uracil 2. Propranolol 3. Butylparaben 4. Naphthalene 5. Acenaphthene 6. Amitriptyline

Accucore RP-MS

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17626-012105	17626-013005	17626-014005
	HPLC Column	30	17626-032130	-	-
		50	17626-052130	17626-053030	17626-054630
		100	17626-102130	17626-103030	17626-104630
		150	17626-152130	17626-153030	17626-154630
	Thermo Scientific™ UNIGUARD™ Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

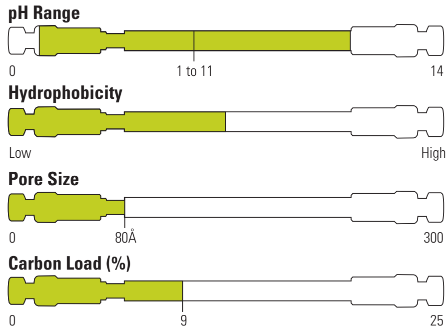
For more information, visit **thermofisher.com/accucore**

Accucore C18

- Optimum retention of non-polar compounds
- Hydrophobic interaction mechanism
- Separates a broad range of analytes

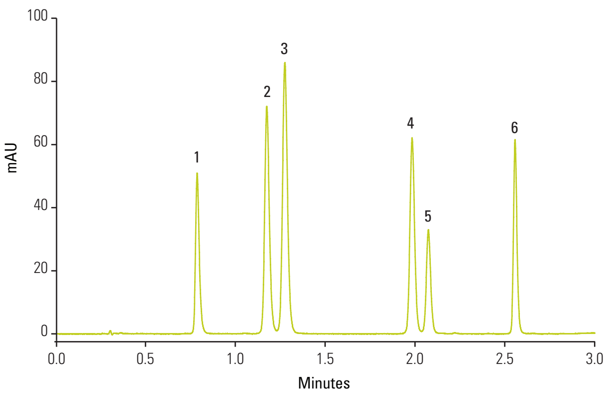
The carbon loading of Accucore C18 phase provides high retention of non-polar analytes via a predominantly hydrophobic interaction mechanism.

The highly retentive nature of Accucore C18 phase means that it can be used to separate a broad range of analytes.



Particle Size 2.6µm **USP** L1

Triazines



Accucore C18 2.6µm, 50mm x 2.1mm

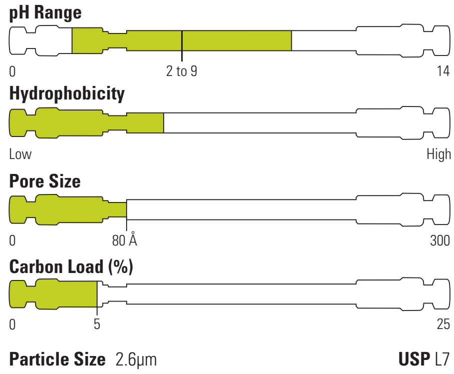
Mobile Phase A:	Water	
Mobile Phase B:	Acetonitrile	
Gradient:	Time (min)	%B
	1.0	35
	2.5	70
Temperature:	25°C	
Flow Rate:	600µL/min	
Injection Volume:	2µL	
Backpressure:	298 bar	
Detection:	UV, 280nm	
Analytes:	1. Simazine 2. Simetryn 3. Atrazine 4. Ametryn 5. Propazine 6. Prometryn	

Accucore C18

Particle Size (µm)	Format	Length (mm)	1mm ID	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	-	17126-012105	17126-013005	17126-014005
	HPLC Column	30	-	17126-032130	-	-
		50	-	17126-052130	17126-053030	17126-054630
		100	17126-101030	17126-102130	17126-103030	17126-104630
		150	-	17126-152130	17126-153030	17126-154630
4	UNIGUARD Drop-in Guard Cartridge Holder	10	-	852-00	852-00	850-00

Accucore C8

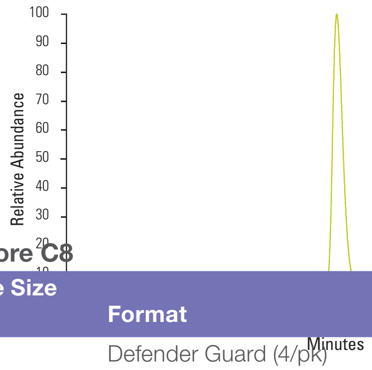
- Lower hydrophobic retention
- Complementary steric selectivity to C18
- Low levels of secondary interactions
- Recommended for moderately polar analytes



Accucore C8 HPLC columns offer lower hydrophobic retention than columns packed with longer alkyl chain length material, such as C18, and are therefore recommended for analytes with medium hydrophobicity or when a less hydrophobic phase provides optimum retention.

The low levels of secondary interactions demonstrated in the phase characterization are the result of excellent bonded phase coverage and allow users of Accucore C8 HPLC columns to benefit from excellent peak shapes.

Testosterone



Accucore C8 2.6µm, 50 x 2.1mm

Mobile Phase A:	Water + 0.1% formic acid
Mobile Phase B:	Acetonitrile + 0.1% formic acid
Gradient:	5–95 % B in 0.8 minutes
Temperature:	60°C
Flow Rate:	1500µL/min
Injection Volume:	5µL
Detection:	ESI-MS/MS

Retention time (tR /min)	0.73
%RSD tR	0.22
%RSD Area	3.01

Data from six injections.

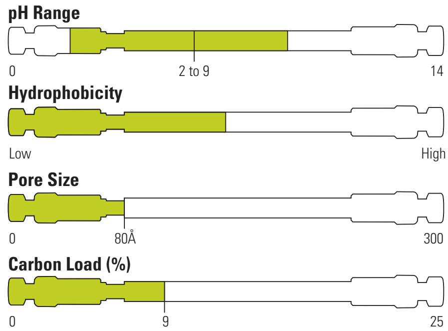
Accucore C8

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17226-012105	17226-013005	17226-014005
	HPLC Column	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**

Accucore aQ

- Retention and resolution of polar analytes
- Polar endcapped C18 stationary phase for alternative selectivity
- Ideal for highly aqueous mobile phases

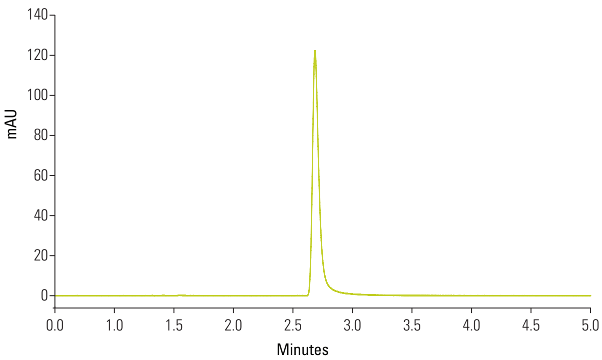


Particle Size 2.6µm **USP** L1

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

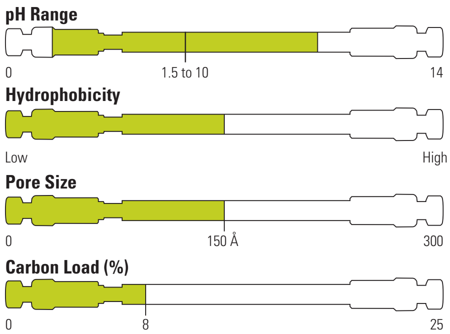
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17326-012105	17326-013005	17326-014005
	HPLC Column	30	17326-032130	-	-
		50	17326-052130	17326-053030	17326-054630
		100	17326-102130	17326-103030	17326-104630
		150	17326-152130	17326-153030	17326-154630
	UNIGUARD Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

Accucore Polar Premium

- Rugged amide-embedded C18 phase
- Selectivity complementary to conventional C18 phases
- Stable over a wide pH range and compatible with 100% aqueous mobile phase

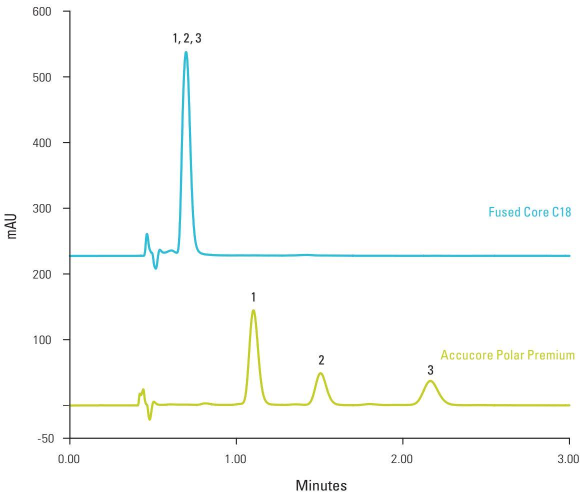
Accucore Polar Premium is an exceptionally rugged polar embedded reverse phase material that offers high efficiency, wider operating pH range and unique selectivity complementary to standard C18 phases.

The specially designed bonded phase is stable from pH 1.5 to 10.5 and will not undergo phase collapse in 100% aqueous mobile phase.



Particle Size 2.6µm **USP** L60

Curcuminoids (Tumeric)



Accucore Polar Premium 2.6µm, 100 x 3.0mm
Fused Core C18, 100 x 3.0mm

Mobile Phase:	Methanol : 10mM Phosphoric Acid, 80 : 20
Temperature:	40°C
Flow Rate:	800µL/min
Injection Volume:	6µL
Detection:	UV, 428nm
Analytes:	1. Curcumin 2. Desmethoxycurcumin 3. Bis-desmethoxycurcumin

The Accucore Polar Premium HPLC column provides desirable selectivity that resolves the major and minor component under simple isocratic conditions in less than three minutes, while the C18 columns fail to separate these components.

Accucore Polar Premium

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	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

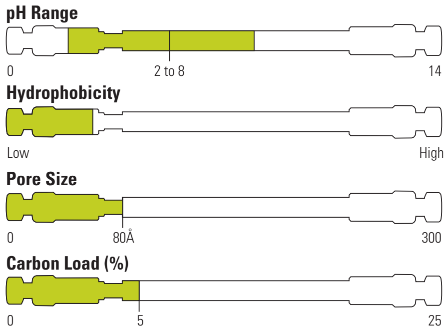
For more information, visit **thermofisher.com/accucore**

Accucore Phenyl-Hexyl

- Mixed-mode selectivity for aromatic and moderately polar analytes
- Enhanced pi-pi interactions with aromatics
- Moderate hydrophobicity

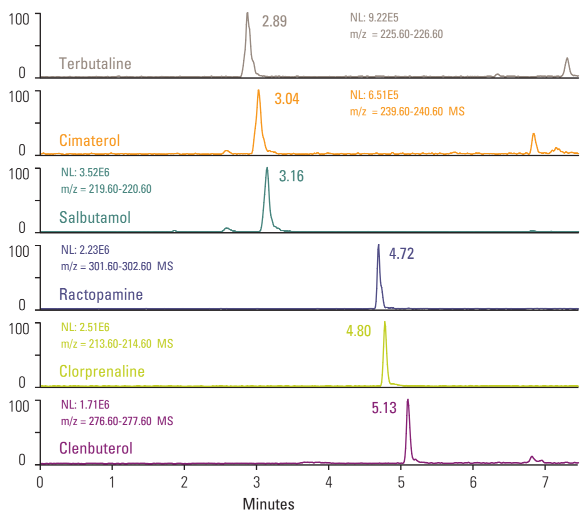
The C6 chain in Accucore Phenyl-Hexyl phase exhibits classical RP retention and selectivity, while the phenyl ring can add special selectivity by interacting with polar groups within the solutes. This results in a mixed-mode separation mechanism. The reduced hydrophobicity of this phase makes it ideal 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.



Particle Size 2.6µm **USP** L11

Beta-agonistsaa



Accucore Phenyl-Hexyl 2.6µm, 100mm x 2.1mm

Mobile Phase A:	Ammonium Acetate 5mM, pH 4	
Mobile Phase B:	Acetonitrile	
Gradient:	Time (min)	%B
	0	5
	1	5
	10	100
Temperature:	40°C	
Flow Rate:	0.25mL/min	
Injection Volume:	1µL	
Backpressure:	120 bar (at t0)	
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
	HPLC Column	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

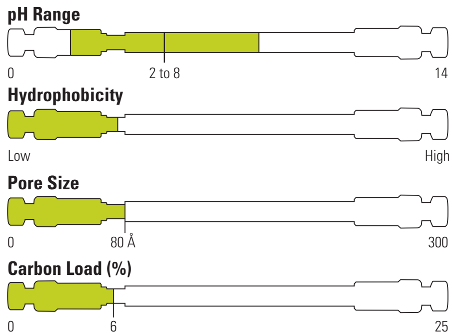
Accucore Phenyl-X

- 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.

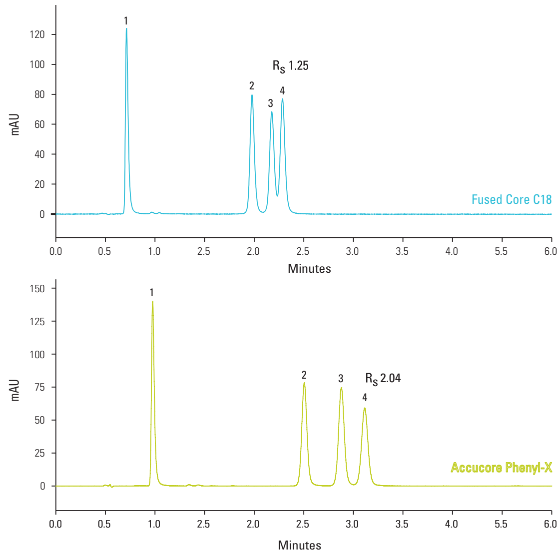
The advanced design of the bonded phase makes it compatible with highly aqueous mobile phases and robust, demonstrating very low bleed.

Phenyl-X exhibits particularly high aromatic selectivity.



Particle Size 2.6µm

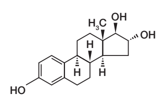
Estrogens



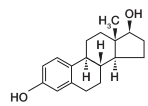
Accucore Phenyl-X 2.6µm, 100 x 2.1mm
Fused Core C18, 100 x 2.1mm

Mobile Phase: 15:40:45 (v/v) Acetonitrile:Methanol:Water
Temperature: 40°C
Flow Rate: 400µL/min
Injection Volume: 1µL
Detection: UV, 220nm

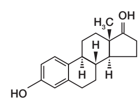
1. Estriol (E3)



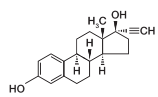
2. Estradiol (E2)



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

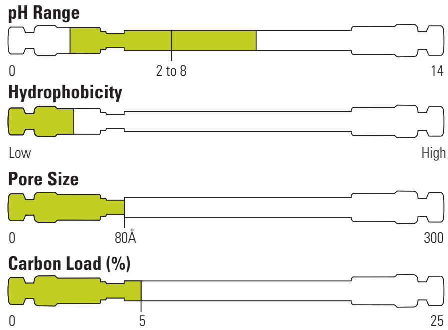
For more information, visit **thermofisher.com/accucore**

Accucore PFP

- Alternative selectivity to C18
- Extra retention for halogenated species
- Unique selectivity for non-halogenated polar compounds

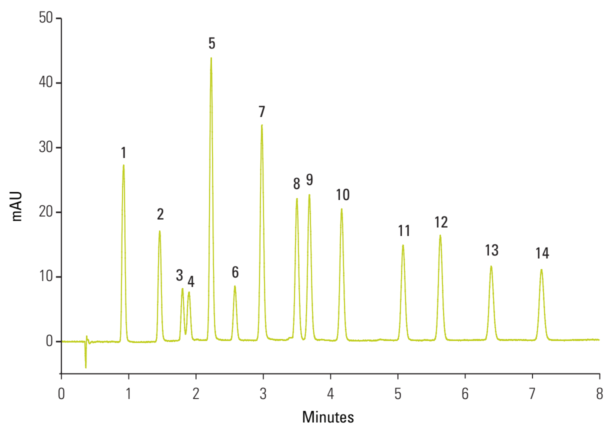
The introduction of fluorine groups into the Accucore PFP (pentafluorophenyl) stationary phase causes significant changes in solute-stationary phase interactions. This can lead to extra retention and selectivity for positional isomers of halogenated compounds.

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.



Particle Size 2.6µm **USP** L43

Positional isomers



Accucore PFP 2.6µm, 50mm x 2.1mm

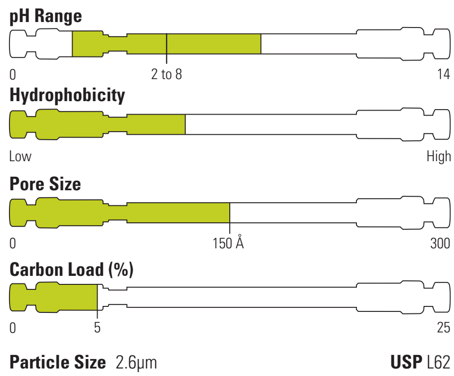
Mobile Phase A:	0.1% Formic Acid in Water
Mobile Phase B:	0.1% Formic Acid in Acetonitrile
Gradient:	15-30%B in 7 minutes
Temperature:	50°C
Flow Rate:	600µL/min
Injection Volume:	2µL
Detection:	UV, 270nm
Analytes:	1. 3,4 – Dimethoxyphenol 2. 2,6 – Dimethoxyphenol 3. 2,6 – Difluorophenol 4. 3,5 – Dimethoxyphenol 5. 2,4 – Difluorophenol 6. 2,3 – Difluorophenol 7. 3,4 – Difluorophenol 8. 3,5 – Dimethylphenol 9. 2,6 – Dimethylphenol 10. 2,6 – Dichlorophenol 11. 4 – Chloro-3-Methylphenol 12. 4 – Chloro-2-Methylphenol 13. 3,4 – Dichlorophenol 14. 3,5 – Dichlorophenol

Accucore PFP

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17426-012105	17426-013005	17426-014005
	HPLC Column	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

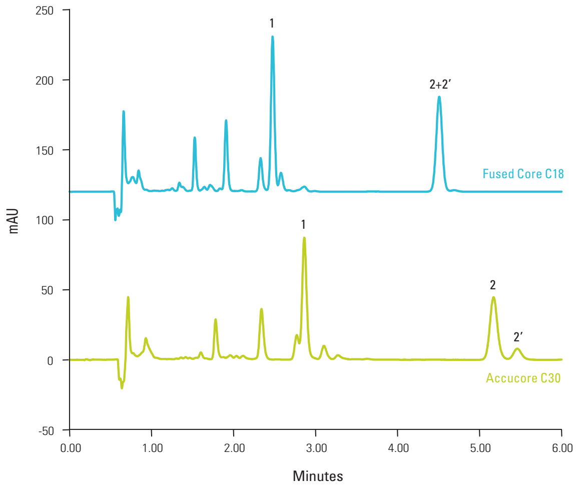
- Ideal for separation of hydrophobic, long alkyl chain compounds
- High shape selectivity for structurally related isomers
- Excellent aqueous-compatibility



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

Mobile Phase:	Methanol: 2mM Ammonium Acetate, 98:2
Temperature:	20°C
Flow Rate:	650µL/min
Injection Volume:	5µL
Detection:	UV, 250nm

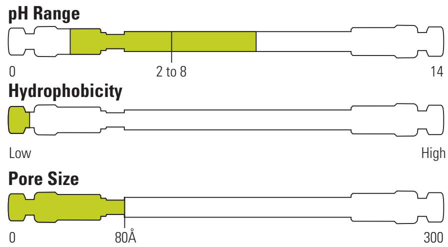
Accucore C30 shows better separation for vitamin K1 isomers than the C18 column.

Accucore C30

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	27826-012105	-	-
	HPLC Column	50	27826-052130	27826-053030	27826-054630
		100	27826-102130	27826-103030	27826-104630
		150	27826-152130	27826-153030	27826-154630
		250	27826-252130	-	-
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

Accucore HILIC

- Enhanced retention of polar and hydrophilic analytes
- Alternative selectivity to C18 without ion-pair or derivatization



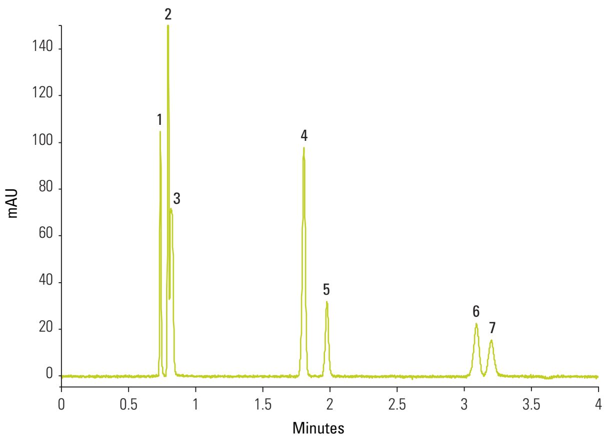
Particle Size 2.6µm **USP** L3

In HILIC mode the separation occurs through two mechanisms. The primary mechanism is a partitioning effect due to the enriched water layer around the polar or charged substrate material. The secondary mechanism involves interaction between the analyte and the active surface moiety.

Analyte properties that govern retention with HILIC phases are acidity/basicity, which determines hydrogen bonding, and polarizability which determines dipole-dipole interactions.

The highly organic mobile phases used with Accucore HILIC phase ensure efficient desolvation in ESI MS detection, which in turn leads to improved sensitivity.

Catecholamines



Accucore HILIC 2.6µm, 50mm x 2.1mm

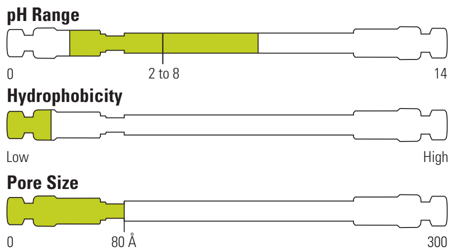
Mobile Phase:	85:15 Acetonitrile:100mM Ammonium Formate, pH 3.2
Temperature:	40°C
Flow Rate:	2mL/min
Injection Volume:	5µL
Backpressure:	157 bar
Detection:	UV, 280nm
Analytes:	1. Catechol 2. 5-HIAA 3. DOPAC 4. Serotonin 5. L-tyrosine 6. Dopamine 7. L-DOPA

Accucore HILIC

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17526-012105	17526-013005	17526-014005
	HPLC Column	30	17526-032130	-	-
		50	17526-052130	17526-053030	17526-054630
		100	17526-102130	17526-103030	17526-104630
		150	17526-152130	17526-153030	17526-154630
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

Accucore Urea-HILIC

- Bonded hydrophilic stationary phase
- Unique selectivity compared to other HILIC phases
- Low ion exchange activity

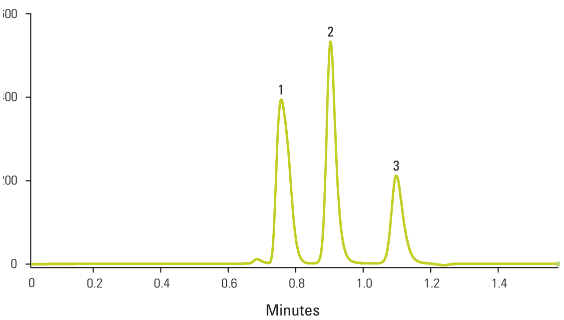


Particle Size 2.6µm

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	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

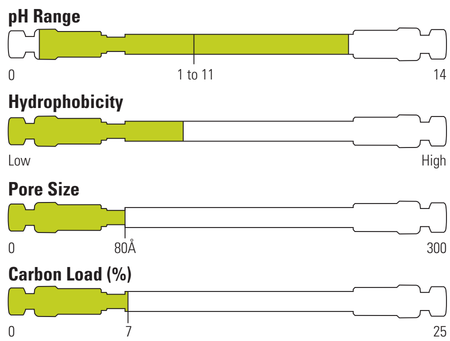
Retention time (t_R), peak asymmetry (A_s), peak resolution (R_s)

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

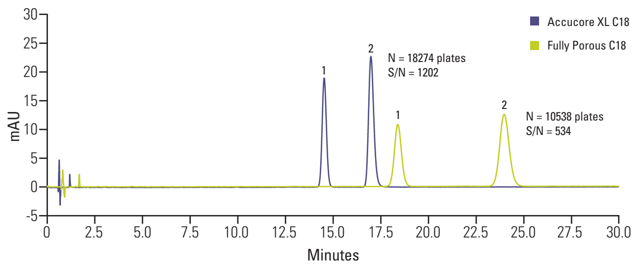
- Optimum retention of non-polar compounds
- Hydrophobic interaction mechanism
- Separates a broad range of analytes



Particle Size 4µm **USP** L1

The carbon loading of Accucore XL C18 provides high retention of non-polar analytes via a predominantly hydrophobic interaction mechanism.

Ibuprofen and valerophenone (USP)

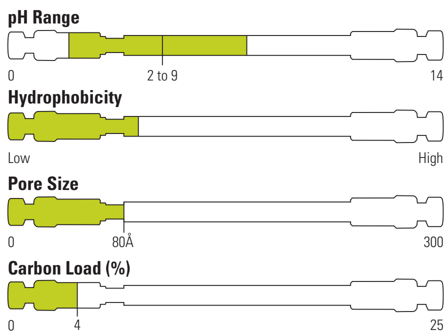


Accucore XL C18 4µm, 150 x 4.6mm
Fully porous C18 5µm, 150 x 4.6mm

Mobile Phase:	66.3:33.7 (v/v) Water with Phosphoric Acid, pH 2.5:Methanol
Temperature:	30°C
Flow Rate:	2mL/min
Injection Volume:	5µL
Detection:	UV, 214nm
Analytes:	1. Valerophenone
	2. Ibuprofen

Accucore XL C8

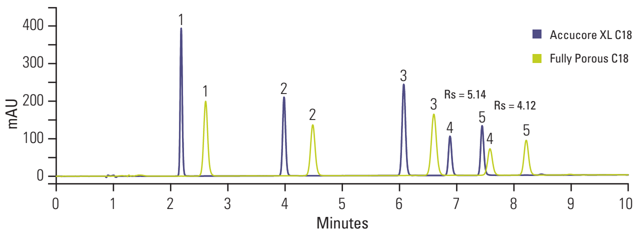
- Similar selectivity to C18 with lower retention
- Recommended for analytes with moderate hydrophobicity



Particle Size 4µm **USP** L7

Accucore XL C8 is recommended for analytes with moderate hydrophobicity, or when a less hydrophobic phase provides optimum retention.

Endocrine disruptors



Accucore XL C8 4µm, 150 x 4.6mm
Fully porous C8 5µm, 150 x 4.6mm

Mobile Phase A:	Water	
Mobile Phase B:	Acetonitrile	
Gradient:	Time (min)	
% B		
	0.0	25
	20.0	70
	20.1	75
	25.0	25
Flow rate:	1.5mL/min	
Temperature:	25°C	
Detection:	UV at 220nm	
Injection volume:	5µL	
Analytes	1.Desethyl Atrazine 3.Atrazine	
	2.Simazine 4.Diuron 5.Bisphenol A	

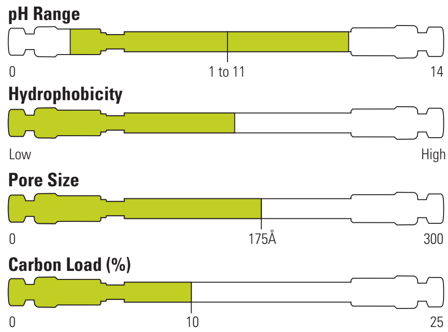
Accucore XL

Particle Size (µm)	Format	Chemistry	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
4	Drop-in Guard (4/pk)	C18	10	74104-012101	74104-013001	74104-014001
	HPLC Column		50	74104-052130	74104-053030	74104-054630
			100	74104-102130	74104-103030	74104-104630
			150	74104-152130	74104-153030	74104-154630
			250	74104-252130	74104-253030	74104-254630
	Drop-in Guard (4/pk)	C8	10	74204-012101	74204-013001	74204-014001
	HPLC Column		50	74204-052130	74204-053030	74204-054630
			100	74204-102130	74204-103030	74204-104630
			150	74204-152130	74204-153030	74204-154630
			250	74204-252130	74204-253030	74204-254630

Hypersil GOLD

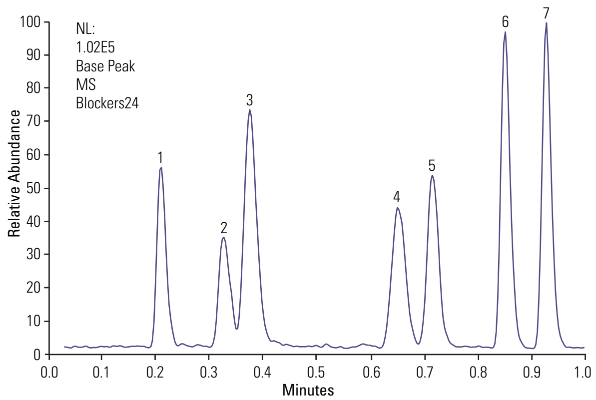
Endcapped, ultra-pure, silica-based columns with exceptional peak shape and resolution for HPLC and LC-MS

- Significant reduction in peak tailing while retaining C18 selectivity
- Excellent resolution, efficiency and sensitivity
- Confidence in the accuracy and quality of analytical data



Particle Size 1.9µm, 3µm, 5µm, 12µm **USP** L1

Seven b-blockers in 1 minute



Hypersil GOLD, 1.9µm, 20 x 2.1mm

Mobile Phase A:	H_2O+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. Propanolol

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
	HPLC Column	30	-	25005-032130	25005-033030	-	25005-034630
		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**

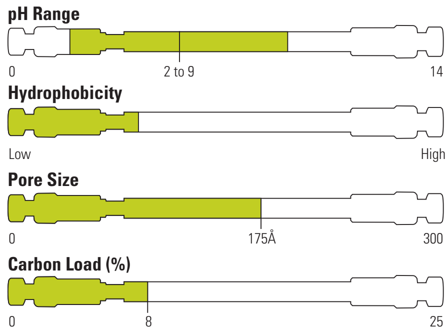
Hypersil GOLD preparative

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

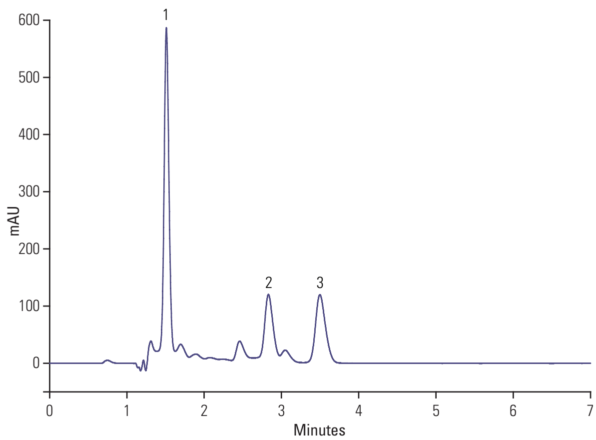
Recommended for analytes with medium hydrophobicity or when a less hydrophobic phase is required to obtain optimum retention

- 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



Particle Size 1.9µm, 3µm, 5µm **USP** L7

β-carotene



Hypersil GOLD C8 5µm, 150 x 4.6mm

Mobile Phase:	MeOH
Temperature:	25°C
Flow Rate:	1.5mL/min
Detection:	UV, 450nm
Analytes:	1. Lutein 2. Lycopene 3. β-Carotene

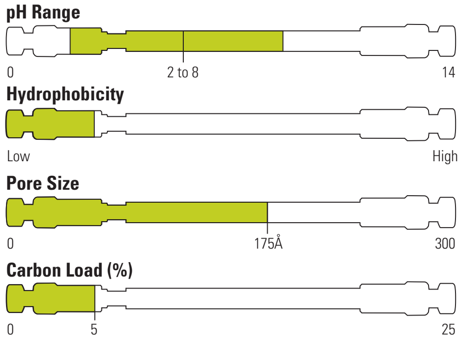
Hypersil GOLD C8

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	30	-	25202-032130	-	-	-
		50	25202-051030	25202-052130	25202-053030	-	25202-054630
		100	25202-101030	25202-102130	25202-103030	-	-
		150	-	25202-152130	-	-	-
3	Drop-in Guard (4/pk)	10	25203-011001	25203-012101	25203-013001	25203-014001	25203-014001
		30	-	25203-032130	25203-033030	-	25203-034630
	HPLC Column	50	-	25203-052130	25203-053030	-	25203-054630
		100	25203-101030	25203-102130	25203-103030	-	25203-104630
		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	-	25205-054630
		100	-	25205-102130	25205-103030	-	25205-104630
		150	-	25205-152130	25205-153030	25205-154030	25205-154630
		250	-	25205-252130	25205-253030	25205-254030	25205-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00	850-00

Hypersil GOLD C4

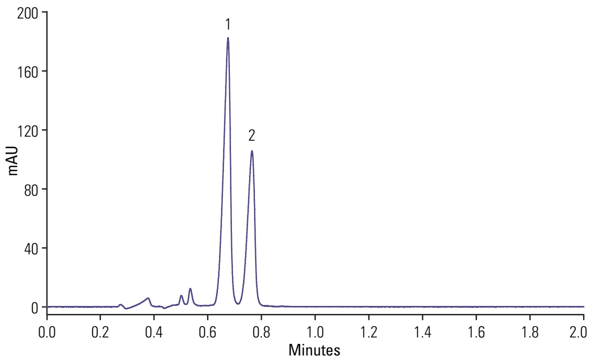
Lower hydrophobicity than C18 or C8 recommended for very hydrophobic analytes

- Lower hydrophobicity
- Faster separations
- Excellent peak shape
- High efficiency
- Outstanding sensitivity



Particle Size 1.9µm, 3µm, 5µm **USP** L26

Fatty acids



Hypersil GOLD C4 1.9µm, 100 x 2.1mm

Mobile Phase:	H_2O / MeCN (20:80)
Temperature:	30°C
Flow Rate:	0.55mL/min
Injection Volume:	1µL
Detection:	200 nm
Analytes:	1. Linolenic acid 2. Linoleic acid

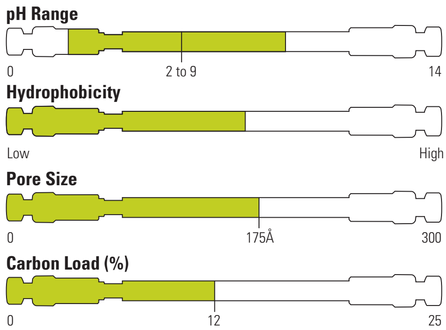
Hypersil GOLD C4

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	25502-051030	25502-052130	-	-
		100	-	25502-102130	-	-
		150	25502-151030	25502-152130	-	-
3	Drop-in Guard (4/pk)	10	25503-011001	25503-012101	25503-013001	25503-014001
	HPLC Column	50	25503-051030	25503-052130	-	-
		100	-	25503-102130	25503-103030	25503-104630
		150	25503-151030	25503-152130	25503-153030	25503-154630
5	Drop-in Guard (4/pk)	10	-	25505-012101	-	25505-014001
	HPLC Column	50	-	25505-052130	-	25505-054630
		100	-	25505-102130	25505-103030	25505-104630
		150	-	25505-152130	-	25505-154630
		250	-	25505-252130	-	25505-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

Hypersil GOLD aQ

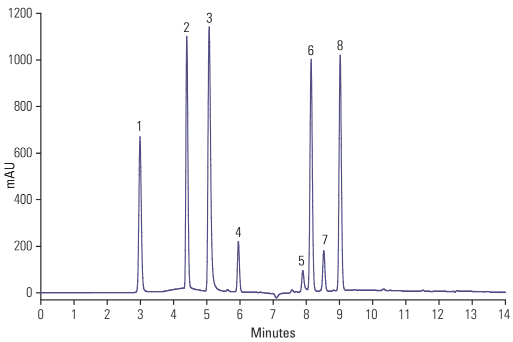
Controlled interaction mechanism by which polar analytes can be retained and resolved

- Polar endcapped C18 phase for alternative selectivity
- Retention and resolution of polar analytes
- Stable in 100% aqueous mobile phases



Particle Size 1.9µm, 3µm, 5µm **USP** L1

Water soluble vitamins



Thermo Scientific™ Hypersil GOLD™ aQ 5µm, 150 x 4.6mm

Mobile Phase A:	50 mM KH_2PO_4, pH 3.5
Mobile Phase B:	MeOH
Gradient:	0 – 100% B in 15 min
Flow Rate:	1mL/min
Detection:	UV, 205nm
Analytes:	1. Vitamin B1 (thiamine)
	2. Vitamin B6 (pyridoxine)
	3. Vitamin B3 (nicotinamide)
	4. Vitamin B5 (pantothenic acid)
	5. Folic Acid
	6. Vitamin B12 (cyanocobalamin)
	7. Vitamin H (biotin)
	8. Vitamin B2 (riboflavin)

Hypersil GOLD aQ

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	20	-	25302-022130	-	-	-
		30	-	25302-032130	-	-	-
		50	25302-051030	25302-052130	25302-053030	-	25302-054630
		100	25302-101030	25302-102130	25302-103030	-	-
		150	-	25302-152130	-	-	-
		200	-	25302-202130	-	-	-
3	Drop-in Guard (4/pk)	10	25303-011001	25303-012101	25303-013001	25303-014001	25303-014001
	HPLC Column	30	-	25303-032130	-	-	-
		50	25303-051030	25303-052130	25303-053030	25303-054030	25303-054630
		100	25303-101030	25303-102130	25303-103030	25303-104030	25303-104630
		150	25303-151030	25303-152130	25303-153030	25303-154030	25303-154630
5	Drop-in Guard (4/pk)	10	-	25305-012101	25305-013001	-	25305-014001
	HPLC Column	50	-	25305-052130	25305-053030	-	25305-054630
		100	-	25305-102130	25305-103030	-	25305-104630
		150	-	25305-152130	25305-153030	-	25305-154630
		250	-	25305-252130	25305-253030	-	25305-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00	850-00

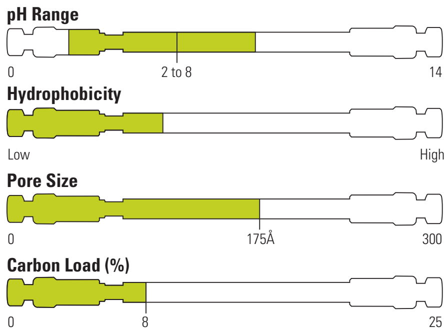
Hypersil GOLD aQ preparative

Particle Size (µm)	Format	Length (mm)	10mm ID	20mm ID	30mm ID	50mm ID
5	Preparative Guard Cartridge (3/pk)	10		25305-019023A	-	-
	Preparative HPLC Column	100	25305-109070A	25305-159070A	25305-109370A	25305-109570A
		150	25305-159070A	25305-159270A	25305-159370A	25305-159570A
		250	25305-259070A	25305-259270A	25305-259370A	25305-259570A

Hypersil GOLD PFP

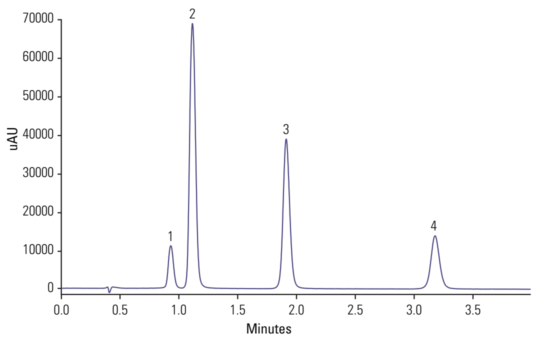
Introduction of a fluorine group into the stationary phase causes significant changes in solute-stationary phase interaction

- Fluorine atoms around the phenyl ring enhance pi-pi interactions with aromatic molecules
- Extra retention for halogenated species
- Selectivity for non-halogenated polar compounds



Particle Size 1.9µm, 3µm, 5µm **USP** L43

Polyphenols



Hypersil GOLD PFP 1.9µm, 50 x 2.1mm

Mobile Phase:	0.1% Acetic Acid
Temperature:	25°C
Flow Rate:	0.5mL/min
Injection Volume:	0.5µL
Detection:	UV, 280nm
Analytes:	1. Pyrogallol 2. Hydroquinone 3. Resorcinol 4. Phenol

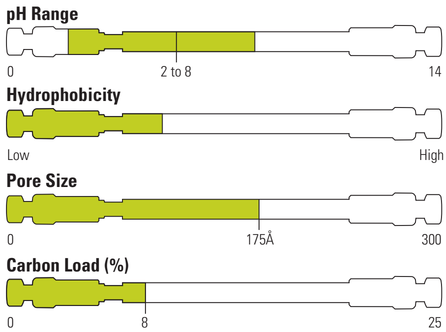
Hypersil GOLD PFP

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	20	-	25402-022130	-	-
		30		25402-032130	-	-
		50	25402-051030	25402-052130	25402-053030	25402-054630
		100	25402-101030	25402-102130	25402-103030	-
		150	-	25402-152130	-	-
		200	-	25402-202130	-	-
3	Drop-in Guard (4/pk)	10	25403-011001	25403-012101	25403-013001	25403-014001
	HPLC Column	30	-	-	25403-033030	-
		50	-	25403-052130	25403-053030	-
		100	25403-101030	25403-102130	25403-103030	25403-104630
		150	-	25403-152130	25403-153030	25403-154630
5	Drop-in Guard (4/pk)	10	-	25405-012101	-	25405-014001
	HPLC Column	50	-	25405-052130	-	-
		100	-	25405-102130	25405-103030	25405-104630
		150	-	25405-152130	25405-153030	25405-154630
		250	-	25405-252130	-	25405-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

Hypersil GOLD Phenyl

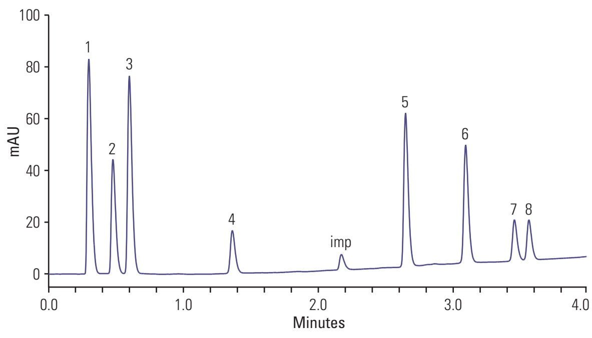
Contains a C4 linker which allows for superior alignment of the phenyl ring with aromatic molecules

- Enhanced pi-pi interactions with aromatics
- Moderate hydrophobicity
- Outstanding peak shape and sensitivity



Particle Size 1.9µm, 3µm, 5µm **USP** L11

Antidepressants



Hypersil GOLD Phenyl 1.9µm, 50 x 2.1mm

Mobile Phase A:	0.1% Formic acid
Mobile Phase B::	0.1% Formic acid in MeCN
Gradient:	10 – 60% B in 3.4mins, 60 - 90% B in 0.24 min
Temperature:	60°C
Flow Rate:	0.5mL/min
Injection Volume:	0.7µL
Detection:	UV, 225 and 254nm
Analytes:	1. Uracil 2. Acetaminophen 3. p-Hydroxybenzoic acid 4. o-Hydroxybenzoic acid 5. Oxazepam 6. Diazepam 7. Di-isopropyl phthalate 8. Di-n-propyl phthalate

Hypersil GOLD Phenyl

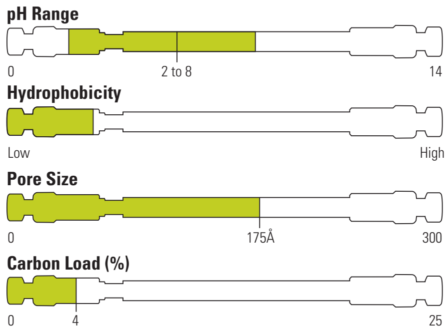
Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	25902-052130	-	25902-054630
		100	-	25902-102130	25902-103030	-
		150	-	25902-152130	-	-
		200	-	25902-202130	-	-
3	Drop-in Guard (4/pk)	10	-	25903-012101	25903-013001	25903-014001
	HPLC Column	50	-	25903-052130	25903-053030	-
		100	-	25903-102130	25903-103030	25903-104630
		150	25903-151030	25905-152130	25903-153030	25903-154630
5	Drop-in Guard (4/pk)	10	-	25905-012101	25905-013001	25905-014001
	HPLC Column	50	-	25905-052130	-	25905-054630
		100	-	25905-102130	25905-103030	25905-104630
		150	-	25905-152130	-	25905-154630
		250	-	-	-	25905-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

For more information, visit **thermofisher.com/hypersilgold**

Hypersil GOLD CN

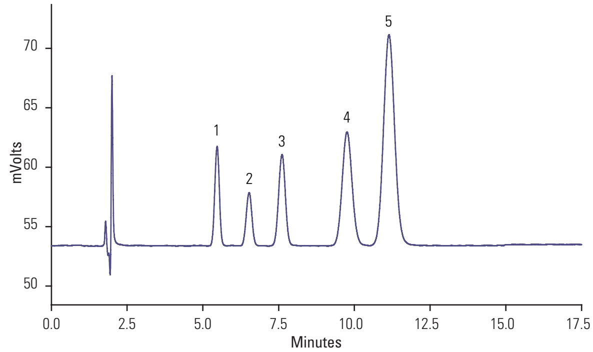
For both normal phase and reversed-phase separations

- Provide alternative selectivity with lower hydrophobicity
- Excellent peak shape
- Outstanding sensitivity
- Less retention for faster analysis



Particle Size 1.9µm, 3µm, 5µm **USP** L10

Organic acids



Hypersil GOLD CN 5µm, 150 x 4.6mm

Mobile Phase A:	25 mM KH_2PO_4 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

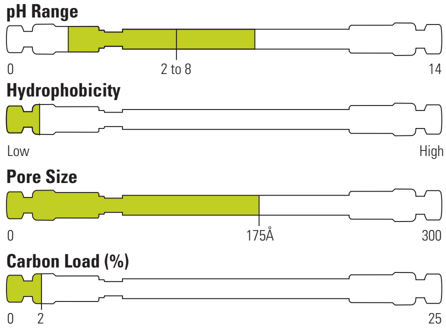
Hypersil GOLD CN

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
	HPLC Column	50	-	25805-052130	25805-053030	-	25805-054630
		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

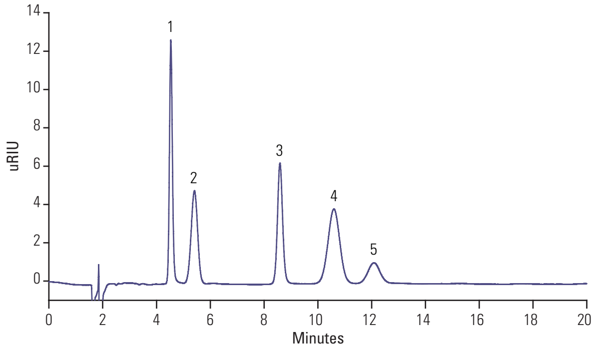
A high performance aminopropyl phase that gives excellent chromatographic properties in three modes: weak anion exchange, reversed-phase and normal phase

- 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



Particle Size 1.9µm, 3µm, 5µm **USP** L8

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

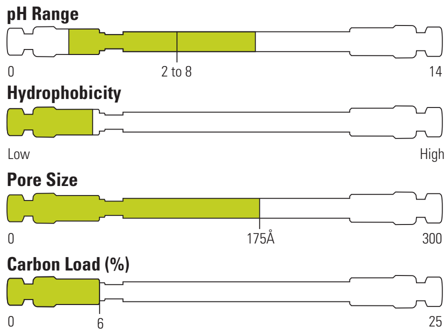
Hypersil GOLD Amino

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

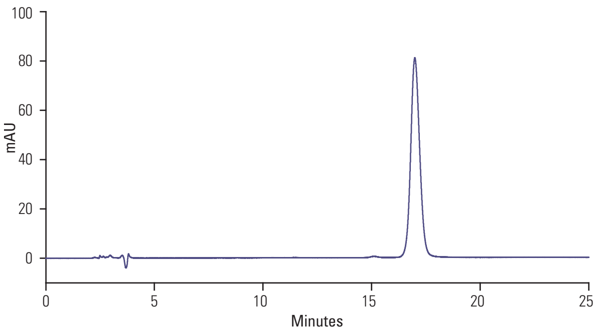
A novel polymeric amine ligand bonded to highly pure base deactivated silica

- 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



Particle Size 1.9µm, 3µm, 5µm

Vitamin C



Hypersil GOLD AX 5µm, 100 x 4.6mm

Mobile Phase:	100 mM Ammonium Acetate pH 6.8/ MeCN (30:70)
Temperature:	30°C
Flow Rate:	0.5mL/min
Injection Volume:	50µL
Detection:	UV, 240nm

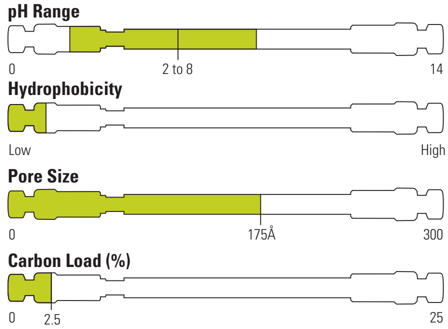
Hypersil GOLD AX

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	26102-052130	-	-
		100	-	26102-102130	-	-
		150	-	26102-152130	-	-
		200	-	26102-202130	-	-
3	Drop-in Guard (4/pk)	10	26103-011001	26103-012101	-	26103-014001
	HPLC Column	30	-	26103-032130	-	-
		50	-	26103-052130	-	-
		100	-	26103-102130	-	26103-104630
		150	26103-151030	26103-152130	26103-153030	-
5	Drop-in Guard (4/pk)	10	-	26105-012101	26105-013001	26105-014001
	HPLC Column	50	-	-	-	26105-054630
		100	-	-	-	26105-104630
		150	-	-	-	26105-154630
		250	-	26105-252130	26105-253030	26105-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

Hypersil GOLD SAX

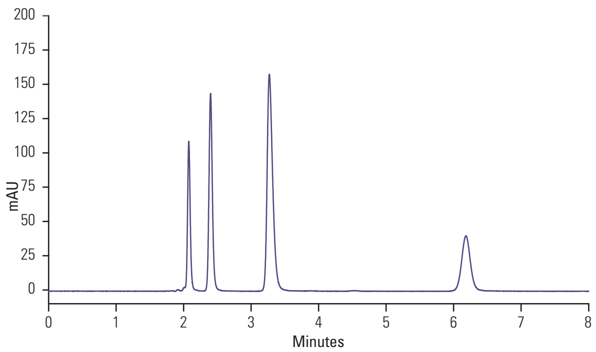
A highly stable quaternary amine strong anion exchange column for aqueous and low pH mobile phases

- High stability to aqueous and low pH mobile phases
- Ideally suited to the analysis of smaller organic molecules including nucleotides and organic acids
- Outstanding peak shape and sensitivity



Particle Size 1.9µm, 3µm, 5µm **USP** L14

Monophosphates



Hypersil GOLD SAX 5µm, 150 x 4.6mm

Mobile Phase:	Aqueous KH_2PO_4 (50 mM, pH 3)
Temperature:	40°C
Flow Rate:	1.0mL/min
Injection Volume:	10µL
Detection:	UV, 254nm

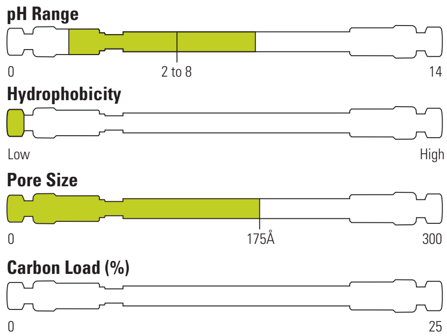
Hypersil GOLD SAX

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	26302-052130	-	-
		100	26302-102130	-	-
		150	26302-152130	-	-
3	Drop-in Guard (4/pk)	10	26303-012101	-	26303-014001
	HPLC Column	50	26303-052130	-	-
		100	26303-102130	26303-103030	26303-104630
		150	26303-152130	26303-153030	26303-154630
5	Drop-in Guard (4/pk)	10	26305-012101	26305-013001	26305-014001
	HPLC Column	50	26305-052130	-	-
		100	26305-102130	-	26305-104630
		150	26305-152130	-	26305-154630
		250	26305-252130	26305-253030	26305-254630
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

Hypersil GOLD Silica

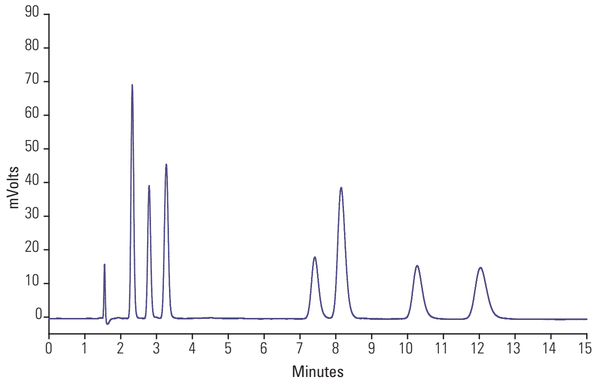
Unbonded, highly pure base deactivated silica media that is the backbone of the Hypersil GOLD range of columns

- Highly pure base deactivated silica media
- Outstanding peak shape and sensitivity



Particle Size 1.9µm, 3µm, 5µm **USP** L3

Steroids



Hypersil GOLD Silica 5µm, 150 x 4.6mm

Mobile Phase:	19:1 (v/v) n-C6H14/EtOH
Temperature:	30°C
Flow Rate:	1.5mL/min
Injection volume:	5µL
Detection:	UV, 254nm
Analytes:	1. Progesterone 2. 21-Hydroxyprogesterone-21-acetate 3. 17-a-Hydroxyprogesterone 4. Cortisone 5. 11-a-Hydroxyprogesterone 6. Corticosterone 7. Hydrocortisone

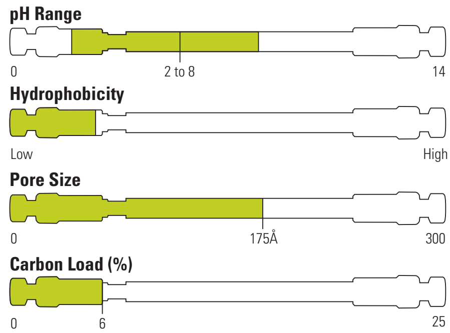
Hypersil GOLD Silica

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

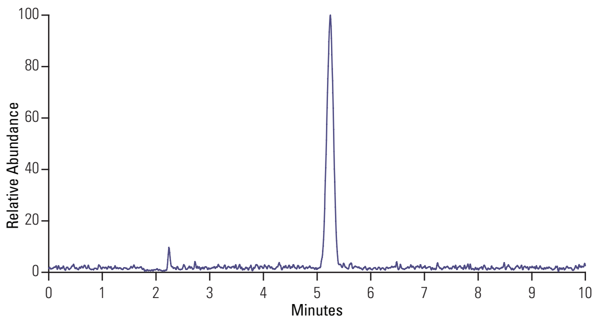
Retains and separates polar analytes that are problematic using reversed-phase columns

- Alternative selectivity to C18
- Improved sensitivity for MS detection
- Alternative to ion-pair or derivatization
- Outstanding peak shape and selectivity



Particle Size 1.9µm, 3µm, 5µm

Urea



Hypersil GOLD HILIC 5µm, 150 x 4.6mm

Mobile Phase:	H_2O/MeCN (10:90) + 0.1% formic acid
Temperature:	30°C
Flow Rate:	0.6mL/min
Injection Volume:	1µL
Detection:	+ESI
Analytes:	1. Urea

Hypersil GOLD HILIC

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	26502-052130	-	-
		100	-	26502-102130	-	-
		150	-	26502-152130	-	-
3	Drop-in Guard (4/pk)	10	26503-011001	26503-012101	26503-013001	26503-014001
	HPLC Column	30	-	26503-032130	-	-
		50	-	26503-052130	-	-
		100	26503-101030	26503-102130	26503-103030	26503-104630
		150	26503-151030	26503-152130	26503-153030	26503-154630
5	Drop-in Guard (4/pk)	10	-	26505-012101	-	26505-014001
	HPLC Column	50	-	26505-052130	-	26505-054630
		100	-	26505-102130	26505-103030	26505-104630
		150	-	26503-101030	-	26505-154630
		250	-	26505-252130	26505-253030	26505-254630
	Uniguard Drop-in Guard Cartridge Holder	10	851-00	852-00	852-00	850-00

Acclaim HPLC and UHPLC columns

Optimal selectivity through innovative chemistries

Designed for separating a variety of analytes, from small neutral and polar molecules to complex mixtures. Ideal for pharmaceutical, environmental, food and beverage and chemical applications.

Diversified selectivities
- Novel and proprietary surface chemistries

Reproducible and reliable
- Strict manufacturing and quality processes

High efficiencies
- For optimum resolution of complex mixtures

Ultra-pure, porous, spherical silica
- Providing consistent quality and performance

Download the Acclaim column selection guide **here**

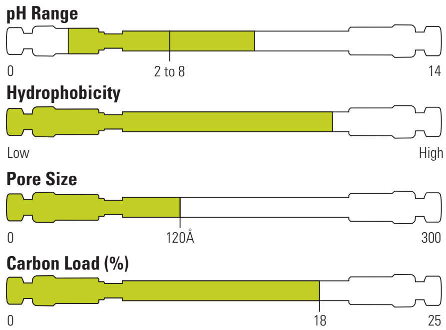
For more information, visit **thermofisher.com/acclaim**

Acclaim 120 C18

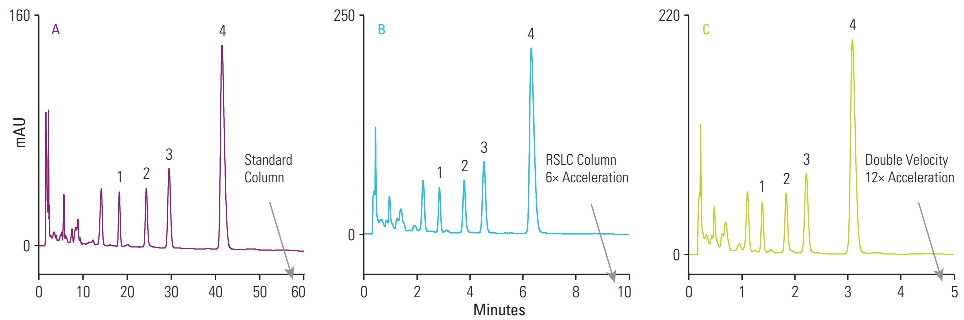
High performance reversed-phase columns for reproducible results

- 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.



Particle Size 2.2µm, 3µm, 5µm **USP** L1



A: Acclaim 120 C18, 5µm, 150 x 4.6mm
B, C: Acclaim RSLC C18, 2.2µm, 50 x 2.1mm

Mobile Phase:	200mM HOAc in 10% (v/v) MeOH
Temperature:	20°C
Flow Rate:	A: 1.00mL/min B: 0.41mL/min C: 0.82mL/min
Injection Volume:	A: 10µL B: 1.2µL C: 1.2µL
Detection:	UV, 254 nm, A: 1 Hz data rate B: 5 Hz data rate C: 10 Hz data rate
Analytes:	1. p-Hydroxybenzoic acid 2. p-Hydroxybenzaldehyde 3. Vanillic acid 4. Vanillin
Sample:	Commercial vanilla extract in 40% ethanol, filtered
Reference:	AOAC Official Method 990.25

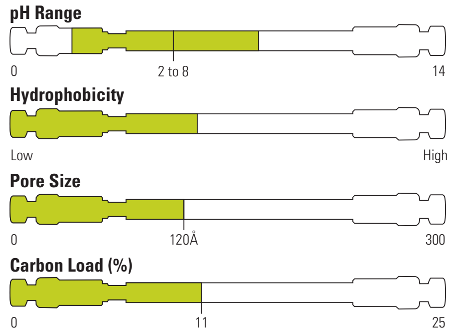
Acclaim 120 C18

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	071400	071606	-
		50	068981	071605	-
		75	-	075697	-
		100	068982	071604	-
		150	071399		-
		250	074812		-
3	HPLC Column	33	-	066272	-
		50	059128	068971	059131
		75	-	066273	-
		100	059129	076186	059132
		150	059130	063691	059133
		250	076187	070077	-
5	Guard Cartridge (2/pk)	10	069689	071981	069695
	HPLC Column	50	059142	-	059146
		100	059143	-	059147
		150	059144	-	059148
		250	059145	-	059149

Acclaim 120 C8

High performance reversed-phase columns with intermediate hydrophobic retention

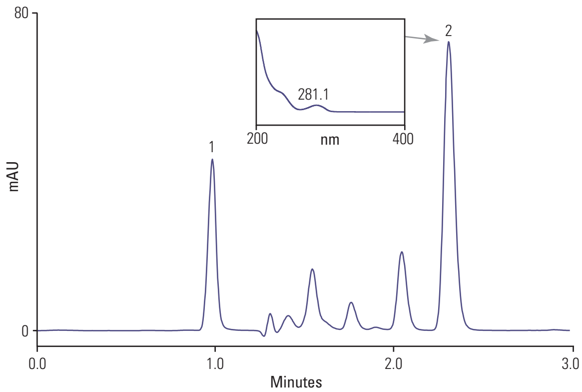
- Low silanol activity for excellent peak shapes for basic analytes
- Excellent column efficiencies
- LC-MS compatible



Particle Size 2.2µm, 3µm, 5µm **USP** L7

Acclaim 120 C8 reversed-phase columns feature densely bonded monolayer C8 ligands on a high-purity, spherical porous silica substrate. The columns are a well-characterized line of LC-MS compatible C8 phases with very high surface coverage and extremely low silanol activity. These columns provide exceptional performance for a variety of applications in the pharmaceutical, environmental, food and many other industrial sectors.

Triclosan in toothpaste



Column: Acclaim RSLC C8, 2.2µm, 50 x 2.1mm

Mobile Phase:	Isocratic, 15% buffer, (2mM Ammonium acetate pH5), 85% methanol (v/v)
Temperature:	50°C
Flow Rate:	0.2mL/min
Injection Volume:	1.0µL
Detection:	Diode array detector, 281nm, 10Hz, 0.1 s resp. time and spectra 200–400 nm
Analytes:	1. Saccharin 2. Triclosan
Sample:	Toothpaste containing 0.3% triclosan

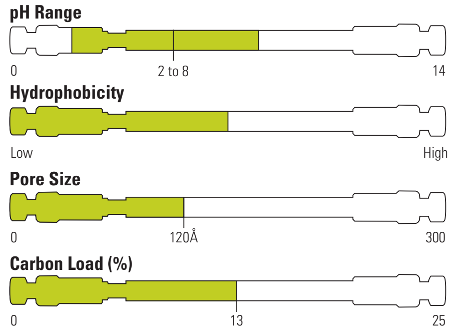
Acclaim 120 C8

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	-	072618	-
		50	072615	072619	-
		100	072616	072620	-
		150	072617	-	-
		250	074811	-	-
3	HPLC Column	50	059122	-	059125
		100	059123	-	059126
		150	059124	068970	059127
5	Guard Cartridge	10	069688	071979	069696
	HPLC Column	50	059134	-	059138
		100	-	-	059139
		150	059136	-	059140
		250	-	-	059141

Acclaim Phenyl-1

A unique reversed-phase column with high aromatic selectivity

- High aromatic selectivity
- High hydrophobic retention
- Unique and complementary selectivity compared to any other phenyl type column
- Compatibility with highly aqueous mobile phase
- High efficiency and rugged packing

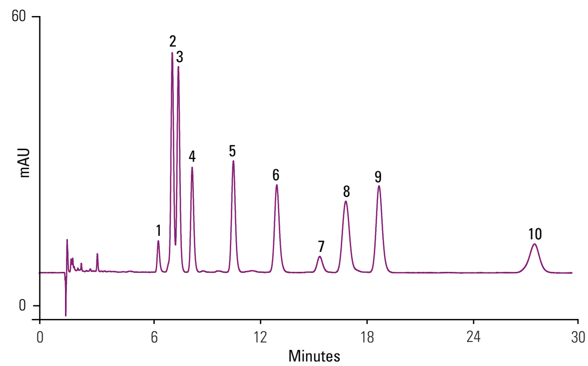


Particle Size 3µm, 5µm **USP** L11

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

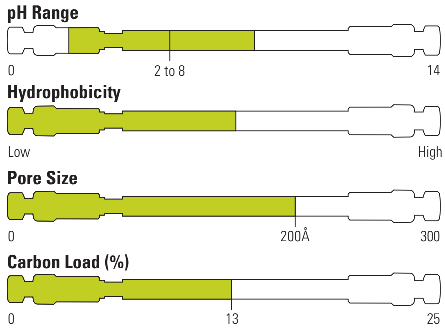
Learn more at **thermofisher.com/acclaim**

Acclaim C30

Columns for separating structurally related isomers

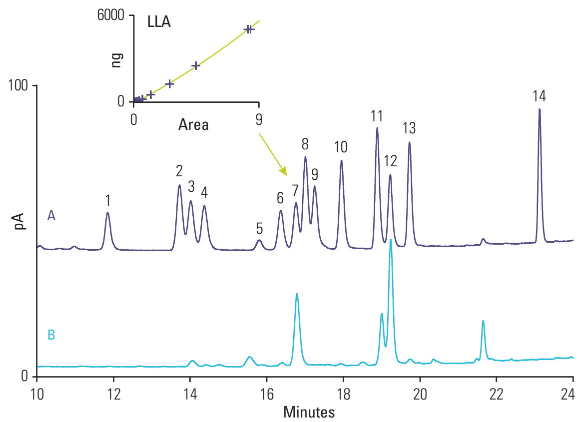
- High shape selectivity
- Unique selectivity complementary to other reversed-phase columns
- Compatibility with highly aqueous mobile phase
- High-quality: low column bleed, high efficiency and rugged packing

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).



Particle Size 3µm, 5µm **USP** L62

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

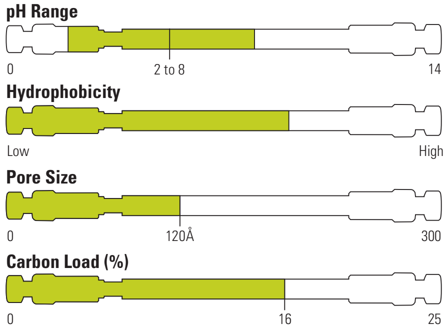
Acclaim guard holder

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

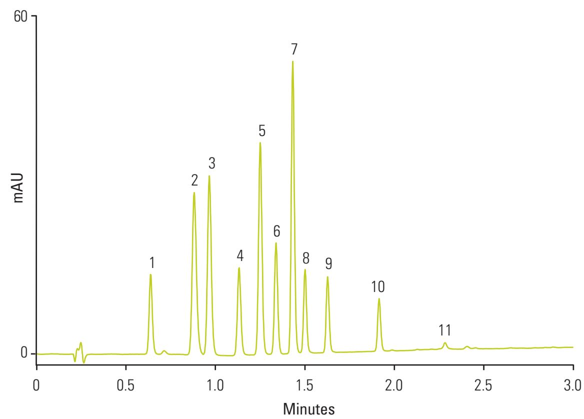
- Selectivity complementary to the C18 column
- Low silanol activity for excellent peak shape with basic compounds
- Compatible with 100% aqueous mobile phase
- High selectivity for hydrophobic aromatic molecules
- Wide range of applications



Particle Size 2.2µm, 3µm, 5µm **USP** L60

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

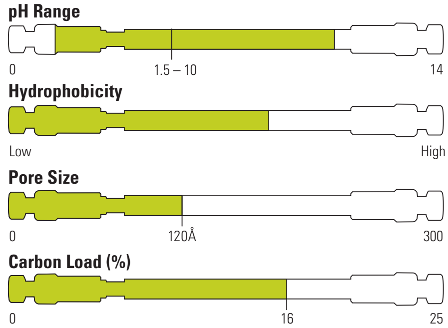
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	50	072622	-	-
		100	072623	072627	-
		150	072624	-	-
		250	074813	-	-
3	HPLC Column	50	063174	068972	-
		100	061316	076214	-
		150	061317	063693	061318
		250	-	070079	-
5	Guard Cartridge	10	069691	071983	069698
	HPLC Column	50	-	-	061319
		150	-	-	061320
		250	-	-	061321

Learn more at **thermofisher.com/acclaim**

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

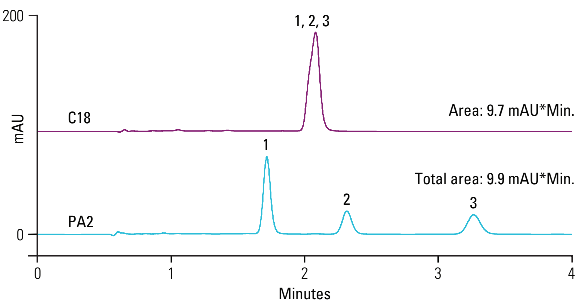


Particle Size 2.2µm, 3µm, 5µm **USP** L60

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_3PO_4
Mobile Phase B:	Methanol
Isocratic:	C18: 70% B (v/v) PA2: 80% B (v/v)
Temperature:	30°C
Flow Rate:	0.41mL/min
Detection:	UV, 428nm
Analytes:	1. Curcumin 2. Demethoxycurcumin 3. Bis-demethoxycurcumin
Sample:	Turmeric extract

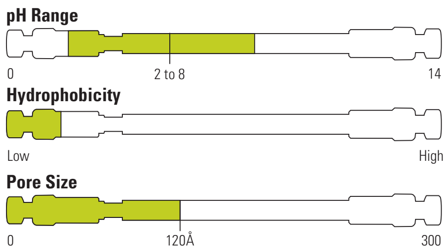
Acclaim PolarAdvantage II

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	071402	-	-
		50	068989	071608	-
		100	068990	071607	-
		150	071401	-	-
		250	074814	-	-
3	HPLC Column	33	-	066276	-
		50	077999	068973	063189
		75	-	066277	-
		100	077998	078000	078001
		150	063187	063705	063191
		250	077997	070080	-
5	Guard Cartridge	10	069692	071985	069699
	HPLC Column	150	-	-	063197
		250	-	-	063199

Acclaim HILIC-10

Designed with unique selectivity for hydrophilic molecules

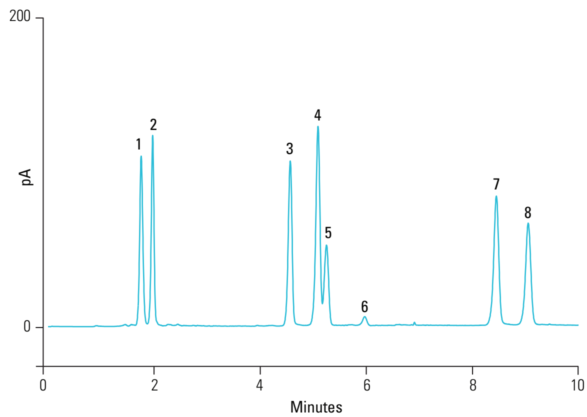
- Retains highly polar molecules that are not retained by reversed-phase chromatography
- Unique selectivity, complementary to reversed-phase columns
- Hydrolytically stable
- Rugged column packing
- Broad application range



Particle Size 3µm, 5µm

The Acclaim HILIC-10 column is designed for separating highly hydrophilic molecules by Hydrophilic Interaction Liquid Chromatography (HILIC). This column is based on high-purity spherical porous silica covalently modified with a proprietary hydrophilic layer.

Glycerides



Acclaim HILIC-10, 3µm, 150 x 3.0mm

Mobile Phase A:	Heptane
Mobile Phase B:	2-Propanol/acetic acid 99.5:0.5
Temperature:	25°C
Flow Rate:	0.50mL/min
Injection Volume:	4µL
Detection:	Corona ultra, nebulizer 15°C
Analytes:	1. Tristearin 2. Trilaurin 3. Distearin isomer 1 4. Dilaurin isomer 1 5. Distearin isomer 2 6. Dilaurin isomer 2 7. Monostearin 8. Monolaurin

Acclaim HILIC-10

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	150	074259	074258	074257
5	Guard Cartridge	10	074263	074261	074262

Acclaim guard holder

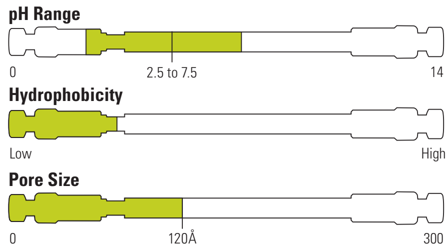
Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and Coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

Learn more at **thermofisher.com/acclaim**

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

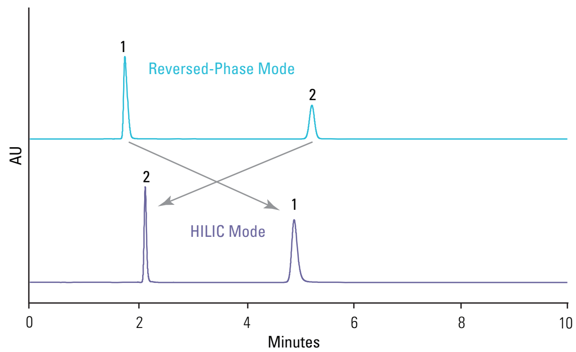


Particle Size 3µm, 5µm

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_3CN/0.1 M NH_4OAc, 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

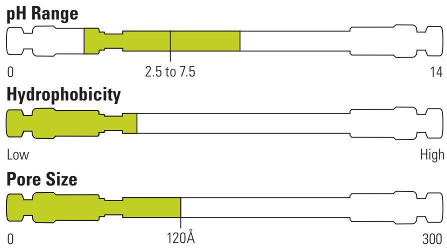
Acclaim guard holder

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

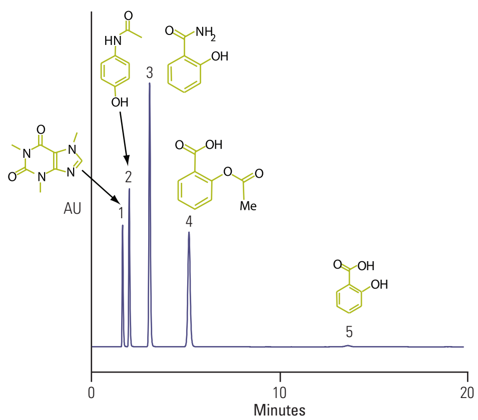
- Adjustable selectivity
- Selectivity orthogonal to reversed-phase (RP) columns
- Ideal selectivity for anionic molecules
- Excellent column efficiency and peak asymmetry
- Multimode retention mechanisms: reversed-phase, weak anion exchange, and HILIC modes



Particle Size 3µm, 5µm **USP** L78

The Acclaim Mixed-Mode WAX-1 is a novel, high-efficiency silica HPLC column that combines hydrophobic and weak anion exchange characteristics. Its unique chemistry results in a multimode separation mechanism that includes reversed-phase, anion exchange, and HILIC interactions. Selectivity can be adjusted by changing ionic strength, pH or organic solvent content.

Pain relief medicine



Acclaim Mixed-Mode WAX-1, 5µm, 150 x 4.6mm

Mobile Phase:	40/60 v/v Acetonitrile/buffer (6.8 g potassium monophosphate and 0.5 g pyrophosphate in 1000 g D.I. H_2O, pH is adjusted to 6.0 with NaOH)
Temperature:	30°C
Flow Rate:	1mL/min
Injection Volume:	1µL
Detection:	UV, 220nm
Analytes:	1. Caffeine
	2. Acetaminophen
	3. Salicylamide
	4. Acetyl salicylic acid (Aspirin)
	5. Salicylic acid

Acclaim Mixed-Mode WAX-1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	50	-	071908	-
		150	070089	070088	-
5	Guard Cartridge	10	069686	071909	069704
	HPLC Column	150	067084	-	064984
		250	-	-	064985

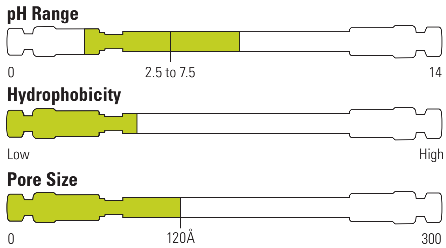
Acclaim guard holder

Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and Coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

Acclaim Mixed-Mode WCX-1

Designed for separating cationic molecules with adjustable selectivity control

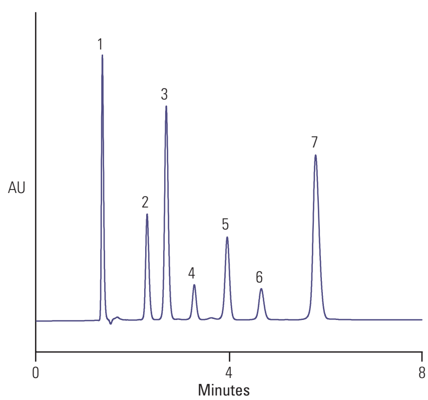
- Adjustable selectivity
- Ideal selectivity for separating basic molecules
- Selectivity complementary to C18 RP columns
- Multimode separation mechanism: reversed-phase, weak cation exchange, anion-exclusion and HILIC



Particle Size 3µm, 5µm **USP** L78

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_3CN/NH_4OAc, pH 5.2 (20 mM total)
Temperature:	30°C
Flow Rate:	1mL/min
Injection Volume:	5µL
Detection:	UV (225 nm)
Analytes:	1. Maleate 50µg/mL
	2. Ketoprofen 30µg/mL
	3. Naproxen 30µg/mL
	4. Hydrocortisone 60µg/mL
	5. Dexamethasone 60µg/mL
	6. Oxprenolol 300µg/mL
	7. Timolol 250µg/mL

Acclaim Mixed-Mode WCX-1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	50	-	071910	-
		150	070093	070092	-
5	Guard Cartridge	10	085455	071911	069705
	HPLC Column	150	068371	-	068353
		250	-	-	068352

Acclaim guard holder

Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and Coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

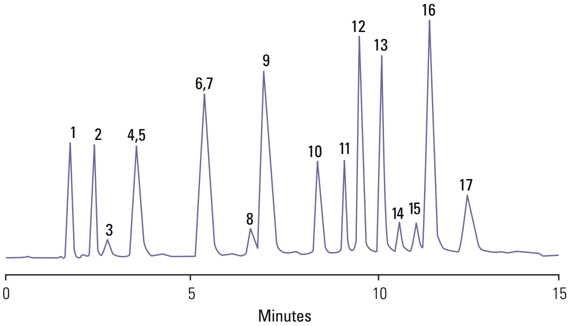
OmniPac

DVB polymer columns for combined ion exchange and reversed-phase separations

- Acid, base and solvent compatible, pH 0 to 14
- Ideal for the separation of high molecular weight organic acids
- Delivers optimal separation of very hydrophobic anions
- Delivers optimal separation of halogenated anions
- Provides simultaneous separation of neutral and ionic species
- Unique selectivity for polar and ionic organic analytes
- Delivers optimal separation of organic, hydrophobic, and halogenated cations

Thermo Scientific™ OmniPac™ is a range of latex-based columns. Both PAX columns have an ion exchange capacity of about 40µeq per column, and the PCX columns have a capacity of approximately 120µeq per column. The PAX-500 and PCX-500 columns separate analytes through both ion exchange and reversed-phase mechanisms, due to their higher reversed-phase capacity relative to the PAX-100 and PCX-100 columns.

Gradient separation of nitrogen-containing compounds



OmniPac PCX-500, 250 x 4.0mm

Mobile Phase:	Acetonitrile/Sodium Chloride/ Hydrochloric Acid Gradient
Flow Rate:	1.0mL/min
Detection:	UV, 254nm
Analytes:	1. Orotic Acid 2. 4-Hydroxybenzamide 3. Luminol Impurity 4. Luminol 5. Pyridine 6. PABA 7. 2,2'-Bipyridine 8. p-Phenylenediamine 9. Naphthylamine 10. Nitrobenzoic Acid 11. Tribenzylamine 12. p-Nitroaniline 13. 2,4-Dinitroaniline 14. Dibenzylamine 15. N-Methyl-N-nitrosoaniline 16. 4-Chloro-2-nitroaniline 17. 2,6-Dichloro-4-nitroaniline

OmniPac anion exchange

Description	Porosity	Length (mm)	4.0mm ID
PAX-100	Microporous	50	042151
		250	042150
PAX-500	Microporous	50	042153
		250	042152

OmniPac cation exchange

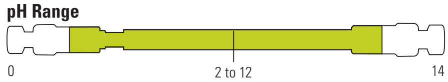
Description	Porosity	Length (mm)	4.0mm ID
PCX-100	Microporous	50	042193
		250	042189
PCX-500	Microporous	50	042195
		250	042191

Acclaim Size Exclusion Chromatography (SEC)

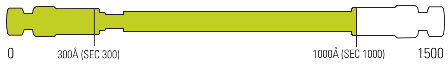
High performance SEC columns for analysis of water soluble polymers

- Proprietary mono-dispersed multi-pore hydrophilic resin: no inflection points in calibration curve
- SEC-300 calibrated from 100 to 50,000 Daltons
- SEC-1000 calibrated from 1,000 to 1,000,000 Daltons
- Availability of small particle sizes packed in 300 x 4.6mm dimension allows for high-resolution analysis at reduced solvent consumption
- Stable surface bonding with low column bleed and compatibility with UV, RI, MS, ELSD and Thermo Scientific™ Dionex™ Corona™ Charged Aerosol Detectors

pH Range

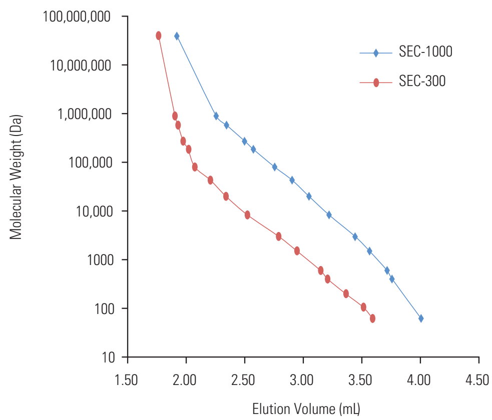


Pore Size



Particle Size 5, 7µm

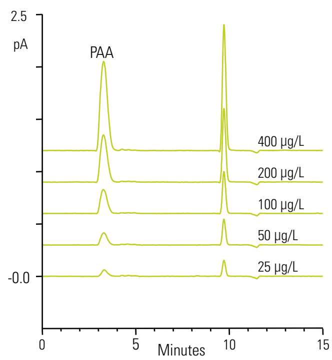
Thermo Scientific™ Acclaim™ SEC-300 and SEC-1000 are a family of resin based, high performance size exclusion chromatography columns specifically designed for the separation of water soluble polymers and oligomers.

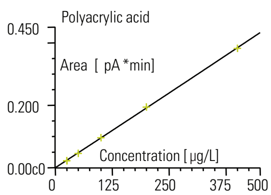


Acclaim SEC-300, 5µm, 300 x 4.6mm
Acclaim SEC-1000, 7µm, 300 x 4.6mm

Mobile Phase:	10mM sodium perchlorate
Temperature:	25°C
Flow Rate:	0.35mL/min
Injection Volume:	50µL
Detection:	RI
Analytes:	(0.03% - 0.1% in mobile phase) dextran (MW 5,000,000-40,000,000), PEO (MW 895,000, 580,000, 272,000, 185,000, 80,000, 43,000, and 20,000), PEG (MW 8,300, 3,000, 1,500, 600, 400 and 200), diethylene glycol (MW 106 and ethylene glycol (MW 62)

Polyacrylic acid using SEC with charged-aerosol detection





Acclaim SEC-300 , 5µm, 300 x 4.6mm

Mobile Phase A:	Acetonitrile
Mobile Phase B:	Water
Temperature:	30°C
Flow Rate:	0.35mL/min
Injection Volume:	35µL
Detection:	Corona III; evaporator 55°C, Engine 40 °C, 2 Hz, filter 5, power function 1.20
Analytes:	1. PAA standards in water

Acclaim size exclusion chromatography (SEC)

Description	Particle Size (µm)	Format	Length (mm)	4.6mm ID	7.8mm ID
Acclaim SEC-300	5	Guard	33	082740	–
		HPLC Column	150	–	079726
			300	079723	079725
Acclaim SEC-1000	7	Guard	33	082739	–
		HPLC Column	150	–	079722
			300	079724	079721

Application Specific HPLC and UHPLC Columns

Innovative chemistries tailored for challenging and critically important applications

Application specific columns utilize novel and unique chemistries to provide superior resolution with ease of use for key pharmaceutical and environmental applications.

Acclaim AmG C18
- Aminoglycoside antibiotics separation

Acclaim Trinity P1 and P2
- API & counterion analysis

Acclaim organic acid
- Fast organic acid analysis

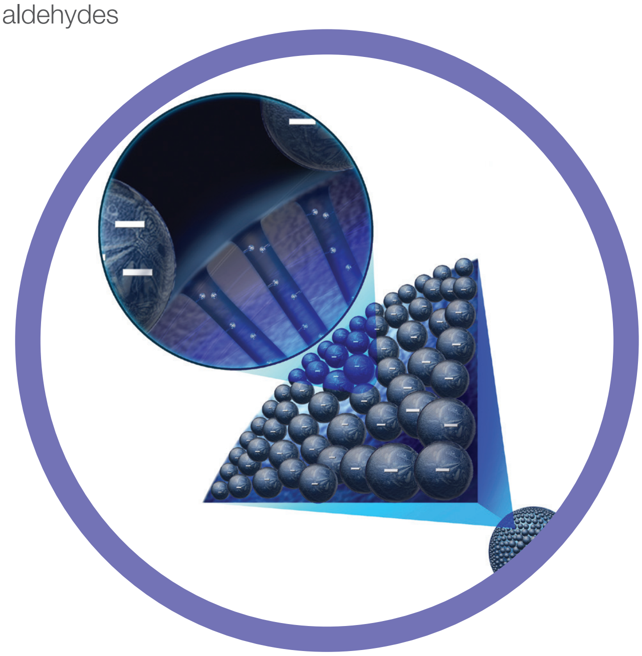
Acclaim surfactant and surfactant plus
- Separation of surfactants

Acclaim explosives
- Separation of explosive residues

Acclaim Trinity Q1
- Diquat and paraquat analysis

Acclaim Carbamate
- The separation of carbamate pesticides

Acclaim Carbonyl C18
- Separation of DNPH derivatives of aldehydes and ketones



Download the Acclaim column selection guide **here**

For more information,
visit **thermofisher.com/acclaim**

Acclaim AmG C18

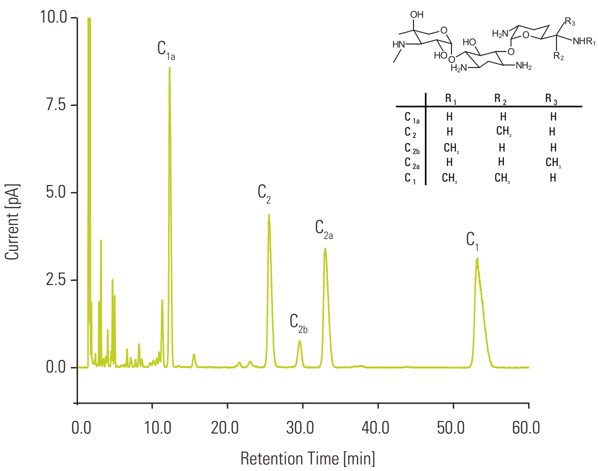
Designed to provide rugged and reproducible reversed-phase chromatography of aminoglycoside antibiotics.

- 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



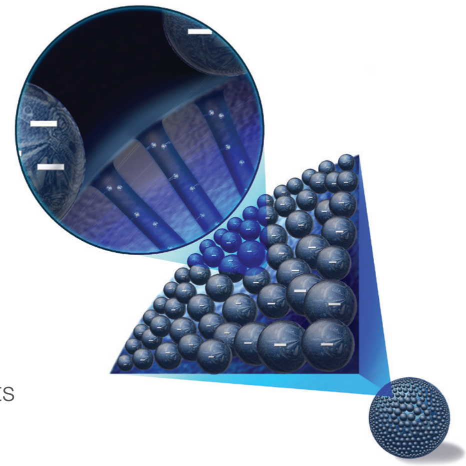
Acclaim AmG C18, 3µm, 150 x 3.0mm

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



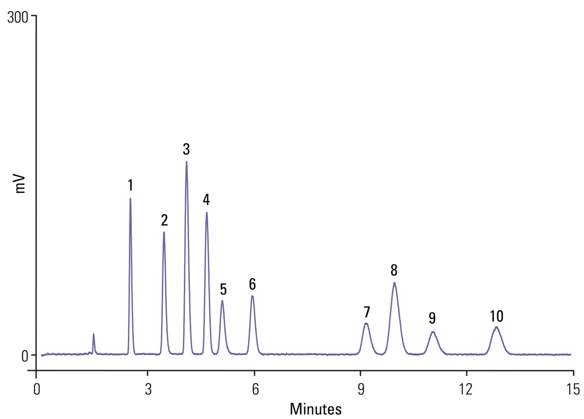
Mixed mode column technology combining reversed-phase, anion exchange and cation exchange functionality on a single support

- 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_3CN/20mM (total) NH_4OAc, 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: (50 to 100ppm)	1. Choline 2. Tromethamine 3. Sodium 4. Potassium 5. Meglumine 6. Mesylate 7. Nitrate 8. Chloride 9. Bromide 10. Iodide

Acclaim Trinity P1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID
3	Guard Cartridges (2/pk)	10	071391	071390
	HPLC Column	50	075565	071388
		100	071389	071387
		150	075564	075563

Acclaim guard holder

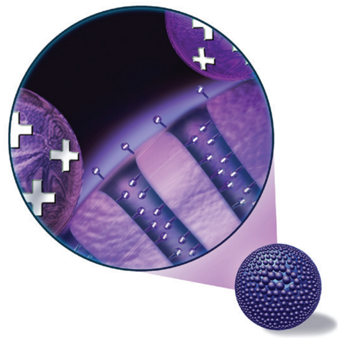
Format	Cat. No.
Acclaim SST Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

For more information, visit **thermofisher.com/acclaim**

Acclaim Trinity P2

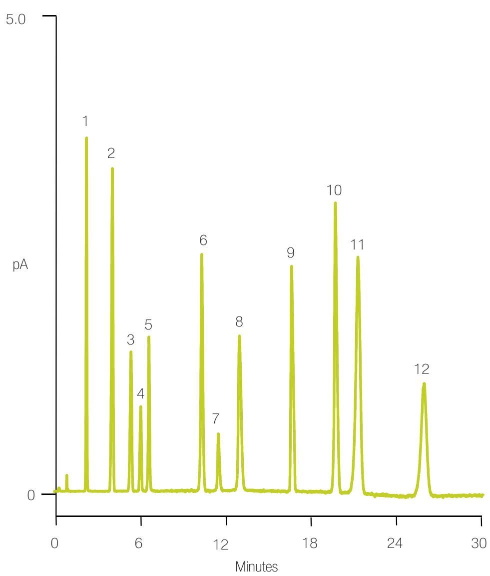
Mixed-mode column technology; hydrophilic interaction combining HILIC, anion exchange and cation exchange functionalities

- 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 nano-polymer 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 NH4OFm, 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_2O	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

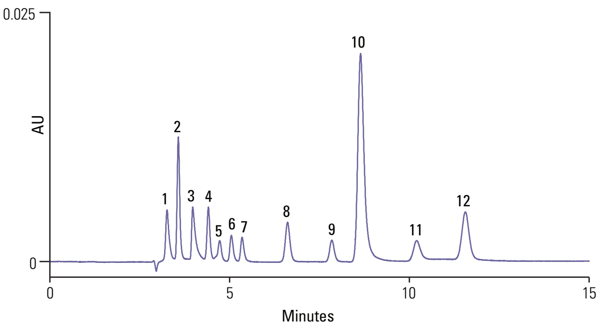
Optimized and application-tested for the analysis of hydrophilic organic acids

- 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_2SO_4, 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**

Acclaim surfactant

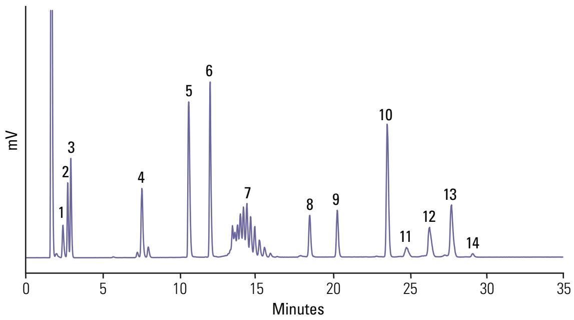
Excellent performance for separating a broad range of surfactants

- 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_3CN,
Mobile Phase B:	0.1 M NH_4OAc, pH 5.4
Gradient:	25% to 85% A in 25min, then hold 85% A for 10min
Temperature:	30°C
Flow Rate:	1mL/min
Injection Volume:	25µL
Detection:	ELS detector
Analytes:	1. Chloride 2. Bromide 3. Nitrate 4. Xylene sulfonate 5. Laurylpyridinium chloride 6. Lauryldimethylbenzyl-ammonium chloride 7. Triton X-100 8. Cetyl betaine 9. Decyl sulfate 10. Dodecyl sulfate 11. C_{10}-LAS 12. C_{11}-LAS 13. C_{12}-LAS 14. C_{13}-LAS

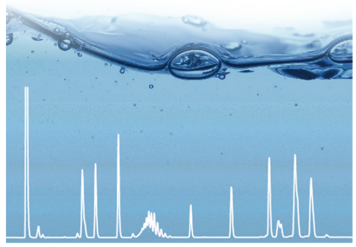
Acclaim surfactant

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



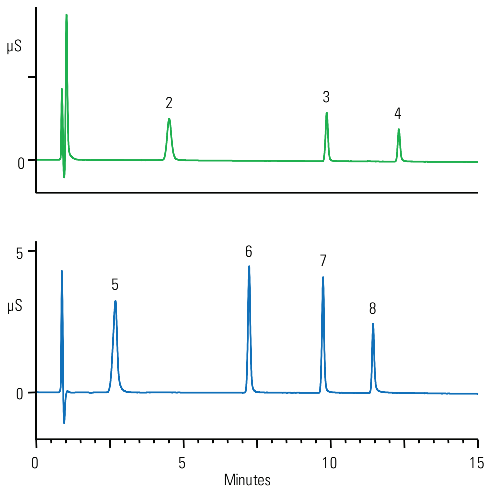
Column of choice for surfactant analysis using higher sensitivity detection: performance, versatility, throughput

- 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

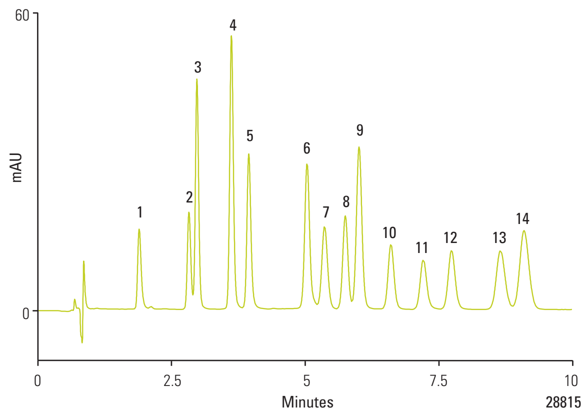
The best solution for explosives analysis (EPA Method 8330)

- 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% acetontrile	

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

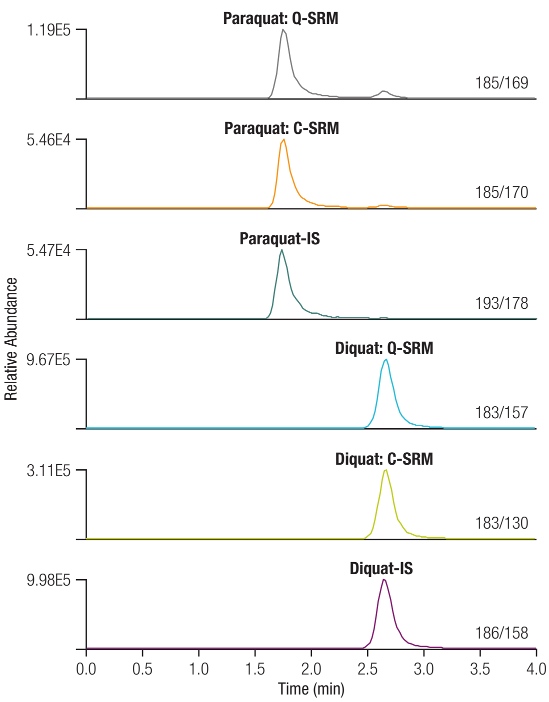
Acclaim Trinity Q1

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 Electrospary 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: (SRM)	Selected Reaction Monitoring

Scan Events	Precursor	Quantitative SRM (CID)	Confirmative SRM (CID)
Paraquat	185	169 (27)	170 (17)
Paraquat-d_6	193	178 (17)	
Diquat	183	157 (22)	130 (31)
Diquat-d_3	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**

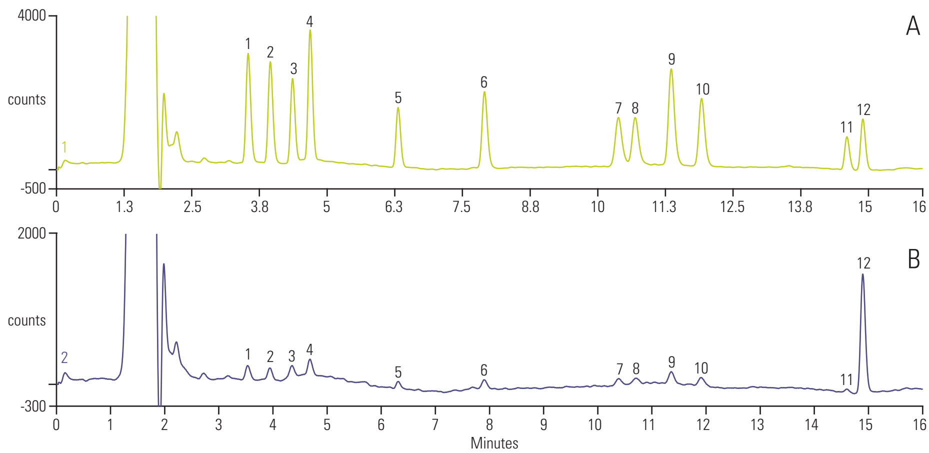
Acclaim Carbamate

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_2O
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

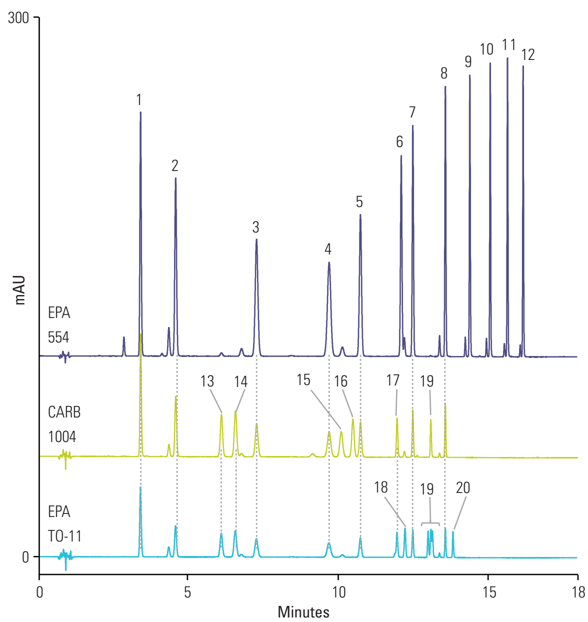
A silica-based, reversed-phase column designed specifically for separating DNPH derivatives of aldehydes and ketones

- 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):	-4.5 0.0 8.3 15.0 18.0 %A 48 48 48 0 0 %B 52 52 52 100 100
Flow Rate:	0.400mL/min
Injection Volume:	1µL
Temperature:	28°C
Detection:	UV, 360nm
Samples:	Calibration mixes diluted in methanol
Analytes:	1. Formaldehyde DNPH 2. Acetaldehyde DNPH 3. Propionaldehyde DNPH 4. Crotonaldehyde DNPH 5. Butyraldehyde DNPH 6. Cyclohexanone DNPH 7. Valeraldehyde DNPH 8. Hexanal DNPH 9. Heptanal DNPH 10. Octanal DNPH 11. Nonanal DNPH 12. Decanal DNPH 13. Acetone DNPH 14. Acrolein DNPH 15. Butanone DNPH 16. Methacrolein DNPH 17. Benzaldehyde DNPH 18. Isovaleraldehyde DNPH 19. Tolualdehyde DNPH 20. Xylylaldehyde DNPH

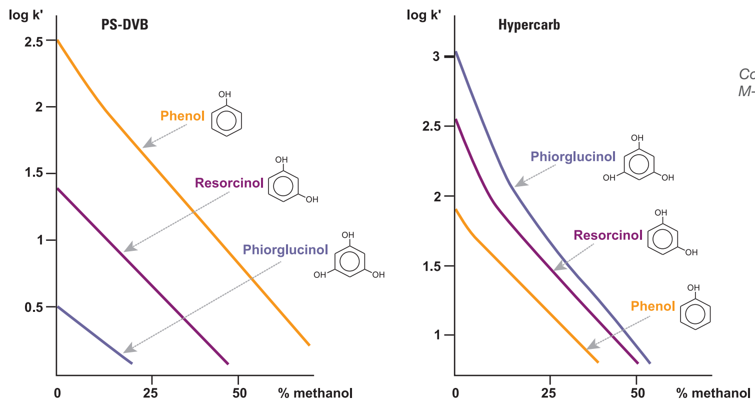
Acclaim Carbonyl C18

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**

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 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.

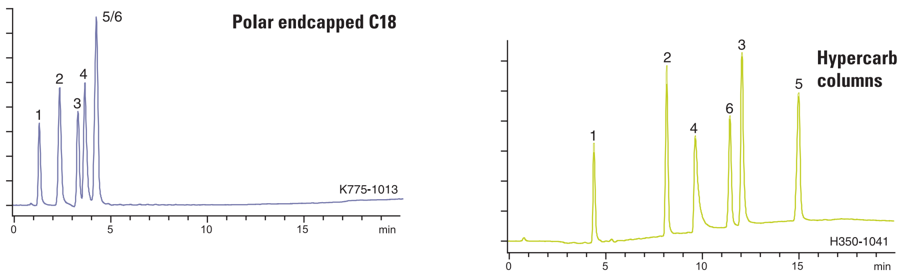


Courtesy V. Coquart and M-C. Henion, J. Chrom., 1992

Retention on Hypercarb columns increases as polarity of the analyte increases, which is the opposite of typical reversed phase materials such as PS-DVB

Extended pH range

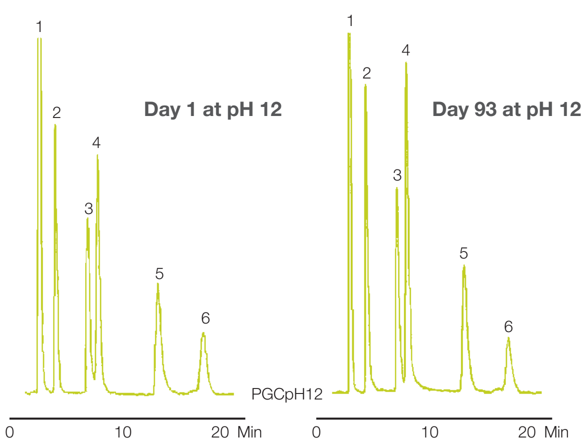
One of the other key benefits of Hypercarb columns is the extreme stability of the phase to chemical or physical attack. Due to the unique characteristics of the media, it can withstand chemical attack across the entire pH range of 0 to 14, allowing applications to be run at pH levels that are incompatible with typical silica-based columns. Hypercarb columns offer more choice in buffer selection while handling both high temperature and high pressure.



Hypercarb, 5µm, 100 x 0.32mm

Mobile Phase A:	H_2O + 0.1% formic acid
Mobile Phase B:	ACN + 0.1% formic acid
Gradient:	0 to 25% B in 15 minutes
Temperature:	25°C
Flow Rate:	8µL/min
Detection:	UV, 254nm
Analytes:	1. Cytosine 2. Uracil 3. Guanine 4. Adenine 5. Xanthine 6. Thymine

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 4.6mm

Mobile Phase:	MeOH:H_2O
Gradient:	70:30
Flow Rate:	0.7mL/min
Detection:	UV, 254nm
Analytes:	1. Acetone 2. Phenol 3. p-Cresol 4. Anisol 5. Phenetole 6. 3,5 -Xylenol

Hypercarb column stability at pH 12: retention and selectivity do not change even after 93 days of storage in 0.1M NaOH/MeOH

Hypercarb

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
3	Drop-in Guard (4/pk)	10	2.1	35003-012101
			3.0	35003-013001
			4.0 / 4.6	35003-014001
	HPLC Column	30	2.1	35003-032130
			3.0	35003-033030
		50	2.1	35003-052130
			3.0	35003-053030
			4.6	35003-054630
		100	2.1	35003-102130
			3.0	35003-103030
			4.6	35003-104630
		150	2.1	35003-152130
			3.0	35003-153030
			4.6	35003-154630
	High Temperature HPLC Column	30	2.1	35003-032146
		50	2.1	35003-052146
			4.6	35003-054646
		100	2.1	35003-102146
			3.0	35003-103046
			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	2.1	35005-032130
			3.0	35005-033030
			4.6	35005-034630
		50	2.1	35005-052130
			3.0	35005-053030
			4.6	35005-054630
		100	2.1	35005-102130
			3.0	35005-103030
			4.6	35005-104630
		150	2.1	35005-152130
			3.0	35005-153030
			4.6	35005-154630
	High Temperature HPLC Column	30	2.1	35005-032146
			4.6	35005-034646
		50	2.1	35005-052146
			4.6	35005-054646
		100	2.1	35005-102146
			4.6	35005-104646
	Javelin HTS Column	20	2.1	35005-022135
	Preparative HPLC Column	100	10	35005-109070A
			21.2	35005-109270A
			30	35005-109370A
		150	10	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

Syncronis HPLC and UHPLC columns

Remarkable separations guaranteed time after time

Thermo Scientific™ Syncronis™ 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

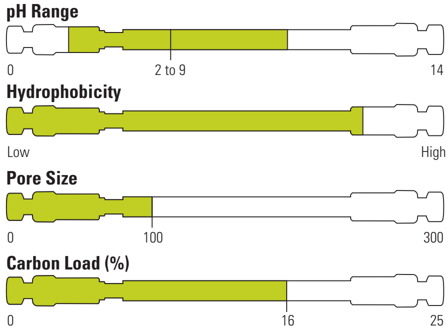
- Rigorously tested to ensure quality

For more information, visit **thermofisher.com/syncronis**

Syncronis C18

Syncronis C18 columns deliver remarkable separations, time after time

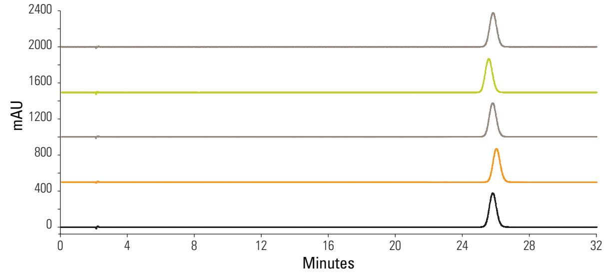
- Highly pure, high surface area silica
- High carbon load for increased retention
- Double endcapped for extra surface coverage
- Highly inert towards basic compounds
- Rigorously tested to ensure quality



Particle Size 1.7µm, 3µm, 5µm **USP** L1

Syncronis 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.

Ziovudine



Syncronis 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

Syncronis C18

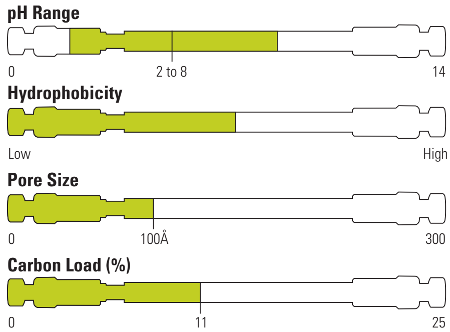
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	30	97102-032130	-	-
		50	97102-052130	-	-
		100	97102-102130	97102-103030	-
3	HPLC Column	50	97103-052130	-	97103-054630
		100	97103-102130	97103-103030	97103-104630
		150	97103-152130	-	97103-154630
5	Drop-in Guard (4/pk)	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/syncronis**

Syncronis C8

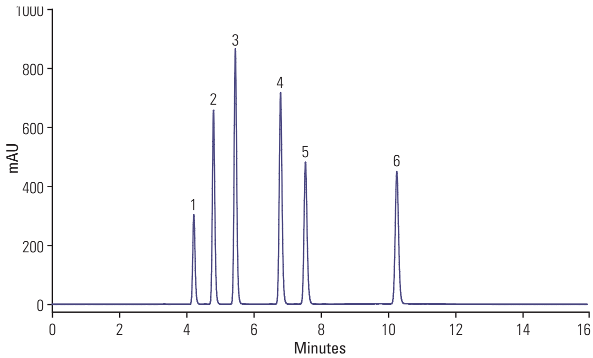
Reduces hydrophobic interactions allowing compounds to elute quicker from the column. Recommended for analytes with medium hydrophobicity or when a less hydrophobic phase is required to obtain optimum retention.

- Highly pure, high surface area silica
- Less hydrophobic than Syncronis C18
- Double endcapped for extra surface coverage
- Rigorously tested to ensure quality



Particle Size 1.7µm, 3µm, 5µm **USP** L7

Uron herbicides



Syncronis C8, 5µm, 150 x 4.6mm

Mobile Phase A:	Water
Mobile Phase B:	Acetonitrile
Gradient:	35 to 60% B in 10 minutes
Temperature:	30°C
Flow Rate:	1.0mL/min
Injection Volume:	20µL
Detection:	240nm
Analytes:	1. Tebuthiuron 2. Metoxuron 3. Monuron 4. Chlorotoluron 5. Diuron 6. Linuron

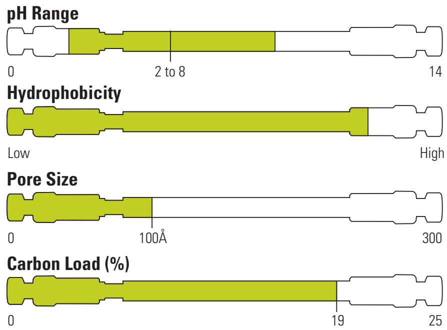
Syncronis C8

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

Syncronis aQ

Polar endcapped Syncronis aQ columns provide a controlled interaction mechanism that retains and resolves polar analytes

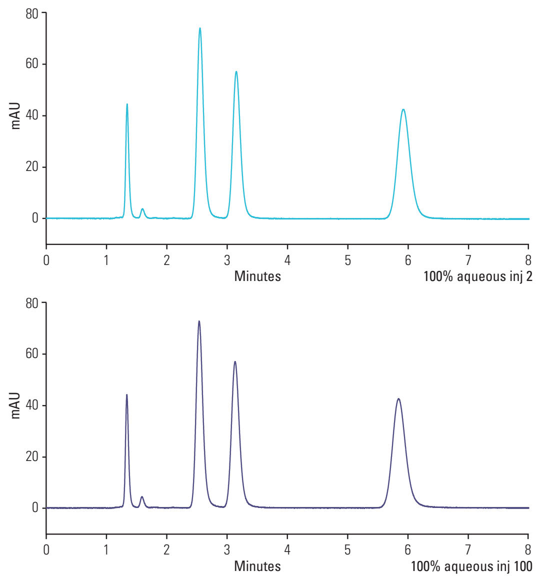
- Stable in 100% aqueous mobile phase
- Enhanced retention of polar compounds
- Rigorously tested to ensure quality



Particle Size 1.7µm, 3µm, 5µm **USP** L1

In comparison to a conventionally endcapped C18, the Syncronis aQ polar end-capped C18 stationary phase exhibits superior stability towards aqueous mobile phase. Syncronis aQ shows no degradation in performance after 100 injections in a buffered 100% aqueous eluent.

Stability of syncronis aQ in 100% aqueous mobile phase



Syncronis aQ, 5µm, 100 x 4.6mm

Mobile Phase:	50mM Aqueous K_2HPO_4 (pH 6)
Temperature:	30°C
Flow Rate:	0.7mL/min
Injection Volume:	2µL
Detection:	260nm
Analytes:	1. Cytidine-5'-diphosphate 2. Adenosine-5'-triphosphate 3. Adenosine-5'-diphosphate 4. Adenosine-5'-monophosphate

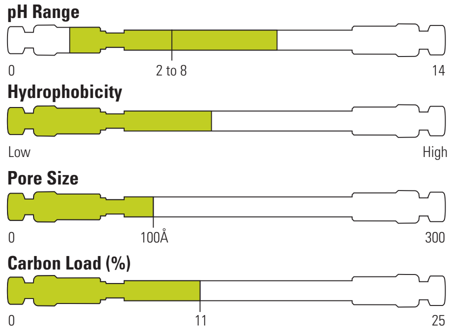
Syncronis aQ

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	850-00

Syncronis phenyl

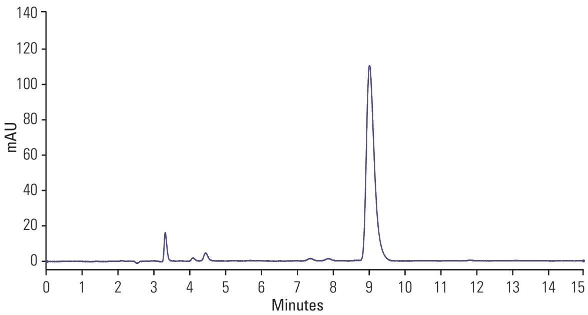
Provides an alternative to Syncronis C18 and is particularly useful for retention of aromatic compounds

- Alternative selectivity to Syncronis C18
- Double endcapped for extra surface coverage
- Highly inert towards basic compounds
- Rigorously tested to ensure quality



Particle Size 1.7µm, 3µm, 5µm **USP** L11

Oxacillin sodium (USP)



Syncronis 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)

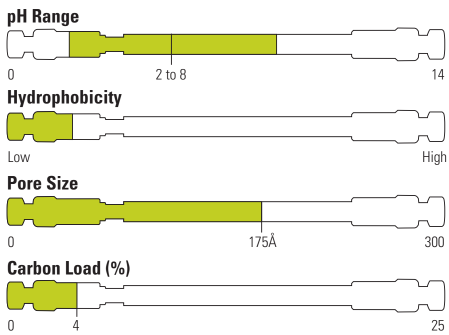
Syncronis Phenyl

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	50	97902-052130	-	-
		100	97902-102130	-	-
3	HPLC Column	100	-	-	97903-104630
5	Drop-in Guard (4/pk)	10	97905-012101	-	97905-014001
	HPLC Column	50	-	-	97905-054630
		150	97905-152130	-	97905-154630
		250	-	-	97905-254630
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

Syncronis amino

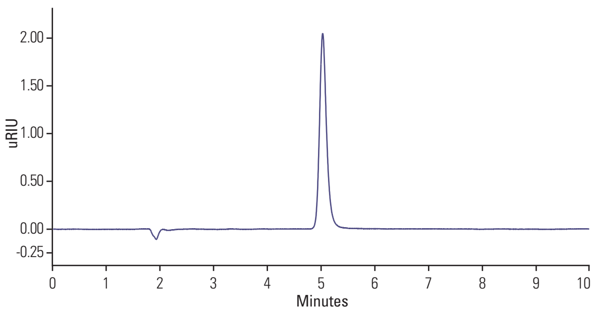
Provides a versatile aminopropyl phase that gives excellent chromatographic properties in four modes: weak anion exchange, reversed-phase, normal phase and HILIC

- Highly pure, high surface area silica
- Double endcapped for extra surface coverage
- Rigorously tested to ensure quality



Particle Size 1.7µm, 3µm, 5µm **USP** L8

Lactulose



Syncronis 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

Syncronis amino

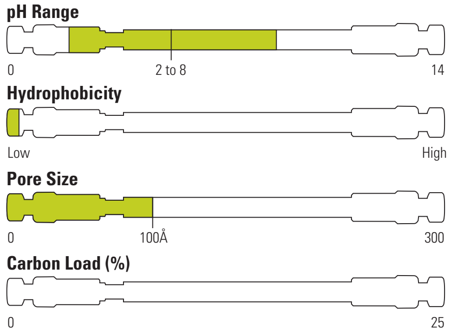
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.7	UHPLC Column	50	97702-052130	-	-	-
		100	97702-102130	-	-	-
3	HPLC Column	150	-	-	-	97703-154630
5	Drop-in Guard (4/pk)	10	97705-012101	97705-013001	97705-014001	97705-014001
		150	97705-152130	97705-153030	97705-154030	97705-154630
		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/syncronis**

Syncronis silica

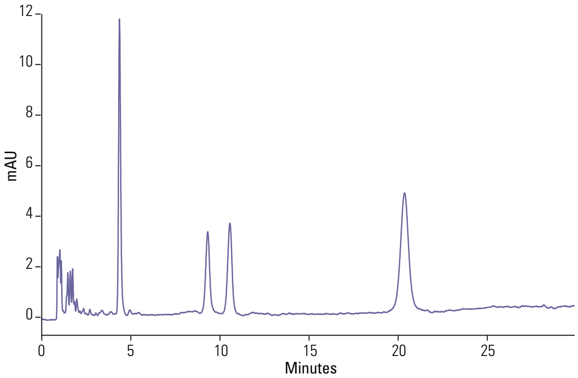
Serves as a powerful and efficient tool for the chromatography of moderately polar organic compounds by normal phase chromatography

- Highly pure, high surface area silica
- Excellent reproducibility for normal phase chromatography
- Rigorously tested to ensure quality



Particle Size 1.7µm, 3µm, 5µm **USP** L3

Tocopherols



Syncronis Silica 5µm, 150 x 4.6mm

Mobile Phase:	Hexane +0.2% propan-2-ol (IPA)
Temperature:	40°C
Flow Rate:	2.0mL/min
Injection Volume:	10µL
Detection:	UV, 254nm
Analytes:	a-tocopherol b -tocopherol g -tocopherol d-tocopherol

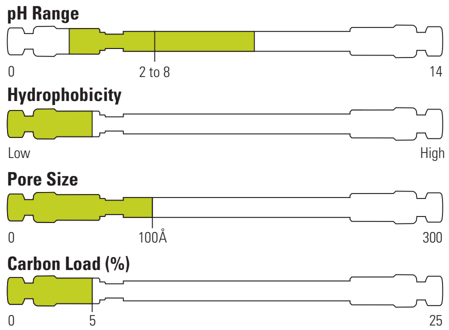
Syncronis silica

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

Syncronis HILIC

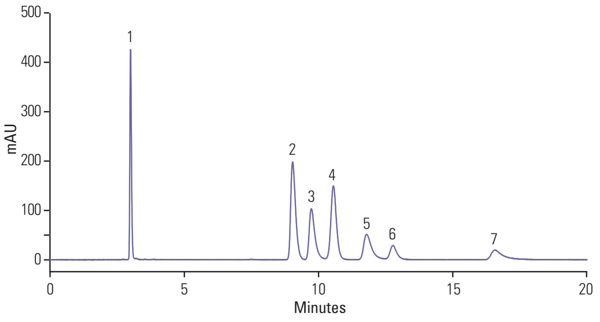
Provides enhanced retention of polar and hydrophilic analytes

- Alternative selectivity to Syncronis 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



Particle Size 1.7µm, 3µm, 5µm

Catecholamines



Syncronis HILIC, 5µm, 250 x 4.6mm

Mobile Phase:	Water : acetonitrile : 200mM ammonium formate (10.5 : 84.5 : 5)
Temperature:	40°C
Flow Rate:	1.0mL/min
Injection Volume:	5µL
Detection:	UV, 280nm
Analytes:	1. catechol 2. 5-HIAA 3. DOPAC 4. serotonin 5. tyrosine 6. dopamine 7. L-DOPA

Syncronis 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/syncronis**

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

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	-	-	-
			4.6	28103-104630	28203-104630	-	-
		150	2.1	28103-152130	-	-	-
			3.0	28103-153030	28203-153030	-	-
			4.0	28103-154030	-	-	-
			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	-	-	-
			4.6	28105-104630	28205-104630	-	-
		125	3.0	28105-123030	-	-	-
			4.0	28105-124030	-	-	-
			4.6	28105-124630	-	-	-
		150	2.1	28105-152130	-	-	-
			3.0	28105-153030	-	-	-
			4.0	28105-154030	28205-154030	-	-
			4.6	28105-154630	28205-154630	28905-154630	28805-154630
		250	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
			4.6	30103-054630
		100	2.1	30103-102130
			3.0	30103-103030
			4.0	30103-104030
			4.6	30103-104630
		125	4.0	30103-124030
			4.6	30103-124630
		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
			4.6	30105-104630
		125	3.0	30105-123030
			4.0	30105-124030
			4.6	30105-124630
		150	2.1	30105-152130
			3.0	30105-153030
			4.0	30105-154030
			4.6	30105-154630
		200	2.1	30105-202130
			4.0	30105-204030
			4.6	30105-204630
		250	2.1	30105-252130
			3.0	30105-253030
			4.0	30105-254030
			4.6	30105-254630

Hypersil ODS-2

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
3	Drop-in Guard (4/pk)	10	4.0/4.6	31603-014001
	HPLC Column	50	4.6	31603-054630
		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
		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	30205-054630
		100	4.6	30205-104630
		150	4.6	30205-154630
		250	4.0	30205-254030
			4.6	30205-254630

Hypersil MOS-2 (C8)

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.0/4.6	30305-014001
	HPLC Column	150	4.6	30305-154630
		250	4.0	30305-254030
			4.6	30305-254630

Hypersil SAS (C1)

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.0/4.6	30505-014001
	HPLC Column	150	4.6	30505-154630
		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	-	-	30903-054630
		150mm	30903-153030	-	30903-154630
5	Drop-in Guard (4/pk)	10mm	-	30905-014001	-
	HPLC Column	50mm	-	-	30905-054630
		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	31905-154630
		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	2.1	30703-102130
		150	2.1	30703-152130
			4.6	30703-154630
5	Drop-in Guard (4/pk)	10	3.0	30705-013001
			4.0/4.6	30705-014001
	HPLC Column	100	3.0	30705-103030
			4.6	30705-104630
		150	4.6	30705-154630
		250	4.0	30705-254030
			4.6	30705-254630

Hypersil silica

Particle Size (µm)	Format	Length (mm)	2.1 mm ID	4.0 mm ID	4.6 mm ID
3	Drop-in Guard (4/pk)	10mm	-	30003-014001	30003-014001
	HPLC Column	50mm	30003-052130	-	30003-054630
		100mm	-	-	30003-104630
		125mm	-	30003-124030	-
		150mm	30003-152130	30003-154030	30003-154630
		250mm	-	-	30003-254630
5	Drop-in Guard (4/pk)	10mm	-	30005-014001	30005-014001
	HPLC Column	50mm	30005-052130	30005-054030	30005-054630
		100mm	30005-102130	-	-
		150mm	-	30005-154030	30005-154630
		200mm	-	-	30005-204630
		250mm	-	30005-254030	30005-254630
		300mm	-	30005-304030	-

Hypersil Classical continued

Hypersil SAX

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	3.0	34105-013001
			4.6	34105-014001
	HPLC Column	250	3.0	34105-253030
			4.6	34105-254630

Hypersil Green PAH

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
3	Guard Cartridge	10	2.1	31103-012101
			3.0	31103-013001
			4.6	31103-014001
	HPLC Column	100	2.1	31103-102130
			3.0	31103-103030
			4.6	31103-104630
	HPLC Column	150	2.1	31103-152130
			4.6	31103-154630
5	Guard Cartridge	10	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
			250mm	-	-	-	70103-254630
	5	Drop-in Guard (4/pk)	10mm	70105-012101	70105-013001	70105-014001	70105-014001
		HPLC Column	50mm	70105-052130	70105-053030	-	70105-054630
			100mm	70105-102130	-	-	70105-104630
			125mm	-	-	70105-124030	70105-124630
			150mm	70105-152130	-	70105-154030	70105-154630
			250mm	70105-252130	70105-253030	70105-254030	70105-254630
			300mm	-	-	70105-304030	-
C8	3	HPLC Column	50mm	70203-052130	70203-053030	-	-
			150mm	-	-	-	70203-154630
	5	Drop-in Guard (4/pk)	10mm	-	70205-013001	70205-014001	70205-014001
		HPLC Column	50mm	70205-052130	70205-053030	-	-
			100mm	70205-102130	-	-	70205-104630
			125mm	-	-	70205-124030	70205-124630
			150mm	-	-	70205-154030	70205-154630
			250mm	-	-	-	70205-254630
C6	5	Drop-in Guard (4/pk)	10mm	-	-	70305-014001	70305-014001
		HPLC Column	100mm	-	-	-	70305-104630
			125mm	-	-	-	70305-124630
			150mm	-	-	70305-154030	70305-154630
			250mm	-	-	-	70305-254630

C1	5		250mm			70505-254030	70505-254630
Phenyl	3	Drop-in Guard (4/pk)	10mm	70603-012101	-	-	-
		HPLC Column	150mm	70603-152130	-	-	-
	5	Drop-in Guard (4/pk)	10mm	-	-	70605-014001	70605-014001
		HPLC Column	100mm	70605-102130	-	-	-
			150mm	-	-	-	70605-154630
			250mm	-	-	-	70605-254630
Cyano	5	HPLC Column	50mm	70805-052130	70805-053030	-	70805-054630
				-	-	-	70805-104630
			250mm	-	-	70805-254030	70805-254630
Diol	5	HPLC Column	50mm	-	-	-	72605-054630
			150mm	72605-152130	72605-153030	72605-154030	72605-154630
			250mm	-	-	72605-254030	72605-254630
Phenyl/ Hexyl	3	Drop-in Guard (4/pk)	10mm	73003-012101	-	-	-
		HPLC Column	50mm	73003-052130	73003-053030	-	-
			100mm	-	73003-103030	-	73003-104630
			150mm	-	73003-153030	-	73003-154630
	5	Drop-in Guard (4/pk)	10mm	73005-012101	-	-	-
		HPLC Column	50mm	73005-052130	73005-053030	-	-
			150mm	73005-152130	-	-	73005-154630
			250mm	-	-	73005-254030	73005-254630

IonPac NS1 and NS2

Polymeric reversed-phase column ideal for the separation of hydrophobic, ionizable compounds

- Excellent resolution
- Good peak shape
- Ideal for separation of large molecules that carry localized charges, such as surfactants
- Compatible with acids, bases, and solvent from pH 0 to 14
- Can also be used for traditional polymeric reversed-phase applications
- Utilize ion-pair chromatography for difficult separations

Thermo Scientific™ Dionex™ IonPac™ NS1-10µm and NS1-5µm columns are packed with a neutral, macroporous, high-surface-area, ethylvinylbenzene polymer crosslinked with 55% divinylbenzene. This resin makes the NS1 resistant to solvents, acids, and bases, and permits the use of eluent from pH 0 to 14. The Dionex IonPac NS1 column is the column of choice for routine ion pair chromatography.

IonPac NS2 is a silica-based column for mobile-phase ion chromatography (MPIC) applications using eluents containing trifluoroacetic acid (TFA), heptafluorobutyric acid (HFBA), or tetrabutylammonium borate (TBAB). It provides high performance analysis for hydrophobic amines and hydrophobic acids using suppressed conductivity detection.

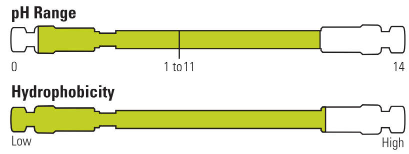
IonPac NS1 and NS2

Description	Particle Size (µm)	Format	Length (mm)	2.0mm ID	4.0mm ID
IonPac NS1	5	HPLC Column	150	-	039568
	10	Guard Column	35	-	039567
			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



Particle Size 8µm, 10µm

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 Ca2+	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 Pb2+	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^+	Ca^{2+}	Pb^{2+}
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 Ca2+ 300 x 7.7mm
HyperREZ Carbohydrate Pb2+ 300 x 7.7mm

Mobile Phase:	H_2O
Flow Rate:	0.6mL/min
Detection:	RI
Temperature:	75°C (H^+)
85°C (Ca^{2+})	
80°C (Pb^{2+})	

Note: partial hydrolysis may occur with some saccharides using H^+.

For more information, visit
thermofisher.com/LCcolumns

BETASIL columns continue

C6	5	Drop-in Guard (4/pk)	10mm	-	-	70305-014001	70305-014001
		HPLC Column	100mm	-	-	-	70305-104630
			125mm	-	-	-	70305-124630
			150mm	-	-	70305-154030	70305-154630
			250mm	-	-	-	70305-254630
C1	5		250mm			70505-254030	70505-254630
Phenyl	3	Drop-in Guard (4/pk)	10mm	70603-012101	-	-	-
		HPLC Column	150mm	70603-152130	-	-	-
	5	Drop-in Guard (4/pk)	10mm	-	-	70605-014001	70605-014001
		HPLC Column	100mm	70605-102130	-	-	-
			150mm	-	-	-	70605-154630
			250mm	-	-	-	70605-254630
Cyano	5	HPLC Column	50mm	70805-052130	70805-053030	-	70805-054630
				-	-	-	70805-104630
			250mm	-	-	70805-254030	70805-254630
Diol	5	HPLC Column	50mm	-	-	-	72605-054630
			150mm	72605-152130	72605-153030	72605-154030	72605-154630
			250mm	-	-	72605-254030	72605-254630
Phenyl/ Hexyl	3	Drop-in Guard (4/pk)	10mm	73003-012101	-	-	-
		HPLC Column	50mm	73003-052130	73003-053030	-	-
			100mm	-	73003-103030	-	73003-104630
			150mm	-	73003-153030	-	73003-154630
	5	Drop-in Guard (4/pk)	10mm	73005-012101	-	-	-
		HPLC Column	50mm	73005-052130	73005-053030	-	-
			150mm	73005-152130	-	-	73005-154630
			250mm	-	-	73005-254030	73005-254630

Thermo Scientific™ HyPURITY™ columns

	Particle Size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.0 mm ID	4.6 mm ID
C18	3	Drop-in Guard (4/pk)	10mm	22103-012101	-	22103-014001	22103-014001
		HPLC Column	30mm	22103-032130	-	-	-
			50mm	22103-052130	-	22103-054630	-
			100mm	22103-102130	22103-103030	22103-104630	-
			125mm	-	-	-	22103-124630
			150mm	22103-152130	22103-153030	22103-154030	22103-154630
			250mm	-	-	-	22103-254630
	5	Drop-in Guard (4/pk)	10mm	22105-012101	22105-013001	22105-014001	22105-014001
		HPLC Column	30mm	22105-032130	-	-	-
			50mm	22105-052130	-	-	22105-054630
			100mm	22105-102130	-	22105-104030	22105-104630
			125mm	-	-	22105-124030	22105-124630
			150mm	22105-152130	22105-153030	22105-154030	22105-154630
			250mm	22105-252130	22105-253030	22105-254030	22105-254630
C8	5	HPLC Column	50mm	-	-	-	22205-054630
			100mm	-	-	-	22205-104630
			150mm	22205-152130	22205-153030	-	22205-154630
			250mm	-	-	-	22205-254630

HyPURITY columns continued

C4	5	Drop-in Guard (4/pk)	10mm	22405-012101	-	-	-
		HPLC Column	50mm	22405-052130	22405-053030	-	-
			100mm	-	-	-	22405-104630
			150mm	-	-	-	22405-154630
			250mm	-	-	-	22405-254630
Aqua-star	3	Drop-in Guard (4/pk)	10mm	22503-012101	22503-013001	-	-
		HPLC Column	100mm	-	-	22503-104030	-
			150mm	-	22503-153030	-	22503-154630
	5	Drop-in Guard (4/pk)	10mm	-	-	22505-014001	-
		HPLC Column	50mm	22505-052130	-	-	-
			100mm	22505-102130	-	-	-
			150mm	-	22505-153030	-	22505-154630
			250mm	-	-	-	22505-254630

Aquasil columns

Particle Size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.0 mm ID	4.6 mm ID
5	Drop-in Guard (4/pk)	10mm	77505-012101	77505-013001	77505-014001	-
	Javelin Guards (4/pk)	10mm	-		77505-014006	-
		20mm	77505-022106	-	-	-
	HPLC Column	20mm	77505-022130			
		30mm			77505-034030	
		50mm	77505-052130	77505-053030		77505-054630
		100mm	77505-102130	77505-103030		77505-104630
		125mm			77505-124030	
			77505-152130	77505-153030	77505-154030	77505-154630
		250mm	77505-252130	77505-253030	77505-254030	77505-254630

BetaBasic

	Particle Size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.0 mm ID	4.6 mm ID
C8	3	HPLC Column	50mm	71403-052130	-	-	-
			100mm	-	-	-	-
			150mm	-	-	-	71403-154630
	5	Drop-in Guard (4/pk)	10mm	71405-012101	-	-	-
		Javelin Guards (4/pk)	10mm	71405-012106	-	71405-014001	-
			20mm	71405-022106	-	-	-
		HPLC Column	50mm	71405-052130	-	-	71405-054630
			100mm	-	-	-	71405-104630
			150mm	-	-	-	71405-154630
			250mm	-	-	-	71405-254630

For more information, visit **thermofisher.com/LCcolumns**

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

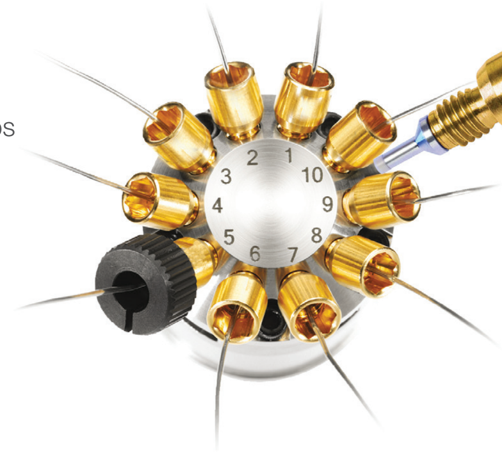
- Supporting manual and automated injections

For more information, visit **thermofisher.com/LCaccessories**

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**

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 Syncronis 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

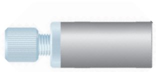
PEEK one-piece column connector

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

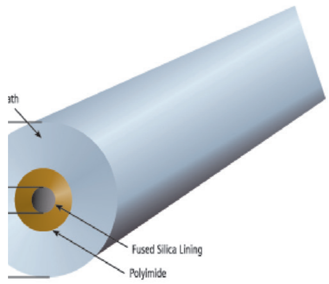
Solvent filters

	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:

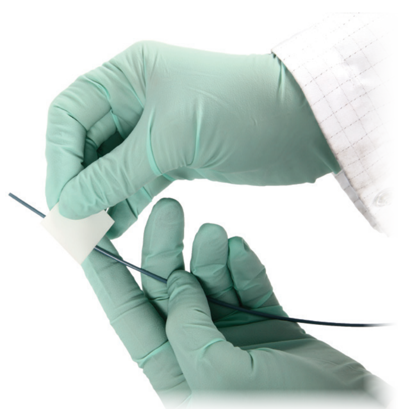
- HPLC
- LC-MS

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

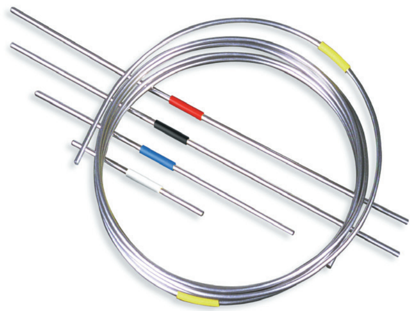


For more information, visit **thermofisher.com/LCaccessories**

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
1/16in OD Precut Tubing				
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

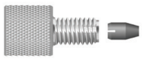
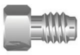
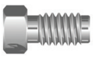
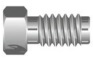
Description	Cat. No.	Quantity
Polymeric Tubing Cutter	A-327	1 Each
Replacement blades	A-328	5 Pack

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

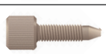
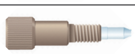
Description	Cat. No.	Quantity
1/8in to 1/16in Reducing Union for Preparative Column	60182-357	1 Each

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

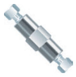
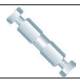
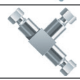
	Type	Cat. No.	Quantity
	One-Piece Fingertight Fitting, 1/16in, 0.37in head	F-120x	10 Pack
	One-Piece Long Fingertight Fitting, 1/16in, 0.37in head	F-130x	10 Pack
	One-Piece PEEK Fingertight Fitting, 1/32in, 0.25in head	M-645	1 Each
	Two-Piece Fingertight Wing Nut with Ferrule, 1/16in	F-300x	10 Pack
	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

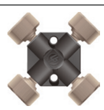
	Description	Through Hole (in)	Swept Volume (µL)	Cat. No.	Quantity
	Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless steel nuts and ferrules	0.010	0.025	U-435	1 Each
	Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless 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**

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
Vespel Seals		
8125/8126	8125-038	1 Each
Tefzel Seals		
8125	8125-097	1 Each

Rheodyne stators

For Use with Rheodyne Models	Cat. No.	Quantity
8125/8126	8125-098	1 Each

Rheodyne stator face assemblies

For Use with Rheodyne Models	Cat. No.	Quantity
8125	8125-074	1 Each

Rheodyne 7010 sample injector

Single-mode sample injector designed for the complete filling method

Compatible with:

Sample loop sizes 5µL to 20mL

Rheodyne 7010 sample injector

Model	Mode	Features	Cat. No.	Quantity
7010	Single	Complete filling method	7010	1 Each

Rheodyne ports for Rheodyne injectors

For Use with Rheodyne Model	Cat. No.	Quantity
7010 Filler Port, Stainless Steel	7012	1 Each

Stainless steel sample loops

Description	Volume	ID (mm / in)	Cat. No.	Quantity
Sample loops for 7010 and 7125 injectors	5µL	0.18 / 0.007	7020	1 Each
	10µL	0.30 / 0.012	7021	1 Each
	20µL	0.30 / 0.012	7022	1 Each
	50µL	0.51 / 0.020	7023	1 Each
	100µL	0.51 / 0.020	7024	1 Each
	200µL	0.76 / 0.030	7025	1 Each
	500µL	0.76 / 0.030	7026	1 Each
	1mL	0.76 / 0.030	7027	1 Each
	5mL	1.0 / 0.040	7029	1 Each

RheBuild kits

For Use with Rheodyne Models	Cat. No.	Quantity
7010/7000	7010-999	1 Each

Rheodyne replacement rotor seals for injectors

For Use with Rheodyne Models	Cat. No.	Quantity
Vespel Seals		
7010	7010-039	1 Each
Tefzel Seals		
7010	7010-071	1 Each

For more information, visit **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
Tefzel Seals		
9010	9010-051	1 Each

Rheodyne stators

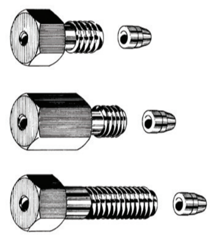
For Use with Rheodyne Models	Cat. No.	Quantity
9010	9125-043	1 Each

Rheodyne stator face assemblies

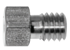
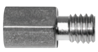
For Use with Rheodyne Models	Cat. No.	Quantity
9125	8125-094	1 Each

RheFlex high-pressure fittings

Precision machined from 316 stainless steel

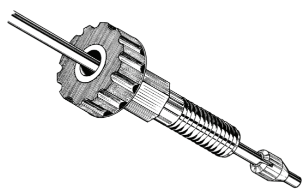


RheFlex high pressure fittings

	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

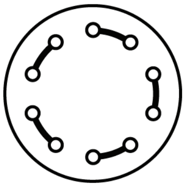
Type	Cat. No.	Quantity
Fitting set, standard length	6000-054	5 Pack
Fitting set, short	6000-055	5 Pack
Fitting set, X-long	6000-066	1 Each
Replacement ferrules	6000-051	5 Pack

For more information, visit **thermofisher.com/LCaccessories**

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, 5µLloop, 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**

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

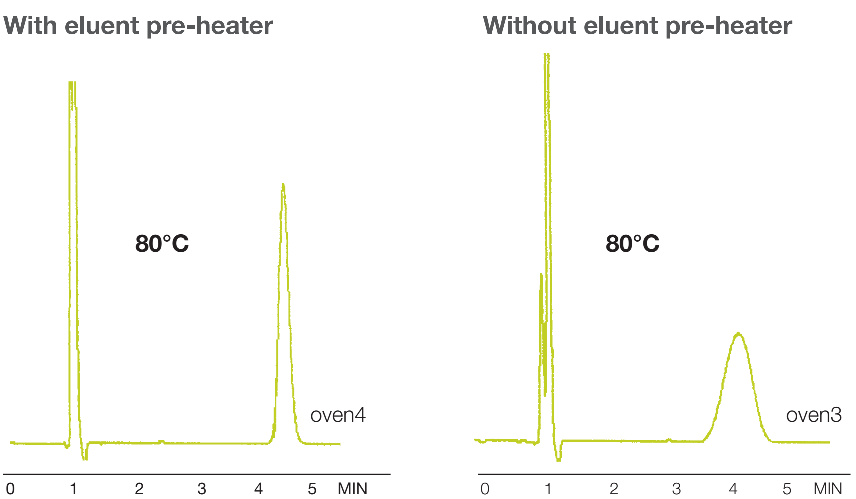
Thermo Scientific™ HOT POCKET and COOL POCKET column temperature controllers

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



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**

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**

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)

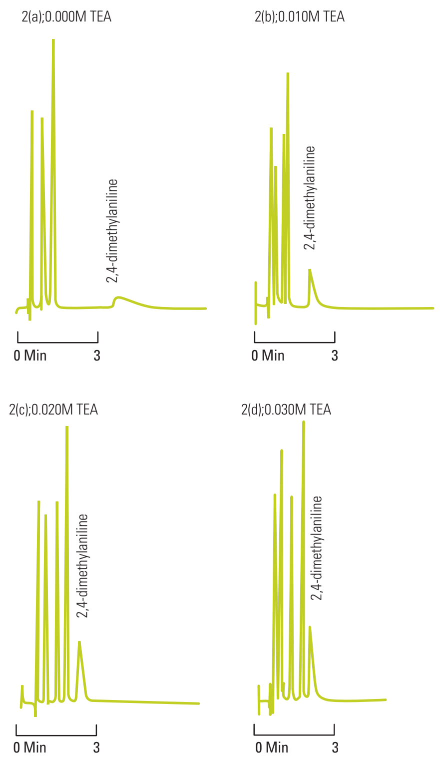
Ideal for HPLC separation and analysis of peptides

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 $C_6H_{15}N$ Q`
- 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

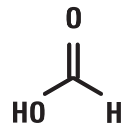
X in the ordering table indicates that hazardous shipping charges apply.

For more information, visit **thermofisher.com/LCreagents**

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 know 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.



Formic Acid
MW 46.03

- 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.

Derivatization and visualization reagents for HPLC

Trifluoracetic 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

Trifluoracetic acid (TFA)

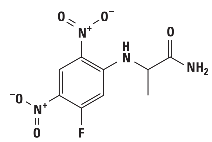
Description	Quantity		Cat. No.	Quantity
Trifluoracetic Acid, Sequencing Grade	500mL	X	TS-28901	1 Each
Trifluoracetic Acid, Sequencing Grade	100g	X	TS-28903	1 Each
Trifluoracetic Acid, Sequencing Grade	10 × 1mL	X	TS-28904	1 Pack
Trifluoracetic Acid, Sequencing Grade	1g	X	TS-28902	1 Each

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

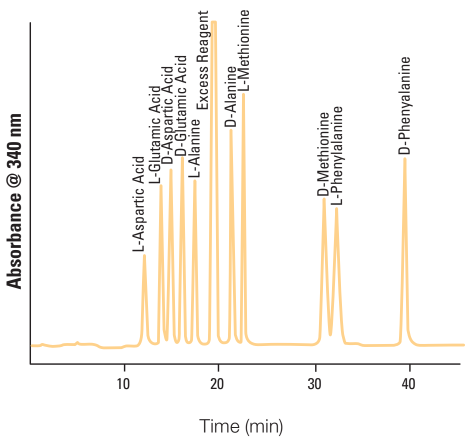
- Optical isomers of amino acids derivatization complete in just 90 minutes
- Derivatives have an absorption coefficient of ~3 x 10^4
- Derivatives can be detected by UV at 340nm with picomole sensitivity



FDAA
(Marfey's Reagent)
MW 272.19

FDAA, marfey's reagent

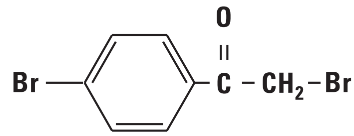
Description	Quantity	Cat. No.	Quantity
FDAA, Marfey's Reagent	50mg	TS-48895	1 Each



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, eptides or proteins
- Chromogenic, Omax = 335nm
- Colored derivatives are monitored at 345nm and have extinction coefficients in range of 1-1.5 x 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.

LC columns and accessories

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 [$(NH_4)_2SO_4$], 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

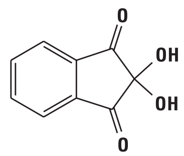
When kept frozen, an unopened vial has an indefinite storage life. Once the seal is broken, the reagent has a maximum storage life of six months. Store frozen between uses.

For more information, visit **thermofisher.com/LCreagents**

Amino acid detection reagents

Ninhydrin

The reagent of choice for detection of amino acids



Ninhydrin
MW 178.14

- Used in amino acid chromatography
- Offers superb color response and low blank
- Indefinitely stable and requires no refrigeration

Ninhydrin

Description	Quantity	Cat. No.	Quantity
Ninhydrin	500g	TS-21003	1 Each

Indefinitely stable. No refrigeration required. Keep bottle tightly sealed. Avoid exposure to direct sunlight and ammonia.

HPLC and spectrophotometric grade solvents

Ultrapure solvents are carefully packed for thorough protection

- Distilled in glass, filtered through 0.2µm TFE membranes and packed in solvent-rinsed, amber glass bottles
- TFE-lined screw caps seal bottles

Acetonitrile, HPLC grade, physical properties

- UV Cutoff: 190nm
- Optical Absorbance: <0.02 at 220nm
- Refractive Index at 25°C: 1.342

Water, HPLC grade, physical properties

- UV Cutoff: 190nm
- Optical Absorbance: <0.005 at 220nm
- Refractive Index at 25°C: 1.332

Dimethylformamide (DMF), sequencing grade, physical properties

- $HCON(CH_3)2$
- Purity (GC): ≥99%
- MW: 73.09
- Density: 0.944
- B.P. 153°C
- Water: 0.1%

Dimethylsulfoxide (DMSO), sequencing grade, physical prop-erties

- C_2H_6OS
- Purity (GC): >99.5%
- MW: 78.13
- Density: 1.101
- Water: ≤0.2%

Pyridine, physical properties

- C_5H_5N
- Purity (GC): ≥99%
- MW: 79.10
- Density: 0.978
- B.P. 115°C

HPLC and spectrophotometric grade solvents

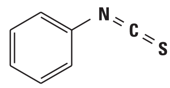
Description	Quantity		Cat. No.	Quantity
Acetonitrile	1L	X	TS-51101	1 Each
Water	1L		TS-51140	1 Each
Dimethylformamide (DMF)	50mL	X	TS-20673	1 Each
Dimethylsulfoxide (DMSO)	950mL	X	TS-20688	1 Each
Pyridine	100g	X	TS-25104	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

High-purity pre-column derivatization reagents

PITC (Phenylisothiocyanate)

High-purity reagent for pre-column quantitative derivatization of amino acids by reversed-phase HPLC



PITC
Edman's Reagent
MW 135.19

- Also known as Edman's Reagent
- Reacts readily with amino acids in 5 to 10 minutes at room temperature
- Resulting phenylthiocarbamyl derivatives can be separated and quantified in 30 minutes using reverse-phase HPLC to produce stable products with all amino acids including proline

PITC (Phenylisothiocyanate)

Description	Quantity	Cat. No.	Quantity
PITC (Edman's Reagent)	10 × 1mL	TS-26922	1 Pack

For more information, visit **thermofisher.com/LCreagents**

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**

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
Premium	
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
Hypersil PREP	
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
Hypersil PREP HS	
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
Hypersil Chiral	
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 (m²/g)	Carbon Load (%)	USP code	pH Range
Premium					
Hypersil GOLD	175	220	10	L1	2 to 9
Hypersil GOLD C8	175	220	8	L7	2 to 9
Hypersil GOLD aQ	175	220	12	L1	2 to 9
Hypersil GOLD C4	175	220	5	L26	2 to 8
Hypersil GOLD Phenyl	175	220	8	L11	2 to 8
Hypercarb	250	120	100	L109	0 to 14
Syncronis C18	100	320	16	L1	2 to 9
Syncronis HILIC	100	320	5	None	2 to 8
Accucore XL C18	80	90	7	L1	2 to 9
Accucore XL C8	80	90	4	L7	2 to 9
DNAPac RP	Proprietary wide pore	N/A	N/A	None	0 to 14
DNAPac PA200	Nonporous	N/A	N/A	None	4 to 10
MAbPac	Nonporous	N/A	N/A	None	Dependent on chemistry
ProPac	Nonporous	N/A	N/A	None	Dependent on chemistry
Hypersil PREP					
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
Hypersil PREP HS					
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
Hypersil Chiral					
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	Syncronis C18	Syncronis 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							
		20	150	25012-159270A							
			250	25012-259270A							
		30	150	25012-159370A							
			250	25012-259370A							
		50	250	25012-259570A							
	XtendedLife	25	150	25012-159270XL							
			250	25012-259270XL							
		30	150	25012-159370XL							
			250	25012-259370XL							
		50	250	25012-259570XL							
	Guard	8	10	25012-018823A							
		20	10	25012-019023A							
			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								

Accucore XL C18	Accucore XL C8	DNAPac RP	DNAPac PA100	DNAPac PA200	MAbPac HIC-10	MAbPac HIC-20	MAbPac HIC-Butyl	MAbPac SCX-10	ProPac HIC	ProPac HIC-10	ProPac SAX-10	ProPac SCX-10	ProPac WAX-10	ProPac WCX-10
		SP6998												
					SP6997		SP6965							
74104-059070A	74204-059070A													
74104-109070A	74204-109070A									01005-109070				
74104-159070A	74204-159070A					SP6961			SP6800					
						SP6995								
74104-059270A	74204-059270A													
74104-109270A	74204-109270A													
74104-159270A	74204-159270A													
										01005-259270				
										SP6869				
						02005-259570								
74104-018823A	74204-018823A													
74104-019023A	74204-019023A													
74104-029023A	74204-029023A													
				088780										
				088781										
								088784						
								SP6947			088770	088769	088771	088766
			088764											
			088765											
			088759											

Premium prep columns

Format	i.d. (mm)	Length (mm)	Hypersil PREP C18 BDS	Hypersil PREP C8 BDS	Hypersil PREP ODS	Hypersil PREP Si BDS	Hypersil PREP Si	Hypersil PREP Phenyl BDS
Standard	2	50	40003-052130	40103-052130	40203-052130	40303-052130		
		100	40003-102130	40103-102130	40203-102130	40303-102130		
		150	40003-152130	40103-152130	40203-152130	40303-152130		
		250	40003-252130	40103-252130	40203-252130	40303-252130		
	4.6	50	40003-054630	40103-054630	40203-054630	40303-054630		
		100	40003-104630	40103-104630	40203-104630	40303-104630		
		150	40003-154630	40103-154630	40203-154630	40303-154630		
		250	40003-254630	40103-254630	40203-254630	40303-254630		
Standard	2	50	40005-052130	40105-052130	40205-052130	40305-052130	40405-052130	40505-052130
		100	40005-102130	40105-102130	40205-102130	40305-102130	40405-102130	40505-102130
		150	40005-152130	40105-152130	40205-152130	40305-152130	40405-152130	40505-152130
		250	40005-252130	40105-252130	40205-252130	40305-252130	40405-252130	40505-252130
	4.6	50	40005-054630	40105-054630	40205-054630	40305-054630	40405-054630	40505-054630
		100	40005-104630	40105-104630	40205-104630	40305-104630	40405-104630	40505-104630
		150	40005-154630	40105-154630	40205-154630	40305-154630	40405-154630	40505-154630
		250	40005-254630	40105-254630	40205-254630	40305-254630	40405-254630	40505-254630
	10	50	40005-059070A	40105-059070A	40205-059070A	40305-059070A	40405-059070A	40505-059070A
		100	40005-109070A	40105-109070A	40205-109070A	40305-109070A	40405-109070A	40505-109070A
		150	40005-159070A	40105-159070A	40205-159070A	40305-159070A	40405-159070A	40505-159070A
		250	40005-259070A	40105-259070A	40205-259070A	40305-259070A	40405-259070A	40505-259070A
	20	50	40005-059270A	40105-059270A	40205-059270A	40305-059270A	40405-059270A	40505-059270A
		100	40005-109270A	40105-109270A	40205-109270A	40305-109270A	40405-109270A	40505-109270A
		150	40005-159270A	40105-159270A	40205-159270A	40305-159270A	40405-159270A	40505-159270A
		250	40005-259270A	40105-259270A	40205-259270A	40305-259270A	40405-259270A	40505-259270A
	30	150	40005-159370A	40105-159370A	40205-159370A	40305-159370A	40405-159370A	40505-159370A
		250	40005-259370A	40105-259370A	40205-259370A	40305-259370A	40405-259370A	40505-259370A
	50	150	40005-159570A	40105-159570A	40205-159570A	40305-159570A	40405-159570A	40505-159570A
		250	40005-259570A	40105-259570A	40205-259570A	40305-259570A	40405-259570A	40505-259570A
XtendedLife	25	50	40005-059270XL	40105-059270XL	40205-059270XL	40305-059270XL	40405-059270XL	40505-059270XL
		100	40005-109270XL	40105-109270XL	40205-109270XL	40305-109270XL	40405-109270XL	40505-109270XL
		150	40005-159270XL	40105-159270XL	40205-159270XL	40305-159270XL	40405-159270XL	40505-159270XL
		250	40005-259270XL	40105-259270XL	40205-259270XL	40305-259270XL	40405-259270XL	40505-259270XL
	30	150	40005-159370XL	40105-159370XL	40205-159370XL	40305-159370XL	40405-159370XL	40505-159370XL
		250	40005-259370XL	40105-259370XL	40205-259370XL	40305-259370XL	40405-259370XL	40505-259370XL
	50	150	40005-159570XL	40105-159570XL	40205-159570XL	40305-159570XL	40405-159570XL	40505-159570XL
		250	40005-259570XL	40105-259570XL	40205-259570XL	40305-259570XL	40405-259570XL	40505-259570XL
Guard	8	10					40405-018823A	40505-018823A
	20	10					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	10	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	10			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	10	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**

Expect reproducible results with sample prep, columns and vials

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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**

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**

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

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.

Page 089

GC columns and accessories

Product selection guide

Selection of the correct GC columns and accessories is critical to ensure optimum system performance. The selection guide below is designed to simplify this process

Thermo Scientific GC consumables are available for both Thermo Scientific and Agilent instruments.

Vials and closures

Nature of sample	Vial Type Recommended
Routine samples	Clear glass (with or without patch) as SureStop 9mm screw thread or 11mm crimp vial
Light sensitive samples	Amber glass (with or without patch) as SureStop 9mm screw thread or 11mm crimp vial
Low volume samples	Micro-Inserts or Microsampling and High Recovery vials with fixed inserts or reduced internal volume
Trace levels	Silanized glass and/or Certified Kits
Ultra Trace MS analysis	MSCERT kits: The first low particle, low background chromatography vials, pre-cleaned to provide unmatched consistency; tested and certified for up to 15 critical physical characteristics affecting vial performance for mass spectrometry

GC septa

Material	Max Operating Temperature	Key Features
BTO	400 °C (330 °C for 17 mm size)	Low bleed
TR-Green	350 °C	Long lifetime
Marathon	350 °C	High mechanical durability
TR-Blue	200–250 °C	Easy to penetrate for routine applications

GC syringes

Syringe selection by needle tip style

Needle Tip Style	Features / Applications
Cone (Tapered tip)	Most versatile needle for autosampler use and resist coring of vial and inlet septa
Bevel (Sharp tip)	Typically used for manual injections. The tip shape helps reduce septa coring
Side Hole (Dome tip with a side hole for sample exit)	Usually used for headspace and large volume injections
Blunt End or 90° (flat top)	Used for injectors that do not contain an inlet septa such as Merlin MicroSeal™
Dual Gauge	Narrow gauge part suitable for megabore on-column injection. Wider part suitable for autosampler use

Syringe selection by needle gauge size

- Gauge is a measure of the "thickness" of the needle
- The higher the gauge number, the thinner the needle e.g. a 23 gauge is thicker than a 26 gauge
- Suffix "s" e.g. 23s refers to a needle with a narrower internal diameter
- For on-column injection ensure that the column ID is greater than the needle gauge

GC liners

Injection Method	Injection Requirements	Liner Requirements
Split	Enables rapid vaporization and effective mixing of sample	• Typically open-ended • Large surface area & volume • Design to aid mixing • Low activity
Splitless	Sample focused onto column – minimizes sample contact with reactive metal components	• Typically tapered • Small volume to aid transfer • Low activity
PTV	Rapid heating and cooling, fast transfer to column-used for active compounds such as pesticides and large volume injections	• Small to aid sample transfer • Good thermal properties for rapid heating & cooling • Siltek coating provides highly inert surface

GC ferrules

Material	Uses	Advantages	Limitations
100% Graphite	FID, NPD, high temperature	• Easy-to-use stable seal • Higher temperature limit • Can be easily removed • Can be re-used	• Not for MS or oxygen-sensitive detectors • Soft, easily deformed or destroyed • Possible system contamination
85% Vespel / 15% Graphite	MS and oxygen-sensitive detectors	• Long lifetime • High temperature limit • MS compatible	• Cannot be re-used • Must be re-tightened after initial temperature cycles
Thermo Scientific™ SilTite™	MS and oxygen-sensitive detectors	• Long lifetime • High temperature limit • MS compatible	• Cannot be re-used

GC columns

Column Parameter	Parameters Affecting Resolution			Performance Changes
	Efficiency	Retention	Selectivity	
Column Length (m)	✔			Doubling column length increases resolution by ~ 40%
Internal Diameter (mm)	✔	✔		The smaller the column ID, the greater the efficiency and better the resolution
Film Thickness (µm)		✔		The thicker the film, the greater the retention, e.g. ideal for highly volatile compounds. The thinner the film, the sharper the peaks and lower the bleed
Stationary Phase Chemistry			✔	Altering the stationary phase can affect elution order and help separate closely, or co-eluting peaks

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_2, N_2, AR, Air		21g H_2O	7.2g H_2O
Oxygen	Inert carrier, He, H_2, N_2, AR		3L O_2	1L O_2
Hydrocarbon	Inert carrier, He, H_2, N_2, AR, Air		36g (as n-butane)	24g (as n-butane)
Combi – Moisture, Oxygen	Inert carrier, He, H_2, N_2, AR		10g H_2O, 1.5L O_2	–
Combi – Moisture, Hydrocarbons	Inert carrier, He, H_2, N_2, AR, Air		10g H_2O, 18g HCs (as n-butane)	3.5g H_2O, 12g HCs (as n-butane)
Triple – Moisture, Oxygen, Hydrocarbons	Inert carrier, He, H_2, N_2, AR		6g H_2O, 1L O_2, 12g HCs (as n-butane)	1.8g H_2O, 500mL O_2, 7g HCs (as n-butane)
Triple– Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	He		6g H_2O, 1L O_2, 12g HCs (as n-butane)	–
Indicating Triple – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	He	Moisture: Yellow to Clear Oxygen: Green to Gray	0.1g H_2O, 100mL O_2, 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_2 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_2 in LC/MS, H_2O in H_2/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

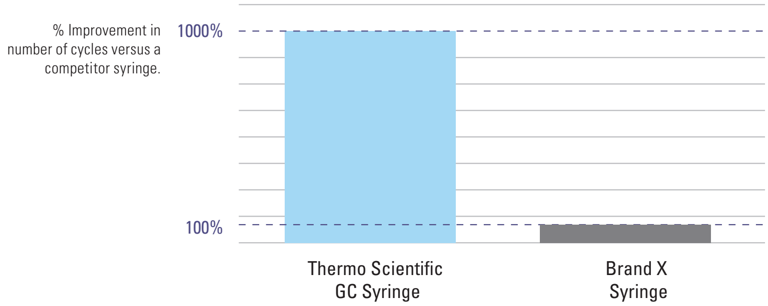
Providing durability, clarity and accuracy for your sample

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

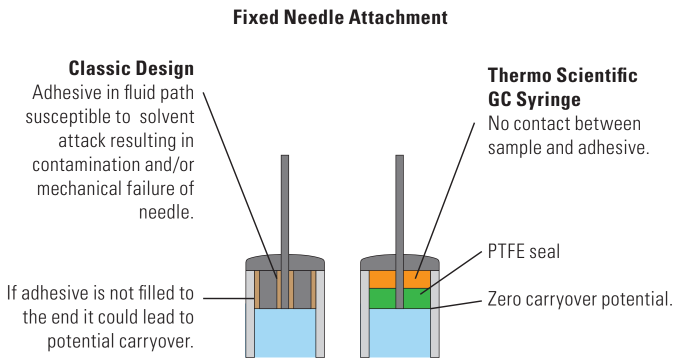
Syringes are provided with a clear, easy-to-read black scale, which aids in consistent delivery of samples for manual syringes and easy identification of installed autosampler syringes.

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
1000	65	23	Side Hole	Headspace, up to 115 deg.	365Q2121	1 Each
	57	22	LC	Sample Preparation, i.e. dilution, derivatization	365K2811	1 Each
2500	65	23	Side Hole	Headspace, up to 115 deg.	365Q2131	1 Each
	65	23	Side Hole	Headspace, up to 150 deg.	365L2321	1 Each
5000	65	22	Side Hole	Headspace up to 115 deg.	365Q2141	1 Each
10000	57	19	LC	Sample Preparation, i.e. dilution, derivatization	365N2721	1 Each

* Also suitable for use with the Thermo Scientific™ TriPlus™ 100LS Autosampler

GC syringes for Thermo Scientific instruments

Removable needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Replacement Needle Cat. No.	Quantity	Instrument Compatibility
10	75	31	Cone	Manual OC	36500520	1 Each	36550046	2 Pack	
100	50	23	Side hole	See Note	36520050	1 Each	36550040	2 Pack	TriPlus, AS200/AS800
100	50	23	Cone	LV Splitless	36500495	1 Each	36566485	5 Pack	TriPlus, AS2000, AS200/AS800
250	80	26	Cone	LVOC	36500490	1 Each	36566480	5 Pack	TriPlus, AS2000
250	50	23	Side hole	See Note	36520051	1 Each	36550040	2 Pack	TriPlus, AS2000, AS200/AS800
1000	50	23	Bevel		365K3041	1 Each	365RN235	5 Pack	AS200/AS800

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Replacement Needle Cat. No.	Quantity	Instrument Compatibility
5	75	31	Cone	Manual OC	36500510	1 Each	36550045	2 Pack	
10	50	26	Cone		365D1841	1 Each	365RN362	2 Pack	AS3000, AS2000
10	50	23	Cone		365D3731	1 Each	365RN372	2 Pack	AS3000, AS2000, AS200/AS800
50	50	23	Cone	LV Splitless	36503015	1 Each	36566485	5 Pack	AS2000

Syringe 36520051 is to be used when performing PTV/LVI injections with a dedicated liner for thermal labile compounds (liner 45352060). Compatible with Merlin Microseal device installed on BEST PTV and with AS2000 and TriPlus autosamplers for liquids.

Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
10	50	23	Cone		365D3741	1 Each	AS2000
100	50	25	Bevel		365H2321	1 Each	AS200/AS800
250	50	25	Bevel		365I2561	1 Each	AS200/AS800

Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
5	50	26	Cone	Split/PTV	36504047	1 Each	TriPlus
5	50	23	Cone		365C3701	1 Each	AS3000, AS2000, AS200/AS800 AI/AS1310
5	50	26	Cone	Split/PTV	36500505	1 Each	AS3000, AS2000 AI/AS1310
5	80	26	Cone	Splitless and OC	36502025	1 Each	TriPlus
10	50	26	Cone		365D3711	1 Each	AS3000, AS200, AS200/AS800
10	50	26	Cone		365D1856	6 Pack	AS300, AS2000, AS200/AS800
10	50	25	Cone	Split/PTV	36500525	1 Each	TriPlus, AS3000, AS2000, AS200/AS800, AI/AS1310

Fixed needle syringes (Continued)

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
10	50	23	Cone	PTV/SSL Split	36520060	1 Each	AI/AS1310, TriPlus, AS300, AS2000, AS200/AS800
10	80	23	Cone	Merlin Valve SSL Splitless	36520061	1 Each	TriPlus, AS2000
10	50	23-26	Cone	OC in PTV Merlin Valve	36500580	1 Each	TriPlus, AS2000
10	80	26	Cone	OC and Splitless	36502019	1 Each	TriPlus, AS2000

Plunger-in-needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
0.5	50	23	Cone	Split/PTV	36504045	1 Each	AI/AS1310, TriPlus, AS3000
0.5	75	31	Cone	Manual OC	36500500	1 Each	
0.5	80	26	Cone	Splitless and OC	36504046	1 Each	TriPlus

GC syringes for Agilent instruments

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	42	23	Cone	365D1611	6 Pack

Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	42	23-26	Cone	365D0621	1 Each
		23-26	Cone	365D0626	6 Pack

Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	42	23	Cone	365C0951	1 Each
		23	Cone	365C0956	6 pack
		23-26s	Cone	365C0971	1 Each
		23-26s	Cone	365C0976	6 pack
10	42	23	Cone	365D1571	1 Each
		23	Cone	365D1576	6 pack
		23-26s	Cone	365D1621	1 Each
		23-26s	Cone	365D1636	6 pack

Fixed needle, super-elastic plunger syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	42	23-26s	Cone	365D5416	1 Each

GC syringes for Shimadzu instruments

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
5	42	26s	Cone	365C6610	1 Each		
		23s	Cone			365RN661	2 Pack
	42	26s	Cone	365D6610	1 Each	365RN272	2 Pack
		23s	Cone	365D6620	1 Each		

GC syringes for CTC instruments

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
10	50	23	Cone	365D3731	1 Each	365RN372	2 Pack
		26	Cone	365D1841	1 Each	365RN362	2 Pack

Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	50	23	Cone	365D2976	6 Pack
		26	Cone	365D2977	1 Each
		23	Cone	365D3741	1 Each
25	50	23	Cone	365F3761	1 Each
100	50	23	Cone	365H3771	1 Each
250	50	26	Cone	365H6700	1 Each
1000	50	26	Side Hole	365K8135	1 Each
2500	50	26	Side Hole	365L8635	1 Each

Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	50	23	Cone	365C3701	1 Each
		26	Cone	36500505	1 Each
10	50	26	Cone	365D3711	1 Each
		23	Cone	36520060	1 Each
		26	Cone	365D1856	6 Pack
		23	Cone	365D2971	6 Pack

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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	–	
5000	50	22	Bevel	365M5212	1 Each	–	
		22s	Blunt End	365M6322	1 Each	–	
		22s	Side Hole	365M8922	1 Each	–	
10000	50	22	Bevel	365N5214	1 Each		
		22s	Side Hole	365N8923	1 Each	365RN465	2 Pack

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No	Quantity
10	50	26	Bevel	365D1171	1 Each	365RN215	5 Pack
25	50	25	Bevel	365F1901	1 Each	365RN225	5 Pack
50	50	25	Bevel	365G2091	1 Each	365RN225	5 Pack

Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	50	26	Bevel	365D4433	1 Each
		26s	Blunt End	365D6314	1 Each
25	50	22s	Blunt End	365F6315	1 Each
50	50	25	Bevel	365G2111	1 Each
		22s	Blunt End	365G6316	1 Each
100	50	25	Bevel	365H2321	1 Each
		22s	Blunt End	365H6317	1 Each
250	50	25	Bevel	365I2561	1 Each
500	50	25	Bevel	365J2831	1 Each
		22s	Blunt End	365J6319	1 Each
1000	50	22	Bevel	365K3051	1 Each

Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	50	26	Bevel	365C0741	1 Each
10	50	26	Bevel	365D1091	1 Each
		26	Bevel	365D1096	6 Pack
25	50	25	Bevel	365F1891	1 Each
100	50	25	Bevel	365H2291	1 Each

PTFE Luer-Lok, gas tight syringes

Volume (µL)	Cat. No.	Quantity	Needle Cat. No.	Quantity
25	365F7655	1 Each	365RNL22	2 Pack
50	365G7656	1 Each	365RNL22	2 Pack
100	365H7657	1 Each	365RNL22	2 Pack
250	365I7658	1 Each	365RNL22	2 Pack
500	365J7659	1 Each	365RNL22	2 Pack
1000	365KL531	1 Each	365RNL22	2 Pack
2500	365LL541	1 Each	365RNL22	2 Pack
5000	365ML551	1 Each	365RNL22	2 Pack
10000	365NL561	1 Each	365RNL22	2 Pack
25000	365PL571	1 Each	365RNL22	2 Pack

Please note that the Luer-Lok syringes do not come with a needle and therefore the needle part number needs to be ordered separately

Luer tip, gas tight syringes

Volume (µL)	Cat. No.	Quantity
100	365H7814	1 Each
1000	365K7817	1 Each
2500	365L7818	1 Each
5000	365M7819	1 Each
10000	365N7820	1 Each

Injection port septa

Quality materials for all applications

BTO septa
- Low bleed septa - ideal for MS applications
- Excellent mechanical properties
- Maximum temperature 400°C

Marathon septa
- Pre-pierced for reliable performance
- Up to 400 injections per septa
- Maximum temperature 350°C

TR-Green septa
- Long injection lifetime
- Low injection port adhesion
- 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**

Gold and siltek inlet base seals

- Precision machined to provide exceptional sealing properties
- Gold plating and Siltek coatings provide a surface with exceptional inertness for analysis of highly active compounds
- High grade stainless steel providing reproducible seal
- Compatible with Thermo Scientific TRACE 1300 Series GC & Agilent split/splitless injection ports

Gold inlet base seals

For Use With	ID (mm)	Cat. No.	Quantity
Single Column Installation	0.8	290GA081	10 Pack
Single Column Installation	0.8	290GA082	2 Pack
Single Column Installation (Cross Version)	0.8	290GA084	10 Pack
Single Column Installation (Cross Version)	0.8	290GA083	2 Pack
Dual Column Installation	1.2	290GA121	10 Pack
Dual Column Installation	1.2	290GA122	2 Pack

Siltek inlet base seals

For Use With	ID (mm)	Cat. No.	Quantity
Single Column Installation	0.8	290GA091	10 Pack
Single Column Installation	0.8	290GA092	2 Pack
Single Column Installation (Cross Version)	0.8	290GA094	10 Pack
Single Column Installation (Cross Version)	0.8	290GA093	2 Pack

Injection port liners

LinerGOLD GC liners

The GOLD standard in GC liner performance

- **Increased accuracy and sensitivity in analysis** – LinerGOLD prevents the loss of sensitive compounds in analysis
- **Lower detection limits** – when analyzing active and sensitive compounds
- **Excellent reproducibility** – gives confidence in your results from liner to liner – setting the GOLD standard

The GOLD standard in liner consistency

Consistency in your GC liner is of paramount importance – you expect to see a consistently high level of performance time after time. Thermo Scientific™ LinerGOLD™ GC liners are manufactured and tested to ensure that you have confidence with every liner that it installed onto your GC system.

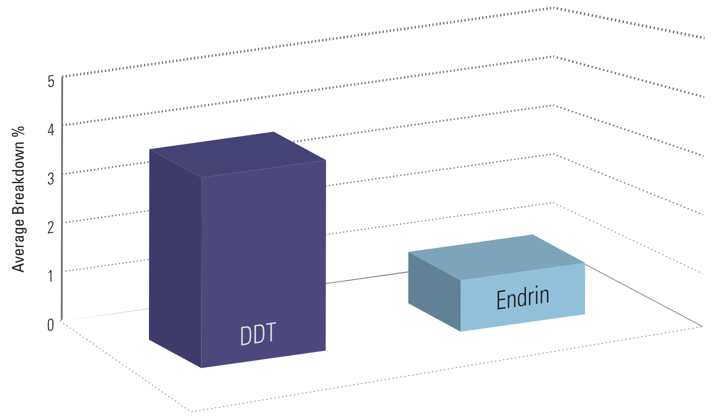
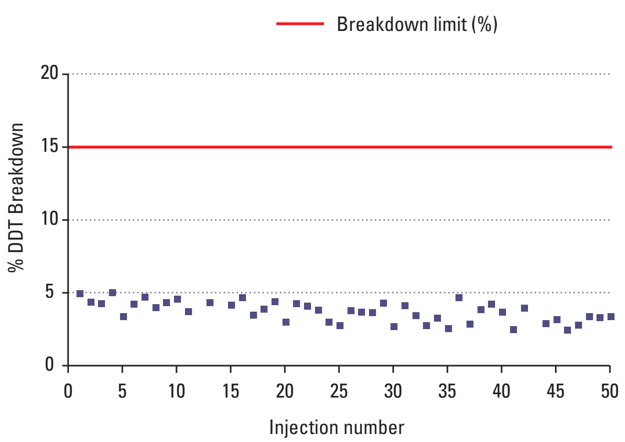


Figure 1: Endrin and DDT breakdown test results showing the lot-to-lot reproducibility and low levels of inertness of LinerGOLD



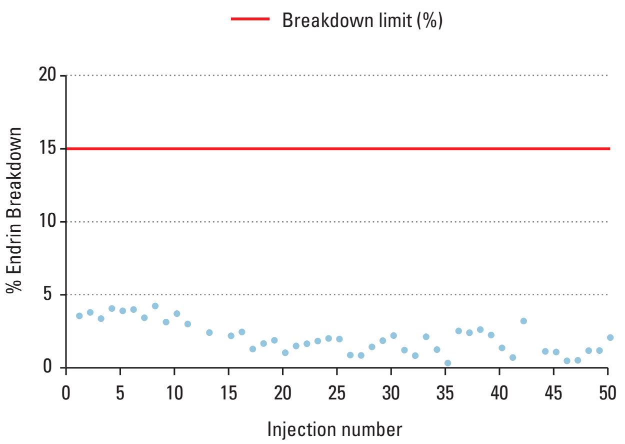


Figure 2: Compound degradation after 50 injections – LinerGOLD exhibits minimal breakdown

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LinerGOLD GC liners for Thermo Scientific TRACE 1300 series and Agilent instruments, SSL injector

Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat. No. 25 Pack
Split/Splitless Liner	4 x 6.3	78.5	Quartz Wool	453A2265-UI	453A1262-UI
Split/Splitless Straight Liner	4 x 6.3	78.5	No	453A1295-UI	453A2292-UI
Splitless/Split Liner with Single Taper	4 x 6.3	78.5	No	453A1345-UI	453A2342-UI
Splitless/Split Liner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1925-UI	453A2922-UI
Splitless Liner with Double Taper	4 x 6.3	78.5	No	453A1355-UI	453A2352-UI
Precision Split/Splitless Liner	4 x 6.3	78.5	Quartz Wool	453A1255-UI	453A1252-UI
Direct Straight Liner	1 x 6.3	78.5	No	453A1335-UI	453A2332-UI
LinerGOLD Mixed Liner Pack	1 x 6.3	Mixed	Mixed	453TH002-UI	N/A

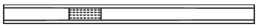
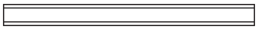
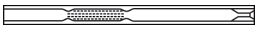
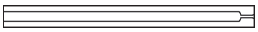
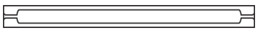
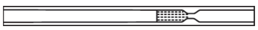
LinerGOLD GC liners for Thermo Scientific TRACE Ultra and FOCUS instruments

Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat. No. 25 Pack
Direct Straight Liner	5 x 8	105	No	45350030-UI	45354030-UI
Split Straight Liner	3 x 8	105	No	45350031-UI	45354031-UI
Splitless Liner	3 x 8	105	No	45350032-UI	45354032-UI
Splitless Liner	5 x 8	105	No	45350033-UI	45354033-UI
Precision Liner	5 x 8	105	Quartz Wool	453T1905-UI	453T4905-UI
Splitless Precision Liner	5 x 8	105	Quartz Wool	453T2999-UI	453T4999-UI
Baffled PTV Liner	2 x 2.75	120	No	453T2845-UI	453T4845-UI

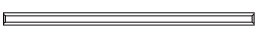
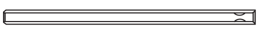
Injection port liners for Thermo Scientific instruments

Highly deactivated and produced to exacting tolerances to ensure a high degree of reproducibility

Liners for Thermo Scientific TRACE 1300 series SSL instruments and Agilent instruments, SSL injector

	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat No. 25 Pack
	Direct Straight Liner	1.2 x 6.3	78.5	No	453A1335	453A2332
	Split Straight Liner	4 x 6.3	78.5	Quartz Wool	453A2265	453A1262
	Split Straight Liner	4 x 6.3	78.5	No	453A1295	453A2292
	Split/Splitless FocusLiner	4 x 6.3	78.5	Quartz Wool	453A1255	453A1252
	Split/Splitless FocusLiner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1315	453A1312
	Split/Splitless Liner with Single Taper	4 x 6.3	78.5	No	453A1345	453A2342
	Split/Splitless Liner with Double Taper	4 x 6.3	78.5	No	453A1355	453A2352
	Split/Splitless Liner w/ Recessed Gooseneck	4 x 6.3	78.5	Quartz Wool	453A1305	N/A
	Splitless Liner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1925	N/A
	Split/Splitless Mini-Lam Liner	4 x 6.3	78.5	No	453A2009	N/A
	Split/Splitless Mixed Liner Sample Pack	Mixed	Mixed	Mixed	453TH002	N/A

Liners for Thermo Scientific TRACE 1300 series and TRACE ULTRA PTV instruments, PTV injector

	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 2 Pack	Cat. No. 5 Pack	Cat. No. 25 Pack
	PTV Straight Liner	1 x 2.75	120	No	N/A	45352054	N/A
	PTV Straight Liner	2 x 2.75	120	No	N/A	45352057	45354057
	PTV Straight Liner (deactivated)	2 x 2.75	120	No	45322045	N/A	N/A
	PTV Liner with Sintered Lining	1 x 2.75	120	No	N/A	45352060	N/A
	PTV Liner with Three Baffles	1 x 2.75	120	No	N/A	45352062	N/A
	PTV Siltek Metal Liner	1 x 2.75	120	No	45322046	N/A	N/A
	PTV Siltek Metal Liner	2 x 2.75	120	No	45322044	N/A	N/A
	PTV Siltek Metal Liner	2 x 2.75	120	Wool	45322056	N/A	N/A
	PTV Baffle Liner (Siltek)	2 x 2.75	120	No	N/A	453T2120	N/A
	PTV Split Liner with Recessed Gooseneck	2 x 2.75	120	Quartz Wool	N/A	45352070	N/A
	PTV Silcosteel Liner for OC	1 x 2.75	120	No	45322052	N/A	N/A

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Liner sealing rings for Thermo Scientific instruments

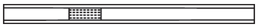
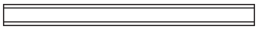
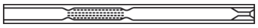
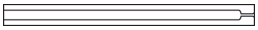
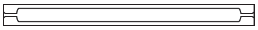
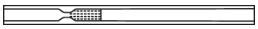
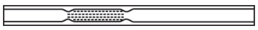
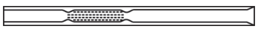
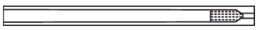
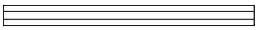
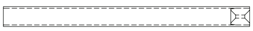
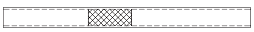
Description	Cat. No.	Quantity
Liner Sealing Ring for TRACE 1300 Series GC SSL Injector	29001320	5 Each
Liner Sealing Ring for TRACE 1300 Series GC PTV Injector	29001318	1 Each
Liner sealing Ring for TRACE and FOCUS GC SSL Injector	29033406	10 Pack
Liner sealing Ring for TRACE PTV Injector	29013417	2 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**

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 (SilTite)	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.

SilTite Metal Ferrules

The SilTite 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, SilTite 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	SilTite
Suitable for Thermo Scientific TRACE ULTRA SSL Injector	•	•	
Suitable for Thermo Scientific TRACE 1300/1310 & Agilent SSL Injectors	•	•	•
Suitable for Thermo Scientific TRACE ULTRA non-MS detectors	•	•	
Suitable for Thermo Scientific TRACE 1300/1310 & Agilent non-MS detectors	•	•	
Suitable for all Thermo Scientific & Agilent MS Detectors		•	•
Suitable for Thermo Scientific PTV Injector	•	•	

Ferrules for Thermo Scientific instruments

For Use with	Material Type	Ferrule Size (Column ID) (mm)	Cat. No.	Quantity
Thermo Scientific TRACE 1300/1310 SSL injectors and non-MS detectors	100 % Graphite	0.1-0.32	290GA139	10 Pack
		0.45-0.53	290GA140	10 Pack
	15% Graphite/85% Vespel	0.1-0.25	290VA191	10 Pack
		0.32	290VA192	10 Pack
		0.53	290VA193	10 Pack
Capillary Column Nut for injectors and non-MS Detectors	Stainless Steel		35050458	5 Pack
Thermo Scientific TRACE Ultra SSL injectors and non-MS detectors	100 % Graphite	0.1-0.25	29053488	10 Pack
		0.32	29053487	10 Pack
		0.53	29053486	10 Pack
	15% Graphite/85% Vespel	0.1-0.25	29033461	10 Pack
		0.32	29033460	10 Pack
		0.53	29033471	10 Pack
		Packed Column 1/8" OD	290VT168	10 Pack
		Packed Column 1/4" OD	290VT165	10 Pack
	15% Graphite/85% Vespel (3.4mm length)	0.1-0.25	290VT186	10 Pack*
		0.32	290VT187	10 Pack*
		0.53	290VT188	10 Pack*
Capillary Column Nut for Graphite/Vespel Ferrules	Brass		290BT239	2 Pack
All Thermo Scientific PTV injectors	100 % Graphite	0.1-0.25	29053488	10 Pack
		0.32	29053487	10 Pack
		0.53	29053486	10 Pack
Thermo Scientific MS detectors	15% Graphite/85% Vespel	0.1-0.25	29033496	10 Pack
		0.32	29033497	10 Pack
Capillary Column Nut for MS Detector	Brass		290BT240	5 Pack
	Stainless Steel		290BT241	5 Pack
Thermo Scientific MS detectors	VESPEL SCP-5000	0.1-0.25	290VT221	5 Pack
Capillary Column Spring Loaded Nut for MS Detectors	Stainless Steel for ISQ/TSQ		1R120434-0010	1 Pack
	Stainless Steel for QE GC/Exactive GC		1R120434-0020	1 Pack
SilTite Kit for Thermo Scientific TRACE 1300/1310 GC SSL injectors	SilTite Metal	0.1-0.25	290MA215	1 Each**
		0.32	290MA216	1 Each**
		0.53	290MA217	1 Each**
SilTite Kit for Thermo Scientific ISQ GC-MS interface	SilTite Metal	0.1-0.25	290MA194	1 Each**
		0.32	290MA195	1 Each**
		0.53	290MA196	1 Each**
Replacement SilTite Ferrules for Thermo Scientific TRACE 1300/1310 SSL and ISQ GC-MS interface kits	SilTite Metal	0.1-0.25	290MA201	10 Pack
		0.32	290MA202	10 Pack
		0.53	290MA203	10 Pack
SilTite Nuts for MS interface			290MA205	5 Pack
SilTite Nuts for SSL injectors			290MA207	5 Pack
SilTite Kits for Thermo Scientific DSQ GC-MS interface	SilTite Metal	0.1-0.25	290MT229	1 Each**
		0.32	290MT230	1 Each**
		0.53	290MT231	1 Each**
		Replacement SilTite Nuts	290MT211	5 Pack
Replacement SilTite Ferrules for Thermo Scientific DSQ GC-MS interface kits	SilTite Metal	0.1-0.25	290MT221	10 Pack
		0.32	290MT222	10 Pack
		0.53	290MT223	10 Pack

* Vespel Ferrules must be used in conjunction with brass nut part number 290BT239
** SilTite Kits contain 2 SilTite nuts and 10 ferrules

Ferrules for Agilent instruments

For Use with	Material Type	Ferrule Size (Column ID) (mm)	Cat. No.	Quantity
Agilent injectors and non-MS detectors	100 % Graphite	0.1-0.32	290GA139	10 Pack
		0.45-0.53	290GA140	10 Pack
		Packed Column 1/8" OD	290GA108	10 Pack
		Packed Column 1/4" OD	290GA107	10 Pack
	15% Graphite/85% Vespel	0.1-0.25	290VA191	10 Pack
		0.32	290VA192	10 Pack
		0.53	290VA193	10 Pack
		Packed Column 1/8" OD	290VT168	10 Pack
		Packed Column 1/4" OD	290VT165	10 Pack
Capillary Column Nut for injectors and non-MS Detectors	Stainless Steel		35050458	5 Pack
Agilent MS detectors	15% Graphite/85% Vespel	0.1-0.25	29033496	10 Pack
		0.32	29033497	10 Pack
		0.53	290VP144	10 Pack
SilTite Kits for Agilent SSL injectors	SilTite Metal	0.1-0.25	290MA215	1 Each*
		0.32	290MA216	1 Each*
		0.53	290MA217	1 Each*
SilTite Nuts for MS interface			290MA205	5 Pack
SilTite Kit for Agilent MS detectors	SilTite Metal	0.1-0.25	290MA194	1 Each**
		0.32	290MA195	1 Each**
		0.53	290MA196	1 Each**
Replacement SilTite Ferrules for all SilTite Kits	SilTite Metal	0.1-0.25	290MA201	10 Pack
		0.32	290MA202	10 Pack
		0.53	290MA203	10 Pack
SilTite Nuts for SSL injectors			290MA207	5 Pack
Replacement Baseplate Seals			290MA227	2 Pack
			290MA228	10 Pack

Thermo Scientific GC consumables are suitable for use with Agilent GC systems
* Kit contains 2 nuts, 10 ferrules and 2 base seals
** Kit contains 2 nuts and 10 ferrules

Capillary accessories

SilTite µ-Union

The tiny connection for GC Columns

The SilTite µ-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 µ-Union kit contains the following:

- 5 x ferrules
- 2 x union fittings
- Installation jigs
- Installation instructions

SilTite µ-Union kits, ferrules and replacement unions

Column ID (mm)	2nd Column ID (mm)	SilTite µ-Union Kit Cat. No. (1 Each)	SilTite µ-Union Ferrules Cat. No. (10 Pack)	SilTite µ-Union Replacement Union Cat. No. (1 Each)
0.1 – 0.25	0.1-0.25	290SM301	290SM401	290SM321
	0.32	290SM302	290SM402	290SM321
	0.53	290SM303	290SM403	290SM322
0.32	0.32	290SM304	290SM404	290SM321
	0.53	290SM305	290SM405	290SM322

SilTite capillary column connectors

For use with capillary GC columns

- For fused silica capillary columns
- Glass lined for inertness
- Low thermal mass
- Each pack contains 1 Connector, 2 Nuts and 5 Ferrules

SilTite capillary column connectors and ferrules

Column ID (mm)	2nd Column ID (mm)	SilTite Column Connector Kit Cat. No. (1 Each)	SilTite Ferrules Cat. No. (10 Pack)	Replacement SilTite Connector Nuts* Cat. No. (5 Pack)
0.1-0.25	0.1-0.25	290MU498	290MF229	290MN211
0.32	0.32-0.53	290MU499	290MF230	290MN211
0.53	0.45-0.53	290MU500	290MF231	290MN211

* SilTite nuts must be used with SilTite ferrules

GC capillary connectors

Description	Cat. No.	Quantity
Universal Capillary Connector	64000-001	1 Each
Y Capillary Connector	64000-002	1 Each

Finger tite connectors

Easier fit, reliability and leak-free connections

- No need to re-tighten ferrules as they expand and contract with the fittin
- 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

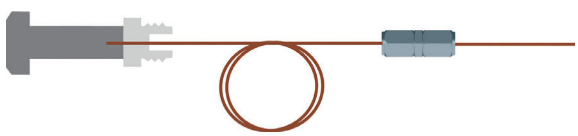
Finger tite connectors for TRACE GC Ultra and FOCUS GCs

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**

SWAP-IT GC-MS interface system

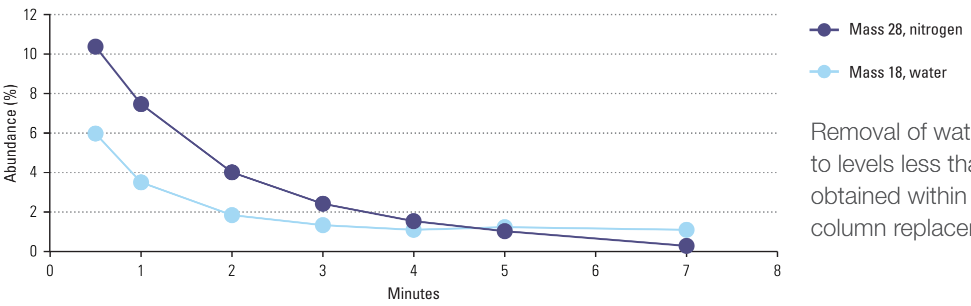
Easy to install for quick column changeovers

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
For Thermo Scientific Instruments (ISQ GC-MS, TSQ 8000 GC-MS/MS)		
SWAP-IT GC-MS Interface Kit: SWAP-IT GC-MS Interface, Nuts, Ferrules, Accessories	60180-791	1 Each
For Thermo Scientific Instruments (DSQ GC-MS, DSQ II GC-MS, PolarisQ GC-MS, ITQ GC-MS only)		
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
For Agilent Instruments		
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
Accessories		
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

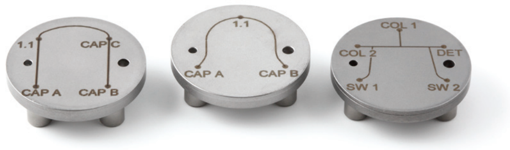


Removal of water and nitrogen to levels less than 2% is obtained within 3-4 minutes after column replacement

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 repacement 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

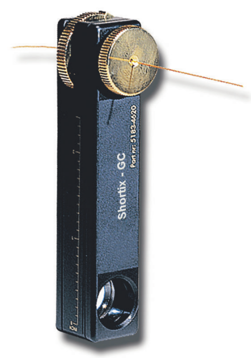
Material	OD (in)	ID (in)	Length (ft)	Cat. No.	Quantity
Copper	1/8	0.065	50	60181-632	1 Each
	1/4	0.19	50	60181-633	1 Each
Stainless Steel	1/16	0.01	25	60181-634	1 Each
		0.02	25	60181-635	1 Each
		0.03	25	60181-636	1 Each
		0.04	25	60181-637	1 Each
	1/8	0.085	25	60181-638	1 Each
	1/4	0.21	25	60181-639	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

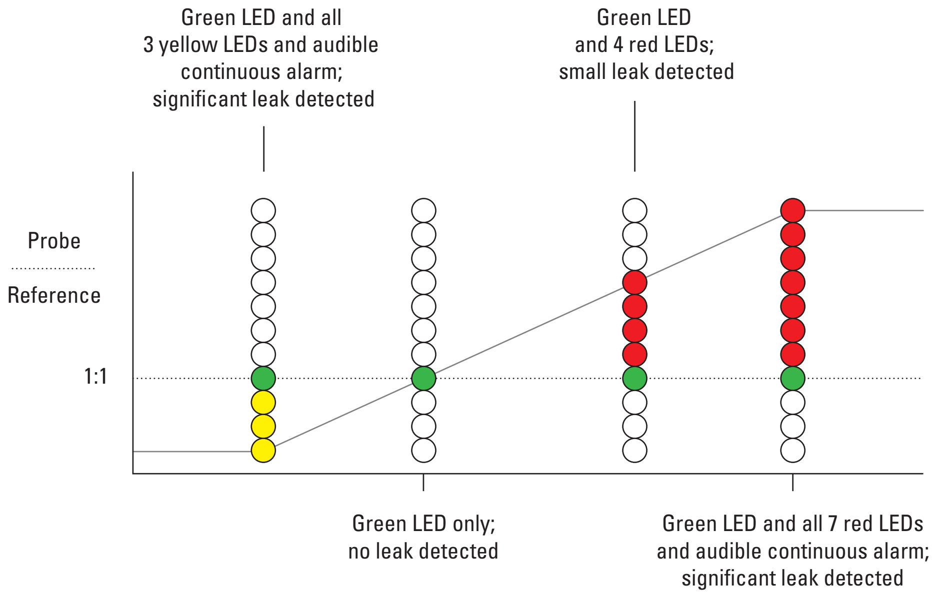
Aids in quickly locating and identifying gas leaks

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**

GFM pro electronic flowmeter

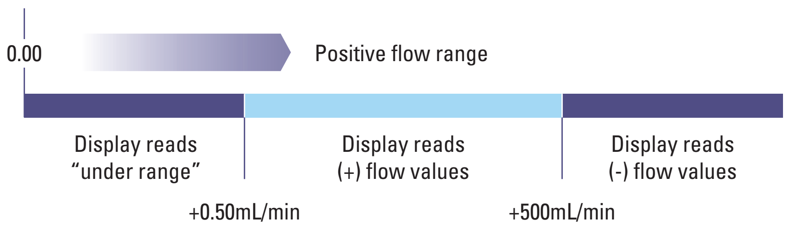
Measure and monitor flow quickly and efficiently

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

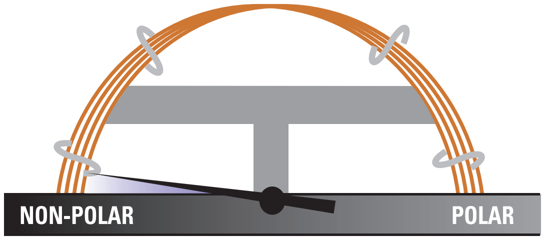
TraceGOLD GC columns

TraceGOLD GC columns offer you a leap forward in column performance delivering low bleed and superior inertness ideally suited to MS applications.

TraceGOLD TG-1MS GC columns

Exceptionally low bleed for optimal signal-to-noise ratio, sensitivity and MS integrity

- Non-polar
- Equivalent to USP G2



Phase:	100% dimethyl polysiloxane
Max. Temps.:	330°C/350°C for Standard Columns 430°C for Metal Columns
USP Listing:	G2

TraceGOLD TG-1MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.10	10	0.1	26099-0200	1 Each
0.20	12	0.33	26099-5820	1 Each
0.15	20	0.15	26099-2760	1 Each
	40	0.15	26099-2940	1 Each
0.18	20	0.18	26099-5780	1 Each
0.25	15	0.25	26099-1300	1 Each
		0.5	26099-2110	1 Each
		1.0	26099-2840	1 Each
	30	0.25	26099-1420	1 Each
		0.5	26099-2230	1 Each
		1.0	26099-2960	1 Each
	30 with 5m SafeGuard	0.25	26099-1425	1 Each
	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	1 Each
		0.5	26099-2360	1 Each
		1.0	26099-3090	1 Each
0.53	15	0.5	26099-2130	1 Each
		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

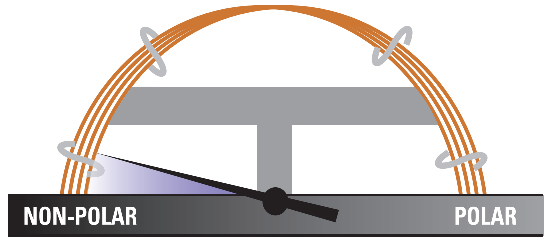
TraceGOLD TG-1MT Metal GC columns

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



Phase:	5% diphenyl / 95% dimethyl polysiloxane
Max. Temps.:	330°C/350°C for Standard Columns 430°C for Metal Columns
USP Listing:	G27, G36

TraceGOLD TG-5MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.10	10	0.1	26098-0200	1 Each
0.15	20	0.15	26098-2760	1 Each
	40	0.15	26098-2940	1 Each
0.18	20	0.18	26098-5780	1 Each
	20 with 5m SafeGuard	0.18	26098-5785	1 Each
0.25	15	0.25	26098-1300	1 Each
	15 with 5m SafeGuard	0.25	26098-1305	1 Each
	30	0.25	26098-1420	1 Each
		0.5	26098-2230	1 Each
		1.0	26098-2960	1 Each
	30 with 5m SafeGuard	0.1	26098-0475	1 Each
		0.25	26098-1425	1 Each
	60	0.25	26098-1540	1 Each
		0.5	26098-2350	1 Each
		1.0	26098-3080	1 Each
0.32	15	1.0	26098-2850	1 Each
	30	0.25	26098-1430	1 Each
		0.5	26098-2240	1 Each
		1.0	26098-2970	1 Each
	30 with 5m SafeGuard	0.25	26098-1435	1 Each
	60	0.25	26098-1550	1 Each
		0.5	26098-2360	1 Each
		1.0	26098-3090	1 Each
0.53		0.5	26098-2130	1 Each
		1.0	26098-2860	1 Each
		1.5	26098-3340	1 Each
	30	0.25	26098-1440	1 Each
		0.5	26098-2250	1 Each
		1.0	26098-2980	1 Each
		1.5	26098-3360	1 Each
	60	5.0	26098-4100	1 Each

Applications:
- Semi-volatiles
- Phenols
- Amines
- Residual solvents and solvent impurities
- Drugs of abuse
- Pesticides
- PCB cogeners
- Aroclor mixes

Similar to:
- Rxi-5ms
- DB-5
- HP-5
- HP-5ms
- Ultra-2
- SPB-5
- Equity-5
- CP-Sil 8

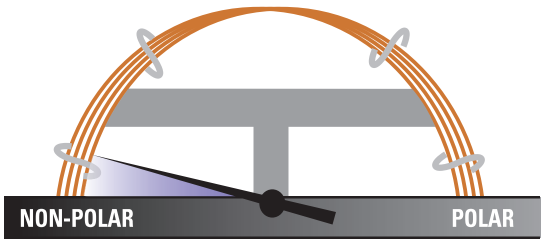
TraceGOLD TG-5MT Metal GC columns

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-5SilMS 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-5SilMS GC columns

ID (mm)	Length (m)	Film Thickness (μm)	Cat. No.	Quantity
0.15	20	0.15	26096-2760	1 Each
0.18	20	0.18	26096-5780	1 Each
0.25	15	0.25	26096-1300	1 Each
	15 with 10m SafeGuard	0.25	26096-1301	1 Each
	30	0.25	26096-1420	1 Each
		0.5	26096-2230	1 Each
		1.0	26096-2960	1 Each
	30 with 5m SafeGuard	0.25	26096-1425	1 Each
		0.5	26096-2235	1 Each
	30 with 10m SafeGuard	0.25	26096-1421	1 Each
	60	0.25	26096-1540	1 Each
		1.0	26096-3080	1 Each
0.32	30	0.25	26096-1430	1 Each
		0.5	26096-2240	1 Each
		1.0	26096-2970	1 Each
0.53	30	1.5	26096-3360	1 Each

Applications:

- GC-MS applications using ion-trap systems
- Polycyclic aromatics
- Hydrocarbons including chlorinated hydrocarbons
- Phthalates
- Phenols
- Amines
- Organophosphate

Similar to:

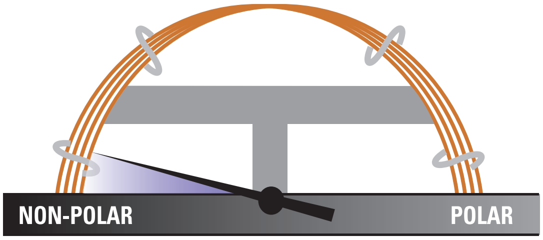
- DB-5ms Ultra Inert
- VF-5ms
- CP-Sil 8 Low-Bleed/MS
- Rxi-5SilMS
- BPX5
- ZB-5ms
- Optima-5MS
- SLB-5

Learn more at **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



Phase:	Modified 5% diphenyl / 95% dimethyl polysiloxane for basic compounds
Max. Temps.:	300°C / 315°C
USP Listing:	N/A

TraceGOLD TG-5MS AMINE GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26097-1300	1 Each
		1.0	26097-2840	1 Each
	30	0.25	26097-1420	1 Each
		0.5	26097-2230	1 Each
		1.0	26097-2960	1 Each
0.32	30	1.0	26097-2970	1 Each
0.53	30	1.0	26097-2980	1 Each
		3.0	26097-3960	1 Each

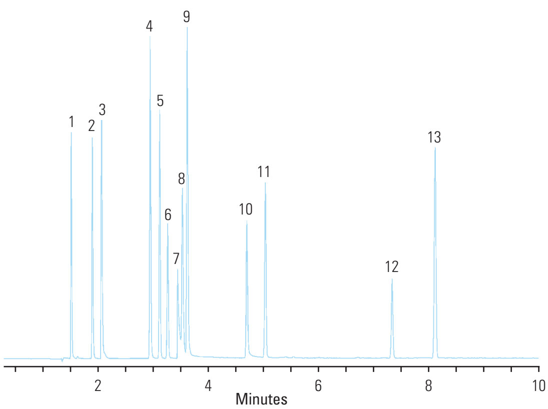
Applications:

- Amines and other basic compounds, including alkylamines, diamines, triamines, ethanolamines
- Nitrogen-containing heterocyclics

Similar to:

- Rtx-5 Amine

Amines and phenols



TG-5MS Amine 30m x 0.32mm x 1.0µm

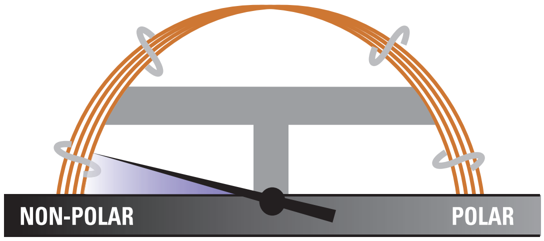
Temperature:	120°C to 220°C at 10°C/minute
Detector Type:	FID
Carrier Gas:	Hydrogen
Flow Rate:	40cm/min
Injection Volume:	1.0µL
Injection Mode:	Split 25:1, 300°C

1. diethylamine
2. pyridine
3. morpholine
4. phenol
5. aniline
6. 2-chlorophenol
7. diethylenetriamine
8. octylamine
9. 1-methyl-2-pyrrolidone
10. 2-nitrophenol
11. 2,6-dimethylaniline
12. nicotine
13. 2-nitroaniline

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
	30	0.1	26095-0480	1 Each
		0.25	26095-1430	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

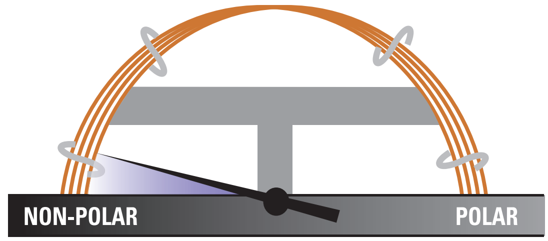
Similar to:
- Rxi-5HT
- BP-5HT
- VF-5HT
- ZB-5HT

Learn more at **thermofisher.com/GCcolumns**

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



Phase:	Proprietary
Max. Temps.:	330°C/350°C

TraceGOLD TG-SQC GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26070-1300	1 Each
	30	0.25	26070-1420	1 Each

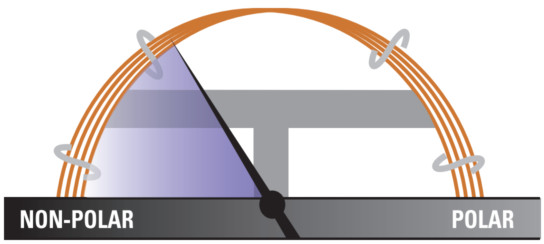
Applications:

- System Qualification Tests (Thermo Scientific GC-MS)

TraceGOLD TG-35MS GC columns

Higher phenyl content for useful elution order and retention time changes

- Mid-polarity phase
- Equivalent to USP G42 phase



Phase:	35% diphenyl / 65% dimethyl polysiloxane
Max. Temps.:	300°C/320°C
USP Listing:	G42

TraceGOLD TG-35MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26094-1300	1 Each
	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
0.53	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 cogeners
- Aroclor mixes
- Sterols
- Rosin acids
- Phthalate esters

Similar to:

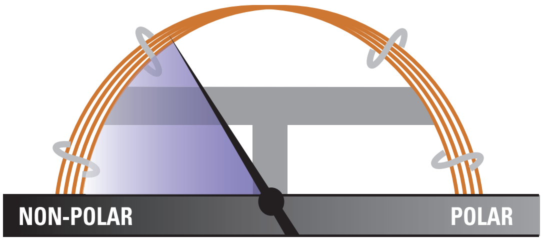
- Rtx-35
- BP-35
- HP-35
- SPB-35
- SPB-608

Learn more at **thermofisher.com/GCcolumns**

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



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
0.53	15	1.0	26092-2860	1 Each
	30	1.0	26092-2980	1 Each

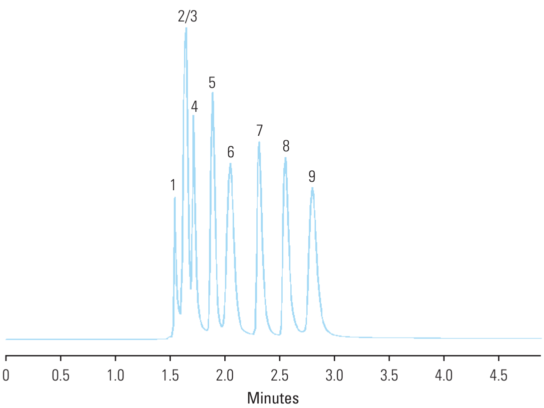
Applications:

- 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

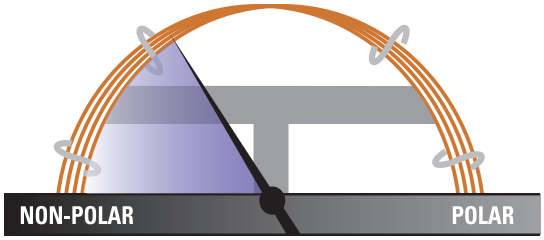
Temperature:	35°C (5 minute hold) Isothermal
Detector Type:	FID
Carrier Gas:	He
Flow Rate:	35cm/sec
Injection Volume:	1.0µL
Injection Mode:	Split (10:1), 250°C

1. methylamine
2. dimethylamine
3. trimethylamine
4. ethylamine
5. isopropylamine
6. tert-butylamine
7. n-propylamine
8. diethylamine
9. sec-butylamine

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



Phase:	6% cyanopropyl phenyl / 94% dimethyl polysiloxane
Max. Temps.:	260°C/280°C
USP Listing:	G43

TraceGOLD TG-1301MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26091-1420	1 Each
		1.0	26091-2960	1 Each
	60	0.25	26091-1540	1 Each
		1.0	26091-3080	1 Each
0.32	30	0.25	26091-1430	1 Each
		1.0	26091-2970	1 Each
		1.5	26091-3350	1 Each
		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:

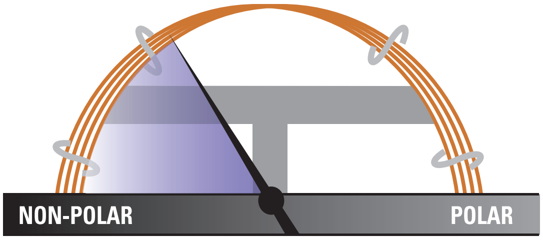
- Rtx-1301
- DB-1301
- BP-624
- HP-1301
- HP-624
- SPB-1301
- SPB-624
- VP-1301
- BF-624ms
- CP-1301
- CP-Select™ 624 CB

Learn more at **thermofisher.com/GCcolumns**

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



Phase:	6% cyanopropyl phenyl / 94% dimethyl polysiloxane
Max. Temps.:	240°C
USP Listing:	G43

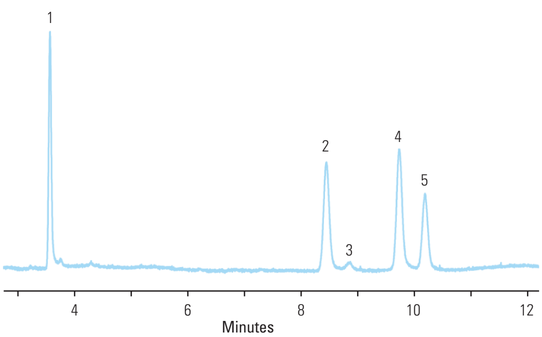
TraceGOLD TG-624 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	26085-4950	1 Each
	40	1.0	26085-4960	1 Each
0.25	30	1.4	26085-3320	1 Each
	60	1.4	26085-3330	1 Each
0.32	30	1.8	26085-3390	1 Each
	60	1.8	26085-3410	1 Each
0.53	30	3.0	26085-3960	1 Each
	60	3.0	26085-4080	1 Each
	75	3.0	26085-4900	1 Each
	105	3.0	26085-4090	1 Each

Applications:
- Residual Solvents
- Volatile Organic Compounds
- Alcohols
- Oxygenates

Similar to:
- DB-1301
- DB-624
- HP-1301
- HP-624
- SPB-1301
- SPB-624
- VF-1301
- VF-624ms
- CP-1301
- CP-Select 624 CB
- Rtx-624
- BP-624
- ZB-624
- Optima-1301
- Optima-624
- AT-624
- 007-1301

Residual solvents class 1



TG-624 30m x 0.32mm x 1.80µm

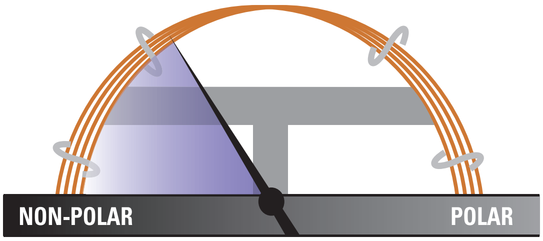
Temperature:	40°C (20 minute hold) to 240°C at 10°C/min (20 minute hold)
Detector Type:	FID
Carrier Gas:	He
Flow Rate:	2.15mL/min
Injection Volume:	1mL
Injection Mode:	Headspace, Split (1:5), 140°C

1. 1,1-dichloroethane
2. 1,1,1-trichloroethane
3. carbon tetrachloride
4. benzene
5. 1,2-dichloroethane

TraceGOLD TG-624SilMS 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



Phase:	6% cyanopropylphenyl / 94% dimethyl arylene polysiloxane
Max. Temps.:	320°C
USP Listing:	G43

TraceGOLD TG-624SilMS 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

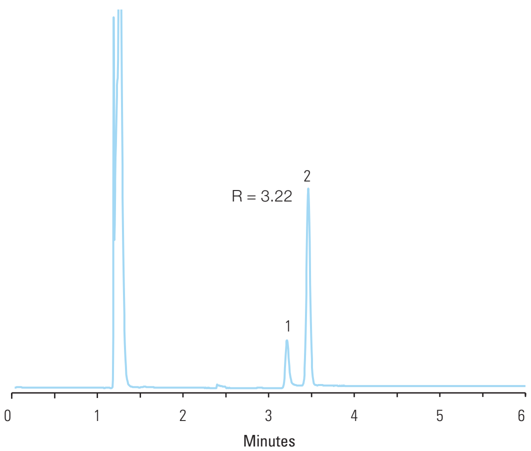
Applications:

- 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-624SilMS 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

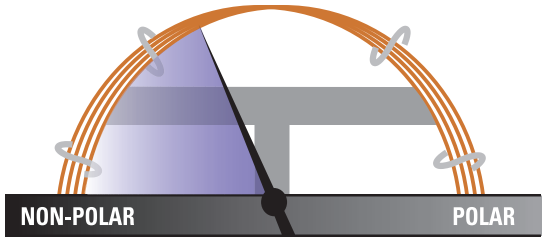
1. Acetonitrile
2. Dichloromethane

Learn more at **thermofisher.com/GCcolumns**

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



Phase:	14% cyanopropyl phenyl / 86% dimethyl polysiloxane
Max. Temps.:	260°C/280°C
USP Listing:	G46

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
0.32	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 Each
		1.0	26090-2980	1 Each
		3.0	26090-3960	1 Each

Applications:

- Alcohols
- Pesticides
- Oxygenates
- PCB cogeners
- Aroclor mixes

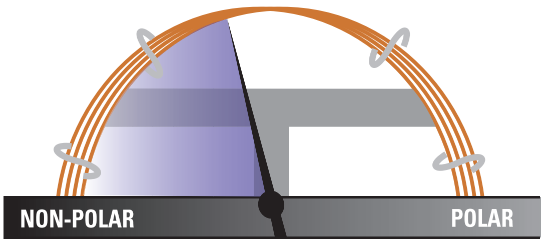
Similar to:

- 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



Phase:	50% diphenyl / 50% dimethyl polysiloxane
Max. Temps.:	300°C/320°C
USP Listing:	G43

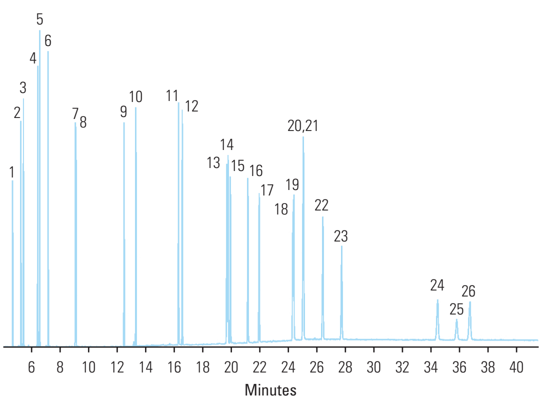
TraceGOLD TG-17MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26089-1300	1 Each
	30	0.25	26089-1420	1 Each
		0.5	26089-2230	1 Each
		1.0	26089-2960	1 Each
	60	0.25	26089-1540	1 Each
0.32	30	0.25	26089-1430	1 Each
		0.5	26089-2240	1 Each
		1.0	26089-2970	1 Each
0.53	30	0.25	26089-1440	1 Each
		1.0	26089-2980	1 Each
		1.5	26089-3360	1 Each

Applications:
- Pesticides and herbicides
- Rosin acids
- Phthalate esters
- Triglycerides
- Sterols

Similar to:
- Rxi-17
- DB-17
- DB-608
- VF-17ms
- CP-Sil 24 CB

Polycyclic aromatic hydrocarbons



TG-17MS 30m x 0.25mm x 0.25µm

Temperature:	90°C (1.0 minute hold) to 215°C (0.5 minute hold) at 25°C/minute to 235°C at 4°C/minute to 280°C/ minute at 15°C/minute to 320°C (20 minute hold) at 4°C/minute
Detector Type:	MS
Carrier Gas:	He
Flow Rate:	1.2mL/min
Injection Volume:	1.0µL
Injection Mode:	Splitless, 300°C

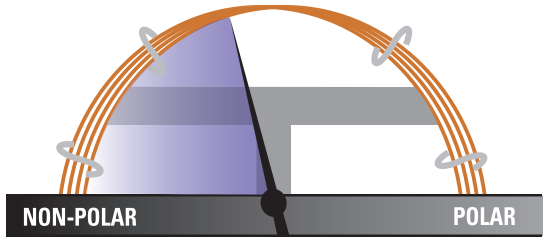
1. naphthalene
2. 1-methylnaphthalene
3. 2-methylnaphthalene
4. acenaphthylene
5. acenaphthene
6. fluorene
7. phenanthrene
8. anthracene
9. fluoranthene
10. pyrene
11. benzo(a)anthracene
12. chrysene
13. benzo(b)fluoranthene
14. benzo(k)fluoranthene
15. benzo(j)fluoranthene
16. benzo(a)pyrene
17. 3-methylcholanthrene
18. dibenzo(a,h)acridine
19. dibenzo(a,j)acridine
20. indeno(1,2,3-cd)pyrene
21. dibenzo(a,h)anthracene
22. benzo(ghi)perylene
23. 7H-dibenzo(c,g)carbazole
24. dibenzo(a,e)pyrene
25. dibenzo(a,i)pyrene
26. dibenzo(a,h)pyrene

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-17SilMS 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



Phase:	50% phenyl / 50% dimethyl arylene polysiloxane
Max. Temps.:	340/360°C
USP Listing:	G3

TraceGOLD TG-17SilMS 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:

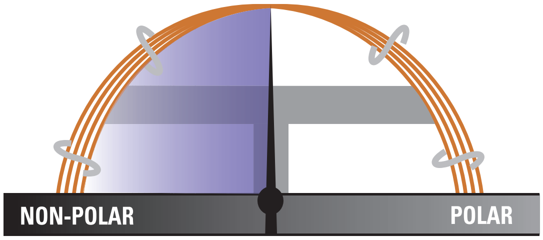
- DB-1 7ms
- VF-17ms
- CP-Sil 24 CB
- ZB-50
- BPX-50

Learn more at **thermofisher.com/GCcolumns**

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



Phase:	50% cyanopropyl / 50% phenyl methyl polysiloxane
Max. Temps.:	220°C/240°C
USP Listing:	G7, G19

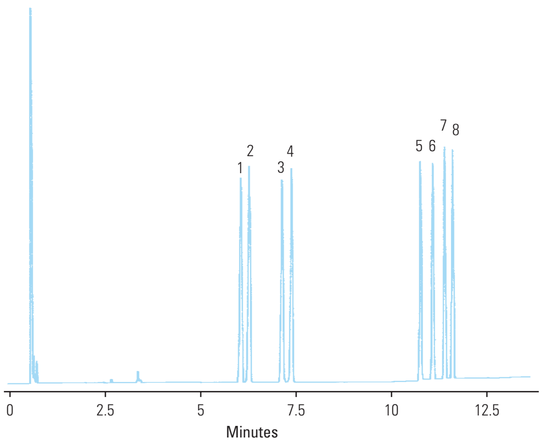
TraceGOLD TG-225MS GC columns

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

Similar to:
- Rtx-225
- DB-225
- HP-225
- SPB-225

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

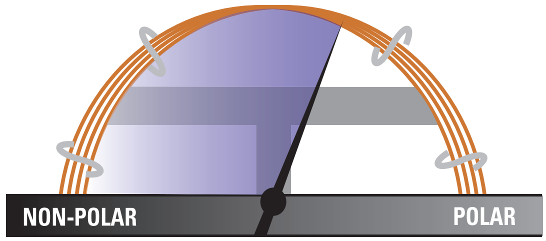
1. rhamnitol
2. fucitol
3. ribitol
4. arabinitol
5. mannitol
6. galactitol
7. glucitol
8. inositol

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-200MS GC columns

Exceptionally inert mid-polarity columns with selectivity and elution order optimized for difficult separations

- Polar phase,trifluoropropyl methylpolysiloxane solid phase resolves compounds that phenyl and cyano phases cannot
- Outstanding thermal stability and low bleed
- Suitable for use with sensitive detectors including ECD, NPD and MS
- Confirmation column in combination with another GC column



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

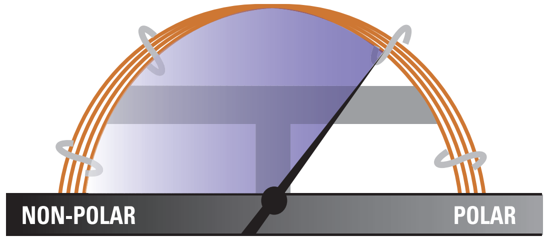
Similar to:

- 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



Phase:	Polyethylene Glycol (PEG)
Max. Temps.:	240/260°C
USP Listing:	G14, G15, G20, G39

TraceGOLD TG-WaxMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.1	10	0.1	26088-0200	1 Each
0.25	15	0.25	26088-1300	1 Each
	30	0.25	26088-1420	1 Each
		0.5	26088-2230	1 Each
	30 with 5m SafeGuard	0.25	26088-1421	1 Each
	60	0.25	26088-1540	1 Each
		0.5	26088-2350	1 Each
0.32	15	0.5	26088-2120	1 Each
	30	0.25	26088-1430	1 Each
		0.5	26088-2240	1 Each
		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
		1.0	26088-3090	1 Each
0.53	15	0.5	26088-2130	1 Each
		1.0	26088-2860	1 Each
	30	0.25	26088-1440	1 Each
		0.5	26088-2250	1 Each
		1.0	26088-2980	1 Each
		1.5	26088-3360	1 Each
	60	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

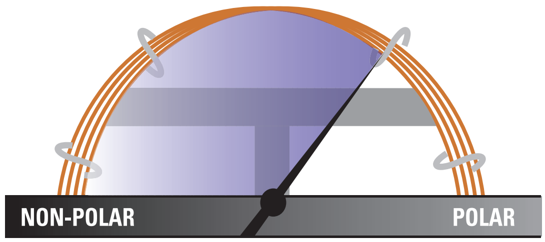
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26M88-1420	1 Each
	60	0.25	26M88-1540	1 Each

Learn more at **thermofisher.com/GCcolumns**

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



Phase:	Modified Polyethylene Glycol (PEG) for Acidic Compounds
Max. Temps.:	240°C / 250°C
USP Listing:	G25, G35

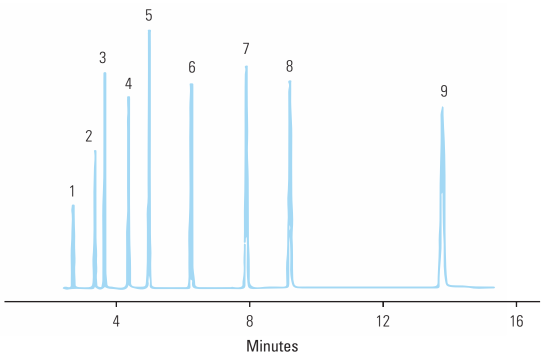
TraceGOLD TG-WaxMS A GC columns

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

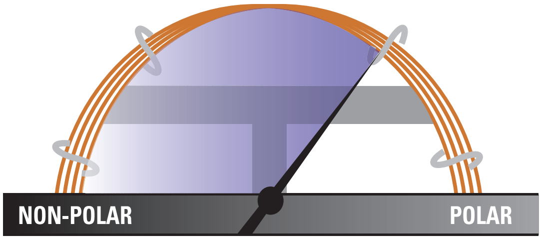
Temperature:	145°C Isothermal
Detector Type:	FID
Carrier Gas:	Hydrogen
Flow Rate:	40cm/sec
Injection Volume:	1.0µL
Injection Mode:	Split (50:1), 250°C

1. acetic acid
2. propionic acid
3. isobutyric acid
4. n-butyric acid
5. isovaleric acid
6. n-valeric acid
7. isocaproic acid
8. caproic acid
9. heptanoic 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

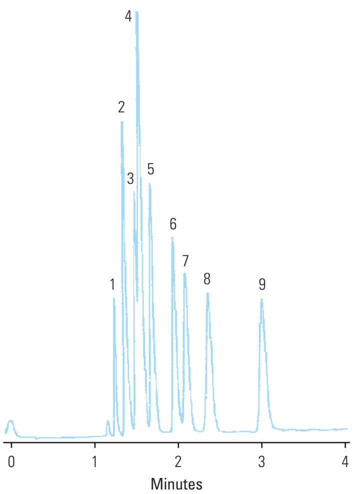
TraceGOLD TG-WaxMS B GC columns

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

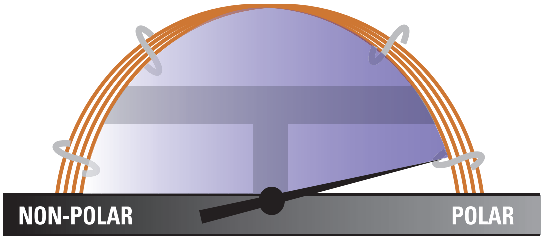
1. trimethylamine
2. dimethylamine
3. ethylamine
4. methylamine
5. isopropylamine
6. n-propylamine
7. tert-butylamine
8. diethylamine
9. sec-butylamine

Learn more at **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



Phase:	90% biscyanopropyl / 10% cyanopropyl phenyl polysiloxane
Max. Temps.:	260°C/275°C
USP Listing:	G8, G48

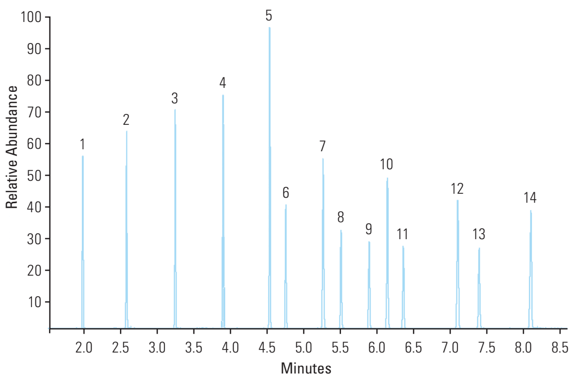
TraceGOLD TG-POLAR GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.1	26082-0470	1 Each
		0.2	26082-5010	1 Each
	60	0.1	26082-0590	1 Each
		0.2	26082-5020	1 Each
	105	0.1	26082-5000	1 Each
		0.2	26082-5030	1 Each
0.32	30	0.2	26082-5040	1 Each
	60	0.2	26082-5050	1 Each

Applications:
- Cis/Trans FAMEs
- Dioxins

Similar to:
- DB-23
- HP-23
- Rtx-2330
- SP-2330
- SP-2380
- SPB-2560
- HP-88
- Silar 10c
- CP-Sil 88 FAME
- CP-Sil 88
- BPX 70
- BPX 90

FAMEs C8-C24



TG-POLAR 30m x 0.25mm x 0.2µm

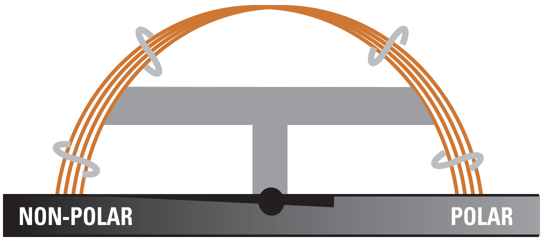
Temperature:	100°C (0.5 minute hold) to 195°C at 25°C/minute (1 minute hold) to 250°C at 10°C/minute (3 minute hold)
Detector Type:	MS
Carrier Gas:	He
Flow Rate:	1.2mL/min
Injection Volume:	0.1µL
Injection Mode:	Split (100:1), 250°C

1. Methyl octanoate
2. Methyl decanoate
3. Methyl decanoate
4. Methyl myristate
5. Methyl palmitate
6. Methyl palmitoleate
7. Methyl stearate
8. Methyl oleate
9. Methyl linoleate
10. Methyl linolenate
11. Methyl arachidate
12. Methyl behenate
13. Methyl cis-13-docosenoate
14. Methyl tetracosanoate

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
0.25	15	0.25	26079-1300	1 Each
	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

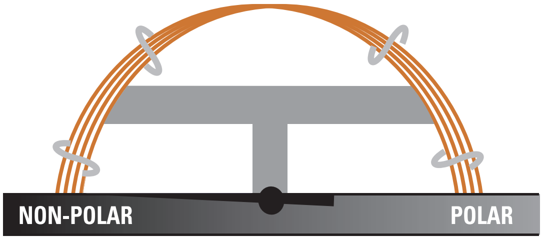
Description	Cat. No	Quantity
Semi-Volatile Organic Compounds (SVOC) Application kit	60181-736	1 Each
Contains the following:		
TG-5MS GC COLUMN 30MX0.25MMX 0.50MM	26098-2230	1 Each
BTO Septa 11mm Diameter (Blister Pack)	31303233-BP	50 Pack
LINERGOLD PRECISION LINER, WOOL, 4X6.3X78.5MM 5PK	453A1255-UI	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**

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



Phase:	Proprietary
Max. Temps.:	260°C
USP Listing:	N/A

TraceGOLD TG-VRX GC columns

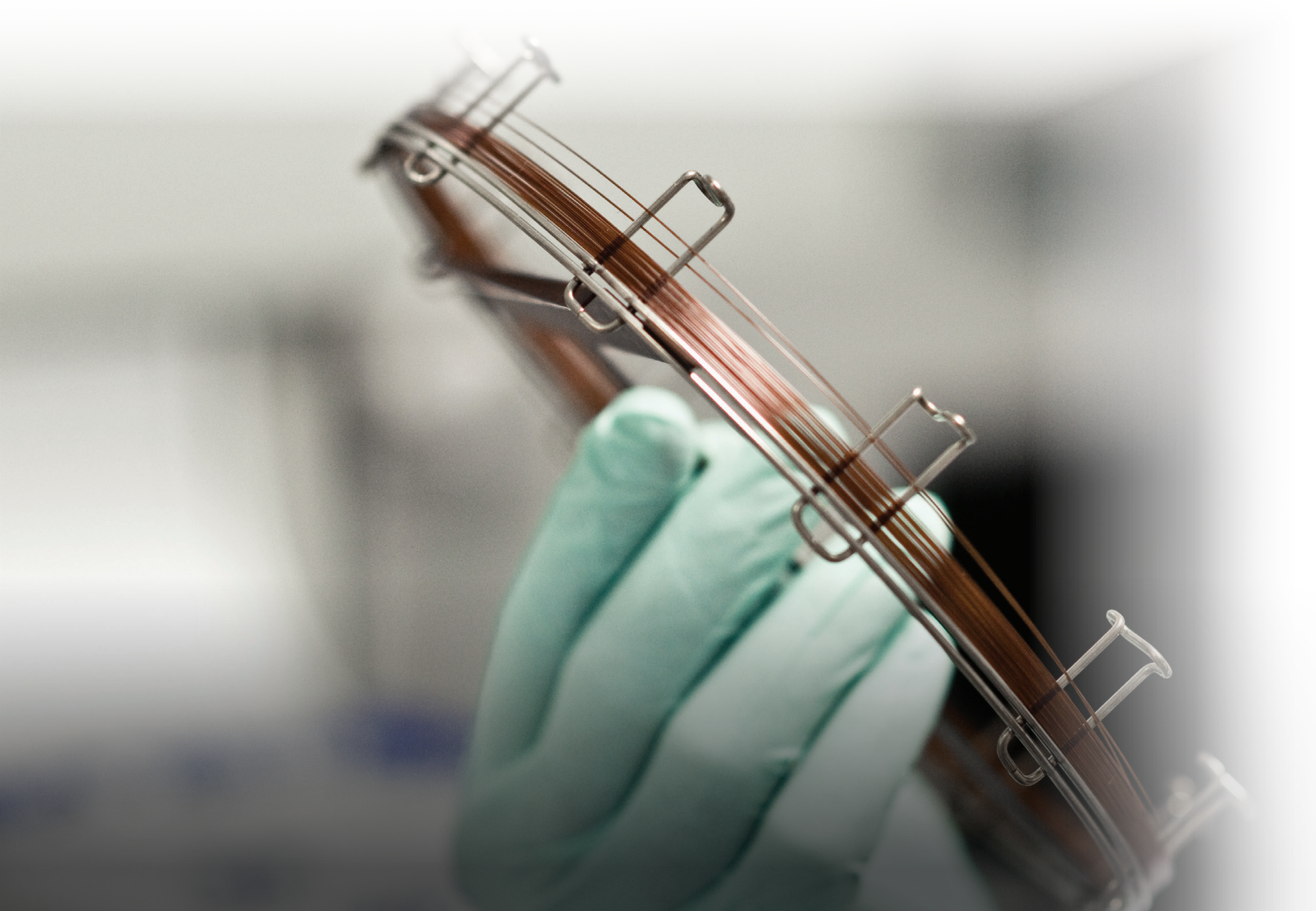
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	26081-4950	1 Each
	40	1.0	26081-4960	1 Each
0.25	30	1.4	26081-3320	1 Each
	60	1.4	26081-3330	1 Each
0.32	30	1.8	26081-3390	1 Each
	60	1.8	26081-3410	1 Each

Applications:

- Volatile organic pollutants
- US EPA Method 8021 compounds

Similar to:

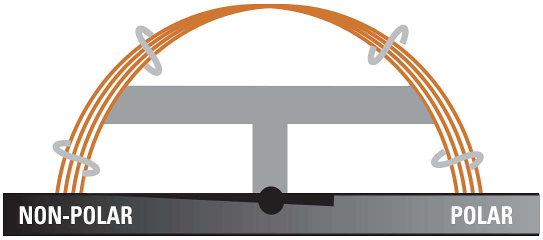
- Rtx-VRX
- DB-VRX



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



Phase:	Proprietary
Max. Temps.:	260°C
USP Listing:	N/A

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

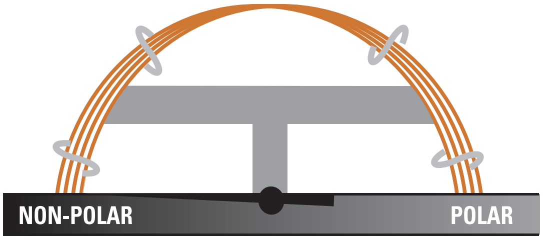
Description	Cat. No.	Quantity
Volatile Organic Compound(VOC) Apps Kit	60181-734	1 Each
Contains the following:		
TG-VMS GC Column,20mx0.18mmx 1.00µm	26080-4950	1 Each
BTO Septa 11mm Diameter (Blister Pack)	31303233-BP	50 Pack
LinerGOLD Split Liner 1x6.3x78.5mm	453A1335-UI	5 Pack
LinerGOLD Splitless Liner, 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 0.1-0.25mmID 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**

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



Phase:	Proprietary
Max. Temps.:	340°C
USP Listing:	N/A

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

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

Applications:

- Organochlorine pesticides
- Herbicides

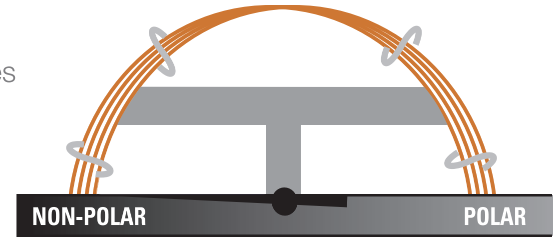
Similar to:

- Rtx-CLPesticides/ Rtx-CLPesticides2

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



Phase:	Proprietary
Max. Temps.:	330°C
USP Listing:	N/A

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:

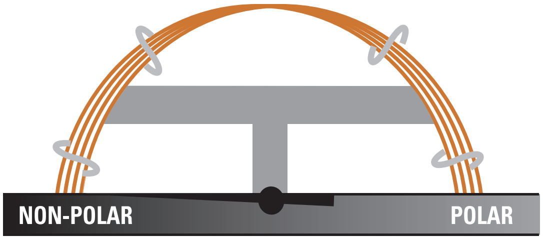
- Rtx-OPPesticides/ Rtx-OPPesticides2

Learn more at **thermofisher.com/GCcolumns**

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



Phase:	Proprietary
Max. Temps.:	260°C
USP Listing:	N/A

Applications:
- Blood alcohol analysis
- Abused inhalent anesthetics
- γ-hydroxybutyrate (GHB)
- γ-butyrolactone (GBL)
- Glycols
- Common industrial solvents

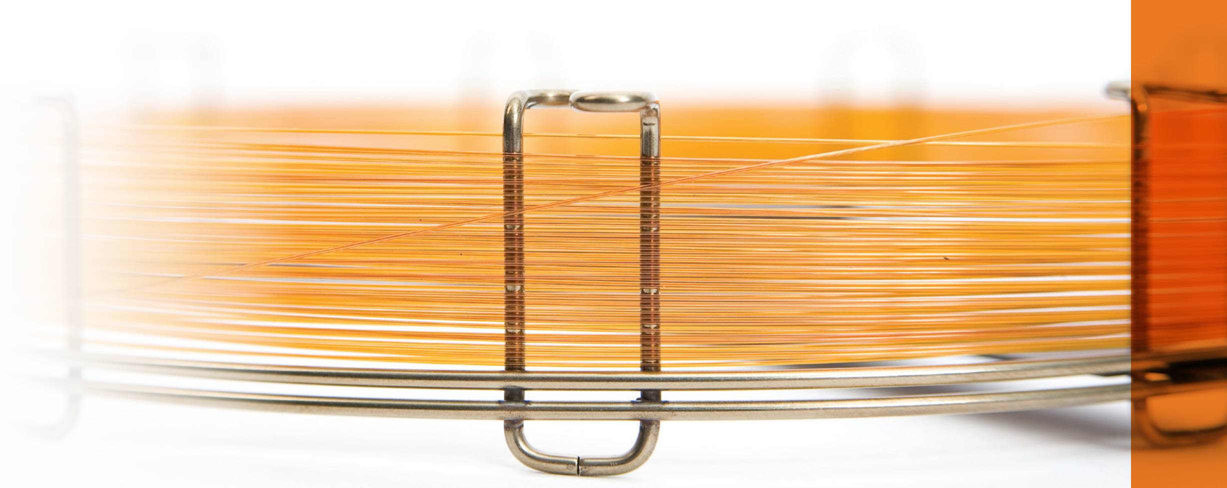
Similar to:
- Rtx BAC Plus 1 / Rtx BAC Plus 2

TraceGOLD TG-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

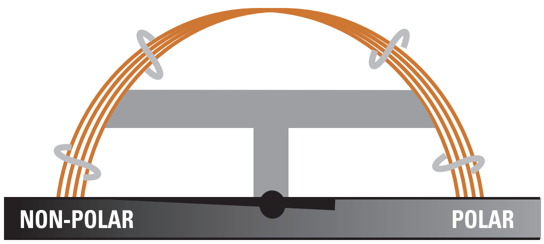
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	30	0.5	26063-2240	1 Each
0.53	30	1.0	26063-2980	1 Each



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



Phase:	Proprietary
Max. Temps.:	340°C
USP Listing:	N/A

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

Persistent organic pollutants (POPs) confirmation kit

Description	Cat. No	Quantity
Persistent Organic Pollutants (POPs) Confirmation kit	TS-MKITG503	1 Each
Contains the following:		
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

Applications:
- Dioxins
- Furans

Similar to:
- Rtx-Dioxin2
- DB-Dioxin

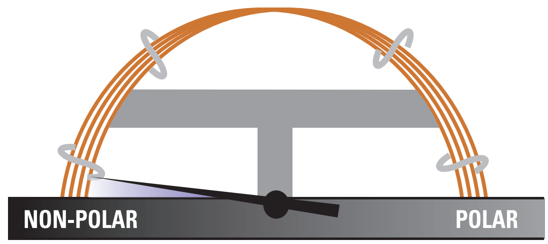
Learn more at **thermofisher.com/GCcolumns**

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

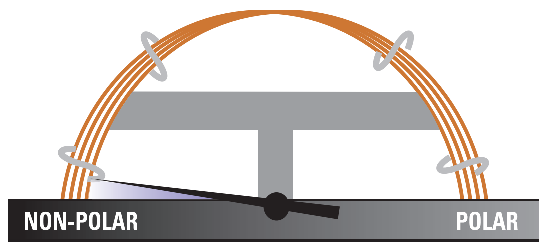
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260A130P	1 Each
	30	0.1	260A047P	1 Each
		0.25	260A142P	1 Each
	60	0.25	260A154P	1 Each
0.32	15	0.25	260A131P	1 Each
	30	0.25	260A143P	1 Each

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

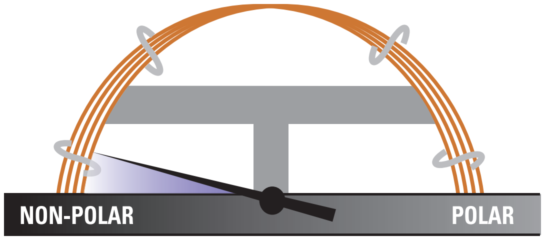
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.1	260B047P	1 Each
		0.25	260B142P	1 Each
	60	0.25	260B154P	1 Each
0.32	30	0.25	260B143P	1 Each
	60	0.25	260B155P	1 Each
		1.0	260B309P	1 Each

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



Phase:	5% Phenyl Methylpolysiloxane
Max. Temps.:	320°C/340°C for films ≤1.5µm 280°C/300°C for films >1.5µm
USP Listing:	G27, G36

TRACE TR-5 GC columns

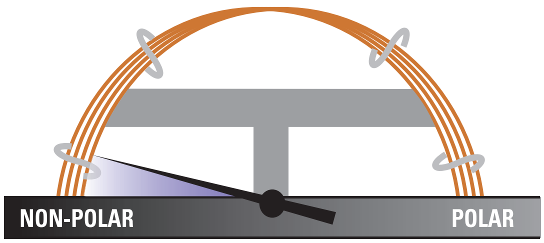
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260E130P	1 Each
	30	0.25	260E142P	1 Each
		0.5	260E223P	1 Each
	60	0.25	260E154P	1 Each
0.32	7	0.25	260E113P	1 Each
	15	0.25	260E131P	1 Each
	30	0.25	260E143P	1 Each
		0.5	260E224P	1 Each
		1.0	260E297P	1 Each
	60	0.25	260E155P	1 Each
	100	0.5	260E242P	1 Each
0.53	30	0.5	260E225P	1 Each
		1.0	260E298P	1 Each
		1.5	260E336P	1 Each
		5.0	260E470P	1 Each

Applications:
- Alcohols
- Free fatty acids
- Aromatics
- Flavors
- Low polarity pesticides

TRACE TR-5HT GC columns

Feature upper temperature limits as high as 400°C

- Non-polar phase, 5% phenyl polycarborane siloxane
- Allow the elution of higher-boiling hydrocarbons up to C100
- Low bleed even at elevated temperatures



Phase:	5% Phenyl Polycarborane Siloxane
Max. Temps.:	380°C/400°C
USP Listing:	G27, G36

TRACE TR-5HT GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.1	260H035P	1 Each
	30	0.1	260H047P	1 Each
		0.25	260H142P	1 Each
0.32	12	0.1	260H030P	1 Each

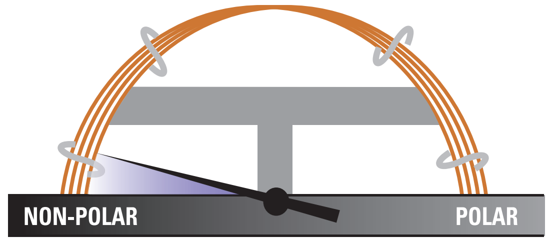
Applications:
- Hydrocarbons
- Solvents
- Pesticides
- Herbicides
- Phenols
- Amines

Learn more at **thermofisher.com/GCcolumns**

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



Phase:	5% Phenyl Polysilphenylene-siloxane
Max. Temps.:	360°C/370°C for films ≤1.5µm 350°C/360°C for films >1.5µm
USP Listing:	G27, G36

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
		0.5	260F223P	1 Each
		1.0	260F296P	1 Each
	60	0.25	260F154P	1 Each
		1.0	260F308P	1 Each
0.32	15	1.0	260F285P	1 Each
	30	0.25	260F143P	1 Each
		0.5	260F224P	1 Each
		1.0	260F297P	1 Each
0.53	30	0.5	260F225P	1 Each
		1.0	260F298P	1 Each
		1.5	260F336P	1 Each
		3.0	260F396P	1 Each

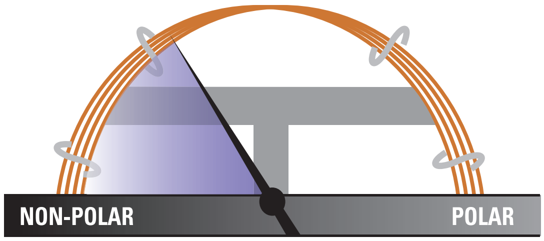
Applications:

- Hydrocarbons
- Solvents
- Pesticides
- Herbicides
- Phenols
- Amines

TRACE TR-35MS GC columns

Mid-polarity columns excellent for many applications

- Mid-polarity phase, 35% phenyl polysilphenylene-siloxane
- Exceptionally low surface activity
- Low bleed even at elevated temperatures



Phase:	35% Phenyl Polysilphenylene-siloxane
Max. Temps.:	330°C/360°C
USP Listing:	G42

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

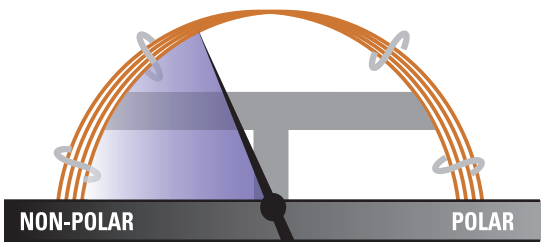
Applications:

- 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



Phase:	14% Cyanopropylphenyl Polysiloxane
Max. Temps.:	280°C/300°C
USP Listing:	G46

TRACE TR-1701 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260Q142P	1 Each
	60	0.25	260Q154P	1 Each
0.32	15	0.25	260Q131P	1 Each
	30	0.25	260Q143P	1 Each
	60	1.0	260Q309P	1 Each
		0.25	260Q155P	1 Each
0.53	30	1.0	260Q298P	1 Each

Applications:

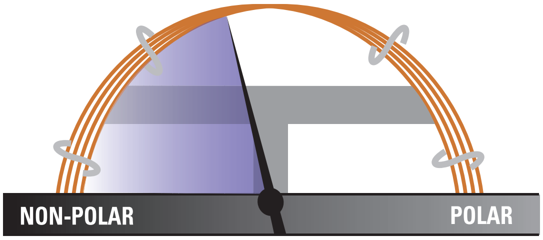
- Pesticides
- PCBs
- PAHs
- Organic acids
- Drugs
- Steroids
- EPA 608, 8081

Learn more at **thermofisher/GCcolumns**

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



Phase:	50% Phenyl Polysilphenylene-siloxane
Max. Temps.:	360°C/370°C
USP Listing:	G3

TRACE TR-50MS GC columns

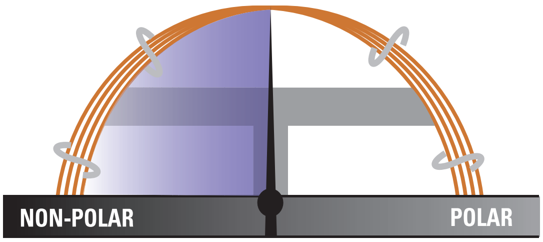
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260R142P	1 Each
0.32	30	0.25	260R143P	1 Each

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



Phase:	50% Cyanopropylphenyl Polysiloxane
Max. Temps.:	230°C / 250°C
USP Listing:	G7

TRACE TR-225 GC columns

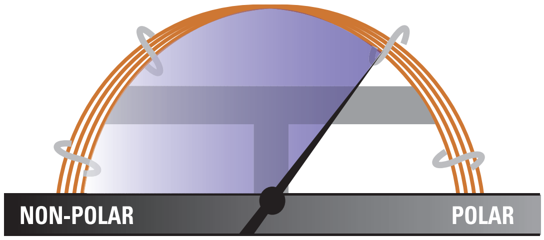
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260Y142P	1 Each

Applications:
- Fatty Acid Methyl Esters (FAMEs)
- Carbohydrates
- Neutral sterols

TRACE TR-Wax GC columns

General purpose, high-polarity columns

- Polar phase, polyethylene glycol
- Highly crosslinked and fully deactivated
- Solvent washable



Phase:	Polyethylene Glycol (PEG)
Max. Temps.:	260°C/280°C for films <1.0µm 240°C/260°C for 1.0µm films
USP Listing:	G16, G20

TRACE TR-Wax GC columns

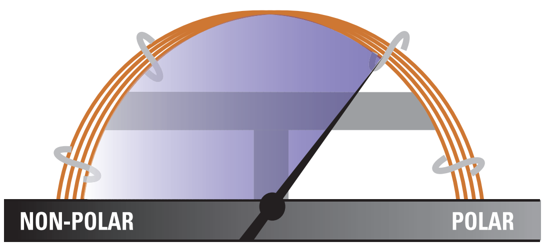
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260W142P	1 Each
		0.5	260W223P	1 Each
		1.0	260W296P	1 Each
	60	0.25	260W154P	1 Each
0.32	15	0.25	260W131P	1 Each
	30	0.25	260W143P	1 Each
		0.5	260W224P	1 Each
		1.0	260W297P	1 Each
	60	0.25	260W155P	1 Each
		1.0	260W309P	1 Each
0.53	15	1.0	260W286P	1 Each
	30	0.5	260W225P	1 Each
		1.0	260W298P	1 Each
	60	1.0	260W310P	1 Each

Applications:
- Esters
- Alcohols
- Ketones
- Glycols
- Aromatic isomers

TRACE TR-WaxMS GC columns

Feature a high-polarity phase designed for mass spectrometry detectors

- Polar phase, polyethylene glycol
- Proprietary bonding method expands operating temperatures
- Extremely low bleed improves sensitivity and library matches
- High stability with oxygen and water



Phase:	Polyethylene Glycol (PEG)
Max. Temps.:	260°C/280°C
USP Listing:	G16

TRACE TR-WaxMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260X142P	1 Each
		0.5	260X223P	1 Each
		1.0	260X296P	1 Each
	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

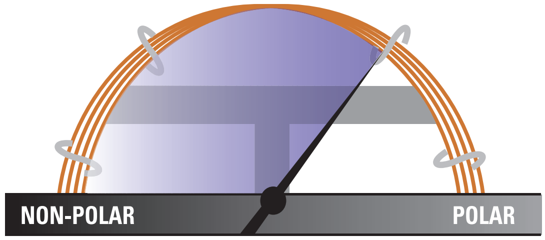
Applications:
- Aromatic hydrocarbons
- Food additives
- Essential oils
- Alcohols
- Esters
- Aldehydes
- Ketones

Learn more at **thermofisher.com/GCcolumns**

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



Phase:	TPA Modified Polyethylene Glycol (PEG)
Max. Temps.:	240°C/250°C
USP Listing:	G25, G35

TRACE TR-FFAP GC Columns

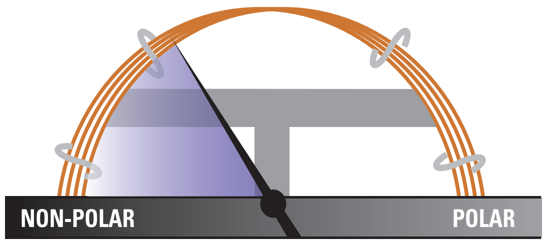
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260N130P	1 Each
	30	0.25	260N142P	1 Each
	60	0.25	260N154P	1 Each
0.32	30	0.25	260N143P	1 Each
	50	0.5	260N230P	1 Each
0.53	30	0.5	260N225P	1 Each
		1.0	260N298P	1 Each

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



Phase:	6% Cyanopropylphenyl Polysiloane
Max. Temps.:	280°C/300°C
USP Listing:	G43

TRACE TR-V1 GC columns

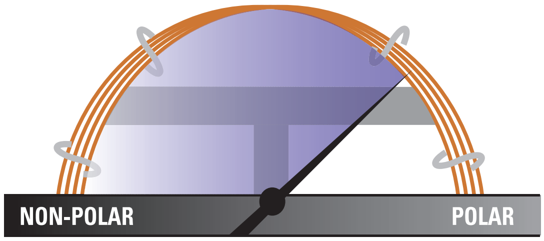
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	260V495P	1 Each
0.25	30	1.4	260V332P	1 Each
	60	1.4	260V333P	1 Each
0.32	30	1.8	260V339P	1 Each
	60	1.8	260V341P	1 Each
0.53	30	3.0	260V396P	1 Each

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



Phase:	70% Cyanopropyl Polysilphenylene-siloxane
Max. Temps.:	250°C/260°C
USP Listing:	N/A

TRACE TR-FAME GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.10	10	0.2	260M096P	1 Each
0.22	25	0.25	260M135P	1 Each
	30	0.25	260M141P	1 Each
	50	0.25	260M147P	1 Each
	60	0.25	260M153P	1 Each
0.25	30	0.25	260M142P	1 Each
	60	0.25	260M154P	1 Each
	100	0.20	260M154P	1 Each
	100	0.20	260M238P	
	120	0.25	260M166L	1 Each
0.32	25	0.25	260M137P	1 Each
	30	0.25	260M143P	1 Each
	60	0.25	260M155P	1 Each

Applications:

- Fatty Acid Methyl Esters (FAMEs)
- FAMEs Cis/Trans Isomers

Learn more at **thermofisher.com/GCcolumns**

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 cogeners 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**

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

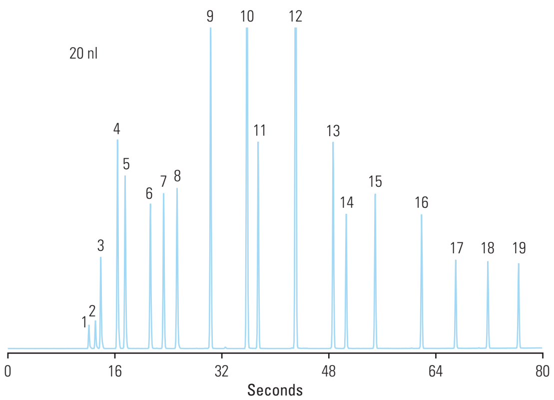
Application – UltraFast Analysis of Pure Petroleum Products through Nanovolumes Injection

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).

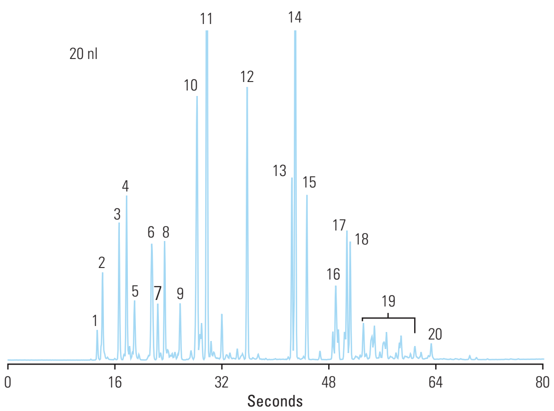
Split injections were performed with a AS3000 Autosampler using a 0.5µL plunger-in-needle syringe p/n 36504045. A minimum penetration depth in the injector (cold needle mode) was set, and 0.3µL of air was automatically withdrawn after the sample to ensure that the part of the needle inserted into the 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.

UFC-1 10m x 0.32mm x 3um

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
2. methyl-propane
3. butane
4. methyl-butane
5. pentane
6. methyl-pentane
7. hexane
8. dimethyl-pentane
9. heptane
10. toluene
11. octane
12. p-xylene
13. propyl-benzene
14. n-decane
15. butyl-benzene
16. n-dodecane
17. n-tridecane
18. n-tetradecane
19. n-pentadecane



1. methyl-propane
2. butane
3. 2-methyl-butane
4. pentane
5. ter-butyl alcohol
6. methyl-pentane
7. 3-methyl-pentane
8. hexane
9. dimethyl-pentane
10. cyclohexane
11. dimethyl-hexane
12. toluene
13. ethyl-benzene
14. p-xylene
15. m-xylene
16. propyl-benzene
17. tetramethyl-octane
18. 1,2,4-trimethyl-benzene
19. tri/tetramethyl-benzene isomers
20. naphthalene

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**

TracePLOT GC columns

Thermo Scientific™ TracePLOT™ TG-BOND Alumina GC columns: Na_2SO_4 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
Na_2SO_4 Deactivation				
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
KCl Deactivation				
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_2 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_2, methane and $O_2/N_2/CO$
- 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**

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.

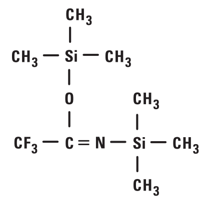
For more information visit **thermofisher.com/GCreagents**

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
MW 257.4
bp 40°C/12 mm
d_4^{20} 0.961

BSTFA and BSTFA + TMCS

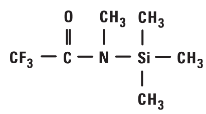
Description	Quantity		Cat. No.	Quantity
BSTFA	10 × 1mL ampules		TS-38830	1 Pack
	25g		TS-38828	1 Each
	100g	X	TS-38829	1 Each
BSTFA + 1% TMCS	10 × 1mL ampules		TS-38831	1 Pack
	10g		TS-38832	1 Each
	25g		TS-38833	1 Each
	100g	X	TS-38834	1 Each
BSTFA + 10% TMCS	10 × 1mL ampules		TS-38840	1 Pack

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 $Si(CH_3)_3$ 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
MW 199.1
bp 70°C/75 mm
d_4^{20} 1.11

MSTFA and MSTFA + 1% TMCS

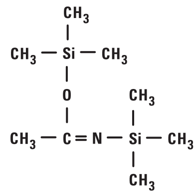
Description	Quantity		Cat. No.	Quantity
MSTFA	10 × 1mL ampules		TS-48910	1 Pack
	10g		TS-48911	1 Each
	25mL		TS-48913	1 Each
	100mL	X	TS-48914	1 Each
MSTFA + 1% TMCS	10 × 1mL ampules		TS-48915	1 Pack

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
MW 203.4
bp 71-73°C/35 mm
d_4^{20} 0.832

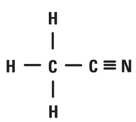
BSA

Description	Quantity	Cat. No.	Quantity
BSA	10 x 1mL	TS-38836	1 Pack

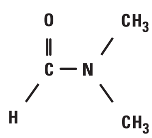
Silylation grade solvents

Manufactured to meet your exact silylation needs

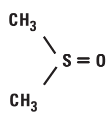
- Purified, dried and packaged under nitrogen in convenient 50mL Hypo-Vial Sample Storage Vials
- Supplied with elastomer septa, allowing immediate access to the sample without exposure to moisture and oxygen
- Use polar solvents (acetonitrile, dimethylformamide, dimethylsulfoxide, pyridine, tetrahydrofuran) to facilitate reactions; nonpolar organic solvents may be used, but they will not accelerate the rate of reaction



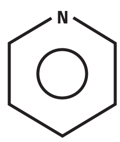
Acetonitrile
MW 41.05
bp 81.6°C



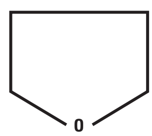
Dimethylformamide
MW 73.09
bp 153°C



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

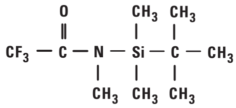
X in the ordering table indicates that hazardous shipping charges apply.

Learn more at **thermofisher.com/GCsreagents**

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
MW 241.3
bp 168-170°C
d_4^{20} 1.121

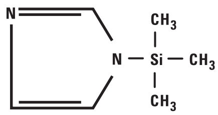
MTBSTFA and MTBSTFA + 1% TBDMCS

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
MW 140.26
bp 99°C/14 mm Hg
d_4^{20} 0.957

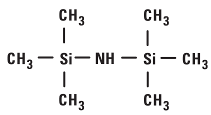
TMSI

Description	Quantity	Cat. No.	Quantity
TMSI (N-Trimethylsilylimidazole)	10 × 1mL ampules	TS-88623	1 Pack
	25g	TS-88625	1 Each
	100g	TS-88626	1 Each

HMDS (Hexamethyldisilazane)

The popular choice for silylation of sugars and related substances

- Greatly extends the practical range of GC, improving chromatographic results
- Suitable for deactivating and coating chromatographic supports
- Monofunctional, making polymerization not possible and eliminating surface moisture



HMDS
MW 161.4
bp 125°C
n_d^{20} 1.4071

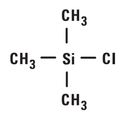
HMDS

Description	Quantity	Cat. No.	Quantity
HMDS (Hexamethyldisilazane)	25g	**TS-84770**	1 Each

TMCS (Trimethylchlorosilane)

An excellent catalyst for difficult-to-silylate compounds

- Excellent adjunct for forming trimethylsilyl ethers for GC determinations
- Used to prepare TMS derivatives of organic acids



TMCS
MW 108.7
bp 57.6°C
d_4^{20} 0.858

TMCS

Description	Quantity	Cat. No.	Quantity
TMCS	25g	TS-88530	1 Each

MOX (Methoxamine) 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 (Methoxamine) Reagent (2% methoxyamine HCl in pyridine)	10mL	TS-45950	1 Each

Learn more at **thermofisher.com/GCsreagents**

Tri-Sil HTP (HMDS:TMCS:Pyridine) reagent

Reagent-catalyst mixture for one-step derivatization

- Derivatizes carbohydrates, phenols, steroids, sterols, organic acids, alcohols and some amines
- Useful for rapid production of TMS derivatives of polar compounds for gas chromatographic determination and biochemical synthesis
- The versatility, speed and ease of use of Tri-Sil HTP Reagent has made it the most widely used silylation formulation available

Tri-Sil HTP reagent

Description	Quantity		Cat. No.	Quantity
Tri-Sil HTP Reagent HMDS:TMCS:Pyridine (2:1:10)	10 × 1mL ampules		TS-48999	1 Pack
Tri-Sil HTP Reagent HMDS:TMCS:Pyridine (2:1:10)	50mL	X	TS-49001	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

Tri-Sil BP (BSA:Pyridine) reagent

Derivatizes alcohols, phenols, organic acids, aromatic amides and amines

Tri-Sil BP Reagent reacts with:

- Alcohols, phenols, some enols and other hydroxyl and polyhydroxyl compounds to from trimethylsilyl esters
- Organic acids to form trimethylsilyl esters
- Aromatic amides to form N-trimethylsilyl derivatives
- Amino acids to form both N- and O-trimethylsilyl derivatives
- Amines to form N-trimethylsilyl derivatives

Tri-Sil BP reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil BP Reagent (2.5mEq/mL BSA in pyridine)	25mL	TS-49012	1 Each

Tri-Sil TBT (TMSI:BSA:TMCS) reagent

A catalyzed silylation reagent formulation containing three parts TMSI, three parts BSA and two parts TMCS

- Converts all classes of hydroxyl groups to TMS ethers
- Under usual conditions, the reaction is complete in a short period of time at 60 to 80°C, although very hindered hydroxyls may require several hours

Tri-Sil TBT reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil TBT Reagent TMSI:BSA:TMCS (3:3:2)	10 × 1mL ampules	TS-49016	1 Pack

Tri-Sil TP (TMSI:Pyridine) reagent

Derivatizes hydroxyl compounds, particularly carbohydrates

- Silylates alcohols and phenols, organic acids, hydroxylamines, amino acids, carbohydrates, flavonoids, glycols and polyglycols, nucleotides, steroids, hydroxyl acids, barbiturates, narcotics, indoles and vitamins
- Does not react with amines
- May be used with water as long as there is enough reagent present to react with both the water and the sample

Tri-Sil TP reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil TP Reagent TMSI: Pyridine (1:4)	10 × 1mL ampules	TS-49230	1 Pack
Tri-Sil TP Reagent TMSI: Pyridine (1:4)	25mL	TS-49231	1 Each

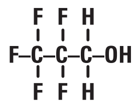
Learn more at **thermofisher.com/GCsreagents**

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_4^{20} 1.2880

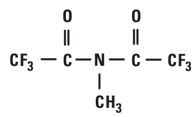
Pentafluoropropanol

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_4^{20} 1.55

MBTFA

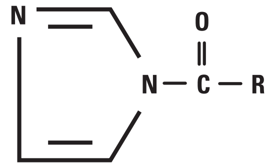
Description	Quantity		Cat. No.	Quantity
MBTFA [N-Methyl-bis(trifluoroacetamide)	10 x 1mL ampules		TS-49700	1 Pack
	25mL		TS-49703	1 Each
	100mL	X	TS-49704	1 Each
	5g		TS-49701	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

Perfluoroacylimidazoles (HFBI and TFAI)

Offer effective acylation of hydroxyl groups and primary and secondary amines

- Reactions are smooth, quantitative and produce no acid byproducts
- Excellent for FID and ECD techniques
- Derivatives are volatile, despite size of group
- Closely bound fluorines contribute to stability



R	Name	M.W.	Boiling Point
C_3F_7	HFBI	264.10	57 to 58°C/10mm
CF_3	TFAI	164.08	38 to 40°C/14mm

Perfluoroacylimidazoles (HFBI and TFAI)

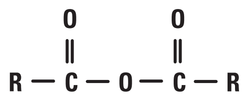
Description	Quantity		Cat. No.	Quantity
HFBI	5g	❄	TS-44211	1 Each
TFAI	10 x 1mL ampules		TS-48882	1 Pack

❄ 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 × 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 × 1mL ampules		TS-63164	1 Pack
HFAA	25g	X	TS-63163	1 Each
HFAA	100g	X	TS-63162	1 Each

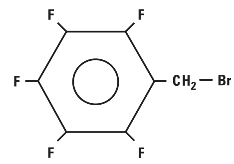
X in the ordering table indicates that hazardous shipping charges apply.

Alkylation reagents

Pentafluorobenzyl bromide (PFBBr)

For electron capture GC analysis of carboxyl acids, phenols and sulfonamides

- Fast reaction times for extraction alkylation technique: ~20 minutes
- Derivatives are highly EC-sensitive
- Analysis of trace organics in asphalt



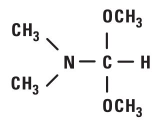
PFBBr
MW 260.9
bp 174-175°C
d_4^{20} 1.86

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:

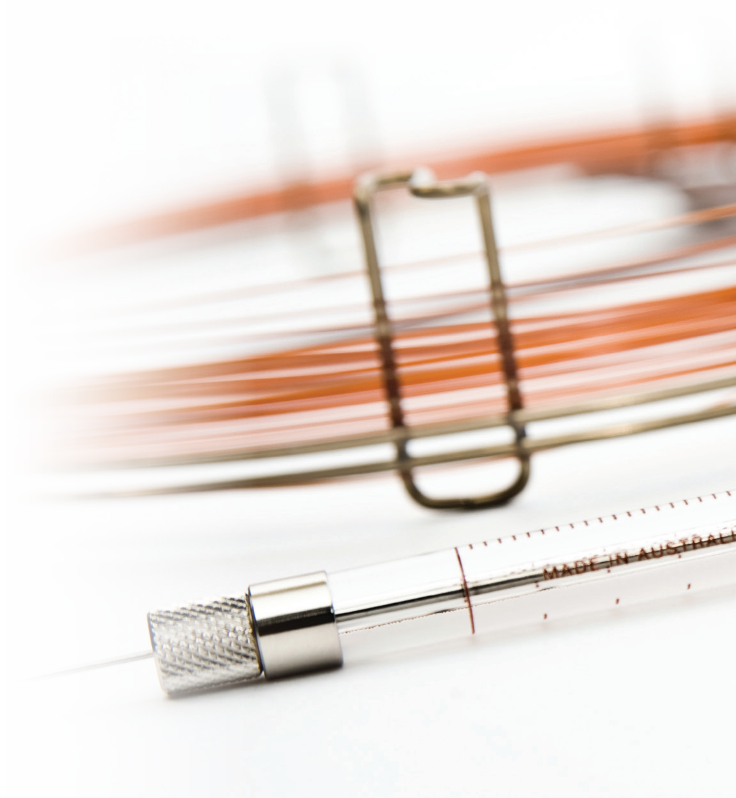
- Speed: the reaction is complete upon dissolution (except long chain solid acids)
- No water washing, extraction or concentration of derivatives required
- No water formed
- Convenient: ready-to-use reagent contains 2mEq/mL pyridine



Methylate Reagent
MW 119.17
bp 102-104°C
d_4^{20} 0.897

Methylate reagent

Description	Quantity	Cat. No.	Quantity
Methylate Reagent (N, N-Dimethylformamide dimethyl acetal)	25mL	TS-49350	1 Each



MethElute reagent (TMPAH)

Provides accurate sensitive on-column methylation

- 0.2M trimethylanilinium hydroxide (TMPAH) in methanol solution
- For quantitative methylation and detection of barbiturates, sedatives, xanthine bases, phenolic alkaloids and phenytoin by gas chromatography
- Single quantitative peak for each substance
- Comparable to or better than UV/TLC method (when phenobarbitol 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**

Siliconizing fluids

Water-soluble siliconizing fuid

Attaches the silane polymer, octadecyltrialkosilane, 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

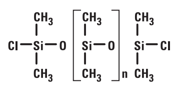
X in the ordering table indicates that hazardous shipping charges apply.

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 tightlyCbonded 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



Siliconizing Fluid – Hydrocarbon Soluble

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

Applications:

- General sample incubation and evaporation in a variety of tube and vial sizes
- Silylation, alkylation and acylation derivatization reactions for GC sample preparation

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

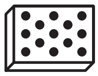
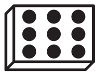
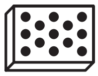
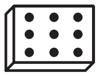
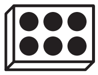
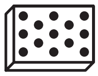
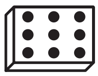
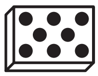
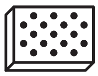
Description	Cat. No.	Quantity
1/8" tube fitting	60181-625	1 Each
1/4" tube fitting	60181-626	1 Each

Reacti-Block aluminum blocks

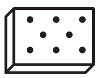
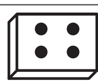
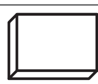
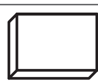
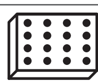
Optimal thermal conductivity

- 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 llocks

Description		Cat. No
Reacti-Block A-1 Holds 13 x 0.3mL or 1mL Reacti-Vials; 13 holes/14mm dia. x 23mm deep		TS-18801
Reacti-Block B-1 Holds 9 x 3mL or 5mL Reacti-Vials; 9 holes/21mm dia. x 32mm deep		TS-18802
Reacti-Block C-1 Holds 13 x 3.5mL Screw Cap Septum Vials; 13 holes/15mm dia. x 34mm deep		TS-18803
Reacti-Block Z-1 Holds 9 x 0.1mm Reacti-Vials; 9 holes/12mm dia. x 21mm deep		TS-18804
Reacti-Block M-1 Holds 6 x 27.5mL Reacti-Vials; 6 holes/28.5mm dia. x 70mm deep		TS-18811
Reacti-Block S-1 Holds 13 x 13mm dia. Test Tubes; 13 holes/14mm dia. x 45mm deep		TS-18816
Reacti-Block T-1 Holds 9 x 16mm dia. Test Tubes; 9 holes/17mm dia. x 45mm deep		TS-18817
Reacti-Block U-1 Holds 8 x 20mm dia. Test Tubes; 8 holes/21mm dia. x 45mm deep		TS-18818
Reacti-Block V-1 Holds 17 Microcentrifuge Test Tubes; 17 holes/11mm dia. x 45mm deep		TS-18819

The Reacti-Block aluminium blocks below are designed to be used exclusively with the Reacti-Therm modules. The hole patterns do not match the needle configuration of Thermo Scientific™ Reacti-Vap™ Evaporators.

Description		Cat. No
Reacti-Block F Holds 8 x 6mL Vacuum Hydrolysis Tubes; 8 holes/10mm dia. x 64mm deep		TS-18806
Reacti-Block G Holds 4 x 18mL Vacuum Hydrolysis Tubes; 4 holes/19mm dia. x 64mm deep		TS-18807
Reacti-Block J Blank/no holes (for custom drilling) 7.6cm tall		TS-18809
Reacti-Block K Blank/no holes (for custom drilling) 5.1cm tall		TS-18810
Reacti-Block L Holds 16 x 0.1mL Reacti-Vials; 16 holes/12mm dia. x 21mm deep		TS-18812

Reacti-Therm thermometers

Thermometers specially designed for use in dry block heaters

- Mercury-free: alcohol-filled for greater safety
- PTFE coating ensures that glass is impervious to corrosive materials
- Shock-resistant glass and coatings
- Standard laboratory size: 225mm length x 8mm diameter
- Compatible for use in Thermo Scientific™ Reacti-Therm™ Heating Modules and other laboratory equipment

Reacti-Therm thermometers

Min. Temperature (°C)	Max. Temperature (°C)	Cat. No.	Quantity
0	100	TS-18914	1 Each
0	200	TS-18915	1 Each

Reacti-Vap replacement parts

Reacti-Vap replacement parts

Description	Cat. No.	Quantity
Reacti-Vap Replacement Tube Kit 2.5 inch (64mm) (Tubes and Plugs)	TS-18782	9 Pack
Reacti-Vap PTFE-Coated Needles 102mm (4in) Length	TS-18784	9 Pack
Reacti-Vap PTFE-Coated Needles 152mm (6in) Length	TS-18786	9 Pack
Replacement Luer-Lok Fitting	TS-18827	1 Each
Replacement Height Adjustment Knob	TS-18829	1 Each
Replacement Metal Rod	TS-18831	1 Each

Vacuum hydrolysis tubes

For fast, effective protein and peptide hydrolysis

- The upper temperature limit of the Vacuum Hydrolysis Tubes is 260°C; however, do not heat the tubes greater than 100°C in an oven
- Vacuum hydrolysis tubes fit conveniently into Reacti-Block aluminium heating blocks

Vacuum hydrolysis tubes

Volume (mL)	OD (mm)	Length (mm)	Cat. No.	Quantity
1	8	60	TS-29570	1 Each
6	10	150	TS-29571	1 Each
18	19	100	TS-29572	1 Each

Learn more at **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 fc observing chemical reactions
- Amber vials available for light-sensitive compounds
- Supplied complete with Open-Top Screw Caps and PTFE/Rubber Dis

Applications:

- Residue isolation, derivative preparation, maximum sample retrieval, moisture protection, sample storage, precipitations, centrifugations, solvent evaporation

Thermo Scientific™ Reacti-Vial™ small reaction vials

Capacity	Cat. No.	Quantity
Amber		
1mL	TS-13097	12 Pack
5mL	TS-13099	12 Pack
Clear		
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

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.

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**

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 µL 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.

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Q Exactive GC Orbitrap GC-MS/MS

Bring the power of the first-ever combination of high-resolution gas chromatography (GC) and high-resolution/accurate-mass (HR/AM) Orbitrap mass spectrometry to your laboratory. The Thermo Scientific™ Q Exactive™ GC Orbitrap™ GC-MS/MS system provides comprehensive characterization of samples in a single analysis for the highest confidence in compound discovery, identification, and quantitation. Q Exactive GC offers the quantitative power of a GC triple quadrupole MS combined with the high performance, full scan HR/AM capabilities that are only possible with Orbitrap MS technology.

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