ThermoFisher SCIENTIFIC

HPLC columns

Connected chromatography solutions

Low-flow columns and accessories

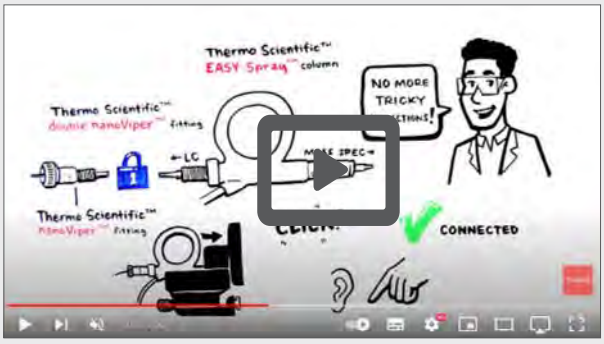
ORION SCIENTIFIC
THE LABORATORY WORLD

thermo scientific

Introduction

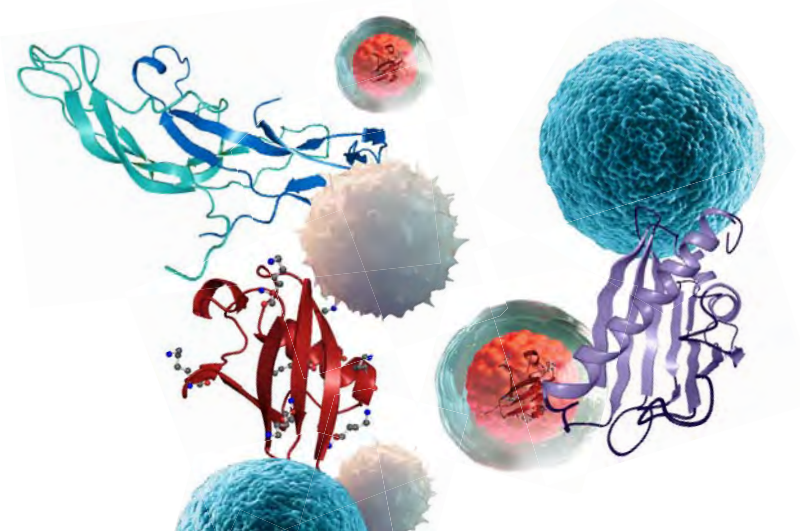
Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomic, metabolomic, and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.

- Thermo Scientific™ µPAC™ Neo HPLC Columns
- Thermo Scientific™ EASY-Spray™ HPLC Columns
- Thermo Scientific™ Double nanoViper™ HPLC Columns



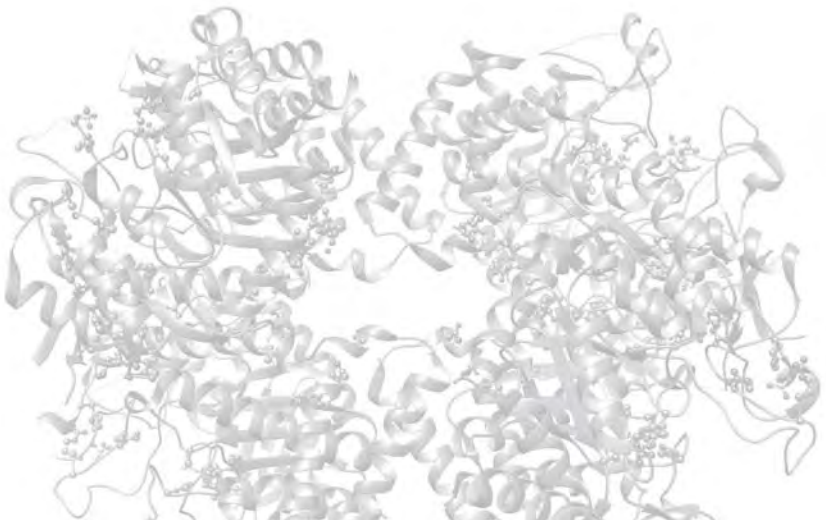
Video: Low-flow HPLC columns connectivity

Contents



Column selection guide

	Pillar array column format	Packed bed column format	
	Thermo Scientific™ µPAC™ Neo HPLC Columns	**Thermo Scientific™ EASY-Spray™ HPLC Columns**	**Thermo Scientific™ Double nanoViper™ HPLC Columns**
Technology			
Benefits	**Ultimate separation** • Excellent retention time stability • A unique combination of performance and reliability to get the highest sample coverage every time • Separate emitters • Compatible with all low-flow U/HPLC instruments	**Ease-of-use** • Click-and-spray connect with Thermo Scientific™ EASY-Spray™ Source • Thermo Scientific™ nanoViper™ connections • Integrated column and emitter • Integrated temperature control • For use with Thermo Scientific™ mass spectrometry systems	**Analytical flexibility** • Universal Thermo Scientific™ nanoViper™ Fingertight Fittings for column inlet and outlet • Simple zero-dead-volume (ZDV) connections • Separate emitters • Compatible with all low-flow U/HPLC instruments
Application areas/chemistries	Deliver excellent column-to-column reproducibility with flow rate flexibility. Ideally suited for proteomic analyses of HPLC separations up to 450 bar. • 50 cm column: 15–60 min gradient time • 110 cm column: 90–150 min gradient time • 50 cm Low Load single cell analysis: 15–60 min gradient time • High Throughput: <15 min gradient time, for up to 180 samples/day	**Bottom-up proteomic applications** The Thermo Scientific™ PepMap™ Neo UHPLC Columns are a recent addition to our portfolio. PepMap Neo columns are packed to higher pressure, which provides 1500 bar pressure rating, improved column-to-column consistency, and increased efficiency. **Top- and middle-down proteomic applications** The Thermo Scientific™ MAbPac™ Capillary Reversed-Phase HPLC Column is best suited for the characterization of intact proteins in top- and middle-down proteomic applications where sample amount is limited.	



µPAC Neo HPLC columns

The µPAC Neo columns are specifically suited for bottom-up proteomic applications where separation performance is critical to the success of the analysis. Our µPAC Neo HPLC columns offer highest resolution and peak capacities for complex biological samples. The unique µ-pillar backbone improves column-to-column reproducibility and robustness, providing more confidence in analytical results.

Additional reading

Links	Type	Description
	Reference guide	Chromatography consumables reference guide for low-flow LC-MS proteomic research
	Flyer	Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomic research
	Learn more **thermofisher.com/lowflowHPLCcolumns**	

Choose a µPAC Neo HPLC column when:

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

What makes µPAC Neo HPLC columns special?

The unique separation path provides:

- µ-pillar stationary backbone, micromachined in a silicon wafer
- Flow path designed for highest analyte concentration during elution
- Extra high-resolution separations, using up to 110 cm column lengths
- Low back pressure separations, improving column and emitter robustness
- Perfect match with single cell proteomics sample amounts

µPAC Neo HPLC columns Continued

Velocity Label-free Quantitation (LFQ) Data Independent Acquisition (DIA) Platform

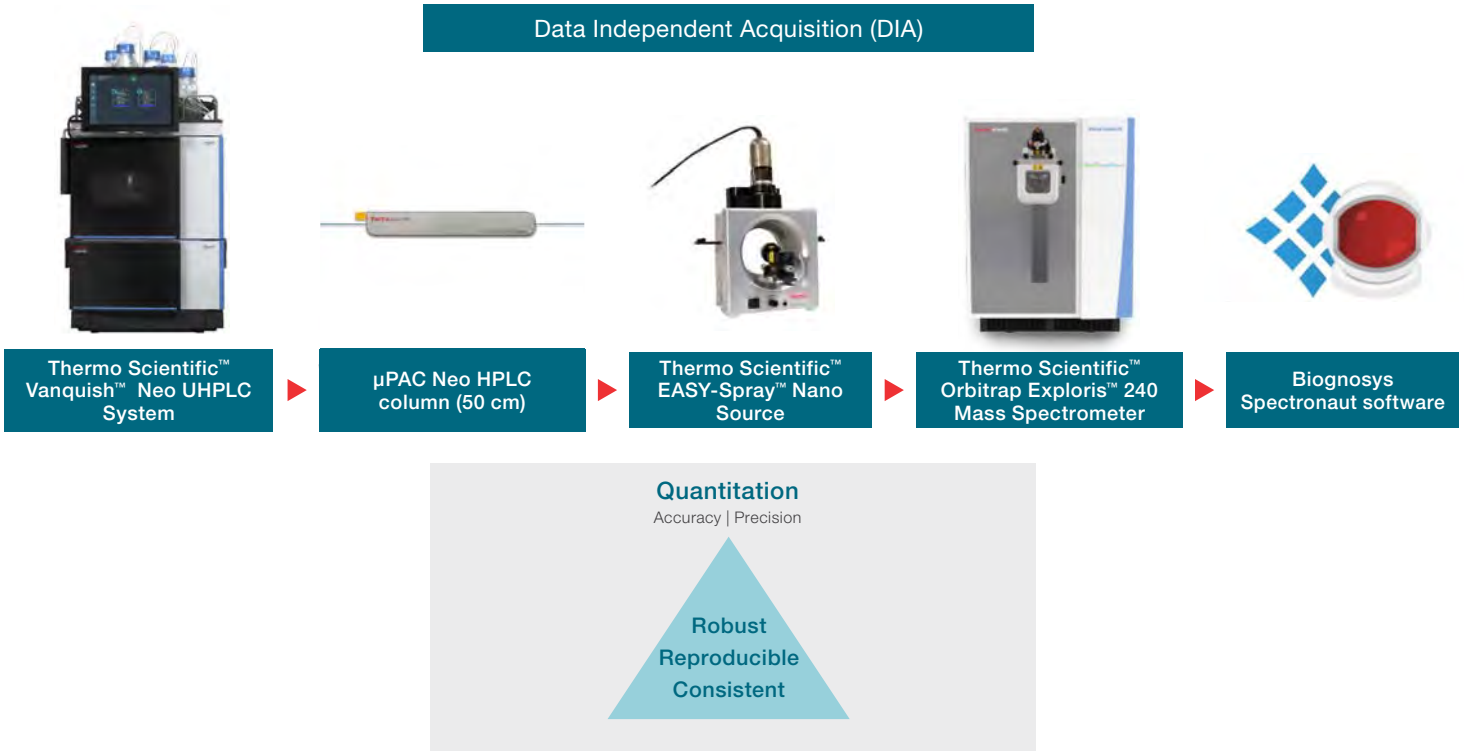


Figure 1. Graphical schematic of HR-DIA workflow for label-free quantitation of two- and three-proteome mixtures. The different components of the workflow are depicted on the top. The main goal of the setup is the quantitative performance at high sample throughput while delivering robust and reproducible results to make it a perfect fit for large scale clinical and biomarker discovery studies.

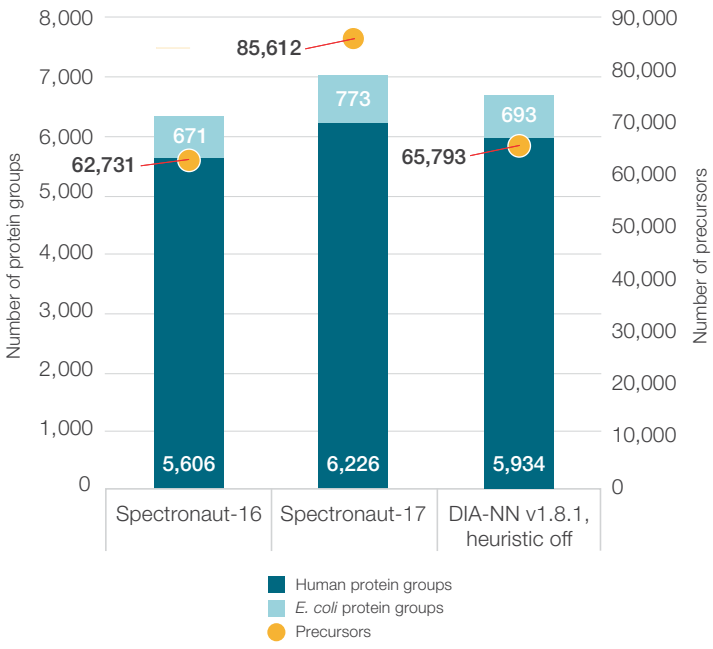
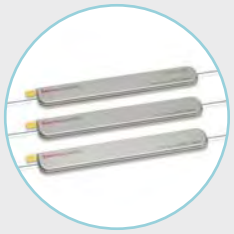


Figure 2. HR-DIA Workflow delivers confident proteome coverage utilizing next generation library-free analysis approaches. Bar graph comparison of protein group (human and E. coli) and precursor (total) numbers identified in 12 runs of two-proteome mix by use of three different software packages. Data analysis has been done by library-free analysis. All protein group results are filtered for 1% experiment-wide FDR.

µPAC Neo HPLC columns Continued



Ordering information

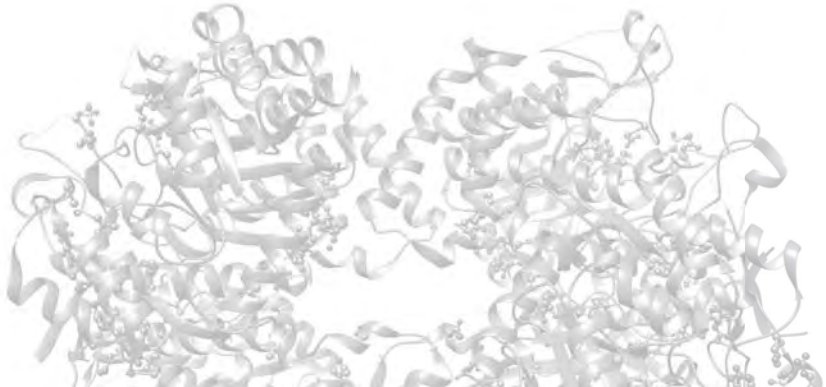
Description	Pillar dimensions (µm)	Interpillar distance (µm)	Column length (cm)	Flowrate range (nL/min)	Cat. no
Thermo Scientific 50 cm µPAC Neo Column	2.5	1.25	50	100-750	COL-NANO050NEOB
Thermo Scientific 110 cm µPAC Neo Column	2.5	1.25	110	100-750	COL-NANO110NEOB
Thermo Scientific 50 cm µPAC Neo Low Load column	2.5	1.25	50	100-750	COL-LOLO050NEOB
Thermo Scientific µPAC Neo High Throughput Column	3.0	2	5.5	250-2500	COL-CAPHTNEOB

Ordering information

Description	Pillar dimensions (µm)	Interpillar distance (µm)	Column length (cm)	Cat. no
Thermo Scientific™ µPAC™ Neo Trapping Column	5	2.5	1	COL-TRPLOLONEOB2

Ordering information

Description	Pillar dimensions (µm)	Details	For use with	Cat. no
Thermo Scientific™ EASY-Spray™ Nano Emitters	10	Bullet type without transfer line	EASY-Spray ion-source	ES993



EASY-Spray HPLC columns

Ensure robust nano- and capillary-flow LC-MS analysis using Thermo Scientific EASY-Spray HPLC Columns. The integrated column/emitter design eliminates dead volume and is temperature-controlled for maximum reliability and performance. Rigorously tested to ensure maximum quality, these columns deliver maximum simplicity and ease-of-use. The capillary-flow HPLC columns provide sensitive protein, peptide, and monoclonal antibody (MAb) separation. They give proteomic researchers more than ever before: more throughput, more sensitivity, more separation power, and more ease of use.

Additional reading

Links	Type	Description
	Reference guide	Chromatography consumables reference guide for low-flow LC-MS proteomic research
	Flyer	Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomic research
	Learn more **thermofisher.com/lowflowHPLCcolumns**	

Choose an EASY-Spray column when:

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

What makes an EASY-Spray column special?

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

Features for optimum data quality:

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

Video:
Thermo Scientific EASY-Spray 150 mm LC columns

EASY-Spray HPLC columns Continued

Bottom-up proteomics

PepMap Neo HPLC columns

The Thermo Scientific™ EASY-Spray™ PepMap™ Neo UHPLC Columns are perfect for bottom-up proteomic applications. Packed at higher pressure and rated to 1500 bar, they provide consistent column-to-column performance, long column lifetime, and excellent efficiency. These benefits are true at any pressure.

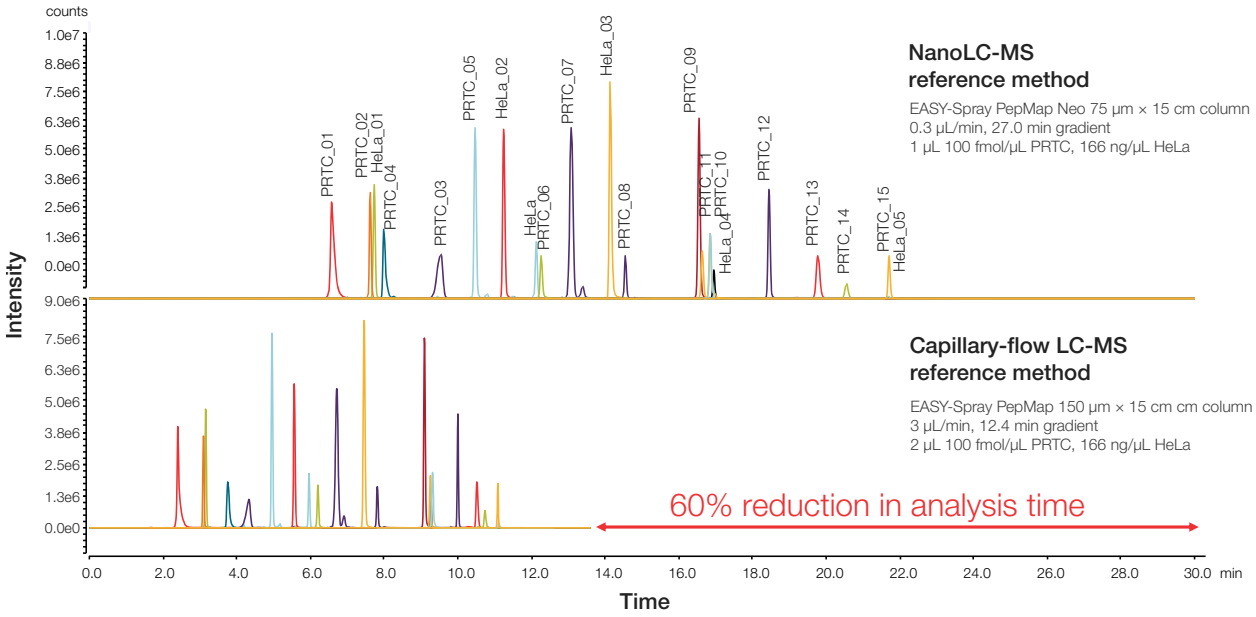


Figure 3. The 60% reduction in total analysis time allows increasing the sample throughput moving from the nano- to the capillary-flow LC-MS method

Ordering information for bottom-up proteomic applications

Description	Length (mm)	Column ID (µm)	Cat. no
EASY-Spray PepMap Neo UHPLC Columns	150	75	ES75150PN
	500	75	ES75500PN
	750	75	ES75750PN

EASY-Spray HPLC columns Continued

Top-down proteomics

MAbPac Capillary Reversed Phase HPLC Column

The Thermo Scientific™ MAbPac™ Capillary Reversed Phase capillary column is best suited for the characterization of intact proteins in top-down proteomic, clinical, and anti-doping applications where sample amount is limited or sensitivity is crucial.

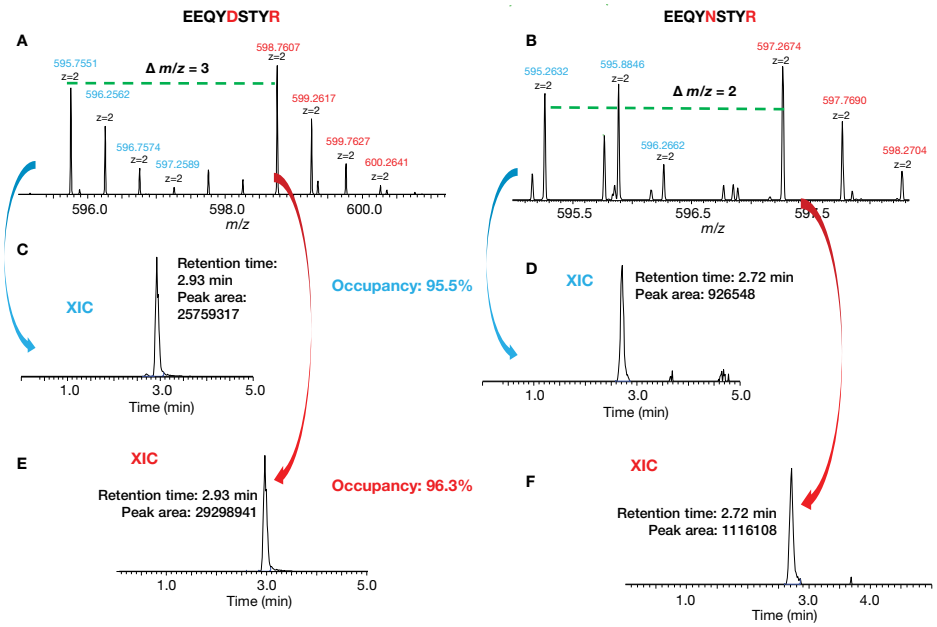


Figure 4. Calculation of site occupancy of N306 in Fab glycosylated mAb

Ordering information for top-down proteomic applications

Description	Length (mm)	Column ID (µm)	Cat. no
EASY-Spray HPLC Column	150	150	ES907

EASY-Spray HPLC columns Continued

EASY-Spray accessories

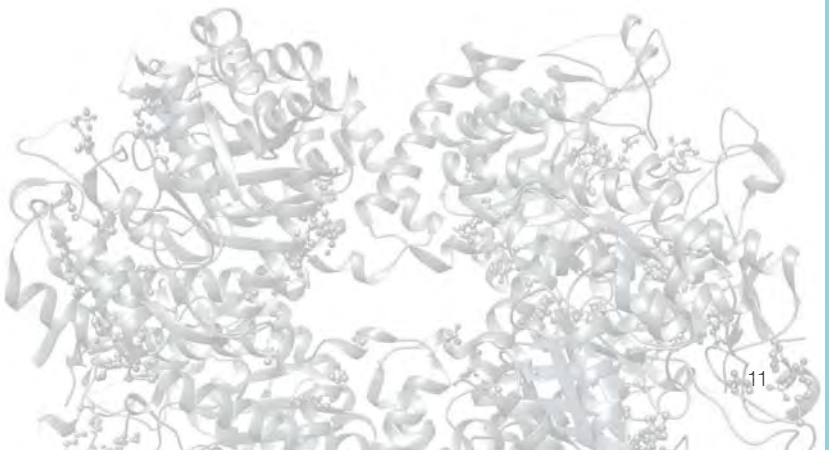
For the best performance from your EASY-Spray column consider investing in these accessories.

Ordering information

Description	Union type	Particle size (µm)	Column ID (µm)	Media bed length (mm)	Trap length (mm)	Cat. no
Thermo Scientific™ PepMap™ Neo Trap Cartridge	N/A	5	300	5	N/A	174500
Thermo Scientific™ Acclaim™ PepMap™ 100 C18 HPLC Column, Trap Column	Nut/sleeve	5	200	20	150	164213
	Nut/sleeve	5	100	20	150	164199
	Double nanoViper	5	100	20	150	164750
	Double nanoViper	3	75	20	150	164535
	Double nanoViper	3	75	20	70	164946

Ordering information

Description	For use with	Cat. no
Thermo Scientific™ PepMap™ Neo Trap Cartridge Holder, PEEK Tubing, and nanoViper™ Fittings	Low-flow PepMap columns	174502



Double nanoViper columns

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

Virtually without any dead-volume, Viper and nanoViper fittings combine usability with high performance. Viper and nanoViper connections can be used on all standard LC modules, valves, and columns quickly, independent of different connection geometries and system backpressures. Dedicated capillary kits for standard LC system configurations and application-specific setups enable high qualitative and reproducible results for all flow rates and pressure ranges.

Additional reading

Links	Type	Description
	Reference guide	Chromatography consumables reference guide for low-flow LC-MS proteomic research
	Flyer	Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomic research
	Product specifications	Viper and nanoViper Fingertight Fitting Systems
	Learn more **thermofisher.com/lowflowHPLCcolumns**	

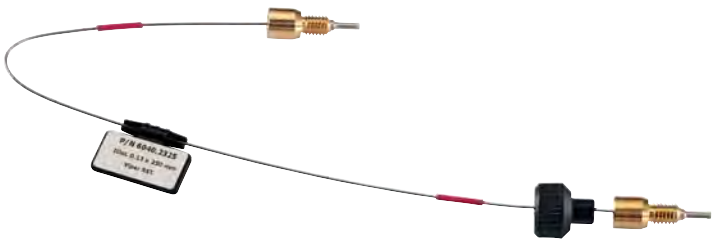
Choose these columns when:

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

What makes these columns special?

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

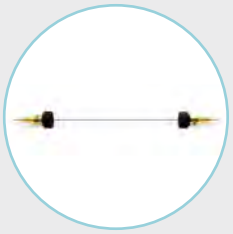
- Designed with single nanoViper and double nanoViper fingertight fittings for trouble-free connection
- For robust separation in proteomics research, drug discovery, and high-throughput proteomics laboratories



Video:
Discover a better LC connection

Double nanoViper columns Continued

Bottom-up proteomics



Double nanoViper PepMap Neo UHPLC columns

Separate challenging peptide mapping samples with Thermo Scientific™ Double nanoViper™ PepMap™ Neo UHPLC Columns. These columns feature easy connectivity, high reproducibilty, and excellent separations. Our Neo columns are packed to higher pressure and provide 1500 bar pressure capability, improved column-to-column consistency, and increased efficiency. The column media is manufactured and selected to exacting standards and packed at high pressure, resulting in enhanced peak symmetry, resolution, and column-to-column reproducibility that allows you to obtain greater sample coverage and sample insights.

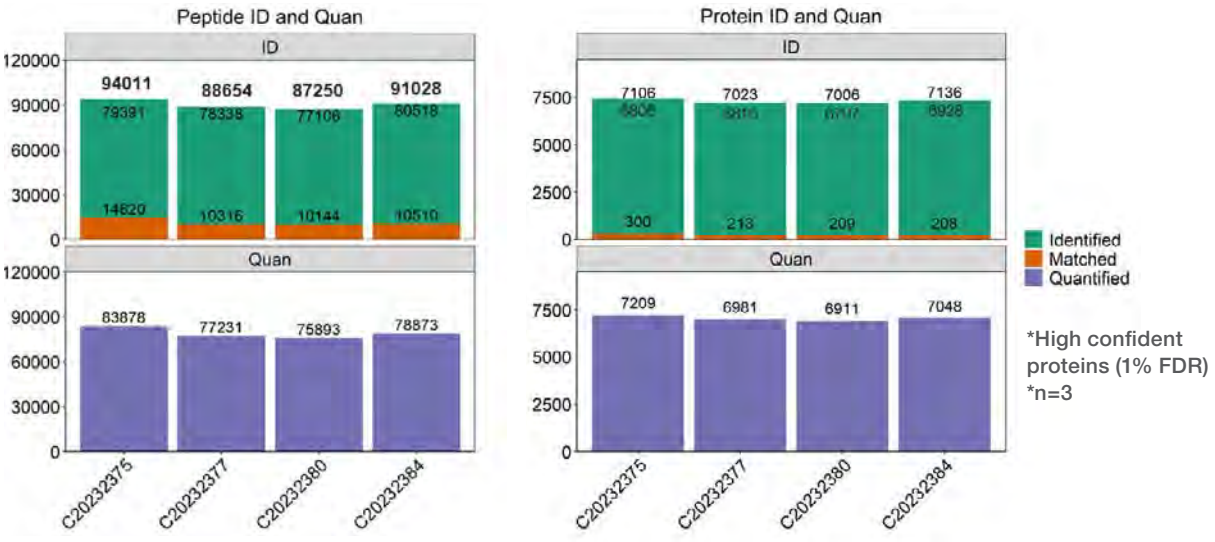


Figure 5. Reproducible identification and quantification of HeLa peptides and proteins over 4 EASY-Spray PepMap Neo columns while using the Vanquish Neo UHPLC system coupled with the Orbitrap Exploris 480 mass spectrometer

Ordering information for bottom-up proteomic applications

Format	Length (mm)	Column ID (µm)	Cat. no
Double nanoViper PepMap Neo UHPLC Columns	150	75	DNV75150PN
	500	75	DNV75500PN
	750	75	DNV75750PN

Double nanoViper columns Continued

Top-down proteomics

MAbPac Capillary Reversed Phase HPLC Column

The Thermo Scientific MAbPac Capillary Reversed Phase column is best suited for the characterization of intact proteins in top-down proteomic, clinical, and anti-doping applications where sample amount is limited or sensitivity is crucial.

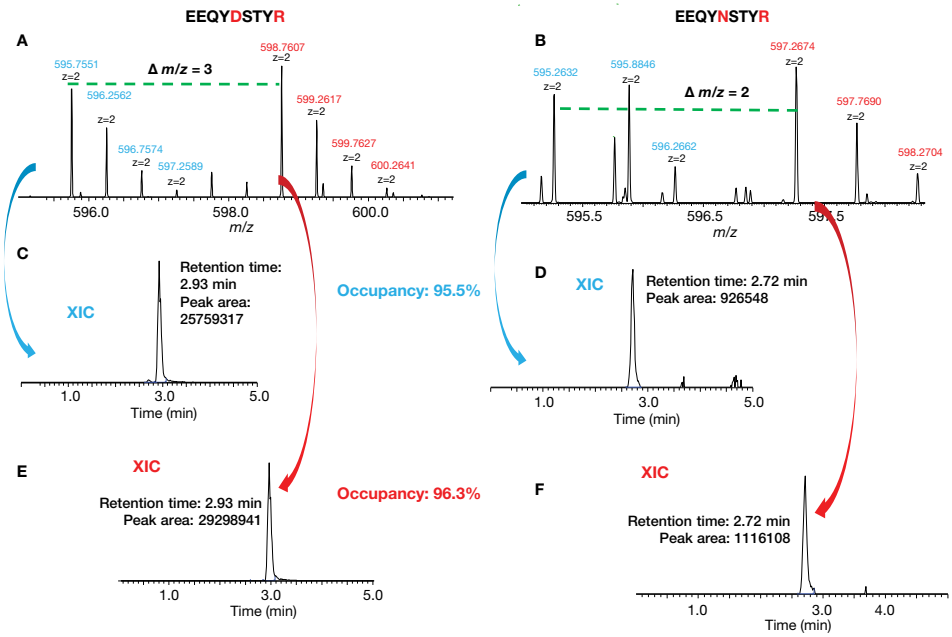


Figure 6. Calculation of site occupancy of N306 in Fab glycosylated mAb

Ordering information for top-down proteomic applications

Format	Length (mm)	Column ID (µm)	Cat. no.
MAbPac Capillary Reversed Phase HPLC Column	150	150	164947

Double nanoViper columns Continued

LC-MS connection accessories and emitters

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

Ordering information

Description	For use with	Part number
Viper and nanoViper Fingertight Fittings Accessories	Double nanoViper columns	6040.2304
nanoViper Fingertight Fittings, 20 µm x 550 mm		6041.5260
EASY-Spray Nano Emitter, 10 µm		ES993
EASY-Spray Capillary Emitter, 15 µm		ES994

Traps and accessories

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

Ordering information

Description	Union type	Particle size (µm)	Column ID (µm)	Media bed length (mm)	Trap length (mm)	Cat. no
Thermo Scientific™ PepMap™ Neo Trap Cartridge	N/A	5	300	5	N/A	174500
Thermo Scientific™ Acclaim™ PepMap™ 100 C18 HPLC Column, Trap Column	Nut/sleeve	5	200	20	150	164213
	Nut/sleeve	5	100	20	150	164199
	Double nanoViper	5	100	20	150	164750
	Double nanoViper	3	75	20	150	164535
	Double nanoViper	3	75	20	70	164946

ThermoFisher SCIENTIFIC

ORION SCIENTIFIC SRL

Sede Legale
Via Alessandro Volta 25/B - 35030 Veggiano (PD)
Tel. +39 049 9006911
P.I. / C.F. / Vat Reg: 05160820287

Sede Operativa
Via Giacomelli 16 - 35010 Limena (PD)
Tel: +39 049 0986380
info@orion-scientific.com - orionscientific@legalmail.it

Expect reproducible results with sample prep, columns and vials

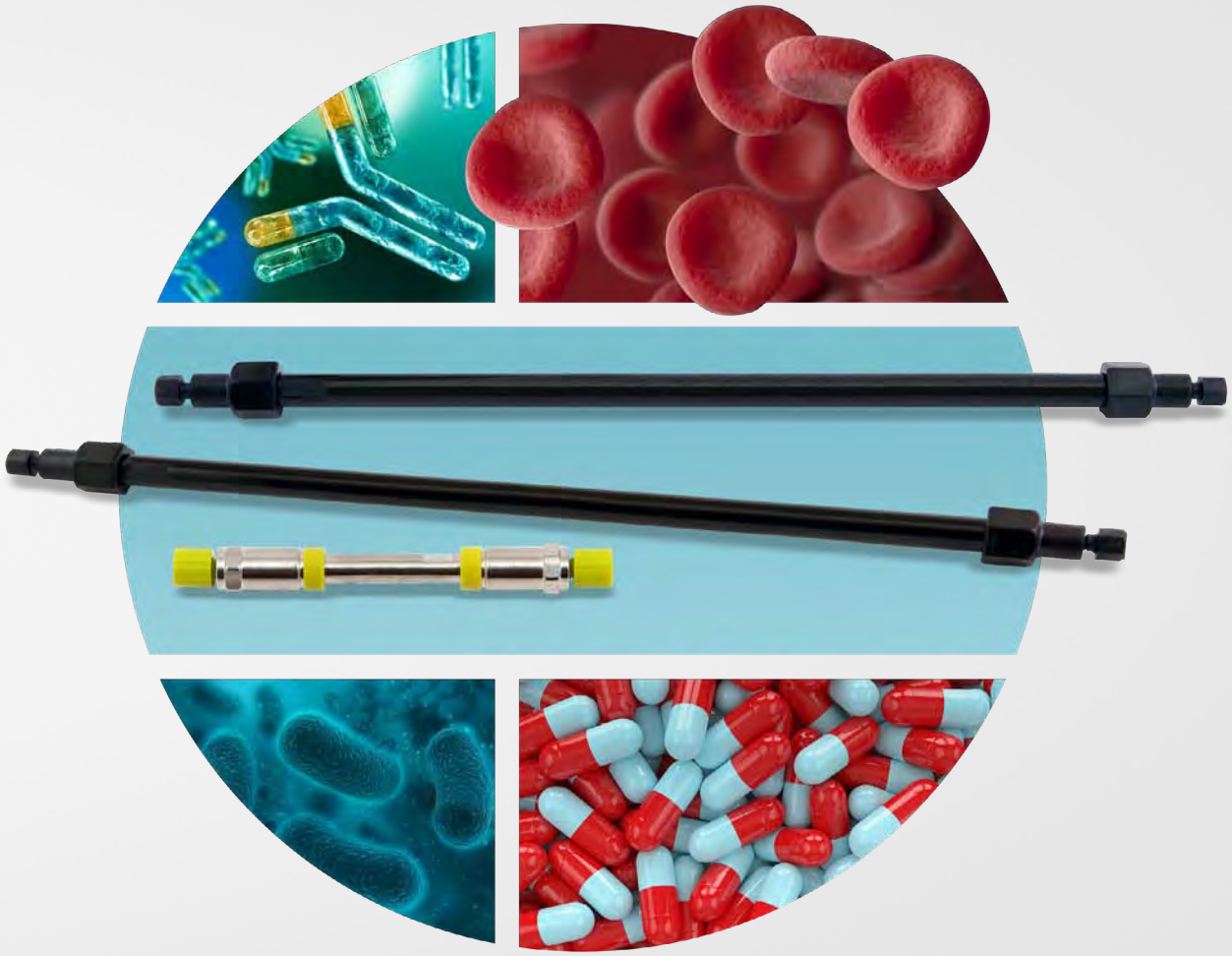
GC | IC | LC | C | CDS | SP | UNITY LAB SERVICES

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

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

thermo scientific

ThermoFisher SCIENTIFIC



BioLC columns

Connected chromatography solutions

BioLC columns and accessories

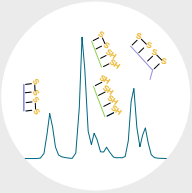
ORION SCIENTIFIC
THE LABORATORY WORLD

thermo scientific

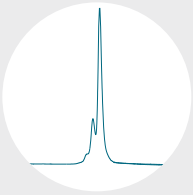
Introduction

Your complete tool kit

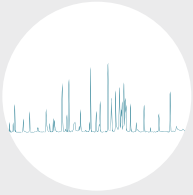
Thermo Fisher Scientific has innovative Thermo Scientific™ BioLC columns for each step of your therapeutic protein characterization, no matter how challenging your separation. Here is just one example, a fully characterized model sample of pertuzumab. Discover our full range in this catalogue.



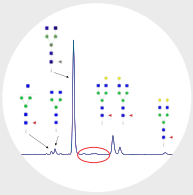
Intact or subunit analysis
Thermo Scientific™ MAbPac™ RP columns are ideal for intact and subunit analysis by MS or UV detection. The polymeric packing material offers column longevity, high resolution and the wide pores to allow for low carryover profiling of your sample.



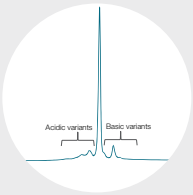
Oxidation monitoring
Deduce protein folding errors or charge-neutral amino acid modifications with the Thermo Scientific™ MAbPac™ HIC-20 hydrophobic interaction column. Our range of innovative HIC chemistries deliver native separations not seen on other columns.



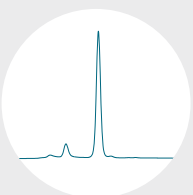
Peptide mapping
Experience reproducible peptide mapping and quantitation. The combination of rapid digestion from the Thermo Scientific™ SMART Digest kit and separation with the high resolution Thermo Scientific™ Hypersil™ GOLD column delivers outstanding, reproducible and efficient peptide mapping separations.



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

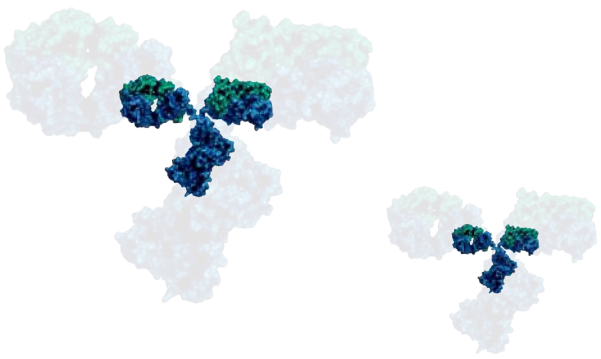


Charge variant analysis
For charge variant analysis by LC-UV or LC-MS/MS Thermo Scientific™ ProPac™ 3R SCX and Thermo Scientific™ ProPac™ 3R SAX columns deliver outstanding resolution on a highly roust, reproducible and high-resolution platform. Combine ProPac 3R SCX columns with our proprietary Thermo Scientific™ CX-1 gradient buffers formulations to enable fast, robust and reproducible pH gradients that are simple to optimize and easily automated - without the need for time-consuming mobile phase adjustments.



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

Contents



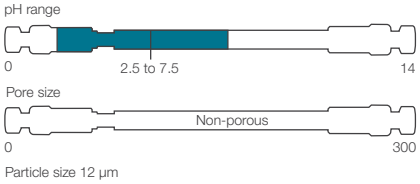
BioLC column selection quick guide

Target applications	Column type	Mode of analysis	Recommended column	Particle size (µm)	Pore size (Å)	pH range	Maximum backpressure (psi)	Solvent compatibility
Affinity	Affinity columns	Affinity	**MAbPac Protein A**	12	Non-porous	2.5-7.5	1,000	—
Intact analysis by HIC	Silica-based hydrophobic interaction chromatography columns	Hydrophobic interaction	**MAbPac HIC-10**	5	1,000	2-8	4.6 × 100 mm = 6,000 4.6 × 250 mm = 8,000	Compatible with organic solvents and aqueous mobile phases
			MAbPac HIC-20	5	1,000	2-9		
			MAbPac HIC Butyl	5	Non-porous	2-12	4,000	Compatible with up to 50% organic solvents
Released glycan analysis	Silica based, mixed-mode columns	Mixed-mode	**GlycanPac AXH-1**	1.9	175	2-8	10,000	0 – 90% aqueous buffer; 10 – 100% acetonitrile or alcohols
				3	120	2-8	6,000	
			GlycanPac AXR-1	1.9	175	2-8	10,000	Compatible with 0 – 100% aqueous and common HPLC solvents (except acetone)
	Silica-based HILIC columns	HILIC	**Accucore 150 Amide HILIC**	2.6	150	2-8	14,500	—
Aggregate fragment analysis	Silica-based size exclusion chromatography phases	Size exclusion	**MAbPac SEC-1**	5	300	2.5-7.5	1,000 for 300 mm 600 for 150 mm	100% organic solvents
Intact and subunit analysis	Polymeric reversed-phase columns	Reversed-phase	**MAbPac RP**	4	1,500	2.1, 3.0 mm (0-14) 1 mm (1-7)	4,000	Up to 100% ACN, IPA, MeOH
	Polymeric reversed-phase columns	Reversed-phase	**ProSwift RP-1S**	Monolith	Monolith	1-14	2,800	—
			ProSwift RP-2H				2,800	Most common organic solvents
			ProSwift RP-3U				2,800	
			ProSwift RP-4H				1 × 50 mm = 2,000 2 × 250 mm = 3,000	
Charge variant analysis	Monolithic ion-exchange columns	Ion-exchange	**ProPac 3R SCX**	3	Non-porous	2-12*	4,500	—
			ProPac 3R SAX	3			4,500	—
			MAbPac SCX-10RS	5			7,000	—
			MAbPac SCX-10	5, 10			3,000 for 10 µm 5,000 for 5 µm	*Please consult column manual
			ProPac SAX-10	10			3,000	*Please consult column manual
			ProPac Elite WCX	5			4,500	*Please consult column manual
Peptide mapping	Silica based, reversed-phase columns	Reversed-phase	**Hypersil GOLD C18**	1.9	175	1-11	18,130	—
				3	175		5,800	—
			Acclaim 120 C18	2.2	120	2-8	Various	—
				3	120			—
				5	120			—
Nucleic acids and oligonucleotides	Polymeric ion-exchange columns	Ion-exchange	**DNAPac PA200**	8	Non-porous	2.5-12.5*	4,000	*Please consult column manual
			DNAPac PA200RS	4	Non-porous	2.5-12.5*	10,000	—
			DNASwift SAX-1S	Monolith	Monolith	3-14*	1,500	*Please consult column manual
	Polymeric reversed-phase	Reversed-phase	**DNAPac RP**	4	Proprietary wide pore	0-14	4,000	—

Affinity columns

Providing fast, accurate titer analysis of monoclonal antibodies in harvest cell cultures, the nonporous, polymeric Thermo Scientific™ MAbPac™ Protein A HPLC Column delivers reproducible, highly efficient separations.

MAbPac Protein A column

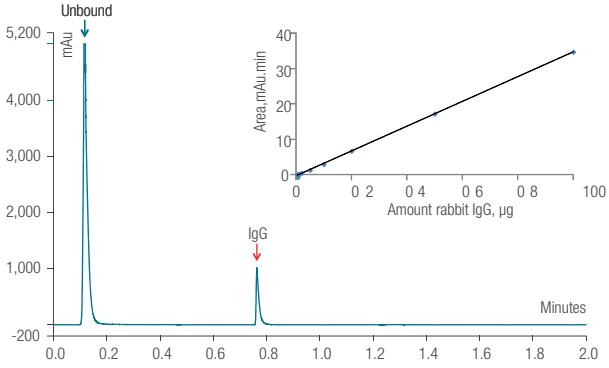


Additional reading

Links	Type	Description
	Application note	MAbPac Protein A: A novel affinity Protein A column
	Learn more **thermofisher.com/biolc**	

Harvest cell culture titer analysis

MAbPac Protein A, 12 µm, 35 x 4.0 mm	
Flow rate	2 mL/min
Mobile phase A	50 mM sodium phosphate, 150 mM NaCl, 5% acetonitrile, pH 7.5
Mobile phase B	50 mM sodium phosphate, 150 mM NaCl, 5% acetonitrile, pH 2.5
Gradient	0% B for 0.2 mins, 100% B for 0.60 mins, 0% B for 1.20 mins
Temperature	30 °C
Injection volume	10 µL
Detection	UV at 280 nm
Sample	mAb B, 5 mg/mL harvest cell culture



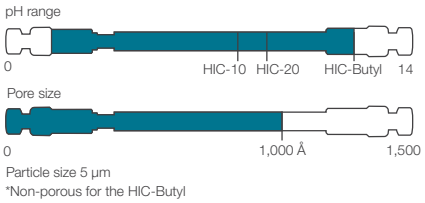
MAbPac Protein A column

Particle size (µm)	Format	Length (mm)	4.0 mm ID
12	HPLC column	35	082539

Intact analysis by HIC

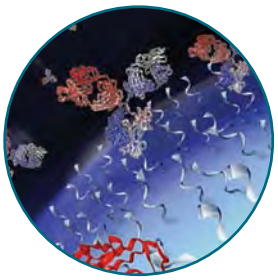
Orthogonal to IEX and SEC, Hydrophobic Interaction Chromatography (HIC) offers selectivity to resolve charge neutral protein oxidations and protein misfolds. Our proprietary 1000 Å silica Thermo Scientific™ MAbPac™ HIC-10 and Thermo Scientific™ MAbPac™ HIC-20 provide unique separation profiles offering high resolution for protein samples. For more hydrophobic samples, select the Thermo Scientific™ MAbPac™ HIC-Butyl column.

MAbPac HIC-10, HIC-20, HIC-Butyl columns

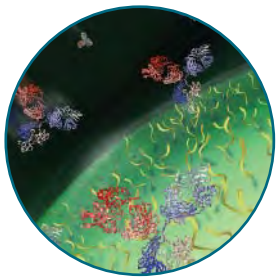


Additional reading

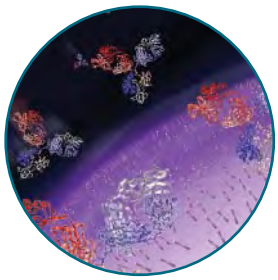
Links	Type	Description
	Application note	MAbPac HIC-10 High resolution separation of a fusion protein on MAbPac HIC-10 column
	Application note	HIC as a complementary, confirmatory tool to SEC for the analysis of mAb aggregates
	Application note	MAbPac HIC-20 High resolution separation of mAb fragments on MAbPac HIC-20 column
	Application note	High resolution separation of monoclonal antibody (mAb) oxidation variants
	Application note	High resolution separation of cysteine-conjugated antibody drug mimics
	Learn more **thermofisher.com/biolc**	



MAbPac HIC-10



MAbPac HIC-20

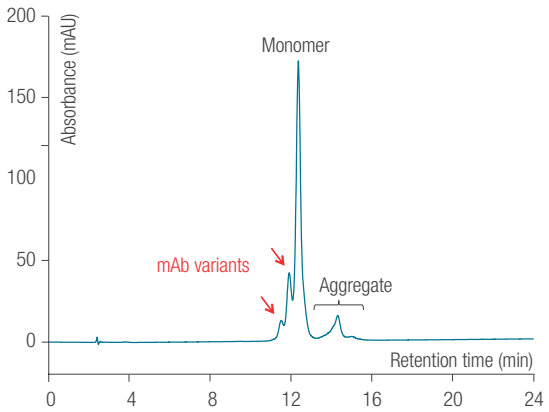


MAbPac HIC-Butyl

Intact analysis by HIC continued

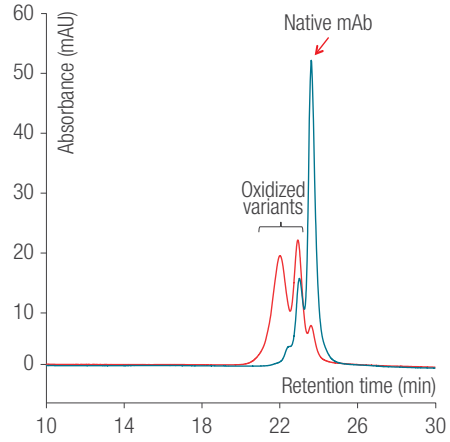
Separation of mAb aggregates

MAbPac HIC-10, 5 µm, 100 x 4.6 mm			
Flow rate	0.5 mL/min		
Mobile phase A	2 mM ammonium sulfate, 100 mM sodium phosphate, pH 7.0		
Mobile phase B	100 mM sodium phosphate, pH 7.0		
Temperature	20 °C		
Injection volume	15 µL		
Detection	UV at 280 nm		
Sample	Monoclonal antibody (4 mg/mL)		
Gradient	Time (min)	%A	%B
	-5.0	60	40
	0.0	60	40
	1.0	60	40
	29.0	0	0
	34.0	0	0



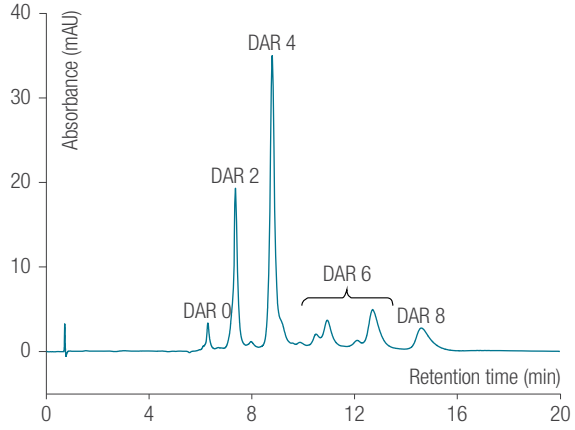
Separation of mAb fragments

MAbPac HIC-20, 5 µm, 250 x 4.6 mm			
Flow rate	0.5 mL/min		
Mobile phase A	2 mM ammonium sulfate, 100 mM sodium phosphate, pH 7.0		
Mobile phase B	100 mM sodium phosphate, pH 7.0		
Temperature	30 °C		
Injection volume	Untreated mAb: 20 µL (1.25 mg/mL) Oxidized mAb: 20 µL (1.25 mg/mL)		
Detection	UV at 280 nm		
Sample	Untreated mAb H_2O_2 oxidized mAb		
Gradient	Time (min)	A%	%B
	-6.0	50	50
	0.0	50	50
	2.0	50	50
	30.0	0	100
	35.0	0	100



Separation of Antibody Drug Conjugates (ADCs)

MAbPac HIC-Butyl, 5 µm, 100 x 4.6 mm			
Flow rate	1.0 mL/min		
Mobile phase A	1.5 mM ammonium sulfate, 50 mM sodium phosphate, pH 7.0/ isopropanol (95:5 v/v)		
Mobile phase B	50 mM sodium phosphate, pH 7.0/isopropanol (80:20 v/v)		
Temperature	25 °C		
Injection volume	5 µL		
Detection	UV at 280 nm		
Sample	Cys-conjugated ADC mimic (5 mg/mL)		
Gradient	Time (min)	%A	%B
	-5.0	100	0
	0.0	100	0
	1.0	100	0
	15.0	0	100
	20.0	0	100



Intact analysis by HIC continued

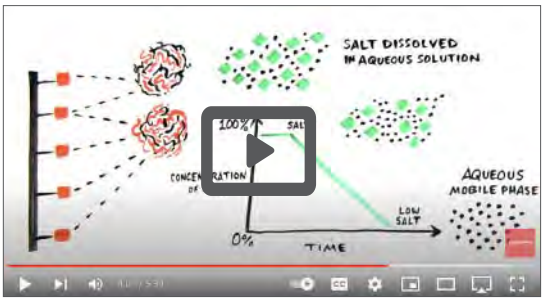
MAbPac HIC selection guide

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 columns

Description	Particle size (µm)	Format	Length (mm)	4.6 mm 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

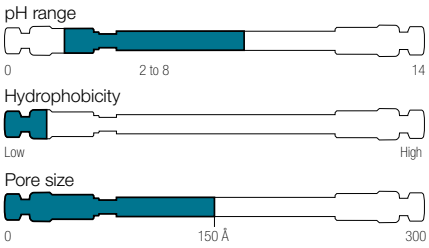


Video:
Introduction to hydrophobic interaction chromatography

Released glycan analysis

For monoclonal antibodies, or protein samples with a lot of neutral glycans, the Thermo Scientific™ Accucore™ 150-Amide HILIC offers outstanding separation on a solid core particle. The low backpressure of this particle allows users to experiment with optimum temperature of their separation, to maximize the elucidation of their released glycan profile. For proteins with charged glycans, we offer two mixed mode column chemistries combining anion exchange with HILIC or RP separations. Thermo Scientific™ GlycanPac™ AXH-1 separates the glycan profile by charge, size, and hydrophilicity. Thermo Scientific™ GlycanPac™ AXR-1 separates the profile by charge, size, and branch isomers.

Accucore 150-Amide-HILIC column



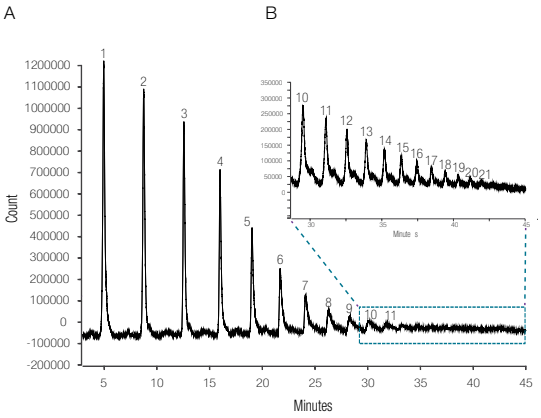
Particle size 2.6 µm

Additional reading

Links	Type	Description
	Application note	Analysis of human IgG glycans on a solid core amide HILIC stationary phase
	Learn more **thermofisher.com/biolc**	

2-AB labeled dextran ladder

Accucore 150-Amide-HILIC, 2.6 µm, 100 x 2.1 mm	
Flow rate	500 µL/min
Mobile phase A	Acetonitrile
Mobile phase B	50 mM ammonium formate, pH 4.5
Temperature	60 °C
Injection volume	2 µL to 5 µL
Backpressure at starting conditions	110 bar
Injection wash solvent	80:20 (v/v) acetonitrile:water
Detector	Fluorescence, 330 nm excitation wavelength; 420 nm emission wavelength; acquisition start after 3 min from gradient start
Run time	50 min
Gradient	20–50% B in 40.0 minutes; 50% B for 5.0 minutes 50–20% B in 0.5 minutes; 50% B for 4.5 minutes



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

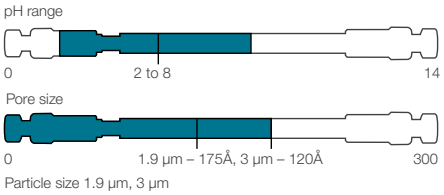
(B) 5 µL injection of sample, zoomed-in to the later part of the gradient rise. A further 10 glycans were detected

Accucore 150-Amide-HILIC columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
2.6	Defender guard (4/pk)	10	16726-012105	—	—
	HPLC column	50	16726-052130	16726-053030	—
		100	16726-102130	16726-103030	16726-104630
		150	16726-152130	16726-153030	16726-154630
		250	16726-252130	—	—
—	Guard cartridge holder	—	852-00	852-00	850-00

Released glycan analysis continued

GlycanPac AXH-1 column

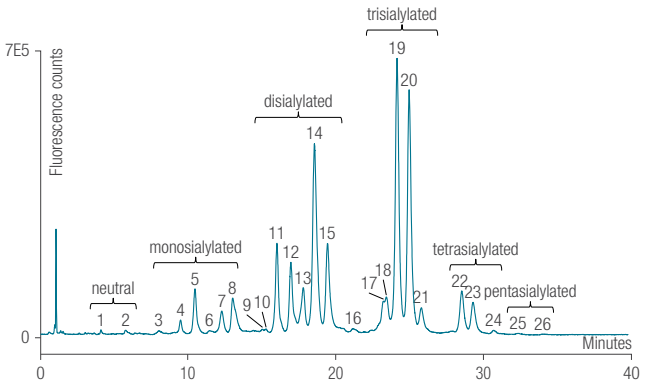


Additional reading

Links	Type	Description
	Application note	Separation of 2AB-labeled N-linked glycans from bovine fetuin
	Application note	Separation of 2AA-labeled N-linked glycans from human IgG
	Application note	Separation of 2AA-labeled N-linked glycans from glycoproteins
	Learn more **thermofisher.com/biolc**	

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

GlycanPac AXH-1, 1.9 µm, 150 x 2.1 mm				
Flow rate	0.4 mL/min			
Mobile phase A	Acetonitrile (100%)			
Mobile phase B	Water			
Mobile phase C	Ammonium formate (100 mM, pH = 4.4)			
Temperature	30 °C			
Injection volume	5 µL			
Detection	Fluorescence, 320/420 nm			
Sample	2AB labeled N-glycan from bovine fetuin			
Curve	5			
Gradient	Time (min)	%A	%B	%C
	-10.0	78	20	2
	0.0	78	20	2
	30.0	70	20	10
	35.0	60	20	20
	40.0	50	20	30

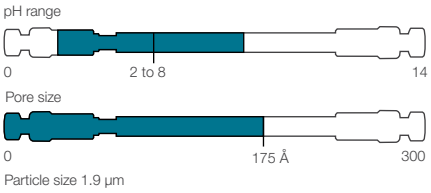


GlycanPac AXH-1 columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
1.9	UHPLC column	100	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

Released glycan analysis continued

GlycanPac AXR-1 column

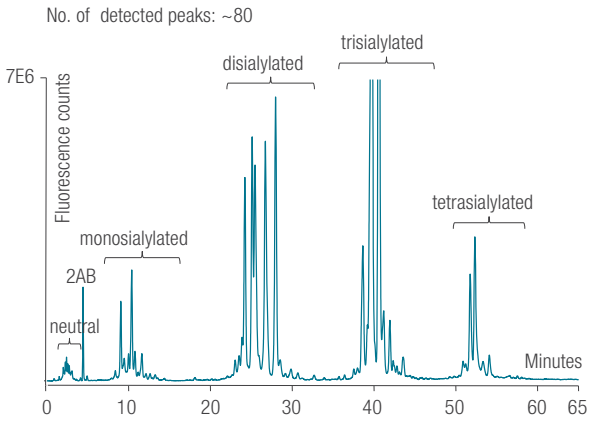


Additional reading

Links	Type	Description
	Application note	Separation of 2AB labeled N-glycans from bovine fetuin
	Application note	Structural analysis of native N-glycans released from proteins
	Learn more **thermofisher.com/biolc**	

Separation of 2AB labeled N-glycans from bovine fetuin

GlycanPac AXR-1, 1.9 µm, 150 x 2.1 mm				
Flow rate	0.4 mL/min			
Mobile phase A	Acetonitrile			
Mobile phase B	Water			
Mobile phase C	Ammonium formate (100 mM, pH = 4.4)			
Temperature	40 °C			
Sample load	100 pmoles			
Detection	Fluorescence, 320/420 nm			
Sample	2AB labeled N-glycan from bovine fetuin			
Curve	5			
Gradient	Time (min)	%A	%B	%C
	-10.0	0	95	5
	0.0	0	95	5
	1.0	0	95	15
	30.0	1	74	25
	65.0	20	50	30



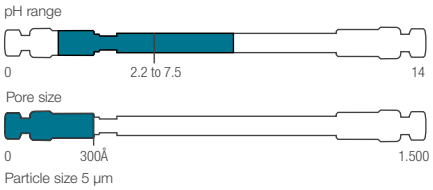
GlycanPac AXR-1 columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
1.9	UHPLC column	150	088136	—	—
		250	088135	—	—
—	Guard cartridge holder	—	069580	069580	069580

Aggregate fragment analysis

For mAb samples, our 300 Å silica Thermo Scientific™ MAbPac™ SEC-1 provides separation of aggregates and fragments samples to characterize your analyte by LC-UV or LC-MS.

MAbPac SEC-1 column

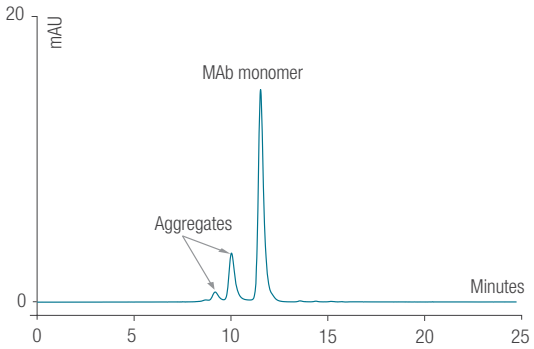


Additional reading

Links	Type	Description
	Application note	Lifetime stability of size-exclusion chromatography columns for protein aggregate analysis
	Application note	Analysis of monoclonal antibodies and their fragments
	Learn more **thermofisher.com/biolc**	

Monoclonal antibody aggregate separation

MAbPac SEC-1, 5 µm, 300 x 4.0 mm (PEEK)	
Flow rate	0.20 mL/min
Mobile phase	0.3 mM NaCl in 50 mM phosphate buffer pH 6.8
Gradient	0% B for 0.2 mins, 100% B for 0.60 mins, 0% B for 1.20 mins
Temperature	30 °C
Injection volume	2 µL
Detection	280 nM
Sample	mAb (10 mg/mL)



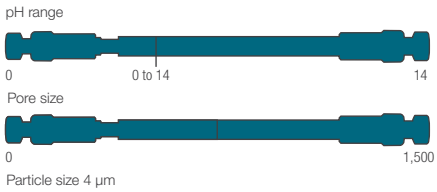
MAbPac SEC-1 columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	4.0 mm ID	7.8 mm ID
5	Guard column	50	—	074697	—
—	HPLC column	150	088790	075592	—
		300	088789	074696	088460

Intact and subunit analysis (RP)

The wide pore (1500 Å) polymeric Thermo Scientific™ MAbPac™ RP columns offers high resolution separation and minimal carryover for monoclonal antibody samples. Excellent lifetime and ability to separate intact and protein subunits, compatible with LC-UV and LC-MS/MS applications. The monolithic Thermo Scientific™ ProSwift™ RP columns offer unique selectivity, high throughput separations for a wide range of protein sizes. These columns provide high loadability and operate under very low backpressure.

MAbPac RP column

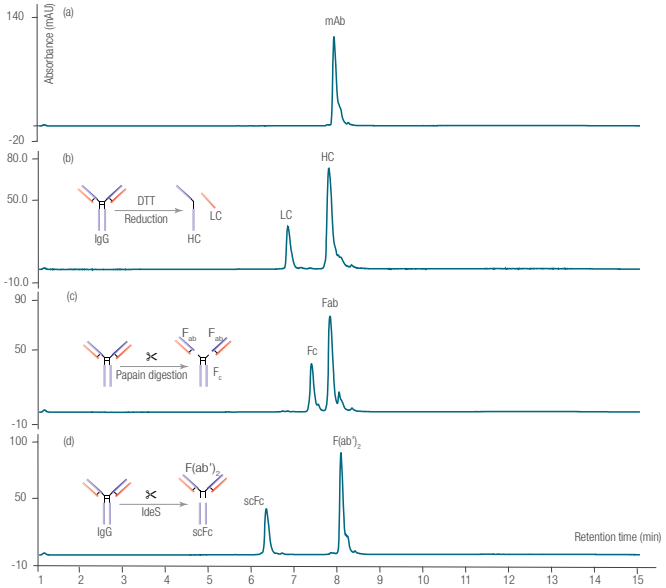


Additional reading

Links	Type	Description
	Application note	Confident monoclonal antibody sequence verification by complementary LC-MS techniques
	Application note	Fast analysis of therapeutic monoclonal antibody fragments
	Learn more **thermofisher.com/biolc**	

mAb and mAb fragments analysis

MAbPac RP, 4 µm, 50 x 3.0 mm			
Flow rate	0.5 mL/min		
Mobile phase A	H_2O/FA/TFA (99.88 : 0.1 : 0.02 v/v/v)		
Mobile phase B	ACN/H2O/FA/TFA 90 : 9.88 : 0.1 : 0.02 v/v/v/v)		
Temperature	80 °C		
Injection volume	5 µL		
Detection	UV at 280 nm		
Sample	(a) trastuzumab (5 mg/mL) (b) trastuzumab + DTT (4 mg/mL) (c) trastuzumab + Papain (2 mg/mL) (d) trastuzumab + IdeS (2 mg/mL)		
Gradient	Time (min)	%A	%B
	0.0	80	20
	1.0	80	20
	11.0	55	45
	12.0	55	45
	14.0	80	20
	16.0	80	20



Intact and subunit analysis (RP) continued

MAbPac RP columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm 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

MAbPac RP 1 mm columns

Particle size (µm)	Length (mm)	1 mm ID
4	50	303182
	100	303183
	150	303184

Webinars

Analytical and life science webinars live and on-demand

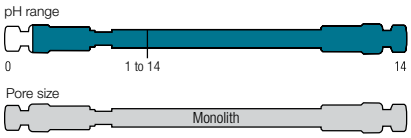
NIBRT collaboration information

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

thermofisher.com/nibrt

Intact and subunit analysis (RP) continued

ProSwift RP column



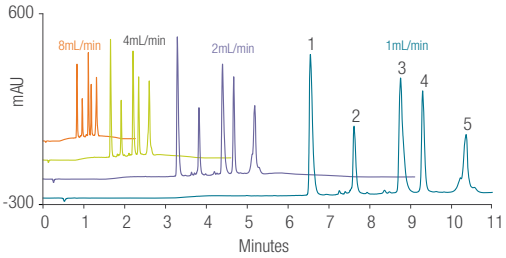
Additional reading

Links	Description
	Learn more thermofisher.com/biolc

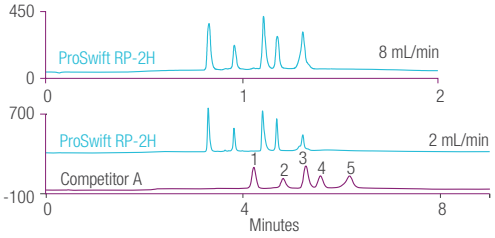
ProSwift column

ProSwift RP-2H, 50 x 4.6 mm	
Flow rate	1, 2, 4, or 8 mL/min
Mobile phase A	H_2O/ACN (95:5; V/V) + 0.1% TFA
Mobile phase B	H_2O/ACN (5:95; V/V) + 0.1% TFA
Injection volume	2 µL
Detection	UV at 214 nm
Sample	Mixture of five proteins
Gradient	1 mL/min: 1-75% B in 12 min 2 mL/min: 1-75% B in 6 min 4 mL/min: 1-75% B in 3 min 8 mL/min: 1-75% B in 1.5 min
Analytes	1. Ribonuclease A 1.5 mg/mL 2. Cytochrome C 0.5 mg/mL 3. BSA 1.5 mg/mL 4. Carbonic anhydrase 0.9 mg/mL 5. Ovalbumin 1.5 mg/mL

Proteins



Competitive comparison



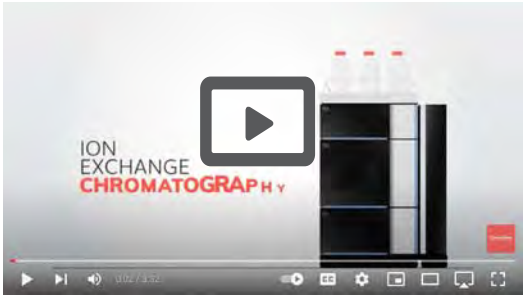
ProSwift RP columns

Functional group	Length (mm)	1.0 mm ID	4.6 mm ID
RP-1S	50	—	064297
RP-2H	50	—	064296
RP-3U	50	—	064298
RP-4H	50	069477	—
	250	066640	—

Charge variant analysis

For charge variant analysis by LC-UV or LC-MS/MS Thermo Scientific™ ProPac™ 3R SAX and Thermo Scientific™ ProPac™ 3R SCX columns deliver outstanding resolution on a highly roust, reproducible and high-resolution platform. Combine ProPac 3R SCX columns with our proprietary CX-1 buffers formulations to enable fast, robust and reproducible pH gradients that are simple to optimize and easily automated - without the need for time-consuming mobile phase adjustments.

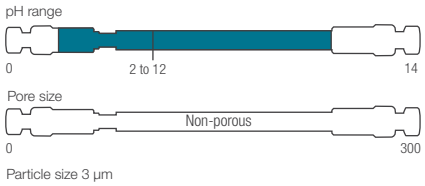
Protein isoelectric point (pl)				
<7	>7			
ProPac 3R SAX column	**ProPac 3R SCX column**	**MAbPac SCX-10 column**	**ProPac WCX-10 column**	**ProPac Elite WCX column**
• Works well with salt and pH gradient buffers • Best choice for proteins with acidic pl • Analyze full/empty AAV capsid ratios	• Highest resolution with excellent reproducibility • Works well with CX-1 buffers	• Alternative selectivity to WCX, scalable from short methods over comprehensive analysis to semi-prep formats • Works well with CX-1 buffers	• Industry GOLD standard – widely used and published	• Improved resolution, speed and reproducibility over ProPac WCX-10 column • Works well with CX-1 buffers



Video:
Tips to improve your charge variant analysis by ion exchange

Charge variant analysis continued

ProPac 3R SCX column

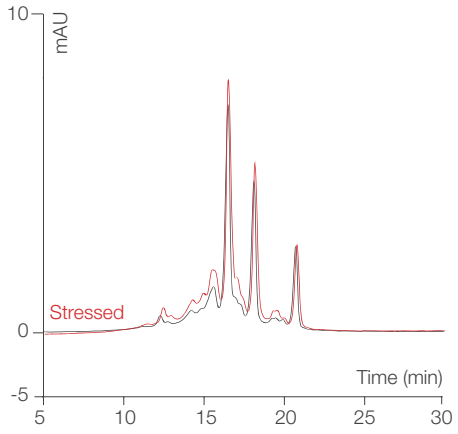


Additional reading

Links	Type	Description
	Application note	Salt gradient analysis of monoclonal antibodies using a 3 µm monodisperse SCX column
	Application note	Method development for pH gradient analysis of monoclonal antibodies using SCX column
	Learn more thermofisher.com/propac	

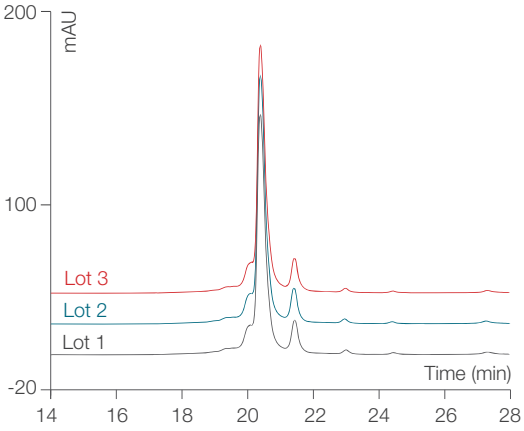
Salt gradient analysis of infliximab

ProPac 3R SCX column, 3 µm			
Format	4 × 100 mm		
Mobile phase	A: 20 mM MES, pH 6.5 B: 20 mM MES, pH 6.5 + 0.5 M NaCl		
Flow rate	0.3 mL/min		
Injection	2 µL		
Temp	30 °C		
Detection	UV, 280 nm		
Sample	Infliximab – 5 mg/mL		
Gradient		%A	%B
Time (min)	0.0	93	7
	30.0	78	22
	30.1	20	80
	33.0	20	80
	33.1	93	7
	40.0	93	7



Lot-to-lot reproducibility of NISTmAb salt gradient separation

ProPac 3R SCX column, 3 µm			
Format	4 × 100 mm		
Mobile phase	A: 20 mM MES, pH 6.5 B: 20 mM MES, pH 6.5 + 0.5 M NaCl		
Flow rate	0.3 mL/min		
Injection	2 µL		
Temp	30 °C		
Detection	UV, 280 nm		
Sample	NISTmAb – 10 mg/mL		
Gradient		%A	%B
Time (min)	0.0	95	10
	30.0	75	30
	30.1	20	80
	33.0	20	80
	33.1	95	10
	40.0	95	10

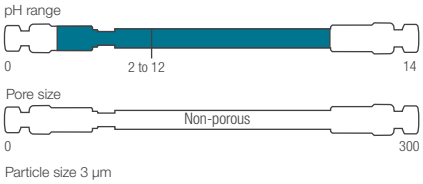


ProPac 3R SCX 3 µm columns

Particle size (µm)	Length (mm)	2.0 mm ID	4.0 mm ID
3	50	43103-052068	43103-054068
	100	43103-102068	43103-104068

Charge variant analysis continued

ProPac 3R SAX column

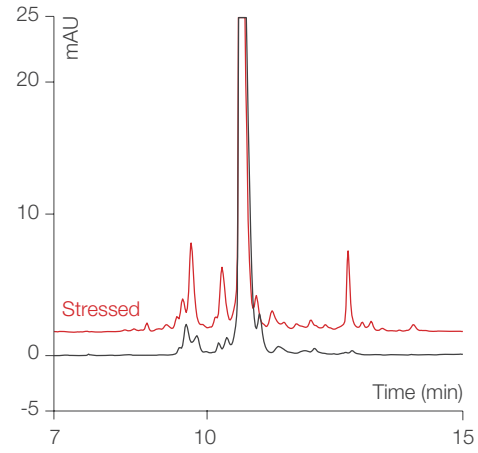


Additional reading

Links	Type	Description
	Application note	Salt gradient analysis of Protein G using a 3 µm monodisperse SAX column
	Application note	Salt gradient separation and analysis of adeno-associated virus samples using SAX column
	Learn more **thermofisher.com/propac**	

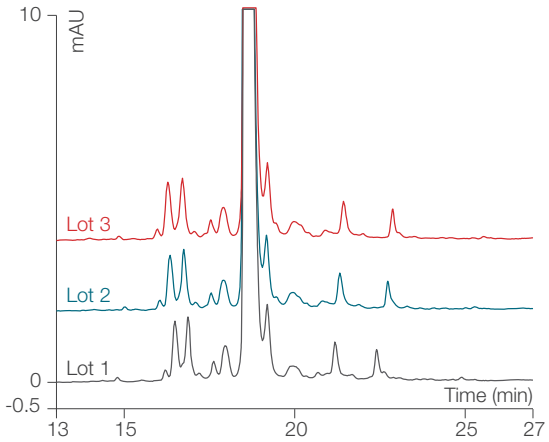
Salt gradient analysis of protein G

ProPac 3R SAX column, 3 µm			
Format	4 × 100 mm		
Mobile phase	A: 20 mM Tris, pH 8.0 B: 20 mM Tris + 500 mM NaCl, pH 8.0		
Flow rate	0.5 mL/min		
Injection	1 µL		
Temp	30 °C		
Detection	UV, 280 nm		
Sample	Protein G – 5 mg/mL		
Gradient		**%A**	**%B**
Time (min)	0.0	88	12
	1.0	88	12
	16.0	58	42
	16.1	0	100
	18.0	0	100
	18.1	88	12
	30.0	88	12



Lot-to-lot reproducibility of protein G salt gradient separation

ProPac 3R SAX column, 3 µm			
Format	4 × 100 mm		
Mobile phase	A: 20 mM Tris, pH 8.0 B: 20 mM Tris + 500 mM NaCl, pH 8.0		
Flow rate	0.5 mL/min		
Injection	1 µL		
Temp	30 °C		
Detection	UV, 280 nm		
Sample	Protein G – 5 mg/mL		
Gradient		**%A**	**%B**
Time (min)	0.0	88	12
	1.0	88	12
	31.0	58	42
	31.1	0	100
	33.0	0	100
	33.1	88	12
	45.0	88	12

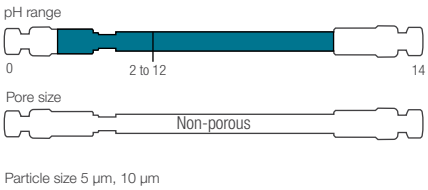


ProPac 3R SAX 3 µm columns

Particle size (µm)	Length (mm)	2.0 mm ID	4.0 mm ID
3	50	43203-052068	43203-054068
	100	43203-102068	43203-104068

Charge variant analysis continued

MAbPac SCX-10 column



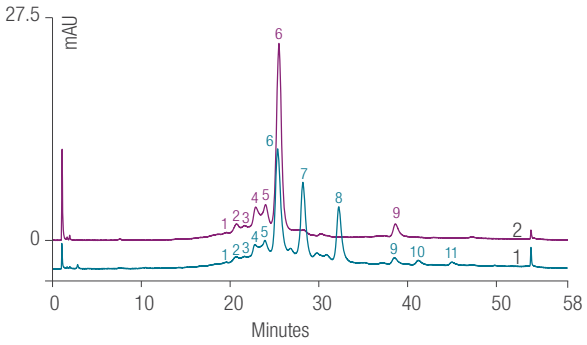
Particle size 5 µm, 10 µm

Additional reading

Links	Type	Description
	Application note	A global pH-gradient based charge variant analysis
	Application note	High throughput, high resolution monoclonal antibody analysis
	Learn more **thermofisher.com/biolc**	

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

MAbPac SCX-10, 5 µm, 250 x 4.0 mm	
Flow rate	1 mL/min
Mobile phase A	20 mM MES (pH 5.6) + 60 mM NaCl
Mobile phase B	20 mM MES (pH 5.6) + 300 mM NaCl
Gradient	15–36% B in 50 min
Temperature	30 °C
Injection volume	5 µL
Detection	UV at 280 nm
Sample	1. mAb B, 900 µg in 100 µL (no carboxypeptidase) 2. mAb B, 900 µg in 100 µL + carboxypeptidase, 50 µg, incubation at 37 °C for 3 h
Both chromatograms	Peaks 1–5: acidic variants
Sample 1	Peaks 6-8: C-Terminal lysine truncation variants of main peak. Peaks 9-11: C-Terminal lysine truncation variants of minor variant peak
Sample 2	Peak 6 results from peaks 6, 7, and 8 after CBP treatment. Peak 9 results from peaks 9, 10, and 11 after CBP treatment

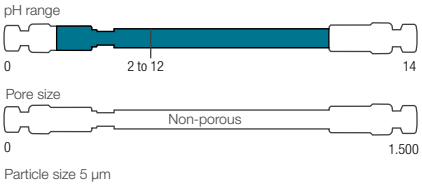


MAbPac SCX-10 columns

Particle size (µm)	Format	Length (mm)	2.0 mm ID	4.0 mm ID	9.0 mm ID
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

Charge variant analysis continued

MAbPac SCX-10 RS column

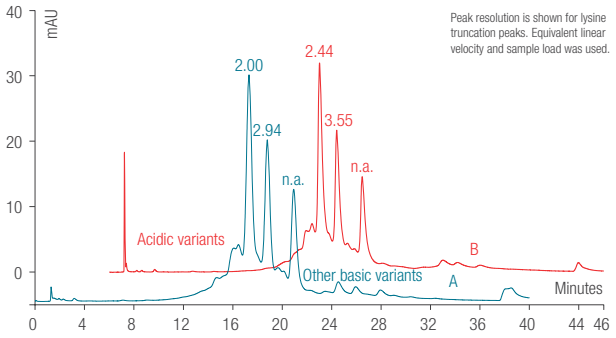


Additional reading

Links	Description
	Learn more thermofisher.com/biolc

Lysine variants

MAbPac SCX, 5 µm, 250 x 4.6 mm	
Flow rate	1.5 mL/min
Mobile phase A	20 mM MES pH 5.6 + 60 mM
Mobile phase B	20 mM MES pH 5.6 + 3 mM NaCl
Injection volume	15 µL
Detection	UV at 280 nm
Sample	mAb 5 mg/mL
Both chromatograms	Peaks 1–5: acidic variants
Chromatogram A	Gradient: 33-53% B in 30 min
Chromatogram B	Gradient: 33-53% B in 20 min

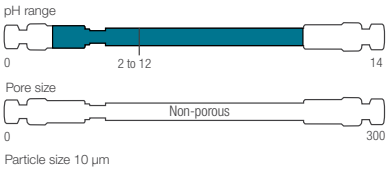


MAbPac SCX-10 RS columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	4.6 mm ID
5	UHPLC column	50	082675	082674
		150	088242	085209
		250	082515	082673

Charge variant analysis continued

ProPac SAX-10 column

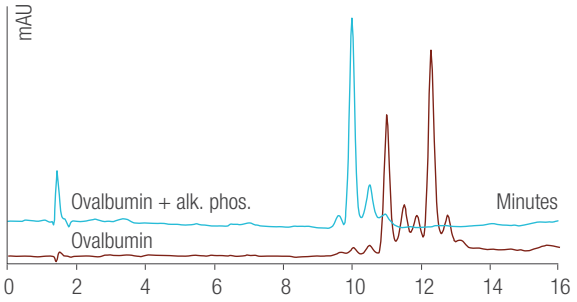


Additional reading

Links	Description
	Learn more thermofisher.com/biolc

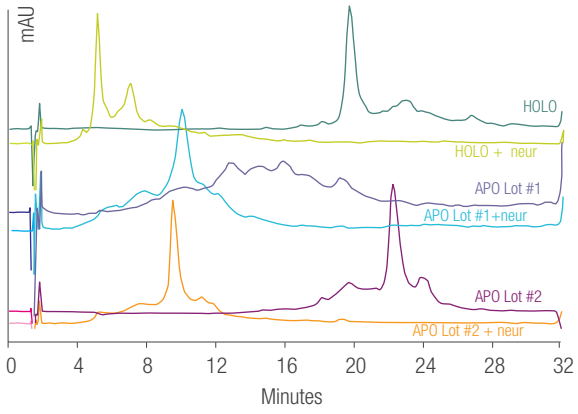
Resolution of phosphorylation variants of ovalbumin

ProPac SAX-10, 10 µm, 250 x 4.0 mm				
Flow rate	1.0 mL/min			
Mobile phase A	Water			
Mobile phase B	2.0 mM NaCl			
Mobile phase C	0.1 mM Tris/HCl (pH 8.5)			
Injection volume	1.0 µL			
Detection	UV at 214 nm			
Sample	Ovalbumin before and after alkaline phosphatase treatment			
Gradient	Time (min)	%A	%B	%C
	0.0	80	0	20
	15.0	67.5	12.5	20



Effect of sialylation on transferrin chromatography

ProPac SAX-10, 10 µm, 250 x 4.0 mm				
Flow rate	1.0 mL/min			
Mobile phase A	Water			
Mobile phase B	2.0 mM NaCl			
Mobile phase C	0.2 mM Tris/HCl (pH 9)			
Injection volume	50.0 µL			
Detection	UV at 214 nm			
Sample	HOLO (iron rich) and APO (iron poor) human transferrin samples before and after neuraminidase treatment. Digestions were carried out overnight at 37 °C in sodium acetate buffer at pH 5.			
Gradient	Time (min)	%A	%B	%C
	0.0	87	3	10
	30.0	83	7	10

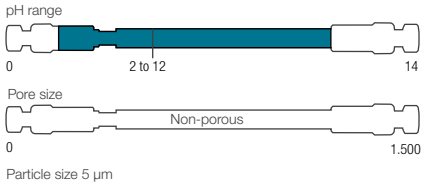


ProPac SAX-10 columns

Particle size (µm)	Format	Length (mm)	2.0 mm ID	4.0 mm ID	9.0 mm ID	22.0 mm ID	4 x 50 mm ID
10	Guard column	50	063454	054998	–	–	–
	HPLC column	250	063448	054997	063703	088770	078990

Charge variant analysis continued

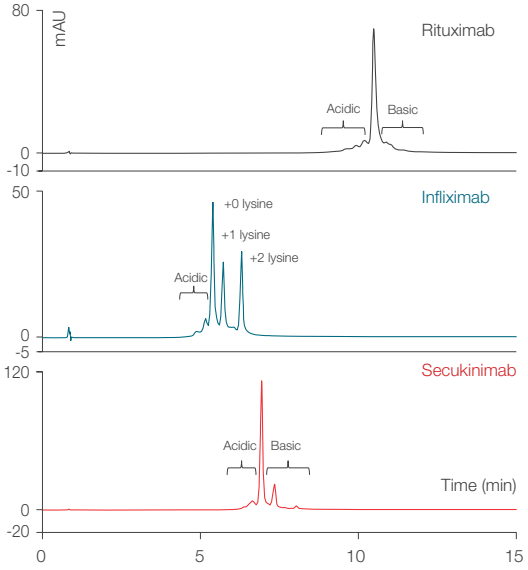
ProPac Elite WCX column



Additional reading

Links	Type	Description
	Application note	Confident monoclonal antibody sequence verification by complementary LC-MS techniques
	Application note	Fast analysis of therapeutic monoclonal antibody fragments
	Learn more **thermofisher.com/biolc**	

ProPac Elite WCX, 5 µm, 150 x 4.0 mm			
Flow rate	1.0 mL/min		
Mobile phase A	1x CX-1 pH Gradient buffer A		
Mobile phase B	1x CX-1 pH Gradient buffer B		
Temperature	30 °C		
Injection volume	2 µL		
Detection	UV at 280 nm		
Sample	Top: rituximab, 5 mg/mL Middle: infliximab, 5 mg/mL Bottom: secukinimab, 5 mg/mL		
Gradient	Time (min)	%A	%B
	0.0	80	20
	15.0	20	80
	15.1	0	100
	17.0	0	100
	17.1	80	20
	25.0	80	20



ProPac Elite WCX columns

Particle size (µm)	Format	Length (mm)	2.0 mm ID	4.0 mm ID
5	HPLC column	50	303028	302973
		100	303027	302972
		250	303026	303025

ProPac Elite WCX kits

Particle size (µm)	Set contents	Length (mm)	4.0 mm ID
5	3 columns from 1 lot	150	302976
	3 columns from 3 lots	150	302977
	3 columns from 1 lot	250	303061
	3 columns from 3 lots	250	303062

Charge variant analysis continued

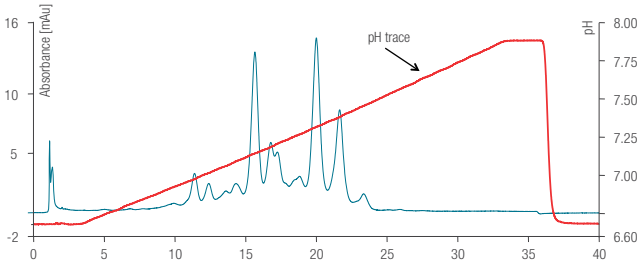
pH gradient buffers

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

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

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	**125 mL**	**250 mL**	**500 mL**	**1000 mL**
CX-1 pH gradient buffer A (pH 5.6)	083273	085346	302779	303274
CX-1 pH gradient buffer B (pH 10.2)	083275	085348	302780	303275

NIBRT collaboration information

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

thermofisher.com/nibrt

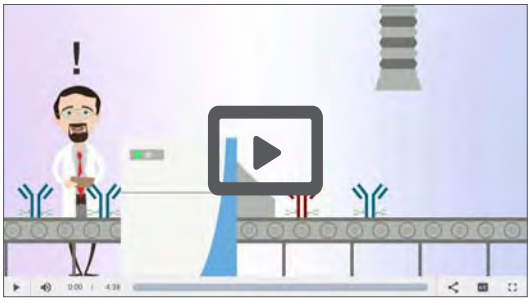
Peptide mapping and MAM

Thermo Scientific™ Hypersil GOLD™ VANQUISH™ C18 UHPLC columns are an excellent column choice for a broad range of peptides, offering high resolution for all critical quality attributes, without extremely long retention for more hydrophobic peptides. For faster separation of peptide samples select the Thermo Scientific™ Accucore™ C18 VANQUISH™ column. The column offers sub-2 µm particles providing ultra-short diffusion paths that result in extremely efficient separations.

Additional reading

Links	Type	Description
	Landing page	Multi-Attribute Method (MAM): Straight through to breakthrough
	Learning centre	Biopharmaceutical Multi-Attribute Method (MAM)
	Learn more **thermofisher.com/biolc**	

Video:
End-to-end MAM solution to move biopharma forward



Video:
Learn how innovation and monitoring strategies can reduce the number of tests and enhance the methodology of validating impurity

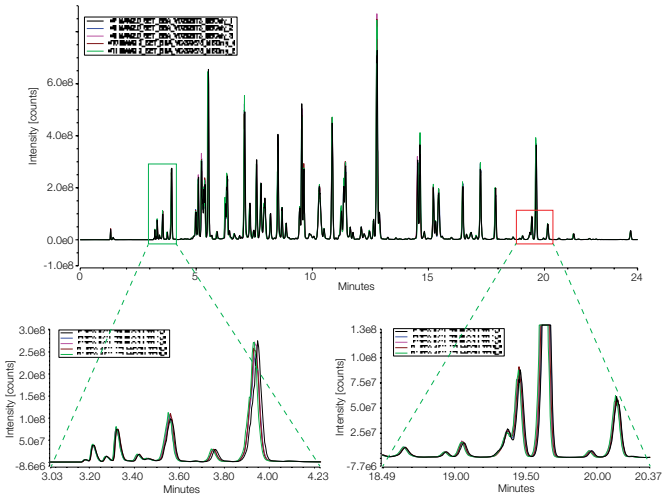
Hypersil GOLD VANQUISH column

Additional reading

Links	Type	Description
	Flyer	VANQUISH UHPLC columns. Delivering powerful separations
	Application note	An integrated LC-MS system performance evaluation test
	Learn more **thermofisher.com/biolc**	

Overlay of 5 TIC traces from the SET injection sequence

Hypersil GOLD VANQUISH C18 UHPLC column, 150 × 2.1 mm, 1.9 µm	
Flow rate	0.25 mL/min
Mobile phase A	H_2O + 0.1% FA
Mobile phase B	ACN + 0.1% FA
Injection volume	5 µL
Detection	Mass spectrometer – Full scan
Sample	Pierce BSA protein digest standard, MS grade, UD294474 (P/N 88341)
Chromatogram B	Gradient: 33-53% B in 20 min



Hypersil GOLD Vanquish columns

Particle size (µm)	Length (mm)	2.1 mm ID
1.9	50	25002-052130-V
	100	25002-102130-V
	150	25002-152130-V

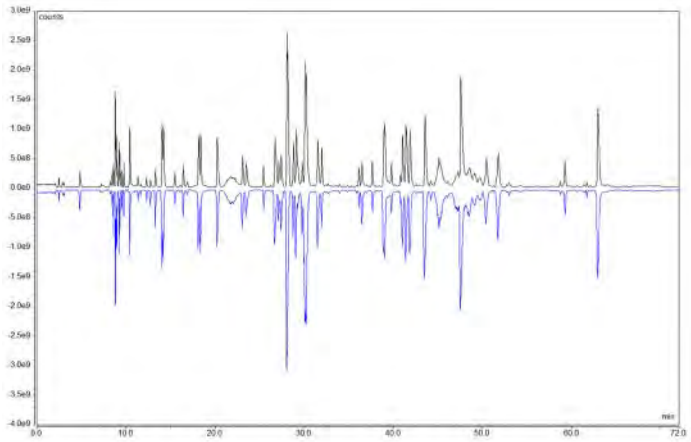
Accucore VANQUISH C18+ column

Additional reading

Links	Type	Description
	Application note	Comparative analysis of innovator and biosimilar monoclonal antibodies using MAM method
	Technical guide	Powerful separations are our core performance
	Poster	Application of a MS in QC method for characterization and attribute monitoring
	Learn more **thermofisher.com/biolc**	

Mirrored base peak chromatograms of rituximab innovator (black) and its biosimilar product (blue)

Accucore Vanquish C18+ UHPLC column, 1.5 µm, 2.1 × 150 mm	
Flow rate	0.25 mL/min
Mobile phase A	H2O + 0.1% FA
Mobile phase B	ACN + 0.1% FA
Injection volume	8 µL
Detection	Mass spectrometer
Sample	Rituximab innovator
Temperature	50 °C



Accucore Vanquish C18+ columns

Particle size (µm)	Length (mm)	2.1 mm ID
1.5 µm	50 mm	27101-052130
	100 mm	27101-102130
	150 mm	27101-152130

Nucleic acids/oligonucleotides

Thermo Scientific™ DNAPac™ RP column offers ion-pair reversed phase separations of nucleic acid mixtures. Samples from siRNA to mRNA easily resolve on this polymer chemistry. Compatible with LC-UV and LC-MS/MS methodologies this column delivers outstanding separations.

Thermo Scientific™ DNAPac™ PA200 and Thermo Scientific™ DNAPac™ PA200RS columns are strong anion exchange columns for n-1 separation of oligo samples. Compatible with LC-UV, these columns offer orthogonal separation to reversed phase columns, separating the oligonucleotide sample by size and charge.

Thermo Scientific™ DNASwift™ column is a monolithic column designed for users who would like to do SAX purification of oligonucleotide samples using their analytical HPLC. These monolithic columns offer high loadability, with slightly less resolution than our analytical columns.

Webinars

Analytical and life science webinars live and on-demand

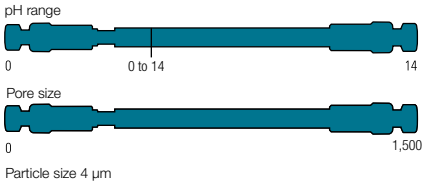
NIBRT collaboration information

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

thermofisher.com/nibrt

Nucleic acids/oligonucleotides continued

DNAPac RP column

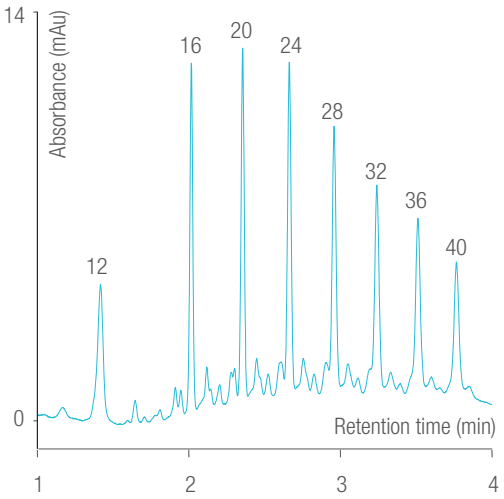


Additional reading

Links	Description
	Learn more thermofisher.com/biolc

Fast analysis of mixed base DNA

DNAPac RP, 4 µm, 50 x 2.1 mm			
Flow rate	0.8 mL/min		
Mobile phase A	25 mM HAA, pH 8.5		
Mobile phase B	25 mM HAA, pH 8.5/acetonitrile (50:50 v/v)		
Temperature	65 °C		
Injection volume	4 µL		
Detection	UV at 260 nm		
Sample	8-Combo DNA		
Gradient curve	3		
Peak label	Length of DNA		
Gradient	Time (min)	%A	%B
	-0.1	67	33
	0.0	67	33
	3.0	41	59
	3.1	5	95
	4.9	5	95
	5.0	67	33
	8.0	67	33

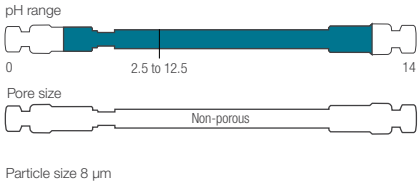


DNAPac RP columns

Particle size (µm)	Format	Length (mm)	2.1 mm ID	3.0 mm ID
4	Guard cartridges (2/pk)	10	088925	088921
	HPLC column	50	088924	088920
		100	088923	088919
		250	303324	–
—	Guard cartridge holder	—	069580	069580

Nucleic acids/oligonucleotides continued

DNAPac PA200 column

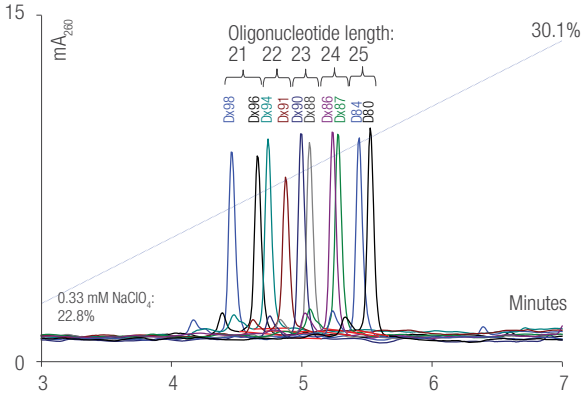


Additional reading

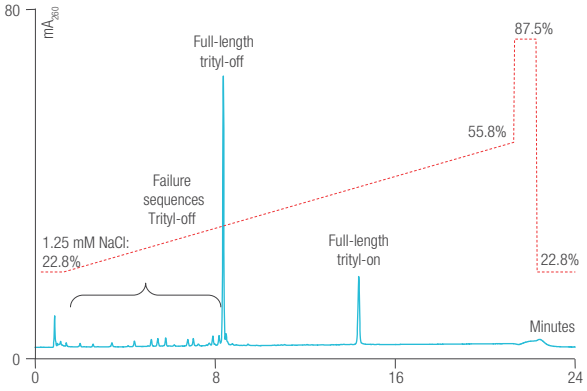
Links	Description
	Learn more thermofisher.com/biolc

DNAPac PA200, 8 µm, 250 x 4.0 mm	
Flow rate	1.2 mL/min
Mobile phase	$NaClO_4$, pH 6.5 with 20% ACN
Detection	UV at 260 nm
Flow rate	1.2 mL/min

Separation of oligonucleotides by length



Target, failure and trityl-on oligonucleotides

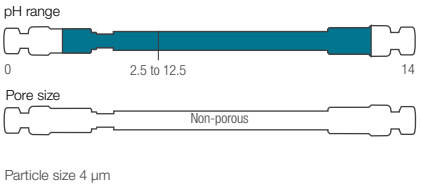


DNAPac PA200 columns

Particle size (µm)	Format	Length (mm)	2.0 mm ID	4.0 mm ID	9.0 mm ID	22.0 mm ID
8	Guard column	50	063423	062998	063419	088780
	HPLC column	250	063425	063000	063421	088781

Nucleic acids/oligonucleotides continued

DNAPac PA200 RS column



Particle size 4 µm

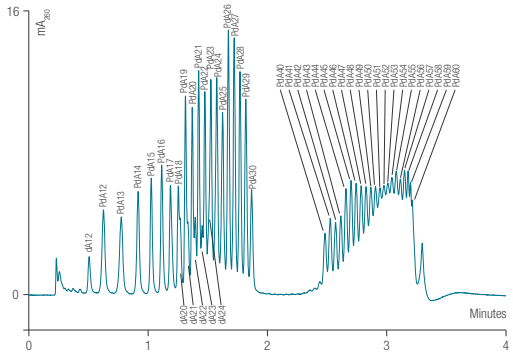
Additional reading

Links	Type	Description
	Brochure	Superior oligonucleotide analysis
	Application note	High resolution separation of oligonucleotides
	Application note	Ultra-high-resolution separation of oligonucleotides by UHPLC
	Application note	Separation of mixed-base oligonucleotides
	Learn more thermofisher.com/biolc	

Partial resolution of 46 oligonucleotides

DNAPac PA200 RS, 4 µm, 50 x 4.6 mm	
Flow rate	1.30 mL/min
Mobile phase A	20 mM Tris pH 8
Mobile phase B	A + 1.25 mM NaCl
Temperature	30 °C
Injection volume	2.5 µL
Gradient	28–43% B in 4 CV* (2.56 min) curve 3**
Sample	PdA12–30, 40–60

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

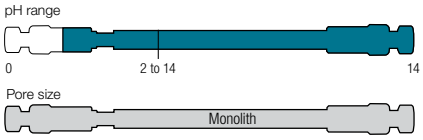


DNAPac PA200 RS columns

Particle size (µm)	Format	Length (mm)	4.6 mm ID
4	BioRS column	50	082508
		150	082509
		250	082510

Nucleic acids/oligonucleotides continued

DNASwift SAX-1S column

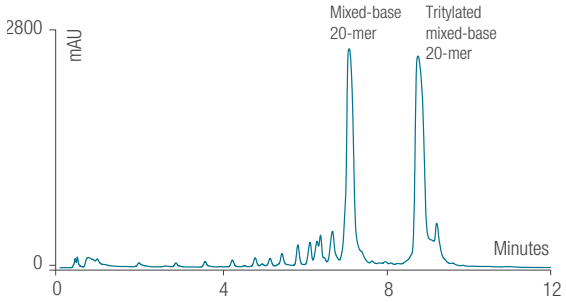


Additional reading

Links	Description
	Learn more thermofisher.com/biolc

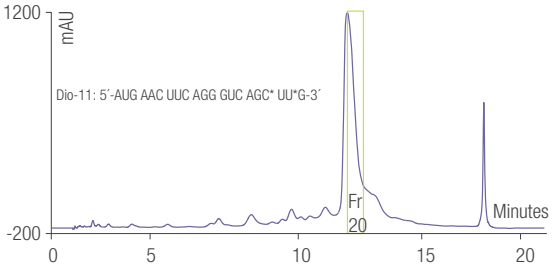
Tritylated oligonucleotide

DNASwift SAX-1S, 150 x 5.0 mm	
Flow rate	1.5 mL/min
Mobile phase A	15 mM Tris, pH 8
Mobile phase B	15 mM Tris, pH 8, 1.25 M NaCl
Temperature	30 °C
Injection volume	20 µL
Detection	UV at 260 nm
Gradient	8–64% B in 10 min



Purification of a 21-base RNA sample with aberrant 2'-5' linkages at the 1 and 3 positions from the 3' end

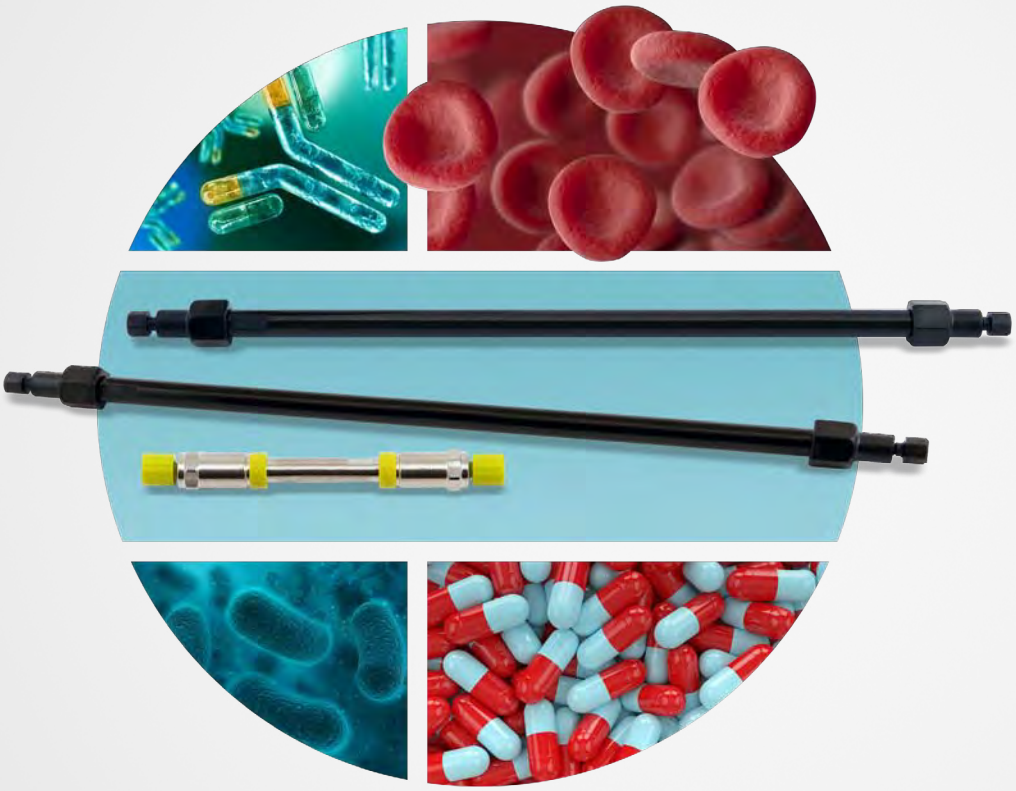
DNASwift SAX-1S, 150 x 5.0 mm	
Flow rate	1.5 mL/min
Mobile phase A	40 mM Tris, pH 7
Mobile phase B	40 mM Tris, pH 7 + 1.25 M NaCl
Temperature	30 °C
Injection volume	125 µg
Detection	UV at 260 nm
Gradient	26–42% B in 10 column volumes



DNASwift SAX-1S column

Length (mm)	5.0 mm ID
150	066766

ThermoFisher SCIENTIFIC



ORION SCIENTIFIC SRL

Sede Legale
Via Alessandro Volta 25/B - 35030 Veggiano (PD)
Tel. +39 049 9006911
P.I. / C.F. / Vat Reg: 05160820287

Sede Operativa
Via Giacomelli 16 - 35010 Limena (PD)
Tel: +39 049 0986380
info@orion-scientific.com - orionscientific@legalmail.it

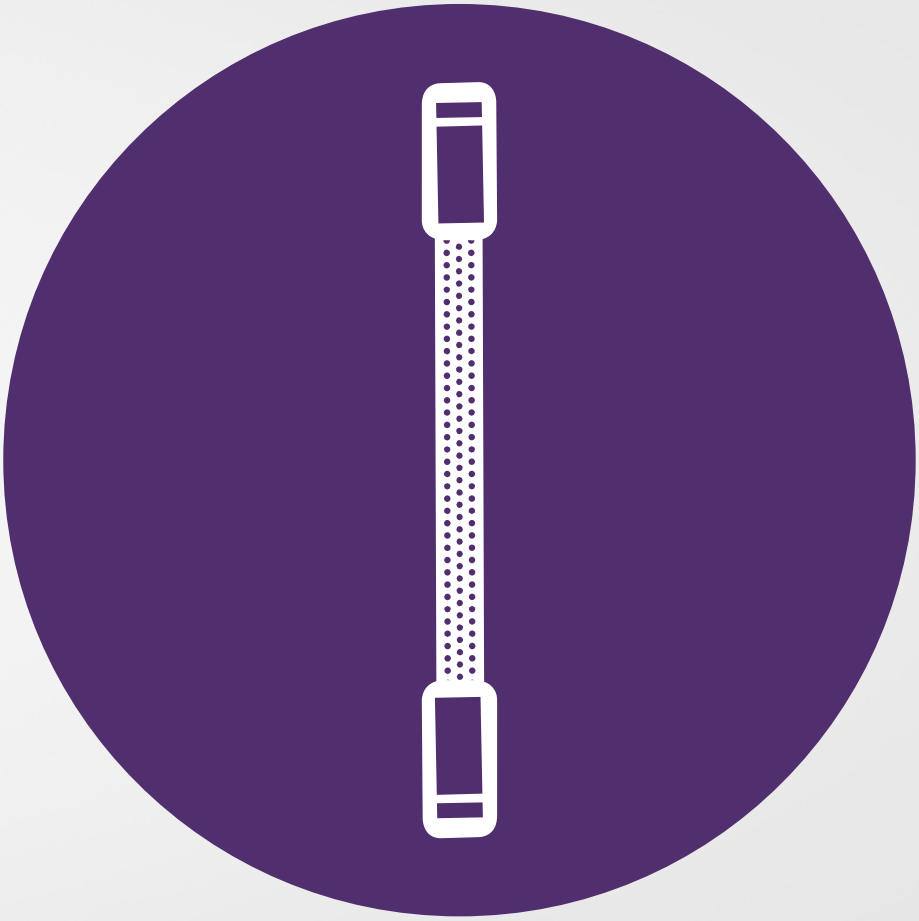
Expect reproducible results with sample prep, columns and vials

GC | IC | LC | C | CDS | SP | UNITY LAB SERVICES

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

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

thermo scientific



Connected chromatography solutions

LC columns and accessories

ORION SCIENTIFIC
THE LABORATORY WORLD

LC columns and accessories

As a leader in LC column technology including silica, polymer and porous graphitic carbon manufacturing, bonded phase production and column packing for 40 years, you can rely on the quality of Thermo Scientific HPLC products. Here, we showcase our latest and most comprehensive range of innovative columns, accessories and equipment for fast LC, analytical HPLC and UHPLC.

Thermo Scientific™ Accucore™ columns
Solid core particles enabling high speed, high resolution separations with back pressures significantly lower than those associated with UHPLC.

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

Thermo Scientific™ Acclaim™ columns
Acclaim columns are based on high-purity, porous silica particles with advanced and innovative column bonding technologies. This provides complementary selectivity, high column efficiencies and symmetrical peaks.

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

Section contents

Accucore HPLC and UHPLC columns

Accucore Vanquish UHPLC columns

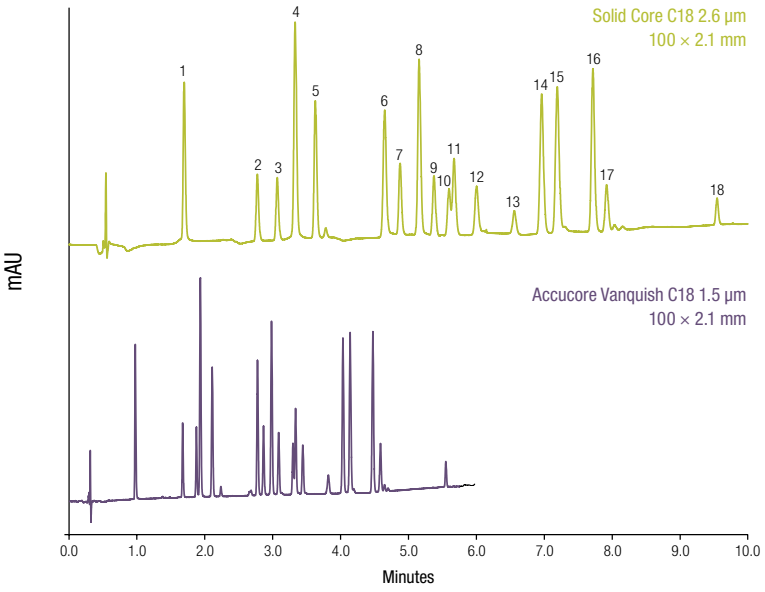
Thermo Scientific™ Accucore™ Vanquish™ UHPLC columns provide a robust chromatography solution to enhance laboratory workflows and productivity. These columns, in combination with Vanquish UHPLC systems, deliver powerful separations to solve your analytical challenges faster and more effectively.

These next-generation UHPLC columns feature 1.5µm solid core particles and combine the benefits of a solid core material and the increased chromatographic efficiency of a sub-2µm particle.

Modern analytical laboratories continue to be driven towards higher throughput workflows which require better separations, more results and easier interaction at a reduced cost. Accucore Vanquish UHPLC columns enable you to achieve this by delivering:

Better separations

The high efficiency offered by Accucore Vanquish UHPLC columns enables the resolution of very complex mixtures.



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

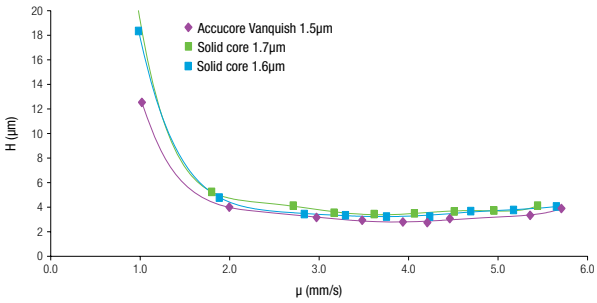
Mobile Phase A:Water
Mobile Phase B:Acetonitrile

Gradient:	Solid core C18 2.6µm 100 × 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

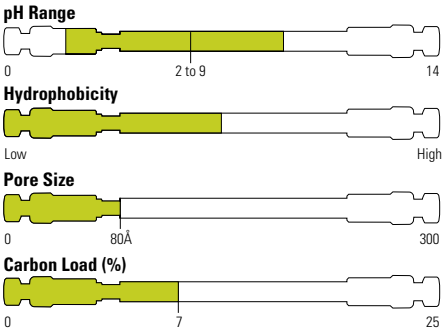
Description	Particle Size	Length (mm)	Diameter (ID)	Part Number
Accucore Vanquish C18+	1.5	50	2.1	27101-052130
		100	2.1	27101-102130
		150	2.1	27101-152130
Hypersil GOLD VANQUISH	1.9	50	2.1	25002-052130-V
		100	2.1	25002-102130-V
		150	2.1	25002-152130-V
Hypersil GOLD VANQUISH PFP	1.9	100	2.1	25402-102130-V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

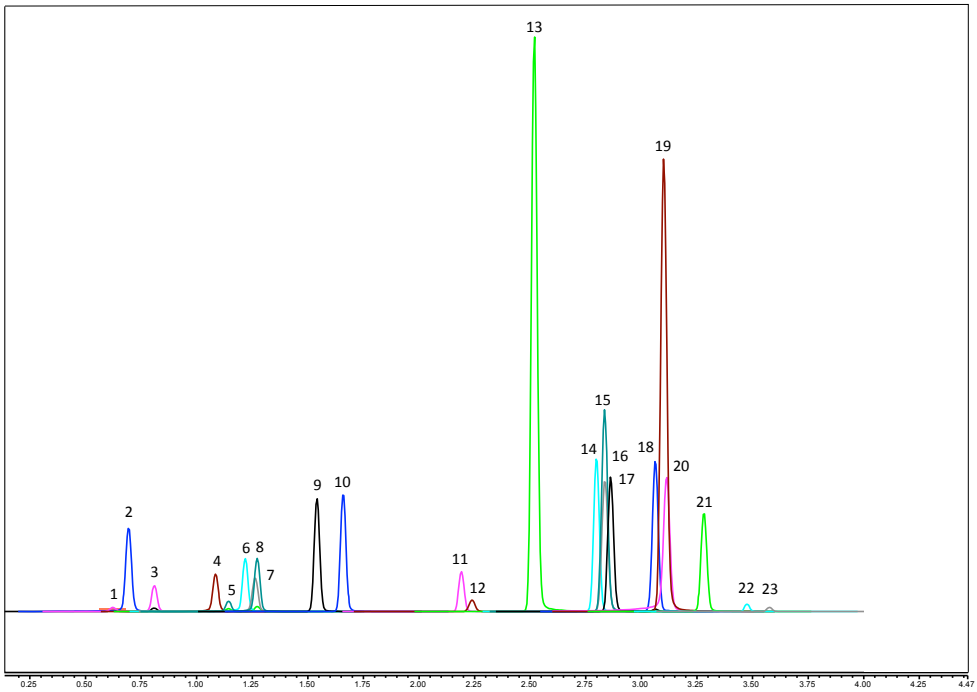
- Compatibility with 100% aqueous conditions
- Lower backpressure, UHPLC not required
- Great column lifetime
- Excellent lot-to-lot reproducibility
- Rugged column, suitable for a variety of matrices



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

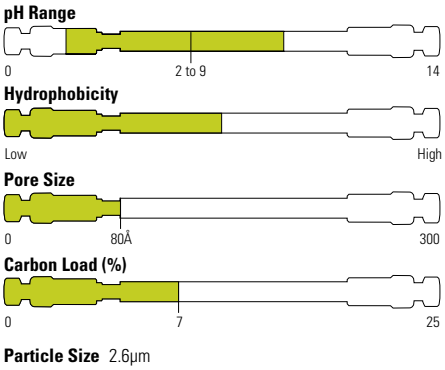
Accucore RP-MS

- Optimized for MS detection
- Excellent peak shapes
- Excellent combination of speed and efficiency

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.

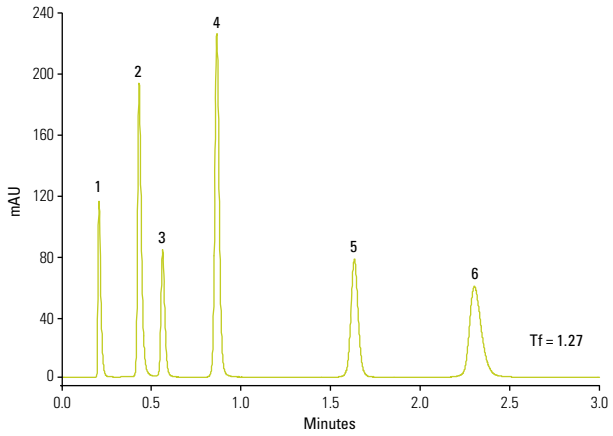
RP-MS offers slightly lower retention than C18 and this combined with high efficiencies and low peak tailing make this the phase of choice for use with MS detection.

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



Particle Size 2.6µm

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

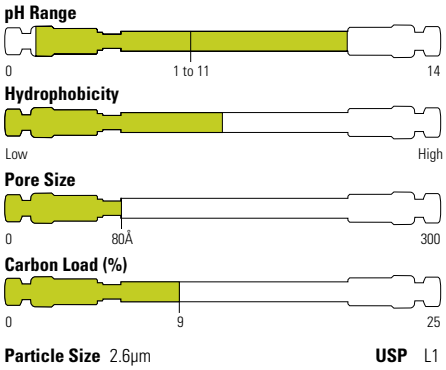
For more information, visit **thermofisher.com/accucore**

Accucore C18

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

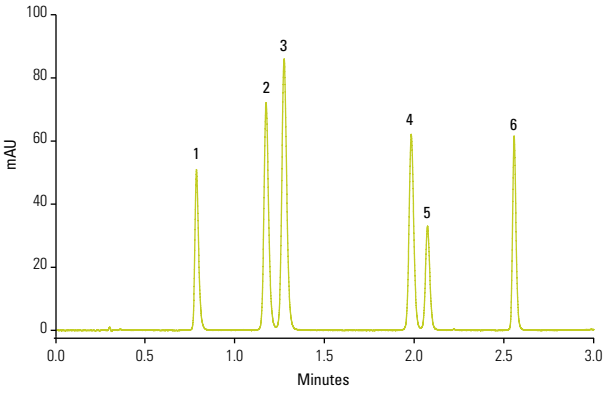
The carbon loading of Accucore C18 phase provides high retention of non-polar analytes via a predominantly hydrophobic interaction mechanism.

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

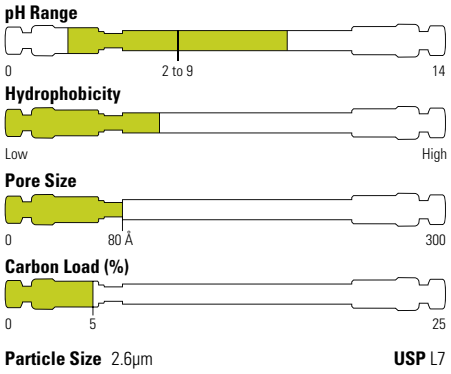
Particle Size (µm)	Format	Length (mm)	1mm ID	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	-	17126-012105	17126-013005	17126-014005
	HPLC Column	30	-	17126-032130	-	-
		50	-	17126-052130	17126-053030	17126-054630
		100	17126-101030	17126-102130	17126-103030	17126-104630
		150	-	17126-152130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

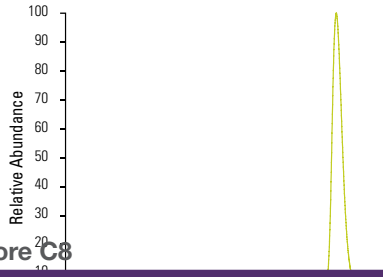
Accucore C8 HPLC columns offer lower hydrophobic retention than columns packed with longer alkyl chain length material, such as C18, and are therefore recommended for analytes with medium hydrophobicity or when a less hydrophobic phase provides optimum retention.

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.



Particle Size 2.6µm **USP** L7

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

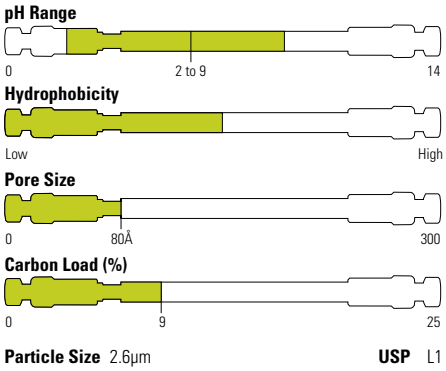
For more information, visit **thermofisher.com/accucore**

Accucore aQ

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

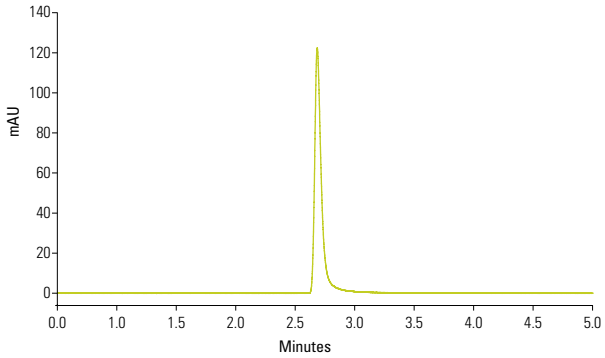
The polar functional group used to endcap Accucore aQ phase provides an additional controlled interaction mechanism by which polar compounds can be retained and resolved, making the Accucore aQ phase ideal for the quantitative analysis of trace levels of polar analytes.

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.



Particle Size 2.6µm **USP** L1

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

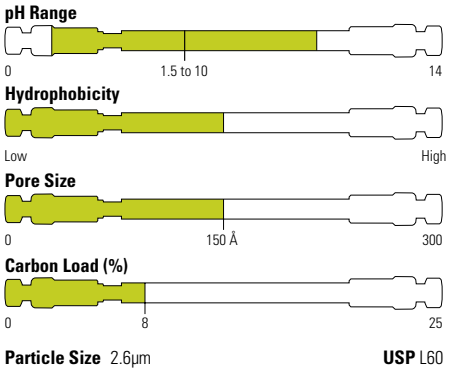
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17326-012105	17326-013005	17326-014005
	HPLC Column	30	17326-032130	-	-
		50	17326-052130	17326-053030	17326-054630
		100	17326-102130	17326-103030	17326-104630
		150	17326-152130	17326-153030	17326-154630
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

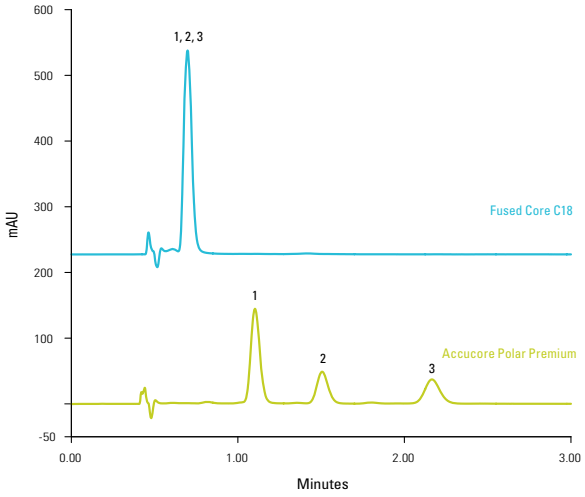
Accucore Polar Premium is an exceptionally rugged polar embedded reverse phase material that offers high efficiency, wider operating pH range and unique selectivity complementary to standard C18 phases.

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

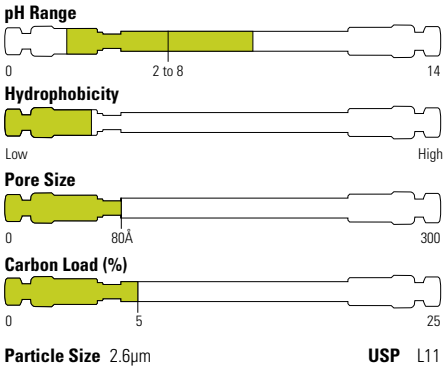
For more information, visit **thermofisher.com/accucore**

Accucore Phenyl-Hexyl

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

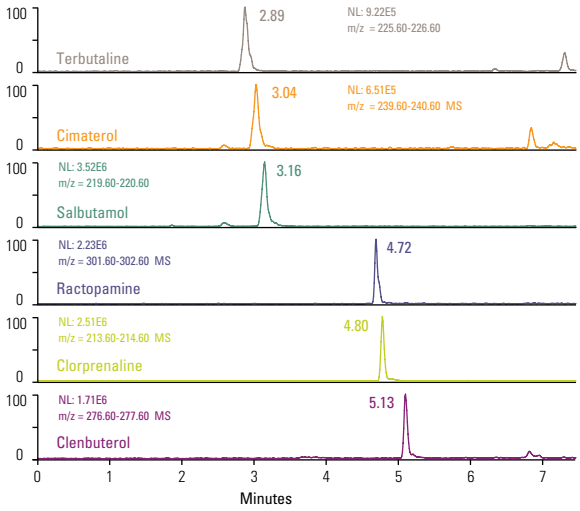
The C6 chain in Accucore Phenyl-Hexyl phase exhibits classical RP retention and selectivity, while the phenyl ring can add special selectivity by interacting with polar groups within the solutes. This results in a mixed-mode separation mechanism. The reduced hydrophobicity of this phase makes it ideal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

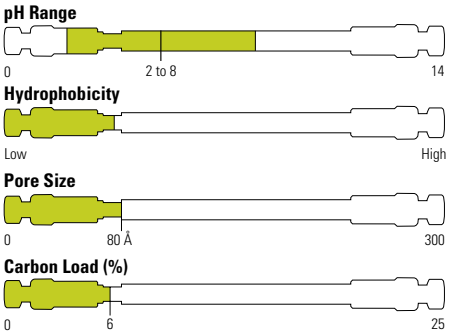
Accucore Phenyl-X

- 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.

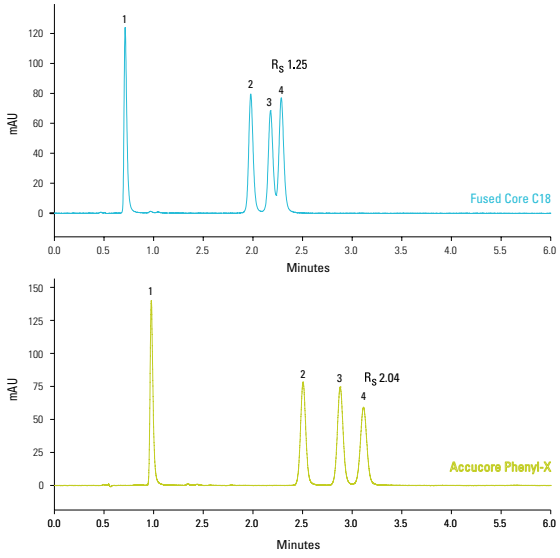
The advanced design of the bonded phase makes it compatible with highly aqueous mobile phases and robust, demonstrating very low bleed.

Phenyl-X exhibits particularly high aromatic selectivity.



Particle Size 2.6µm

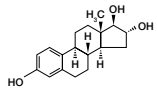
Estrogens



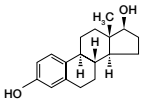
Accucore Phenyl-X 2.6µm, 100 x 2.1mm
Fused Core C18, 100 x 2.1mm

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

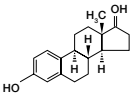
1. Estriol (E3)



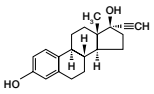
2. Estradiol (E2)



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

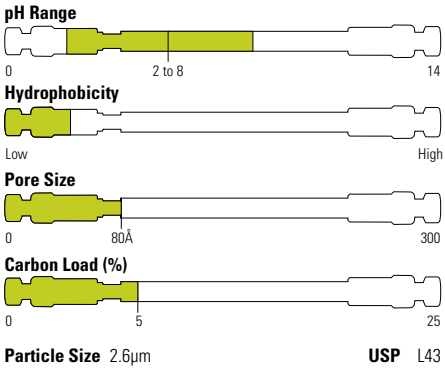
For more information, visit **thermofisher.com/accucore**

Accucore PFP

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

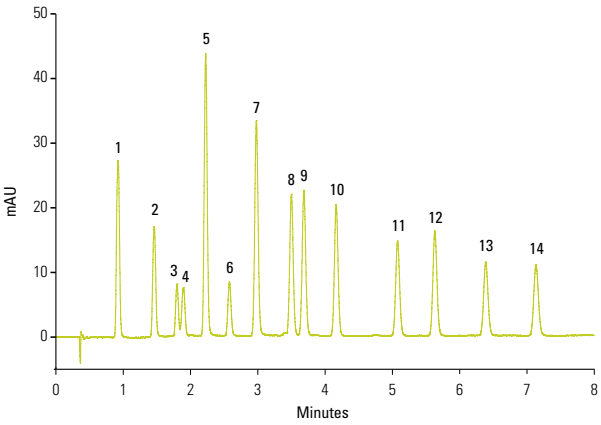
The introduction of fluorine groups into the Accucore PFP (pentafluorophenyl) stationary phase causes significant changes in solute-stationary phase interactions. This can lead to extra retention and selectivity for positional isomers of halogenated compounds.

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

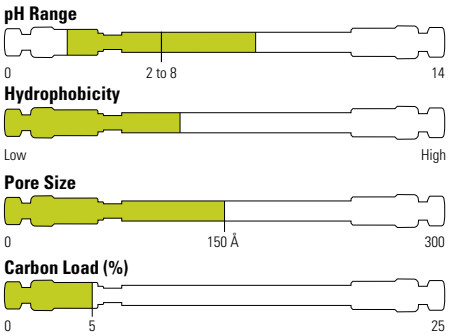
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17426-012105	17426-013005	17426-014005
	HPLC Column	30	17426-032130	-	-
		50	17426-052130	17426-053030	17426-054630
		100	17426-102130	17426-103030	17426-104630
		150	17426-152130	17426-153030	17426-154630
	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

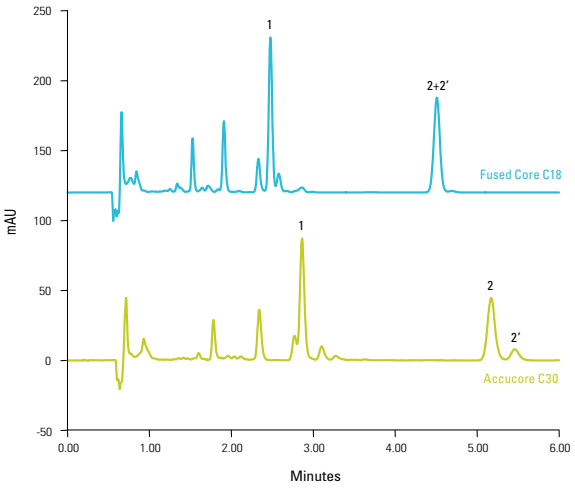
Accucore C30 offers high shape selectivity for hydrophobic, long chain, structurally related isomers, for example carotenoids and steroids. This is a different form of shape selectivity from that measured in the steric selectivity phase characterisation test.

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.



Particle Size 2.6µm **USP** L62

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

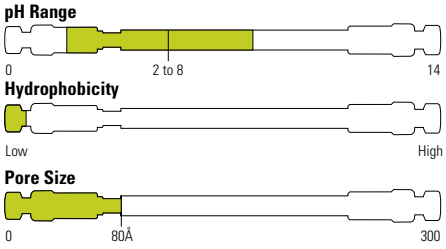
Accucore HILIC

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

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.

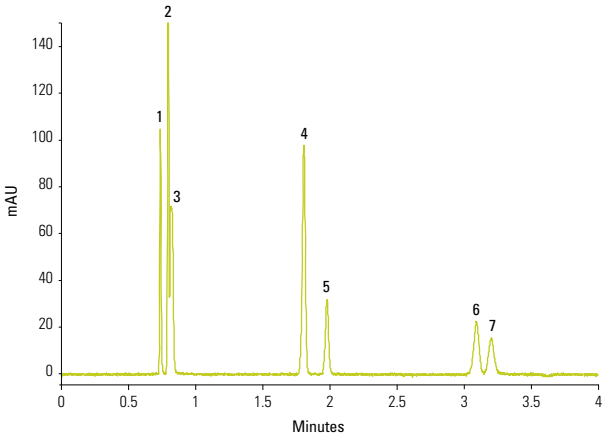
Analyte properties that govern retention with HILIC phases are acidity/basicity, which determines hydrogen bonding, and polarizability which determines dipole-dipole interactions.

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



Particle Size 2.6µm **USP** L3

Catecholamines



Accucore HILIC 2.6µm, 50mm x 2.1mm

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

Accucore HILIC

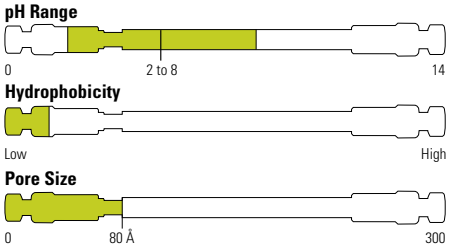
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	17526-012105	17526-013005	17526-014005
	HPLC Column	30	17526-032130	-	-
		50	17526-052130	17526-053030	17526-054630
		100	17526-102130	17526-103030	17526-104630
		150	17526-152130	17526-153030	17526-154630
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

Accucore Urea-HILIC

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

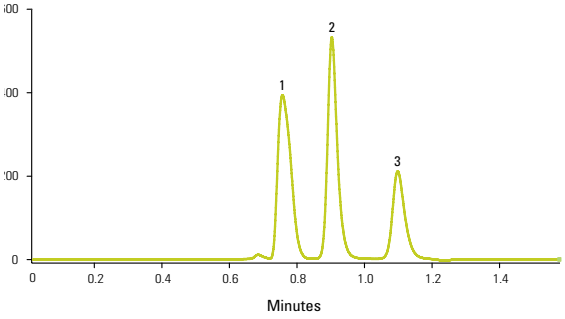
Accucore Urea-HILIC has an alternative selectivity and lower ion exchange activity than other HILIC phases.

The bonded hydrophilic stationary phase provides retention of a broad range of polar analytes using up to 20% aqueous mobile phase.



Particle Size 2.6µm

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

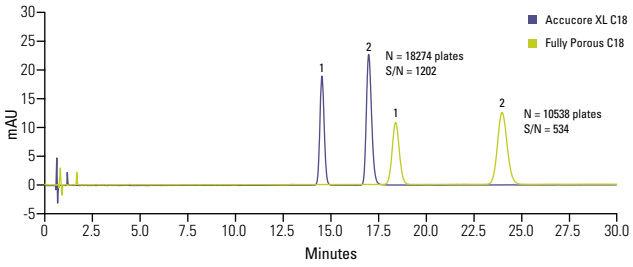
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	27726-012105	-	-
	HPLC Column	50	27726-052130	27726-053030	27726-054630
		100	27726-102130	27726-103030	27726-104630
		150	27726-152130	27726-153030	27726-154630
		250	27726-252130	-	-
	Uniguard Drop-in Guard Cartridge Holder	10	852-00	852-00	850-00

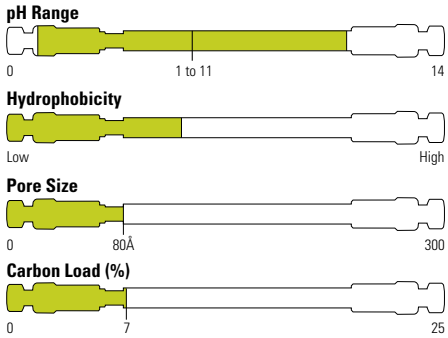
Accucore XL C18

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

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

Ibuprofen and valerophenone (USP)





Particle Size 4µm **USP** L1

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

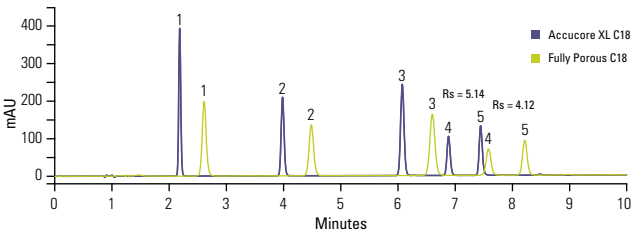
Mobile Phase:	66.3:33.7 (v/v) Water with Phosphoric Acid, pH 2.5:Methanol
Temperature:	30°C
Flow Rate:	2mL/min
Injection Volume:	5µL
Detection:	UV, 214nm
Analytes:	1. Valerophenone
	2. Ibuprofen

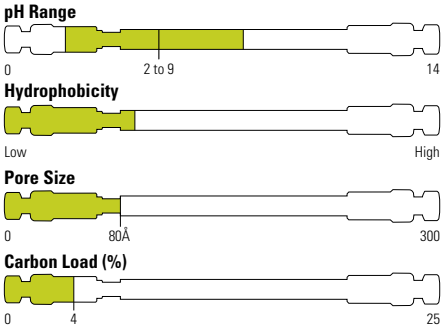
Accucore XL C8

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

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

Endocrine disruptors





Particle Size 4µm **USP** L7

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

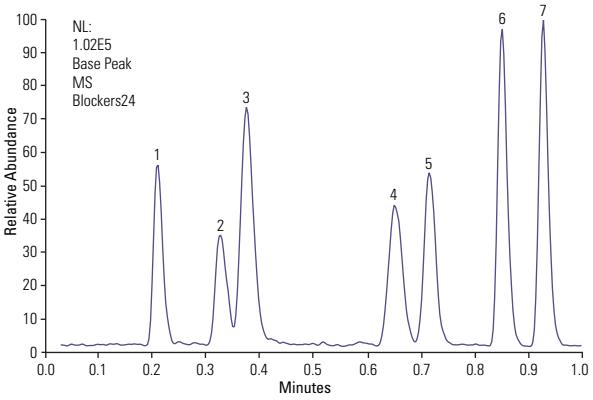
Particle Size (µm)	Format	Chemistry	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
4	Drop-in Guard (4/pk)	C18	10	74104-012101	74104-013001	74104-014001
	HPLC Column		50	74104-052130	74104-053030	74104-054630
			100	74104-102130	74104-103030	74104-104630
			150	74104-152130	74104-153030	74104-154630
			250	74104-252130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

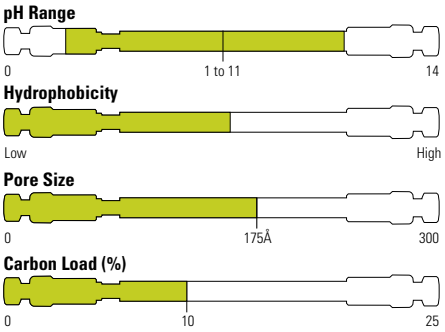
Hypersil GOLD

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

Seven b-blockers in 1 minute





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

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**

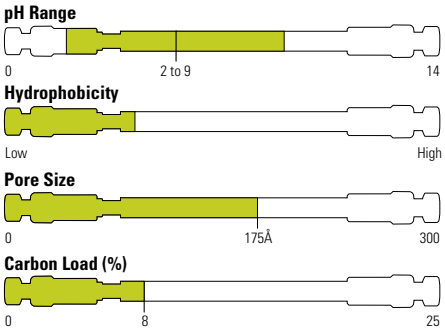
Hypersil GOLD preparative

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

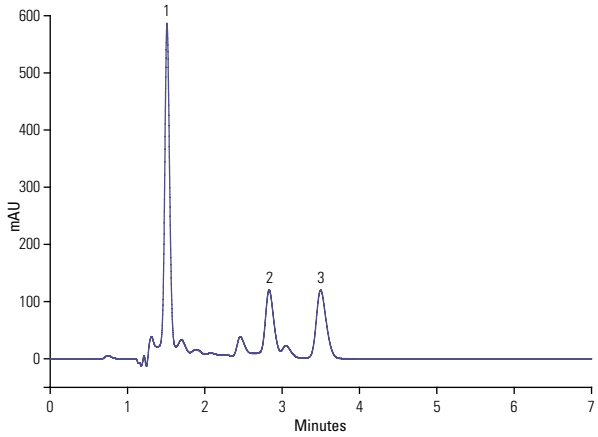
Recommended for analytes with medium hydrophobicity or when a less hydrophobic phase is required to obtain optimum retention

- 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

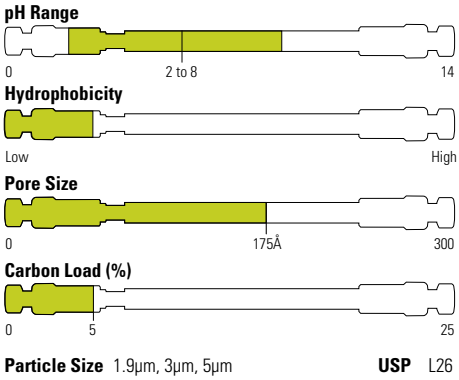
Hypersil GOLD C8

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

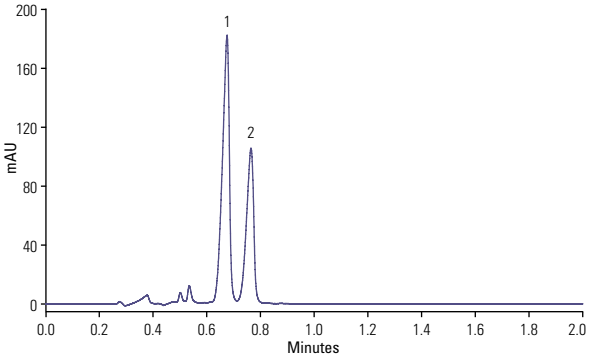
Lower hydrophobicity than C18 or C8 recommended for very hydrophobic analytes

- 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

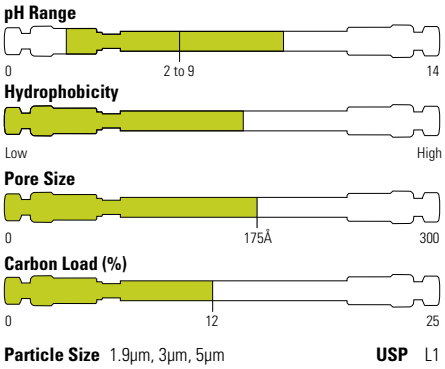
Hypersil GOLD C4

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

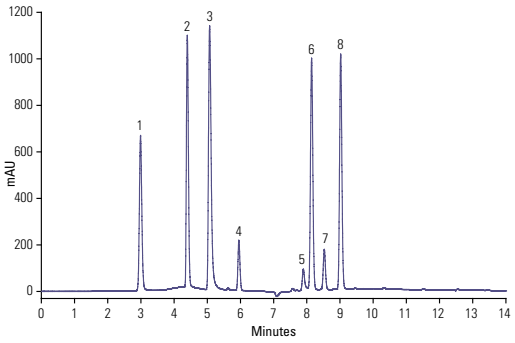
Controlled interaction mechanism by which polar analytes can be retained and resolved

- 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

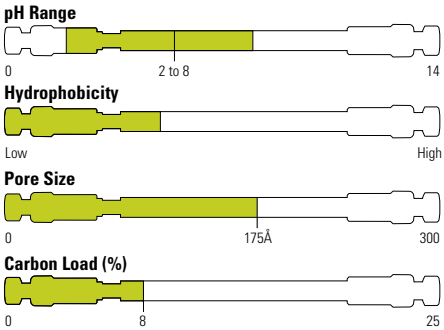
Hypersil GOLD aQ preparative

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

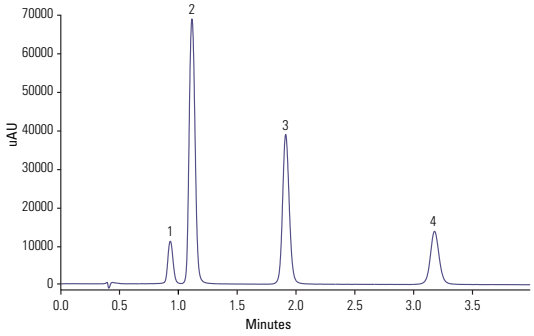
Introduction of a fluorine group into the stationary phase causes significant changes in solute-stationary phase interaction

- 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

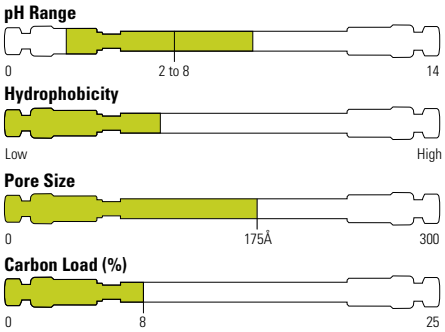
Hypersil GOLD PFP

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

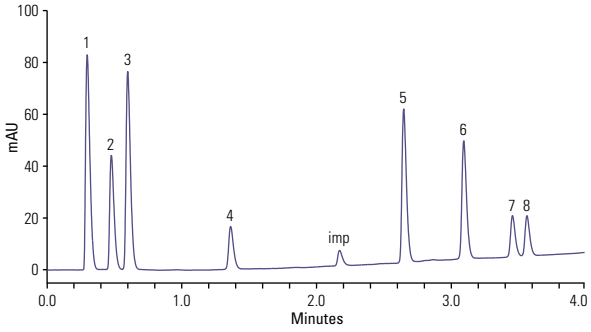
Contains a C4 linker which allows for superior alignment of the phenyl ring with aromatic molecules

- 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

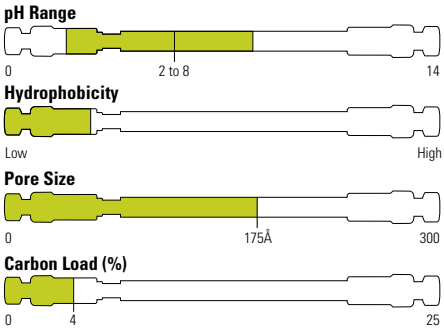
Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	25902-052130	-	25902-054630
		100	-	25902-102130	25902-103030	-
		150	-	25902-152130	-	-
		200	-	25902-202130	-	-
3	Drop-in Guard (4/pk)	10	-	25903-012101	25903-013001	25903-014001
	HPLC Column	50	-	25903-052130	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

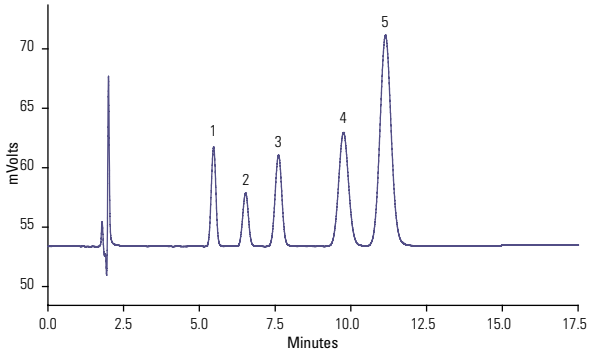
For both normal phase and reversed-phase separations

- 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

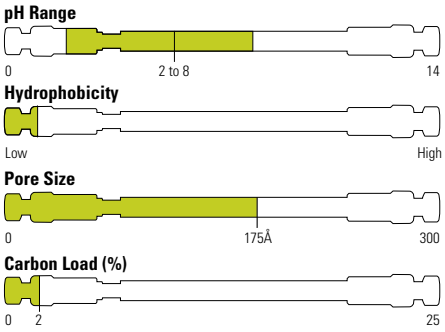
Hypersil GOLD CN

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

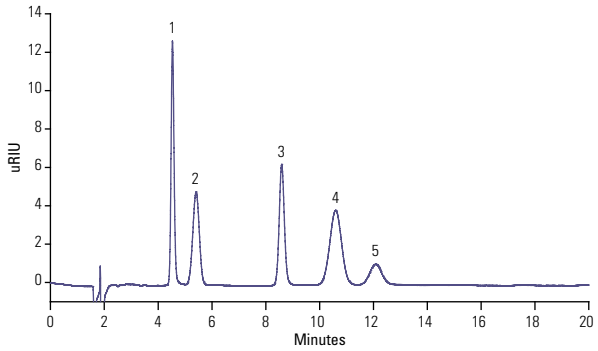
A high performance aminopropyl phase that gives excellent chromatographic properties in three modes: weak anion exchange, reversed-phase and normal phase

- 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

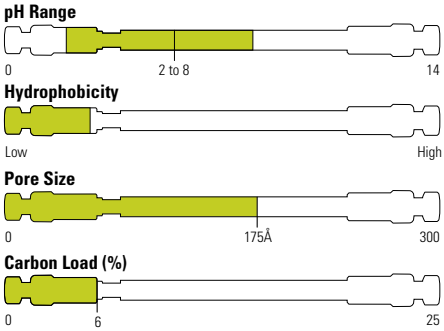
Hypersil GOLD Amino

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

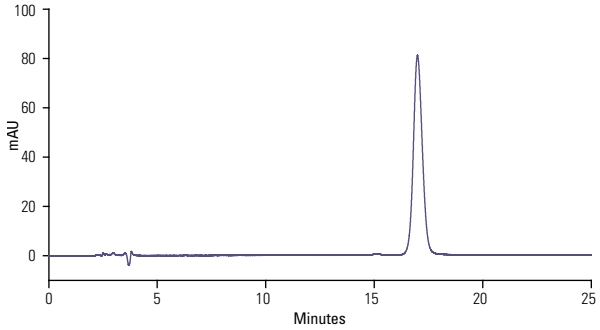
A novel polymeric amine ligand bonded to highly pure base deactivated silica

- 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

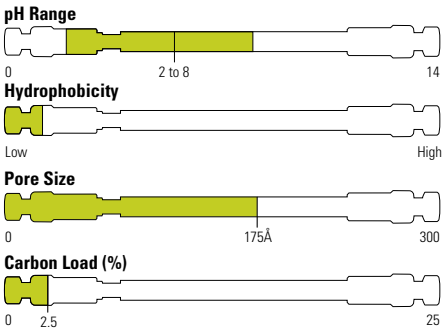
Hypersil GOLD AX

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

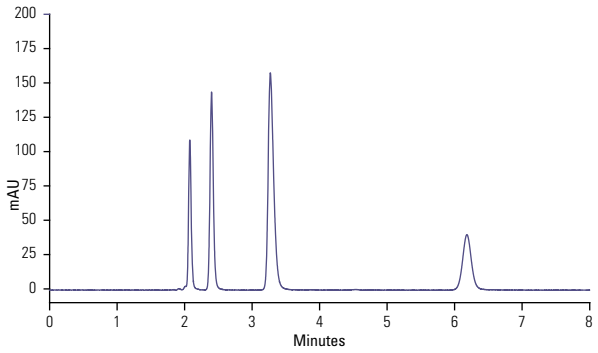
A highly stable quaternary amine strong anion exchange column for aqueous and low pH mobile phases

- 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

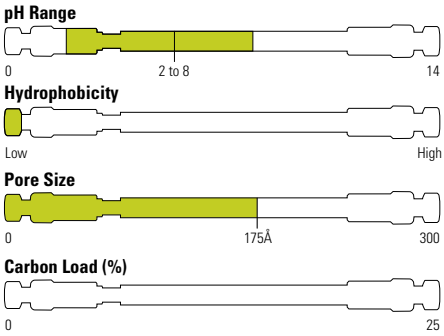
Hypersil GOLD SAX

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

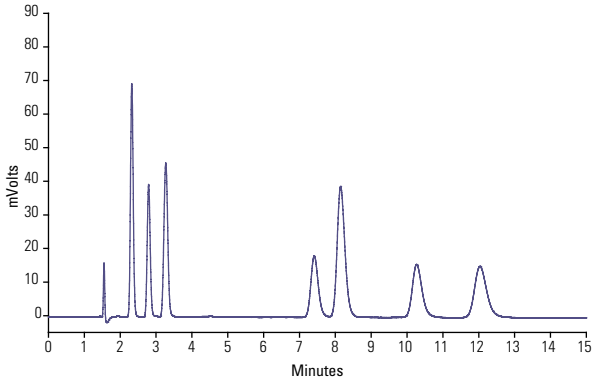
Unbonded, highly pure base deactivated silica media that is the backbone of the Hypersil GOLD range of columns

- 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

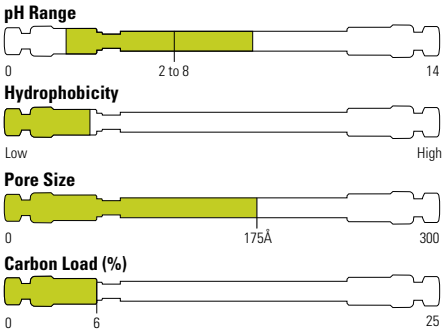
Hypersil GOLD Silica

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

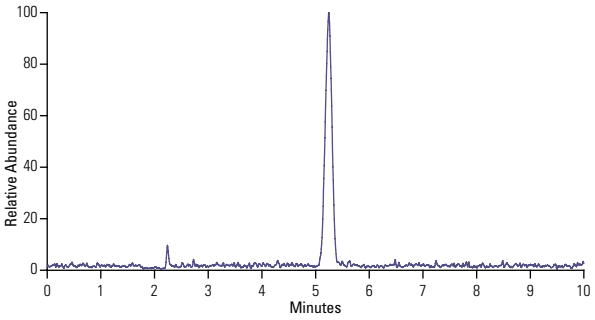
Retains and separates polar analytes that are problematic using reversed-phase columns

- 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**

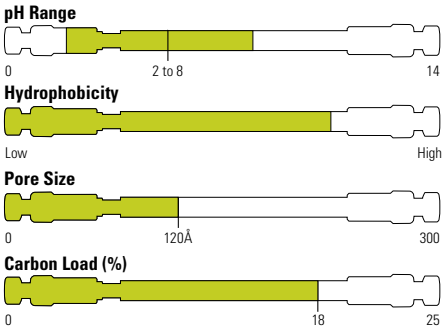
For more information, visit **thermofisher.com/acclaim**

Acclaim 120 C18

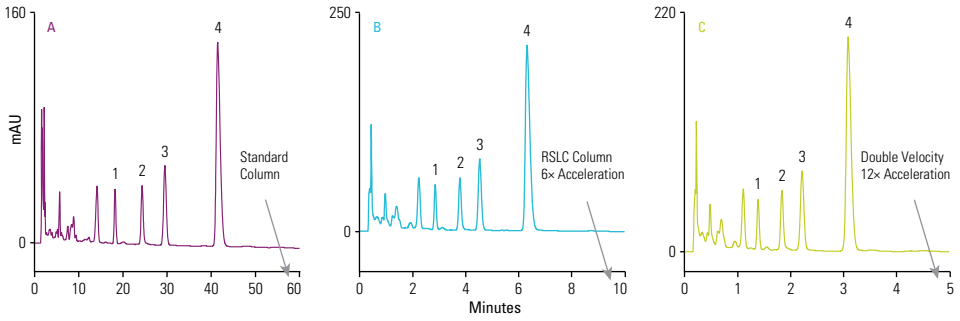
High performance reversed-phase columns for reproducible results

- 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

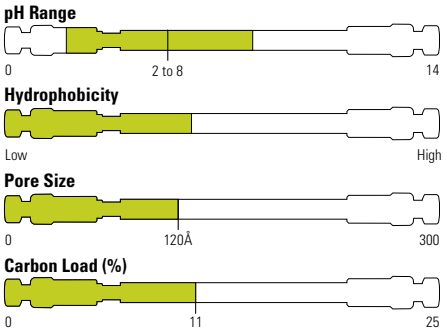
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	071400	071606	-
		50	068981	071605	-
		75	-	075697	-
		100	068982	071604	-
		150	071399		-
		250	074812		-
3	HPLC Column	33	-	066272	-
		50	059128	068971	059131
		75	-	066273	-
		100	059129	076186	059132
		150	059130	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

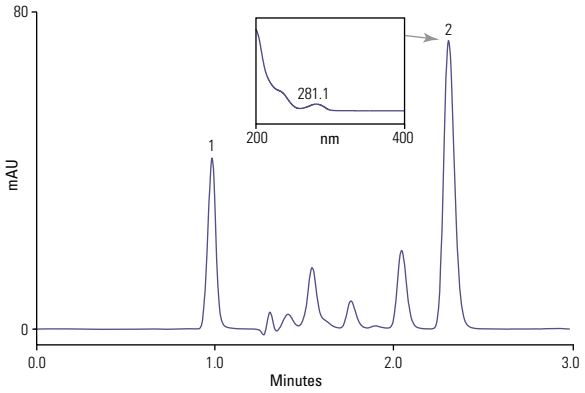
- Low silanol activity for excellent peak shapes for basic analytes
- Excellent column efficiencies
- LC-MS compatible

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.



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

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

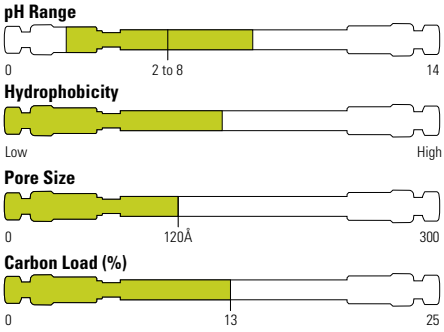
Acclaim 120 C8

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

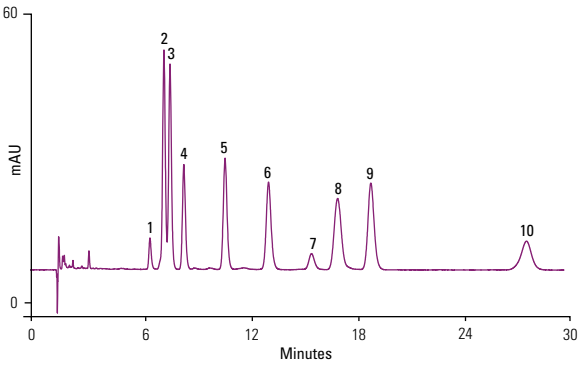


Particle Size 3µm, 5µm **USP** L11

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

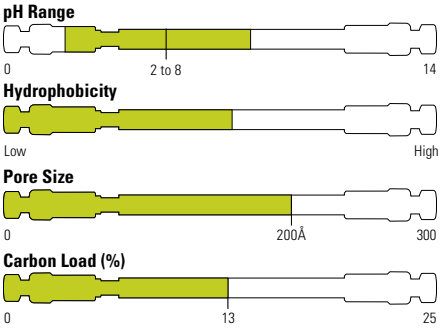
Learn more at **thermofisher.com/acclaim**

Acclaim C30

Columns for separating structurally related isomers

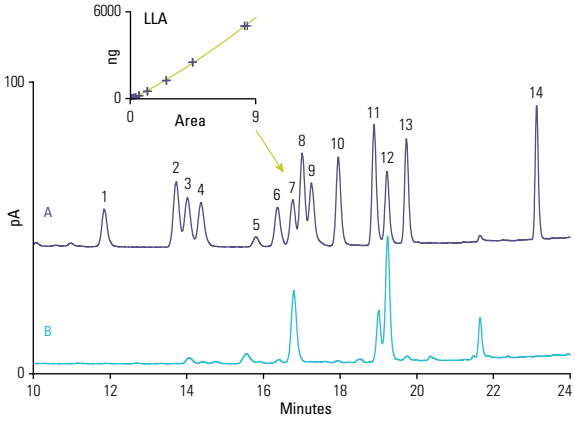
- High shape selectivity
- Unique selectivity complementary to other reversed-phase columns
- Compatibility with highly aqueous mobile phase
- High-quality: low column bleed, high efficiency and rugged packing

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

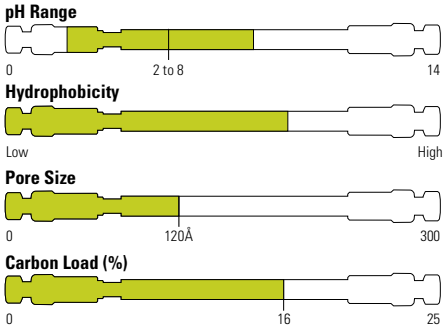
Acclaim guard holder

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

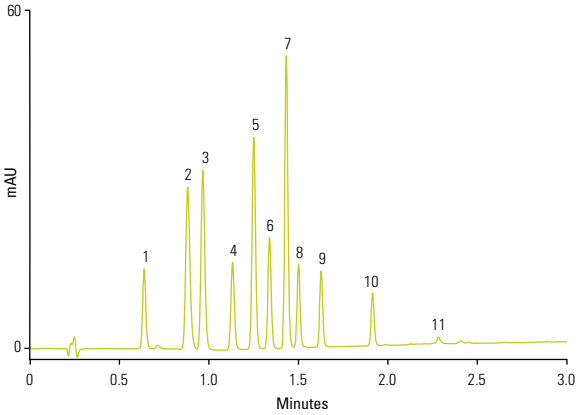
- Selectivity complementary to the C18 column
- Low silanol activity for excellent peak shape with basic compounds
- Compatible with 100% aqueous mobile phase
- High selectivity for hydrophobic aromatic molecules
- Wide range of applications



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

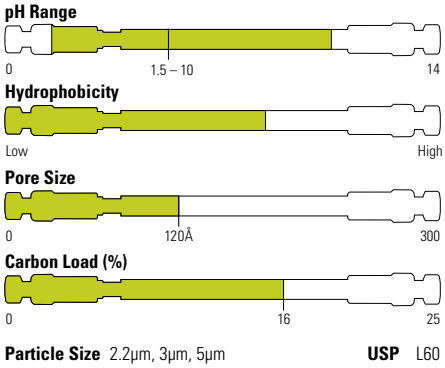
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	50	072622	-	-
		100	072623	072627	-
		150	072624	-	-
		250	074813	-	-
3	HPLC Column	50	063174	068972	-
		100	061316	076214	-
		150	061317	063693	061318
		250	-	070079	-
5	Guard Cartridge	10	069691	071983	069698
	HPLC Column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

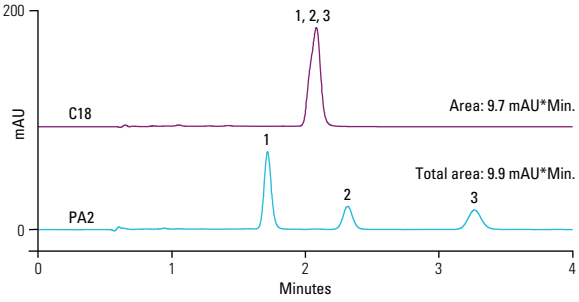


Particle Size 2.2µm, 3µm, 5µm **USP** L60

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

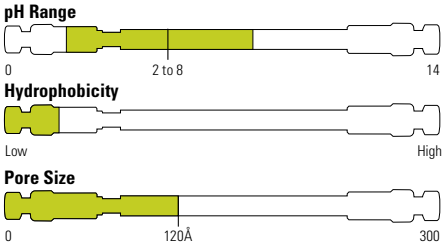
Acclaim PolarAdvantage II

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

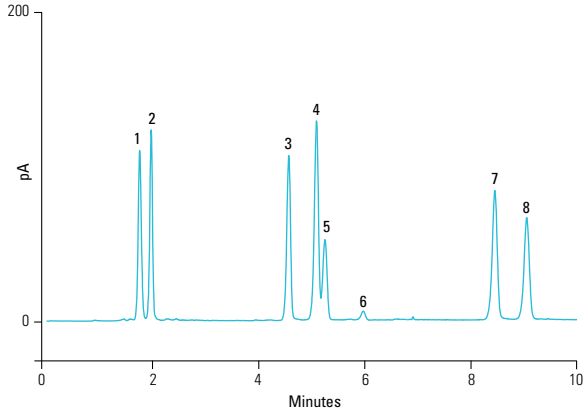
- Retains highly polar molecules that are not retained by reversed-phase chromatography
- Unique selectivity, complementary to reversed-phase columns
- Hydrolytically stable
- Rugged column packing
- Broad application range



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

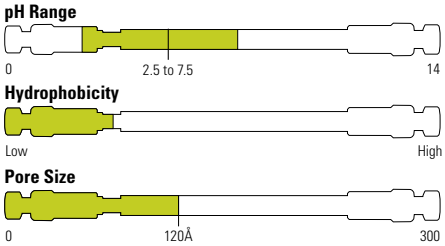
Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	069580
Acclaim Guard Kit (Holder and Coupler) V-2	069707
Guard to Analytical Column Coupler V-2	074188

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

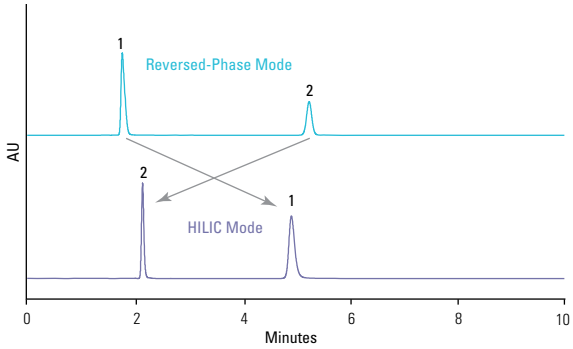


Particle Size 3µm, 5µm

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

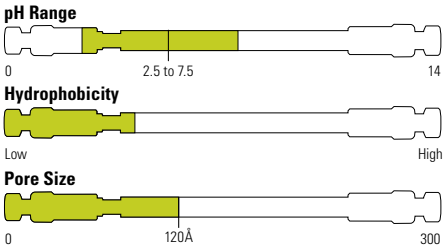
Acclaim guard holder

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

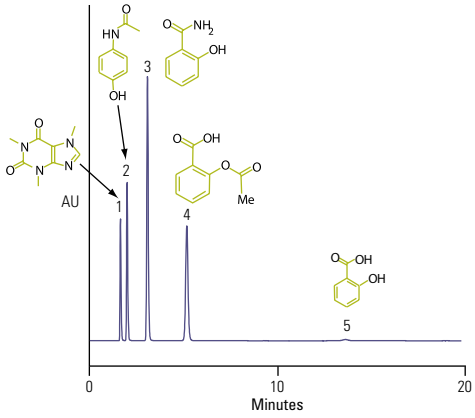
- Adjustable selectivity
- Selectivity orthogonal to reversed-phase (RP) columns
- Ideal selectivity for anionic molecules
- Excellent column efficiency and peak asymmetry
- Multimode retention mechanisms: reversed-phase, weak anion exchange, and HILIC modes



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

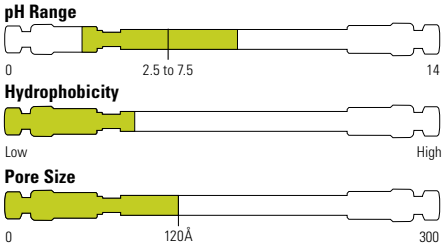
Acclaim guard holder

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

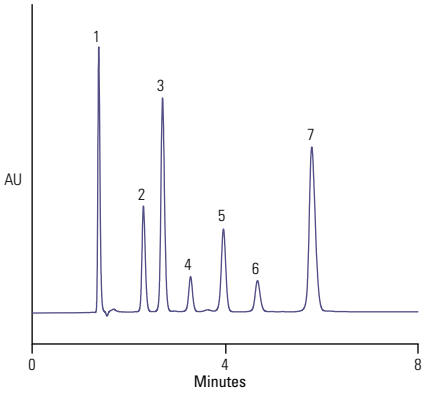
- Adjustable selectivity
- Ideal selectivity for separating basic molecules
- Selectivity complementary to C18 RP columns
- Multimode separation mechanism: reversed-phase, weak cation exchange, anion-exclusion and HILIC



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

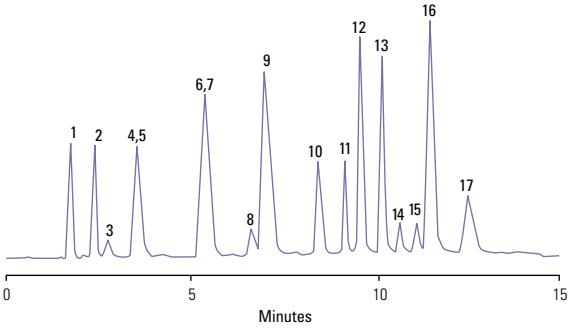
OmniPac

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

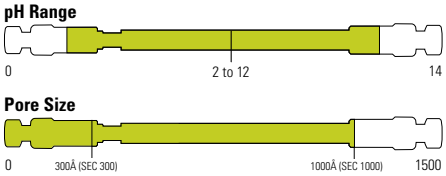
OmniPac cation exchange

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)

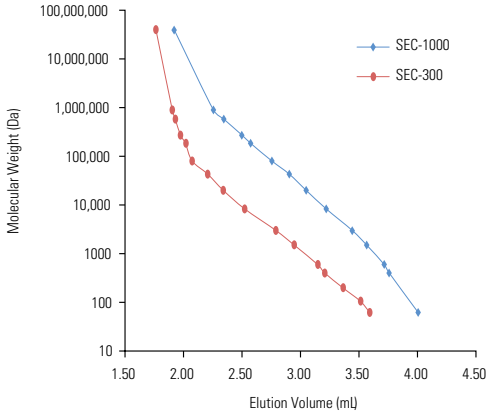
High performance SEC columns for analysis of water soluble polymers

- 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



Particle Size 5, 7µm

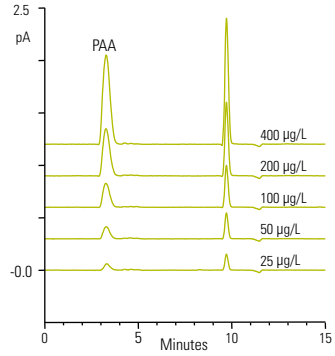
Thermo Scientific™ Acclaim™ SEC-300 and SEC-1000 are a family of resin based, high performance size exclusion chromatography columns specifically designed for the separation of water soluble polymers and oligomers.

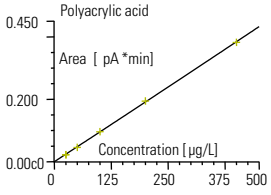


Acclaim SEC-300, 5µm, 300 x 4.6mm
Acclaim SEC-1000, 7µm, 300 x 4.6mm

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

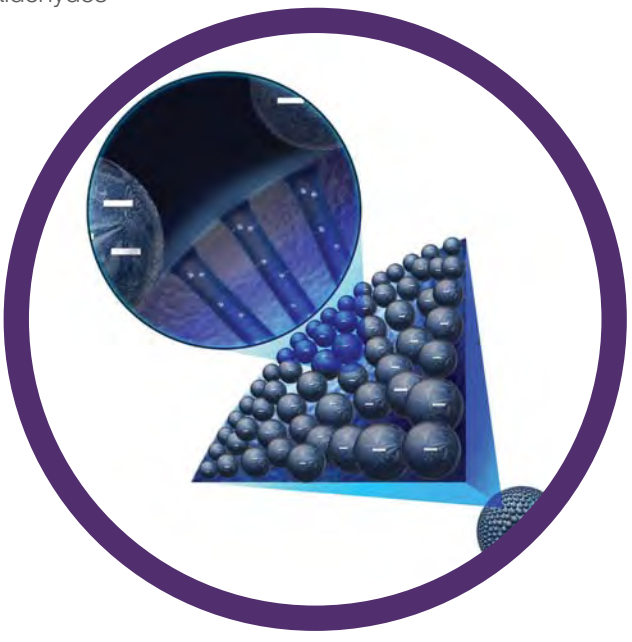
Acclaim surfactant and surfactant plus
- Separation of surfactants

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

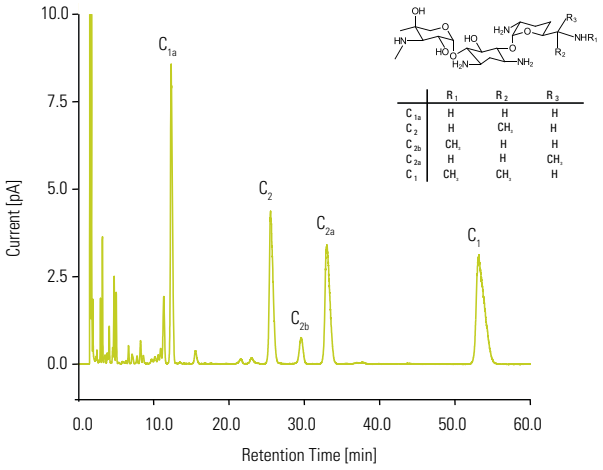
Designed to provide rugged and reproducible reversed-phase chromatography of aminoglycoside antibiotics.

- 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



	R1	R2	R3
C1a	H	H	H
C2	H	CH_3	H
C2b	CH_3	H	H
C2a	H	H	CH_3
C1	CH_3	CH_3	H

Acclaim AmG C18, 3µm, 150 x 3.0mm

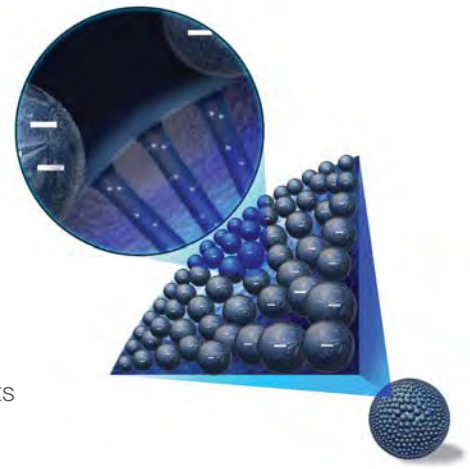
Mobile Phase:	100 mM TFA
Temperature:	30°C
Flow Rate:	0.425 mL/min
Injection Volume:	2µL
Detection:	Corona Veo RS (Filter = 5.0 s; Evaporation Temp = 35 °C; Data Rate = 5 Hz; Power Function = 1.00)
Sample:	Gentamicin (1 mg/mL)

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

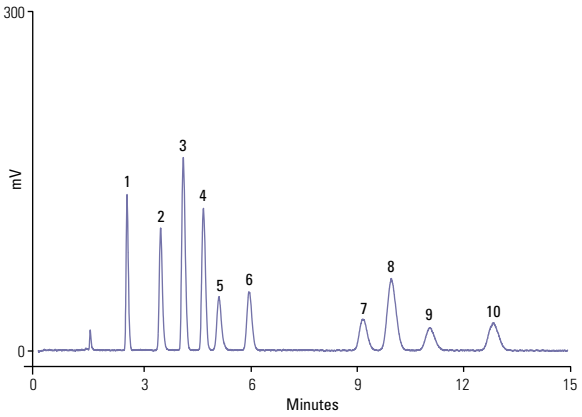


- Ideal selectivity for simultaneous separation of API and counterion
- Adjustable selectivity by mobile phase ionic strength, electrolyte type, pH, and organic solvent
- Low bleed; compatible with MS, CAD and ELSD
- Retention of hydrophilic ionic and ionizable analytes without ion-pairing reagents
- 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

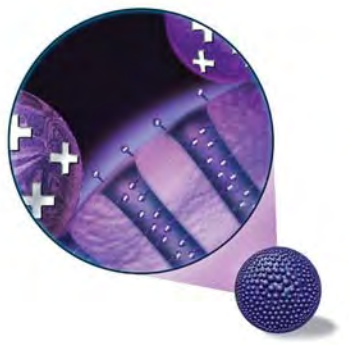
Acclaim guard holder

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

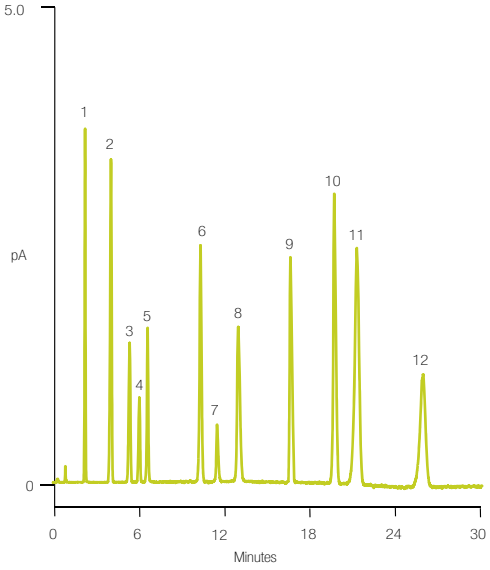
Mixed-mode column technology; hydrophilic interaction combining HILIC, anion exchange and cation exchange functionalities



- 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: Detector	Corona Veo Charged Aerosol
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: water	0.02 – 0.10 mg/mL each in D.I.

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

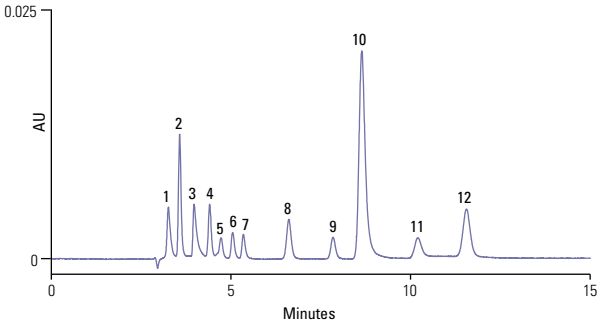
Optimized and application-tested for the analysis of hydrophilic organic acids

- 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

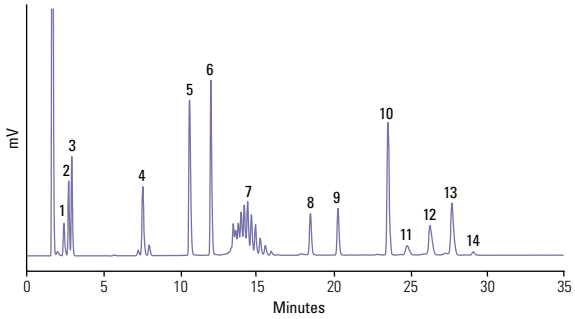
Excellent performance for separating a broad range of surfactants

- 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

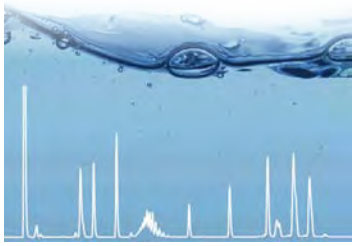
Acclaim surfactant

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



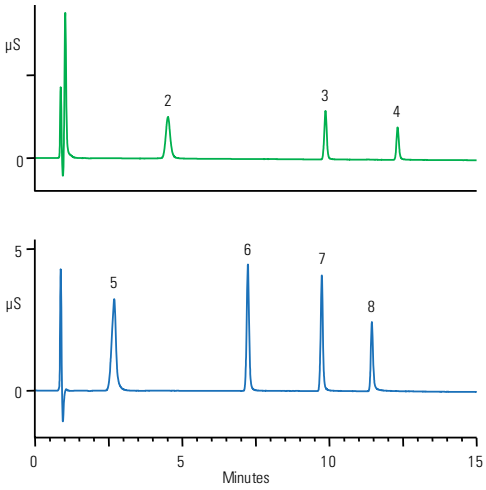
Column of choice for surfactant analysis using higher sensitivity detection: performance, versatility, throughput

- 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

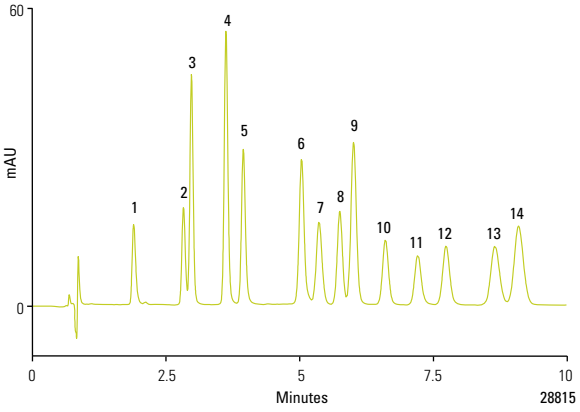
The best solution for explosives analysis (EPA Method 8330)

- 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

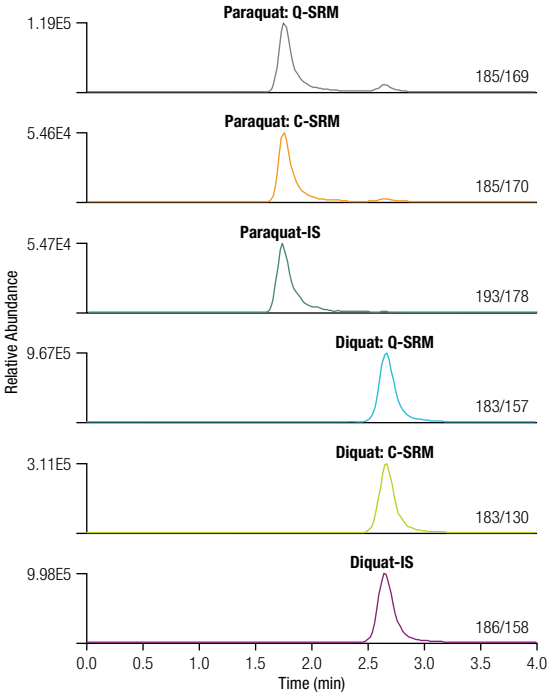
Acclaim Trinity Q1

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**

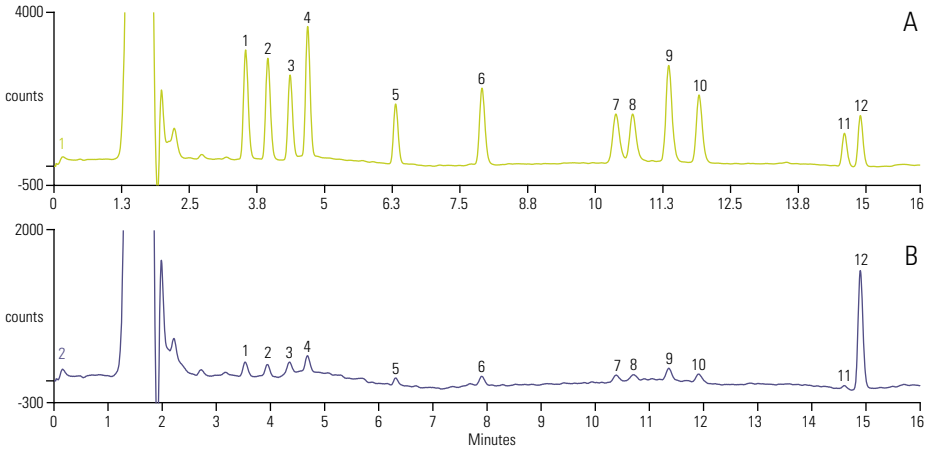
Acclaim Carbamate

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

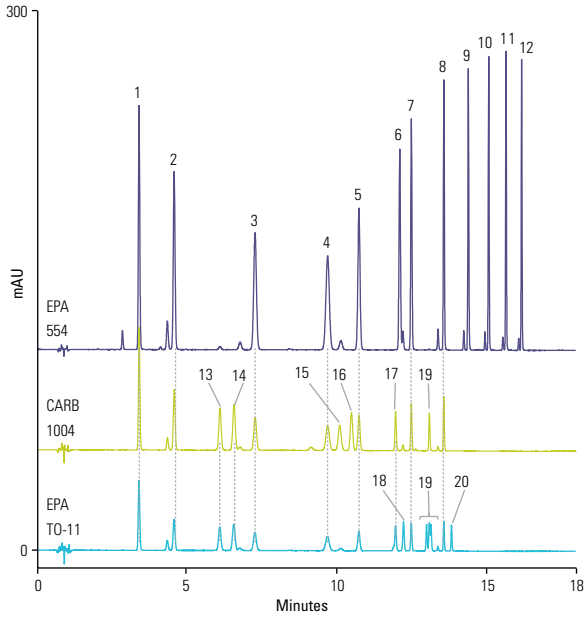
A silica-based, reversed-phase column designed specifically for separating DNPH derivatives of aldehydes and ketones

- 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):	-4.50.0 8.3 15.018.0
	%A 48 48 48 0 0
	%B 52 52 52 100 100
Flow Rate:	0.400mL/min
Injection Volume:	1µL
Temperature:	28°C
Detection:	UV, 360nm
Samples:	Calibration mixes diluted in methanol
Analytes:	1. Formaldehyde DNPH
	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

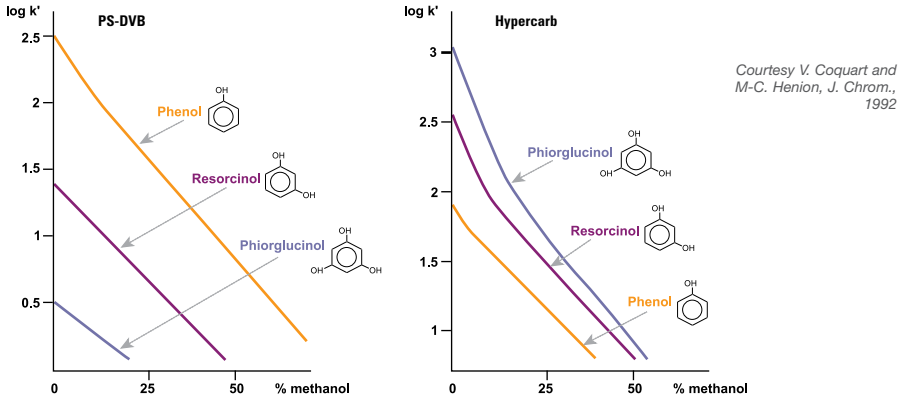
Acclaim Carbonyl C18

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.

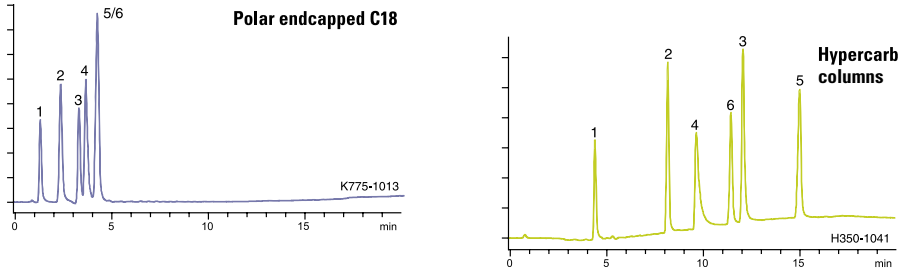


Courtesy V. Coquart and M-C. Henion, J. Chrom., 1992

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

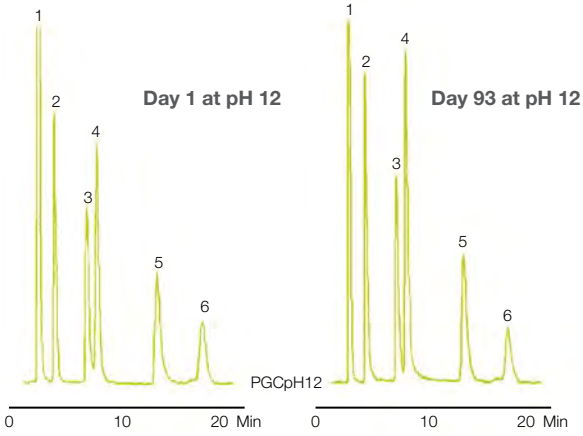
One of the other key benefits of Hypercarb columns is the extreme stability of the phase to chemical or physical attack. Due to the unique characteristics of the media, it can withstand chemical attack across the entire pH range of 0 to 14, allowing applications to be run at pH levels that are incompatible 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

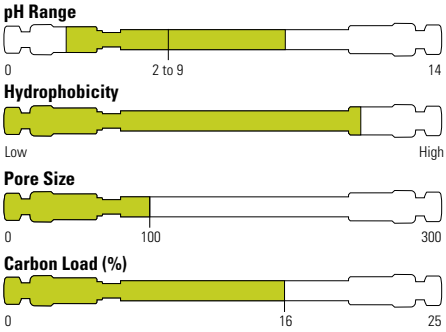
Strong quality control
- Rigorously tested to ensure quality

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

Syncronis C18

Syncronis C18 columns deliver remarkable separations, time after time

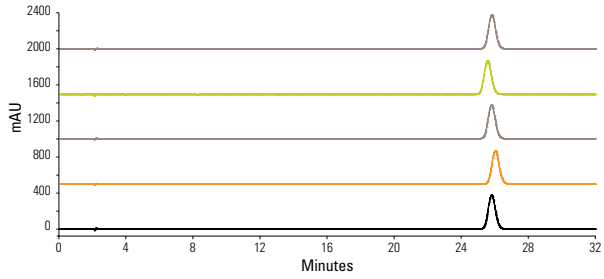
- Highly pure, high surface area silica
- High carbon load for increased retention
- Double endcapped for extra surface coverage
- Highly inert towards basic compounds
- Rigorously tested to ensure quality



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

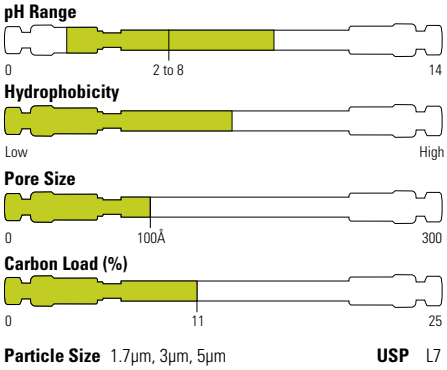
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	30	97102-032130	-	-
		50	97102-052130	-	-
		100	97102-102130	97102-103030	-
3	HPLC Column	50	97103-052130	-	97103-054630
		100	97103-102130	97103-103030	97103-104630
		150	97103-152130	-	97103-154630
5	Drop-in Guard (4/pk)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

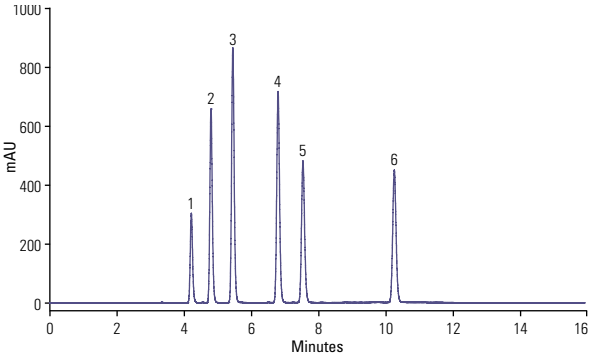
Reduces hydrophobic interactions allowing compounds to elute quicker from the column. Recommended for analytes with medium hydrophobicity or when a less hydrophobic phase is required to obtain optimum retention.

- 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

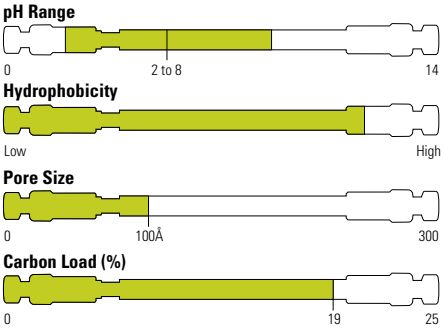
Syncronis C8

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

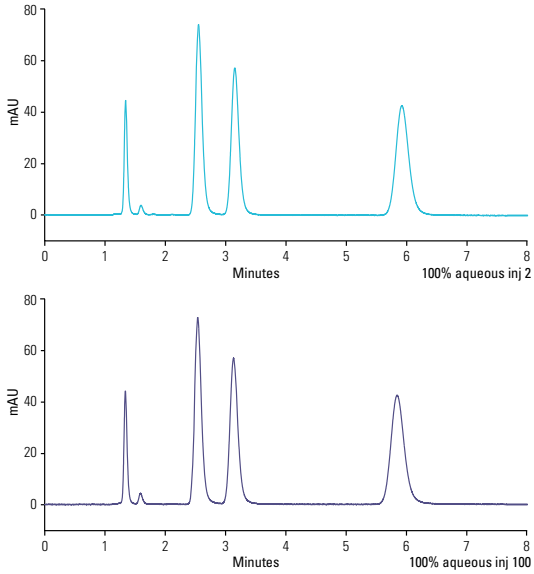
- Stable in 100% aqueous mobile phase
- Enhanced retention of polar compounds
- Rigorously tested to ensure quality



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

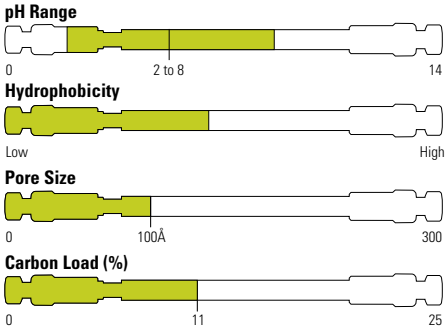
Syncronis aQ

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

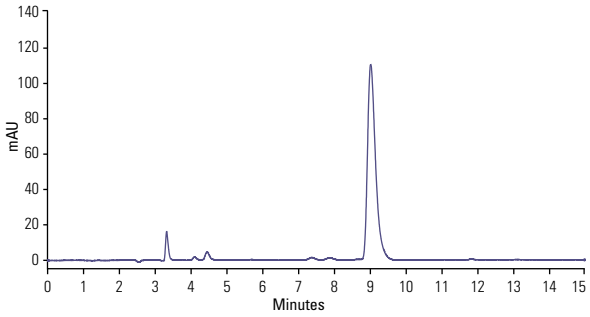
Provides an alternative to Syncronis C18 and is particularly useful for retention of aromatic compounds

- 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)

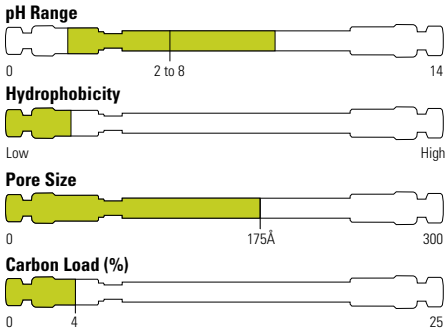
Syncronis Phenyl

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

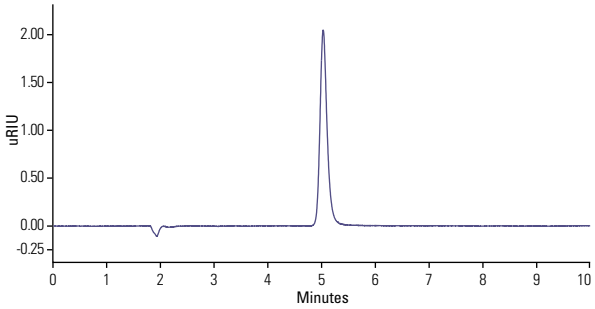
Provides a versatile aminopropyl phase that gives excellent chromatographic properties in four modes: weak anion exchange, reversed-phase, normal phase and HILIC

- 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

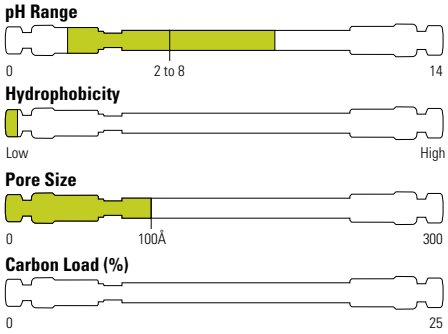
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.7	UHPLC Column	50	97702-052130	-	-	-
		100	97702-102130	-	-	-
3	HPLC Column	150	-	-	-	97703-154630
5	Drop-in Guard (4/pk)	10	97705-012101	97705-013001	97705-014001	97705-014001
		150	97705-152130	97705-153030	97705-154030	97705-154630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

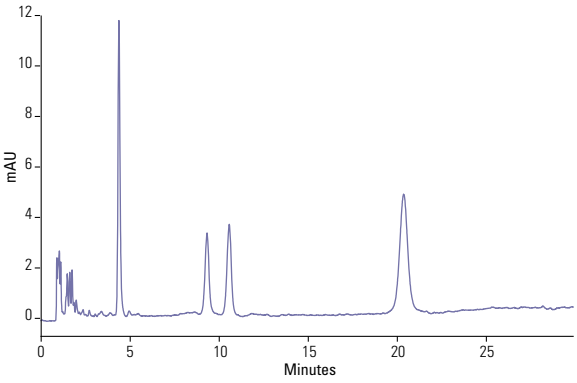
Serves as a powerful and efficient tool for the chromatography of moderately polar organic compounds by normal phase chromatography

- 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

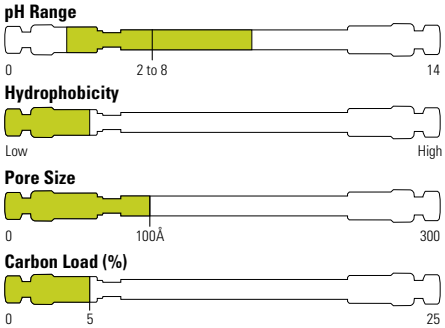
Syncronis silica

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

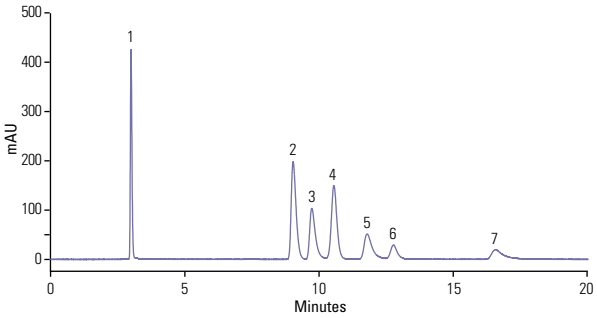
Provides enhanced retention of polar and hydrophilic analytes

- 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.

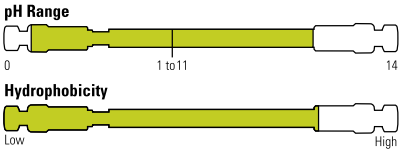
IonPac NS1 and NS2

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

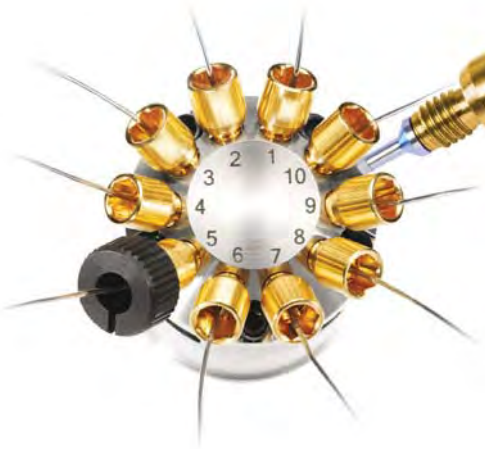
LC syringes
- Supporting manual and automated injections

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

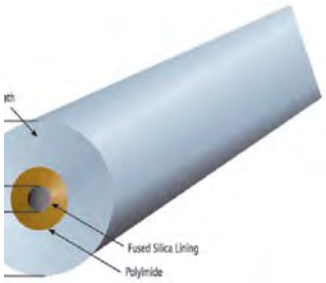
Solvent filters

	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

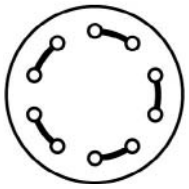
RheFlex two-piece PEEK fittings

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

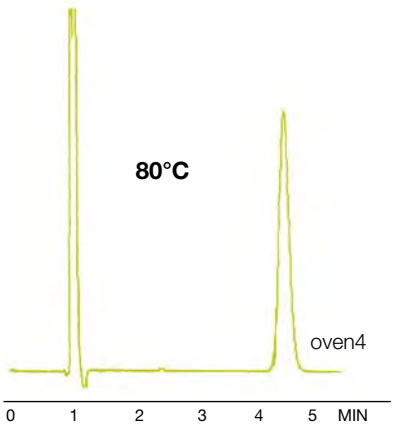
Wrap-around column temperature control systems

- 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

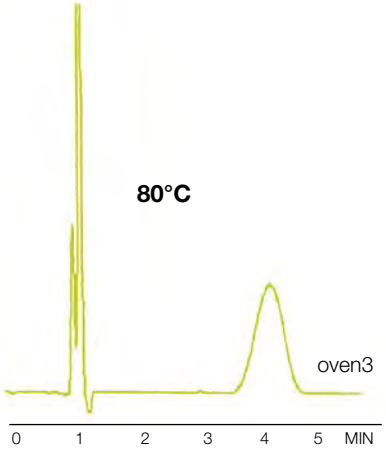
Product specifications

	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

With eluent pre-heater



Without eluent pre-heater



Effect of eluent pre-heater on efficiency

Data courtesy of Dr. Richard F. Myer, Quantitative Technologies, Inc., Whitehouse, NJ

HOT POCKET column heaters, eluent preheater/precooler and COOL POCKET chiller

Description	Cat. No.	Quantity
HOT POCKET Column Heater	92016	1 Each
HOT POCKET Column Heater – short version	92016-150	1 Each
COOL POCKET Column Chiller	92017	1 Each
Eluent Preheater/Precooler	92018	1 Each

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

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

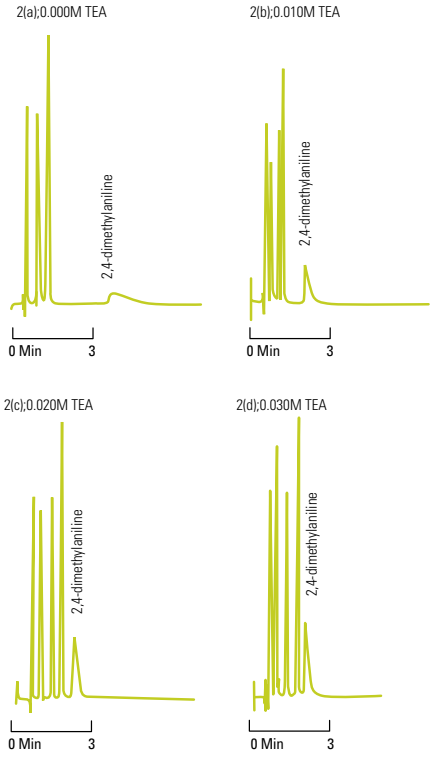
X in the ordering table indicates that hazardous shipping charges apply.

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)

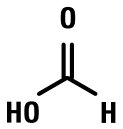
Description	Quantity		Cat. No.	Quantity
Triethylamine, Sequencing Grade	100g	X	TS-25108	1 Each

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
MW 46.03

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.

- 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)

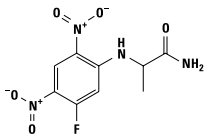
Description	Quantity		Cat. No.	Quantity
Trifluoracetic Acid, Sequencing Grade	500mL	X	TS-28901	1 Each
Trifluoracetic Acid, Sequencing Grade	100g	X	TS-28903	1 Each
Trifluoracetic Acid, Sequencing Grade	10 × 1mL	X	TS-28904	1 Pack
Trifluoracetic Acid, Sequencing Grade	1g	X	TS-28902	1 Each

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

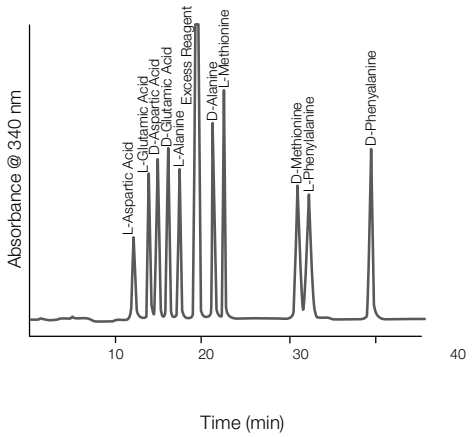
- Optical isomers of amino acids derivatization complete in just 90 minutes
- Derivatives have an absorption coefficient of ~3 x 10^4
- Derivatives can be detected by UV at 340nm with picomole sensitivity



FDAA
(Marfey's Reagent)
MW 272.19

FDAA, marfey's reagent

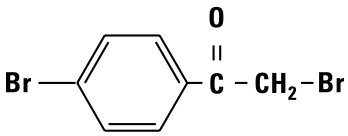
Description	Quantity	Cat. No.	Quantity
FDAA, Marfey's Reagent	50mg	TS-48895	1 Each



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.

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.

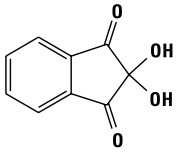
For more information, visit **thermofisher.com/LCreagents**

Amino acid detection reagents

Ninhydrin

The reagent of choice for detection of amino acids

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



Ninhydrin
MW 178.14

Ninhydrin

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

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

HPLC and spectrophotometric grade solvents

Ultrapure solvents are carefully packed for thorough protection

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

Acetonitrile, HPLC grade, physical properties
- UV Cutoff: 190nm
- Optical Absorbance: <0.02 at 220nm
- Refractive Index at 25°C: 1.342

Water, HPLC grade, physical properties
- UV Cutoff: 190nm
- Optical Absorbance: <0.005 at 220nm
- Refractive Index at 25°C: 1.332

Dimethylformamide (DMF), sequencing grade, physical properties
- $HCON(CH_3)2$
- Purity (GC): ≥99%
- MW: 73.09
- Density: 0.944
- B.P. 153°C
- Water: 0.1%

Dimethylsulfoxide (DMSO), sequencing grade, physical properties
- 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

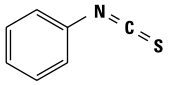
Description	Quantity		Cat. No.	Quantity
Acetonitrile	1L	X	TS-51101	1 Each
Water	1L		TS-51140	1 Each
Dimethylformamide (DMF)	50mL	X	TS-20673	1 Each
Dimethylsulfoxide (DMSO)	950mL	X	TS-20688	1 Each
Pyridine	100g	X	TS-25104	1 Each

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 (m^2/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

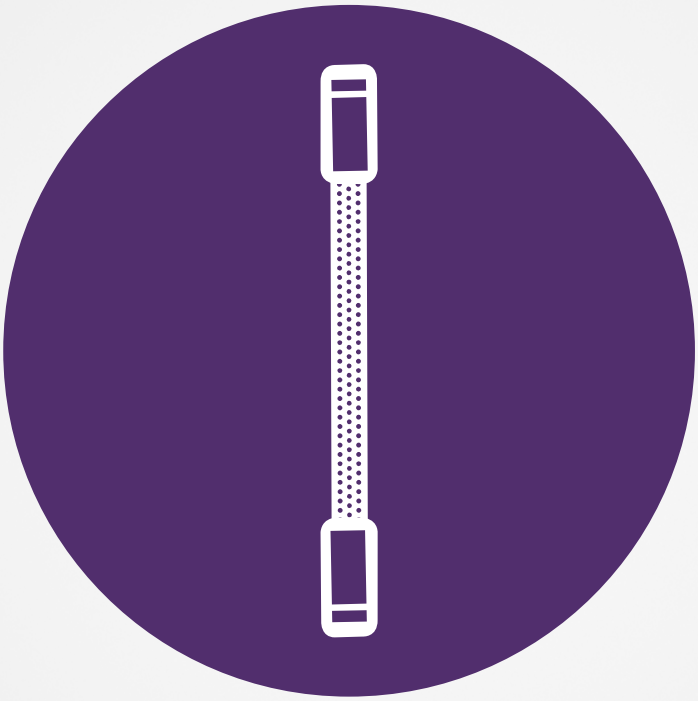
Preparative LC Method Transfer Tool available

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**

Find out more at **thermofisher.com/PrepLC**

ThermoFisher SCIENTIFIC



ORION SCIENTIFIC SRL

Sede Legale
Via Alessandro Volta 25/B - 35030 Veggiano (PD)
Tel. +39 049 9006911
P.I. / C.F. / Vat Reg: 05160820287

Sede Operativa
Via Giacomelli 16 - 35010 Limena (PD)
Tel: +39 049 0986380
info@orion-scientific.com - orionscientific@legalmail.it

Expect reproducible results with sample prep, columns and vials

GC | IC | LC | C | CDS | SP | UNITY LAB SERVICES

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

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

thermo scientific