



**Thermo Scientific**  
Chromatography Columns  
and Consumables 2016-2017

# Connected chromatography solutions

# LC Columns and Accessories

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

## Featured Products



### Accucore

Solid core particles enabling high speed, high resolution separations with back pressures significantly lower than those associated with UHPLC.

**PAGE 4-005**



### Hypersil GOLD

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

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### Acclaim

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

**PAGE 4-034**



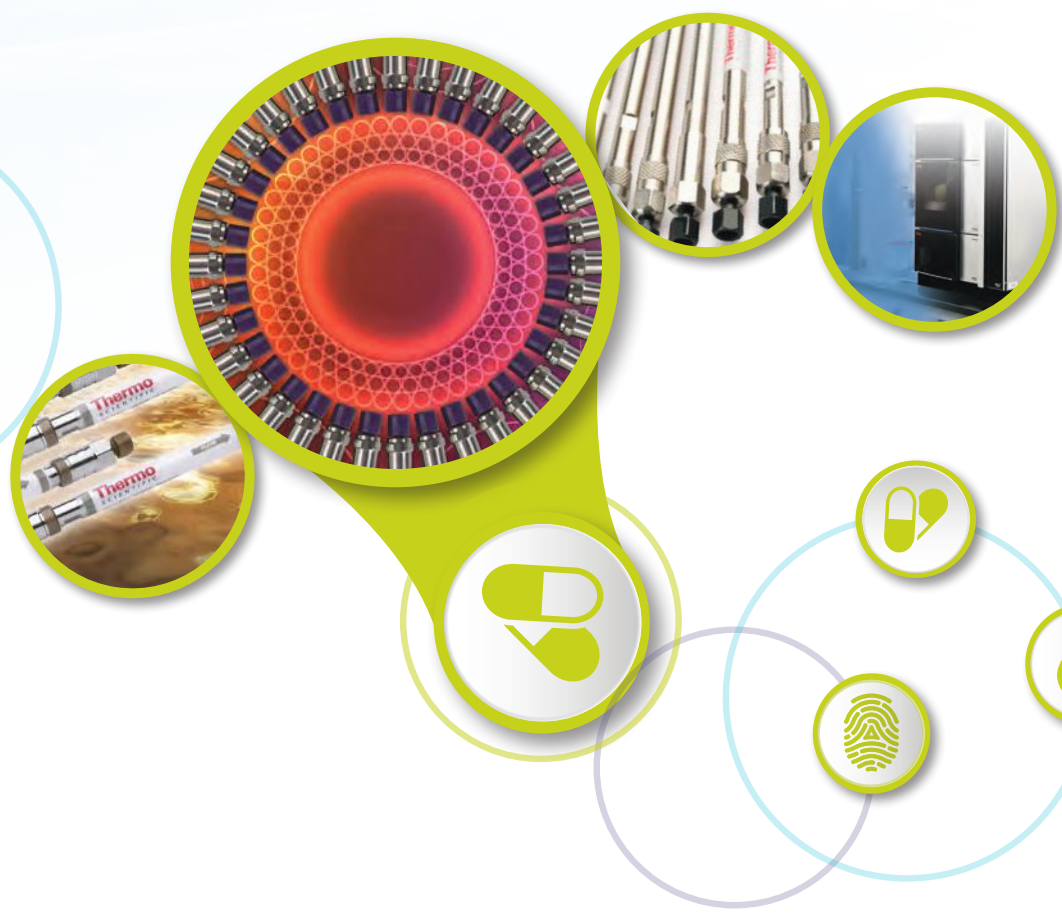
### Viper

Maximize liquid chromatography (LC) performance and get zero-dead-volume connections to ensure optimal separations.

**PAGE 4-078**

# LC Columns

## Technical Resources





visit [www.thermoscientific.com/chromexpert](http://www.thermoscientific.com/chromexpert) to access the following information:






- HPLC Column Selection
- HPLC Column Selection by US Pharmacopeia Specifications
- Thermo Scientific HPLC Phases
- HPLC Column Selection by Manufacturer
- Method Transfer
- Scaling a Method Up or Down
- HPLC Troubleshooting
- HPLC Definitions and Equations
- Selecting the Correct Buffer
- Preparation of Mobile Phases
- Solvent Properties
- Chromophore Detection Wavelengths
- Column Cleaning and Regeneration



# Columns for Fast and Analytical HPLC

The Thermo Scientific LC column portfolio offers a comprehensive range of high quality options for fast and analytical HPLC and UHPLC.

The table below shows our leading column families with details of relative hydrophobicity, key attributes and how the attributes are achieved. Use this table and the information in the subsequent catalogue pages to find the best Thermo Scientific LC columns for your separation needs.

Hydrophobicity		Key Attribute	Achieved through
Low	<b>Accucore Columns</b> Page 4-005 	Ultimate Performance	<ul style="list-style-type: none"> <li>1.5, 2.6 and 4µm solid core silica particles</li> <li>Core Enhanced Technology</li> </ul>
	<b>Hypersil GOLD Columns</b> Page 4-020 	Selectivity & Peak Shape	<ul style="list-style-type: none"> <li>1.9, 3, 5 and 12µm ultra-high purity silica particles</li> <li>Wide range of conventional phases</li> </ul>
Medium/High	<b>Acclaim Columns</b> Page 4-034 	Traditional, Speciality & Application Specific Phases	<ul style="list-style-type: none"> <li>2.2, 3 and 5µm ultra-pure silica particles</li> <li>Innovative and unique bonded phases</li> </ul>
High	<b>Synchronis Columns</b> Page 4-062 	Ruggedness & Reproducibility	<ul style="list-style-type: none"> <li>1.7, 3 and 5µm high surface area silica particles</li> <li>Dense bonding, double endcapping, rigorous testing</li> </ul>
Very High	<b>Hypercarb Columns</b> Page 4-059 	Extended Separation Capabilities	<ul style="list-style-type: none"> <li>3 and 5µm 100% porous graphitic carbon particles</li> <li>Polar retention effect on graphite (PREG)</li> </ul>

# Accucore HPLC and UHPLC Columns

## Ultimate Core Performance – Speed and Selectivity Combined

Thermo Scientific™ Accucore™ HPLC and UHPLC columns are a family of high speed, high resolution columns based on Core Enhanced Technology™.

- **Next-Generation Accucore Vanquish UHPLC Columns**  
Combines the benefits of a solid core material and the increased chromatographic efficiency of a sub-2 $\mu$ m particle
- **Solid Core Particles**  
With a solid central core and porous outer layer, these particles generate high speed, high resolution separations without excessive backpressure
- **Tight Control of Particle Diameter**  
Enhanced selection process keeps particle size distribution to a minimum and produces high efficiency columns



The Accucore web page contains the latest news, applications and downloads for the Accucore HPLC and UHPLC column range. Visit [www.thermoscientific.com/accucore](http://www.thermoscientific.com/accucore)

## Accucore Vanquish

Powerful separations are our core performance

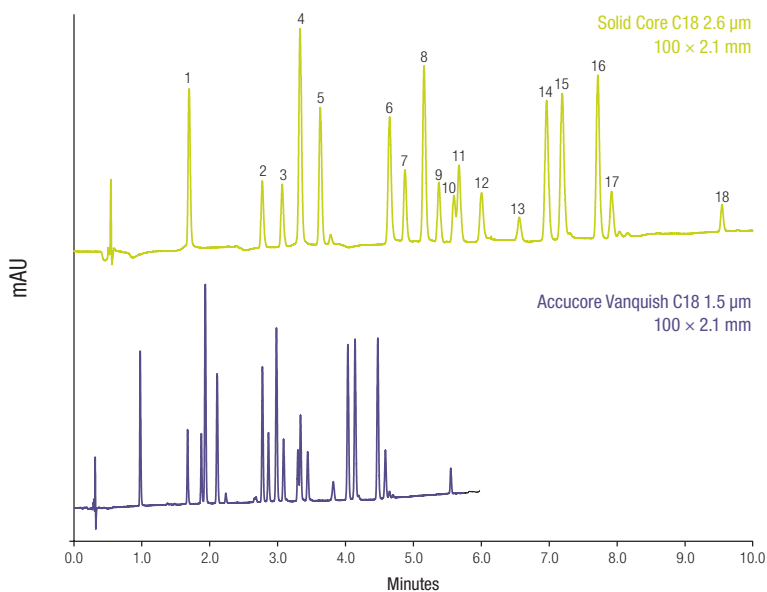
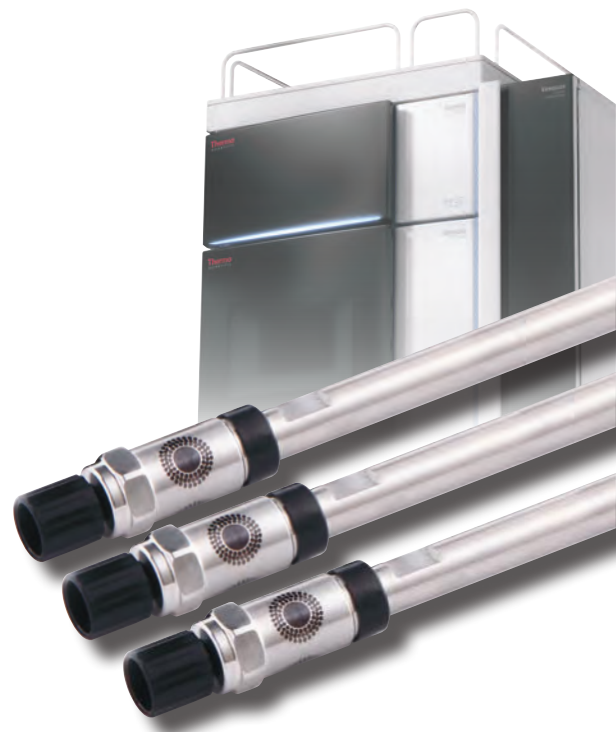
Thermo Scientific™ Accucore™ Vanquish™ UHPLC columns provide a robust chromatography solution to enhance laboratory workflows and productivity. These columns, in combination with Vanquish UHPLC systems, deliver powerful separations to solve your analytical challenges faster and more effectively.

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

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

### Better separations

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



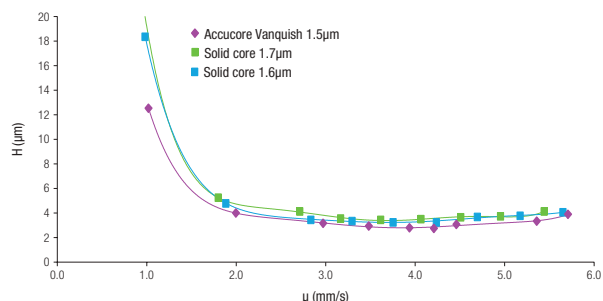
Comparison of separation of 18 pesticides using Accucore Vanquish 1.5µm column to a larger particle size solid core column

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



## More results

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

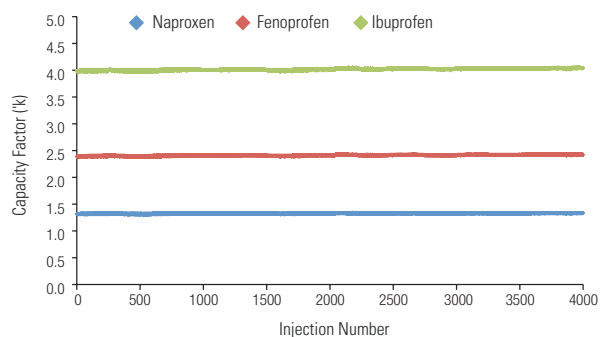


### Accucore Vanquish C18, 1.5µm Solid Core C18 1.7µm Solid Core C18 1.6µm

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

## Reproducibility

The advanced bonding and automated packing technology used in the manufacture of Accucore Vanquish UHPLC columns results in exceptionally reproducible chromatography.



### Accucore Vanquish C18 1.5µm

Mobile Phase:	Acetonitrile:20 mM ammonium formate pH 3.0 (50:50)
Temperature:	30°C
Flow Rate:	0.4mL/min

%RSD for 4000 injections	Naproxen	Fenoprofen	Ibuprofen
Retention time	0.19	0.25	0.29
Capacity factor	0.41	0.42	0.41
Efficiency	2.94	2.74	2.80
Asymmetry	0.92	0.87	1.09
Peak area	0.53	0.50	0.55
Peak height	1.13	1.02	0.91
Pressure	0.53		

- RSD for retention time less than 0.3%
- RSD for peak area less than 0.6%
- RSD for peak height less than 1.2%
- Column pressure stable over 4000 injections (RSD 0.53%)
- Pressure 500 bar

## Easier interaction

Accucore Vanquish UHPLC columns, the Vanquish UHPLC System and the Thermo Scientific™ Dionex™ Chromleon™ Chromatography Data System are combined into a seamless workflow solution, which allows for simple and easy to implement separations.

### Accucore Vanquish

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

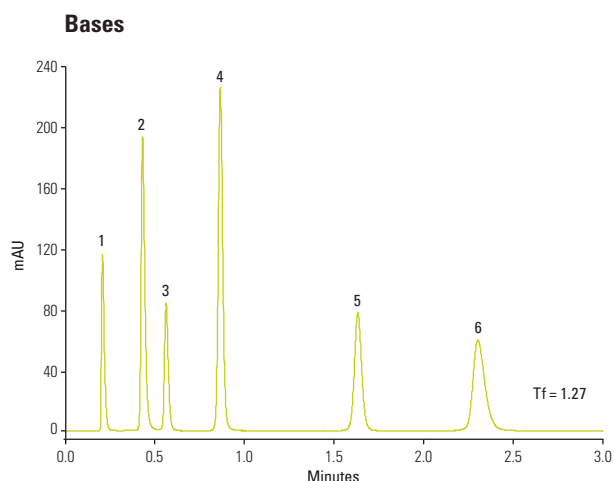
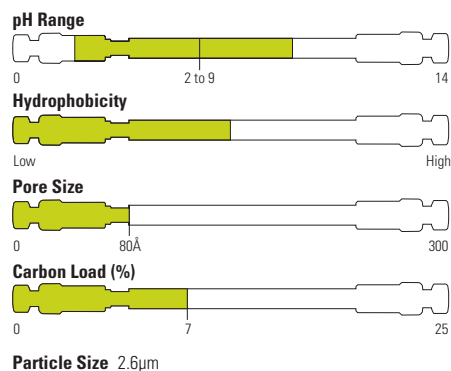
## Accucore RP-MS

- 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.



### 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

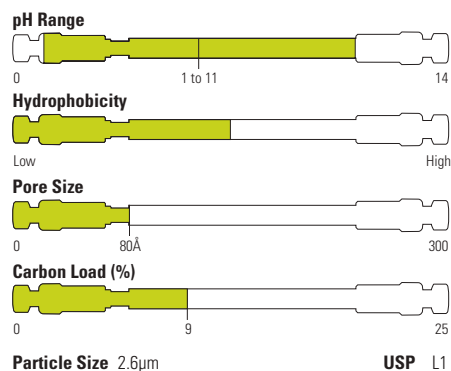
Particle Size (μm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	<b>17626-012105</b>	<b>17626-013005</b>	<b>17626-014005</b>
	HPLC Column	30	<b>17626-032130</b>	-	-
		50	<b>17626-052130</b>	<b>17626-053030</b>	<b>17626-054630</b>
		100	<b>17626-102130</b>	<b>17626-103030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

## Accucore C18

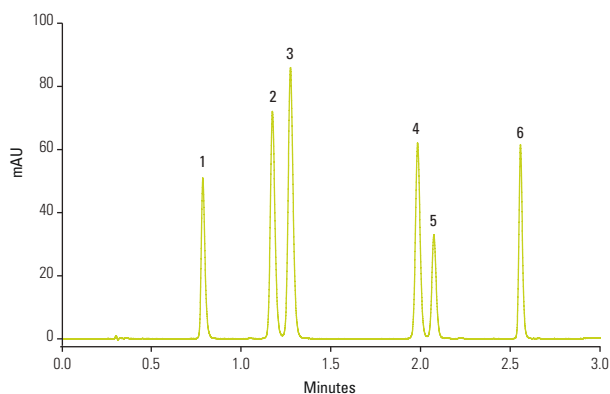
- Optimum retention of non-polar compounds
- Hydrophobic interaction mechanism
- Separates a broad range of analytes

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

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



### Triazines



#### Accucore C18 2.6 μm, 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:	600 μL/min	
Injection Volume:	2 μL	
Backpressure:	298 bar	
Detection:	UV, 280nm	
Analytes:	1.	Simazine
	2.	Simetryn
	3.	Atrazine
	4.	Ametryn
	5.	Propazine
	6.	Prometryn

### Accucore C18

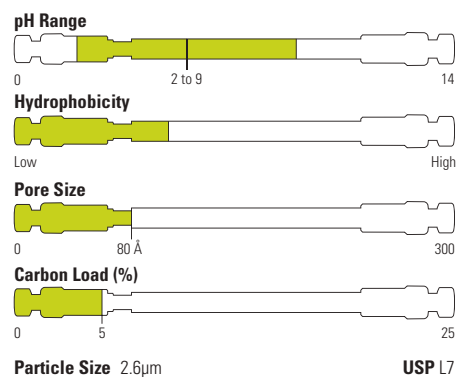
Particle Size (μm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	<b>17126-012105</b>	<b>17126-013005</b>	<b>17126-014005</b>
	HPLC Column	30	<b>17126-032130</b>	-	-
		50	<b>17126-052130</b>	<b>17126-053030</b>	<b>17126-054630</b>
		100	<b>17126-102130</b>	<b>17126-103030</b>	<b>17126-104630</b>
		150	<b>17126-152130</b>	<b>17126-153030</b>	<b>17126-154630</b>
4	Drop-in Guard (4/pk)	10	<b>74104-012101</b>	<b>74104-013001</b>	<b>74104-014001</b>
	HPLC Column	50	<b>74104-052130</b>	<b>74104-053030</b>	<b>74104-054630</b>
		100	<b>74104-102130</b>	<b>74104-103030</b>	<b>74104-104630</b>
		150	<b>74104-152130</b>	<b>74104-153030</b>	<b>74104-154630</b>
		250	<b>74104-252130</b>	<b>74104-253030</b>	<b>74104-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>

## Accucore C8

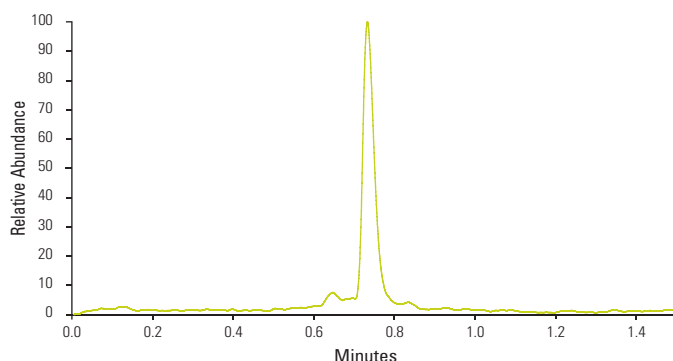
- Lower hydrophobic retention
- Complementary steric selectivity to C18
- Low levels of secondary interactions
- Recommended for moderately polar analytes

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

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



### Testosterone



#### Accucore C8 2.6µm, 50 x 2.1mm

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

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

Data from six injections.

### Accucore C8

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	<b>17226-012105</b>	<b>17226-013005</b>	<b>17226-014005</b>
	HPLC Column	30	<b>17226-032130</b>	-	-
		50	<b>17226-052130</b>	<b>17226-053030</b>	<b>17226-054630</b>
		100	<b>17226-102130</b>	<b>17226-103030</b>	<b>17226-104630</b>
		150	<b>17226-152130</b>	<b>17226-153030</b>	<b>17226-154630</b>
4	Drop-in Guard (4/pk)	10	<b>74204-012101</b>	<b>74204-013001</b>	<b>74204-014001</b>
	HPLC Column	50	<b>74204-052130</b>	<b>74204-053030</b>	<b>74204-054630</b>
		100	<b>74204-102130</b>	<b>74204-103030</b>	<b>74204-104630</b>
		150	<b>74204-152130</b>	<b>74204-153030</b>	<b>74204-154630</b>
		250	<b>74204-252130</b>	<b>74204-253030</b>	<b>74204-254630</b>
		UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>

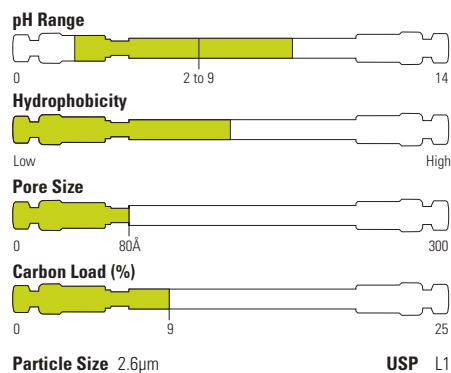


## Accucore aQ

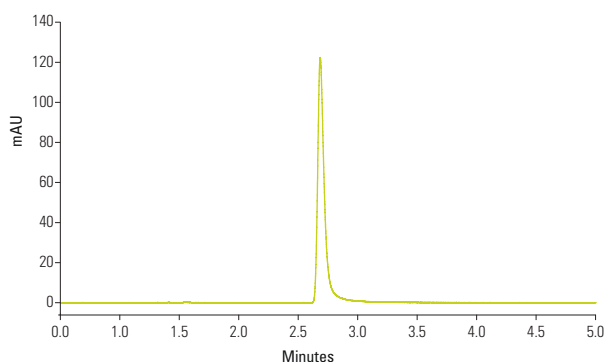
- Retention and resolution of polar analytes
- Polar endcapped C18 stationary phase for alternative selectivity
- Ideal for highly aqueous mobile phases

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

The wettability of reversed phase media can be increased by the introduction of polar functional groups. The polar endcapping of Accucore aQ media also makes it usable in 100% aqueous mobile phases without the risk of loss of performance or poor stability.



### Lamivudine (USP)



#### Accucore aQ 2.6μm, 50mm x 2.1mm

Mobile Phase: 95:5 (v/v) Ammonium Acetate, pH 3.80 / Methanol

Temperature: 35°C

Flow Rate: 200μL/min

Injection Volume: 1μL

Detection: UV, 277nm

Analytes: Lamivudine

Asymmetry 1.36

%RSD t<sub>r</sub> 0.00

%RSD Peak area 1.72

(%RSD calculated from 6 replicate injections)

USP acceptance criteria: % RSD (t<sub>r</sub>, Peak Area) <2.0

### Accucore aQ

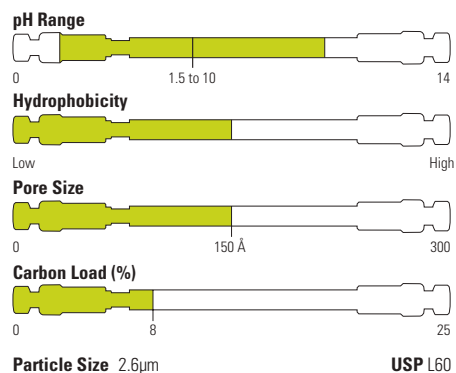
Particle Size (μm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	<b>17326-012105</b>	<b>17326-013005</b>	<b>17326-014005</b>
	HPLC Column	30	<b>17326-032130</b>	-	-
		50	<b>17326-052130</b>	<b>17326-053030</b>	<b>17326-054630</b>
		100	<b>17326-102130</b>	<b>17326-103030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

## Accucore Polar Premium

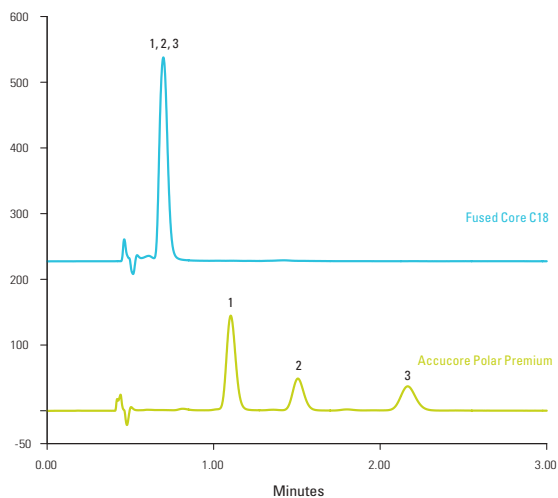
- Rugged amide-embedded C18 phase
- Selectivity complementary to conventional C18 phases
- Stable over a wide pH range and compatible with 100% aqueous mobile phase

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

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



### Curcuminoids (Turmeric)



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

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

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

### Accucore Polar Premium

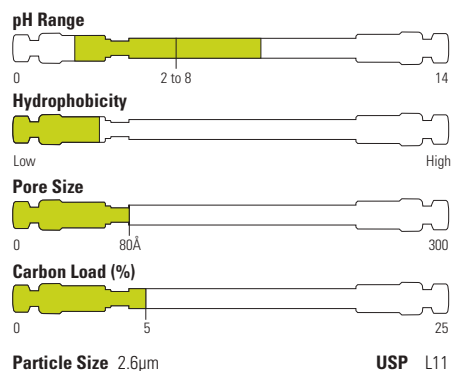
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	<b>28026-012105</b>	-	-
	HPLC Column	50	<b>28026-052130</b>	<b>28026-053030</b>	<b>28026-054630</b>
		100	<b>28026-102130</b>	<b>28026-103030</b>	<b>28026-104630</b>
		150	<b>28026-152130</b>	<b>28026-153030</b>	<b>28026-154630</b>
		250	<b>28026-252130</b>	-	-
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>

## Accucore Phenyl-Hexyl

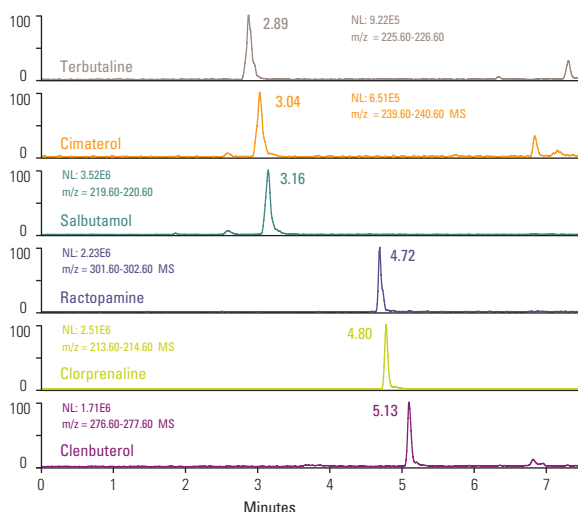
- Mixed-mode selectivity for aromatic and moderately polar analytes
- Enhanced pi-pi interactions with aromatics
- Moderate hydrophobicity

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

The Phenyl-Hexyl phase should be selected for complex samples where some peaks are well resolved on a conventional alkyl phases, but are not well resolved on a conventional phenyl phase, or when other peaks are well resolved on a phenyl phase, but not well resolved on a conventional alkyl phase.



### Beta-agonists



### 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	<b>17926-012105</b>	<b>17926-013005</b>	<b>17926-014005</b>
		HPLC Column	30	<b>17926-032130</b>	-
		50	<b>17926-052130</b>	<b>17926-053030</b>	<b>17926-054630</b>
		100	<b>17926-102130</b>	<b>17926-103030</b>	<b>17926-104630</b>
		150	<b>17926-152130</b>	<b>17926-153030</b>	<b>17926-154630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>

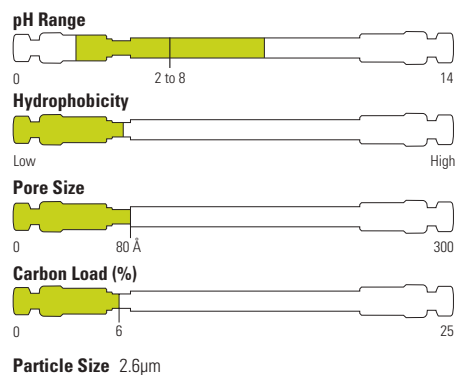
## Accucore Phenyl-X

- Unique reversed-phase shape selectivity
- Enhanced selectivity for aromatic compounds
- Compatible with highly aqueous mobile phases
- Robust, high-efficiency, low column bleed

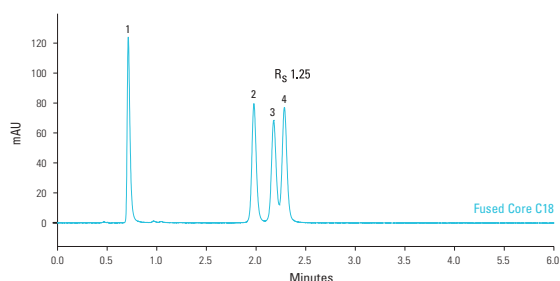
The proprietary Accucore Phenyl-X alkyl aromatic bonded phase provides a unique selectivity when compared to other reversed phase materials such as C18 or Phenyl.

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

Phenyl-X exhibits particularly high aromatic selectivity.

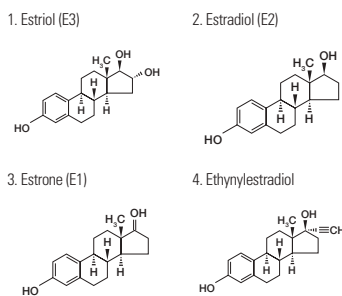
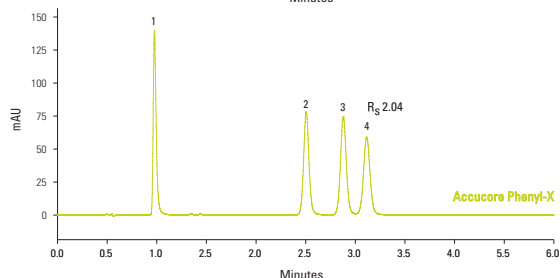


### Estrogens



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

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



### 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	<b>27926-012105</b>	-	-
	HPLC Column	50	<b>27926-052130</b>	<b>27926-053030</b>	<b>27926-054630</b>
		100	<b>27926-102130</b>	<b>27926-103030</b>	<b>27926-104630</b>
		150	<b>27926-152130</b>	<b>27926-153030</b>	<b>27926-154630</b>
		250	<b>27926-252130</b>	-	-
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>

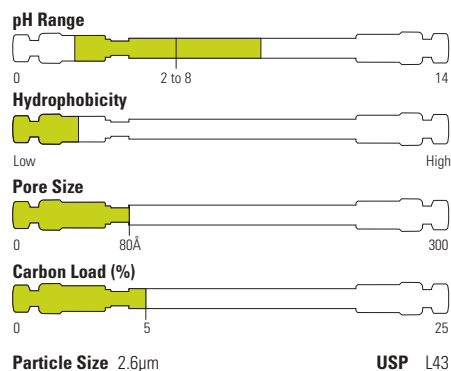


## Accucore PFP

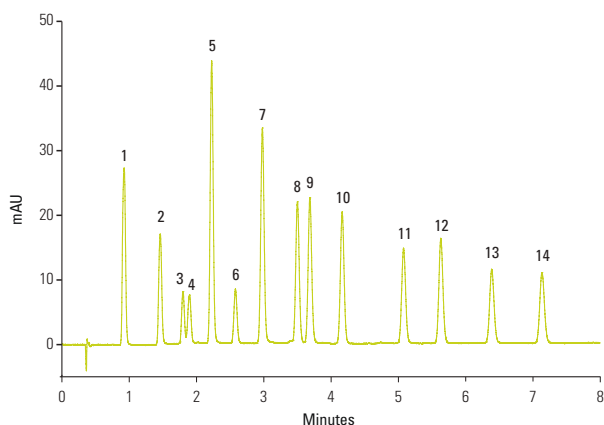
- Alternative selectivity to C18
- Extra retention for halogenated species
- Unique selectivity for non-halogenated polar compounds

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

PFP Columns are also well suited to the selective analysis of non-halogenated compounds, in particular polar compounds containing hydroxyl, carboxyl, nitro, or other polar groups. High selectivity is often most apparent when the functional groups are located on an aromatic or other rigid ring system.



### Positional isomers



#### Accucore PFP 2.6µm, 50mm x 2.1mm

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

### Accucore PFP

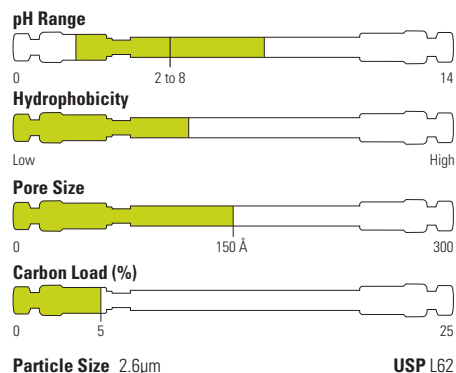
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	<b>17426-012105</b>	<b>17426-013005</b>	<b>17426-014005</b>
	HPLC Column	30	<b>17426-032130</b>	-	-
		50	<b>17426-052130</b>	<b>17426-053030</b>	<b>17426-054630</b>
		100	<b>17426-102130</b>	<b>17426-103030</b>	<b>17426-104630</b>
		150	<b>17426-152130</b>	<b>17426-153030</b>	<b>17426-154630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>

## Accucore C30

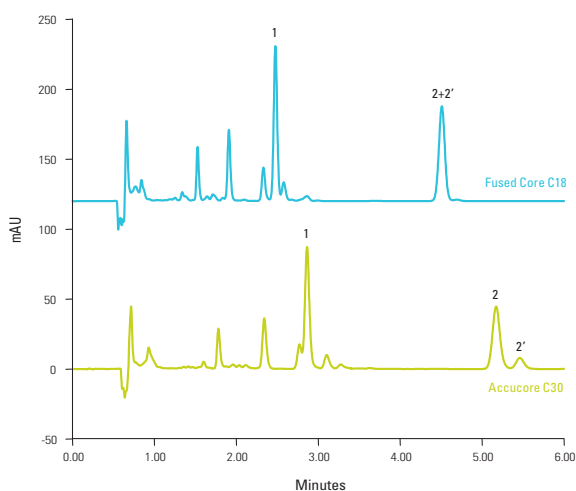
- Ideal for separation of hydrophobic, long alkyl chain compounds
- High shape selectivity for structurally related isomers
- Excellent aqueous-compatibility

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

It is also an excellent alternative to normal-phase columns for lipid analysis. The optimized bonding density of the long alkyl chains facilitated by a wider pore diameter particle result in a phase that is stable even in highly aqueous mobile phases.



### Vitamin K isomers



#### 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.

Chromatogram showing the separation of Vitamin K compounds  
 Minutes 1-Vitamin K2, 2-Vitamin K1 (trans isomer), 2'-Vitamin K1 (cis isomer)

### Accucore C30

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

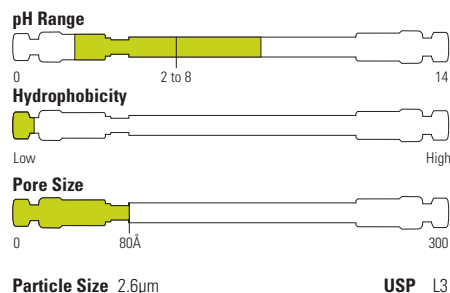
## Accucore HILIC

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

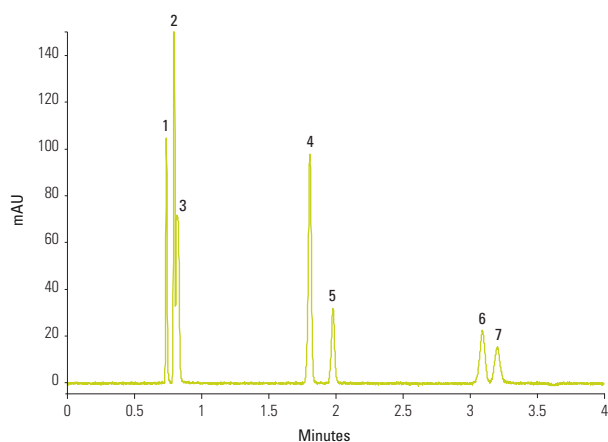
In HILIC mode the separation occurs through two mechanisms. The primary mechanism is a partitioning effect due to the enriched water layer around the polar or charged substrate material. The secondary mechanism involves interaction between the analyte and the active surface moiety.

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

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



### Catecholamines



#### Accucore HILIC 2.6µm, 50mm x 2.1mm

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

### Accucore HILIC

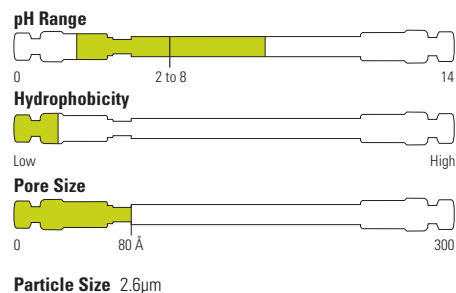
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.6	Defender Guard (4/pk)	10	<b>17526-012105</b>	<b>17526-013005</b>	<b>17526-014005</b>
	HPLC Column	30	<b>17526-032130</b>	-	-
		50	<b>17526-052130</b>	<b>17526-053030</b>	<b>17526-054630</b>
		100	<b>17526-102130</b>	<b>17526-103030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

## Accucore Urea-HILIC

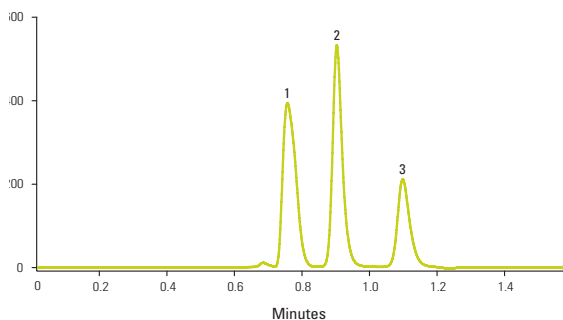
- Bonded hydrophilic stationary phase
- Unique selectivity compared to other HILIC phases
- Low ion exchange activity

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

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



### Analgesic compounds



#### Accucore Urea-HILIC 2.6µm, 100 x 2.1mm

Mobile Phase:	Composition 10:80:10, A : B : C
	A: Water
	B: Acetonitrile
	C: 100 mM Ammonium Acetate adjusted to pH 4.9
Temperature:	35°C
Flow Rate:	300µL/min
Injection Volume:	2µL into 10µL partial loop mode.
Backpressure:	71 bar
Detection:	UV, 230nm

	1. Acetaminophen			2. Salicylic acid			3. Aspirin		
	$t_R$	$A_s$	$R_s$	$t_R$	$A_s$	$R_s$	$t_R$	$A_s$	$R_s$
Mean	0.760	1.474	0.908	1.303	2.359	1.100	1.318	3.264	
CV %	0.00	1.17	0.48	0.92	0.49	0.00	0.63	0.48	

Data from eight replicate analyses of a mixture of acetaminophen, salicylic acid and aspirin

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

### Accucore Urea-HILIC

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

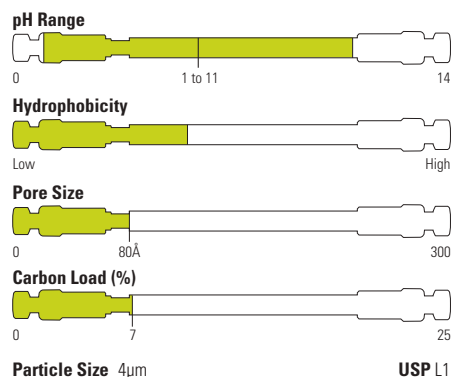
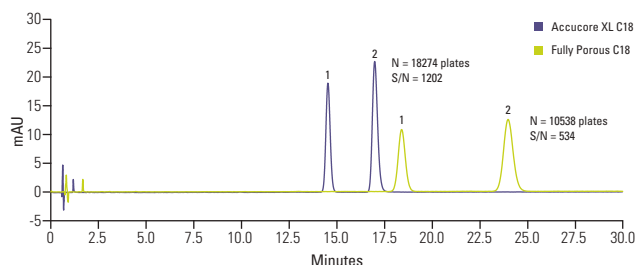


## Accucore XL C18

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

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

### Ibuprofen and Valerophenone (USP)



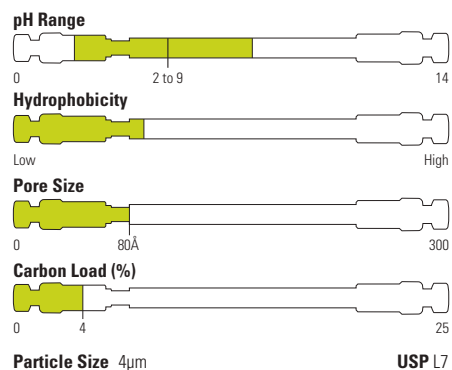
#### Accucore XL C18 4µm, 150 x 4.6mm Fully porous C18 5µm, 150 x 4.6mm

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

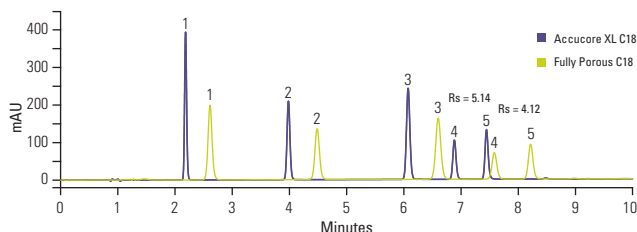
Accucore XL C8 is recommended for analytes with moderate hydrophobicity, or when a less hydrophobic phase provides optimum retention.



#### 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

### Endocrine Disruptors



### 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	<b>74104-012101</b>	<b>74104-013001</b>	<b>74104-014001</b>
			50	<b>74104-052130</b>	<b>74104-053030</b>	<b>74104-054630</b>
	100		<b>74104-102130</b>	<b>74104-103030</b>	<b>74104-104630</b>	
	150		<b>74104-152130</b>	<b>74104-153030</b>	<b>74104-154630</b>	
	250		<b>74104-252130</b>	<b>74104-253030</b>	<b>74104-254630</b>	
4	Drop-in Guard (4/pk)	C8	10	<b>74204-012101</b>	<b>74204-013001</b>	<b>74204-014001</b>
			50	<b>74204-052130</b>	<b>74204-053030</b>	<b>74204-054630</b>
	100		<b>74204-102130</b>	<b>74204-103030</b>	<b>74204-104630</b>	
	150		<b>74204-152130</b>	<b>74204-153030</b>	<b>74204-154630</b>	
	250		<b>74204-252130</b>	<b>74204-253030</b>	<b>74204-254630</b>	

# Hypersil GOLD HPLC and UHPLC Columns

## Outstanding peak shape for your separations

Thermo Scientific™ Hypersil GOLD™ columns are an ideal choice for new method development, delivering outstanding peak shape and increased sensitivity for your separations.

- **Solutions for all Separation Needs**  
Particle sizes and column designs optimized for all analyses
- **Improved Sensitivity**  
Excellent peak symmetry
- **Enhanced Resolution**  
Separation of complex samples
- **pH Stability**  
Robust assays at extended pH



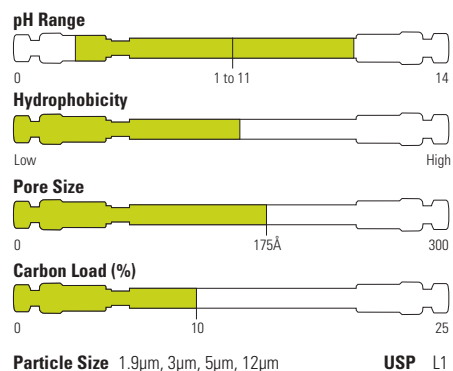
The Hypersil GOLD web page contains the latest news, applications and downloads for the Hypersil GOLD HPLC column range.

Visit [www.thermoscientific.com/hypersilgold](http://www.thermoscientific.com/hypersilgold)

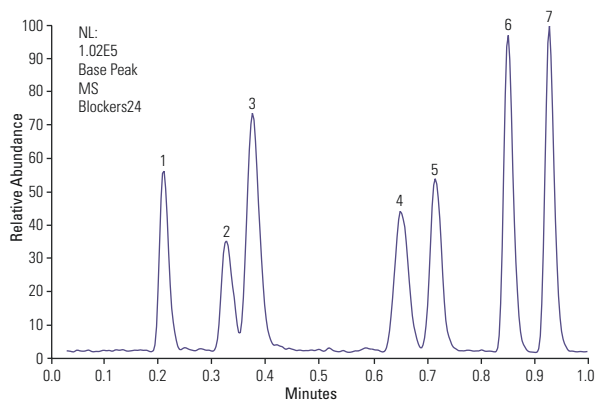
## Hypersil GOLD

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 β-blockers in 1 minute



#### Hypersil GOLD, 1.9µm, 20 x 2.1mm

Mobile Phase A:	H <sub>2</sub> O+0.1%formic acid
Mobile Phase B:	MeCN+0.1%formic acid
Gradient:	15 to 100% B in 1min
Temperature:	30°C
Flow Rate:	0.5mL/min
Detection:	+ESI
Analytes:	1. Atenolol 2. Nadolol 3. Pindolol 4. Timolol 5. Metoprolol 6. Oxprenolol 7. Propranolol

### Hypersil GOLD

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID	
1.9	UHPLC Column	20	-	<b>25002-02130</b>	-	-	-	
		30	<b>25002-031030</b>	<b>25002-032130</b>	-	-	-	
		50	<b>25002-051030</b>	<b>25002-052130</b>	<b>25002-053030</b>	-	<b>25002-054630</b>	
		100	<b>25002-101030</b>	<b>25002-102130</b>	<b>25002-103030</b>	-	-	
		150	-	<b>25002-152130</b>	-	-	-	
		200	-	<b>25002-202130</b>	-	-	-	
3	Drop-in Guard (4/pk)	10	<b>25003-011001</b>	<b>25003-012101</b>	<b>25003-013001</b>	<b>25003-014001</b>	<b>25003-014001</b>	
		30	-	<b>25003-032130</b>	-	-	<b>25003-034630</b>	
	HPLC Column	50	-	<b>25003-052130</b>	<b>25003-053030</b>	<b>25003-054030</b>	<b>25003-054630</b>	
		100	<b>25003-101030</b>	<b>25003-102130</b>	<b>25003-103030</b>	<b>25003-104030</b>	<b>25003-104630</b>	
		150	<b>25003-151030</b>	<b>25003-152130</b>	<b>25003-153030</b>	<b>25003-154030</b>	<b>25003-154630</b>	
		200	-	-	-	-	-	
5	Drop-in Guard (4/pk)	10	-	<b>25005-012101</b>	<b>25005-013001</b>	<b>25005-014001</b>	<b>25005-014001</b>	
		30	-	<b>25005-032130</b>	<b>25005-033030</b>	-	<b>25005-034630</b>	
	HPLC Column	50	-	<b>25005-052130</b>	<b>25005-053030</b>	-	<b>25005-054630</b>	
		100	-	<b>25005-102130</b>	<b>25005-103030</b>	-	<b>25005-104630</b>	
		150	-	<b>25005-152130</b>	<b>25005-153030</b>	<b>25005-154030</b>	<b>25005-154630</b>	
		250	-	<b>25005-252130</b>	<b>25005-253030</b>	<b>25005-254030</b>	<b>25005-254630</b>	
		UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

**Hypersil GOLD Preparative**

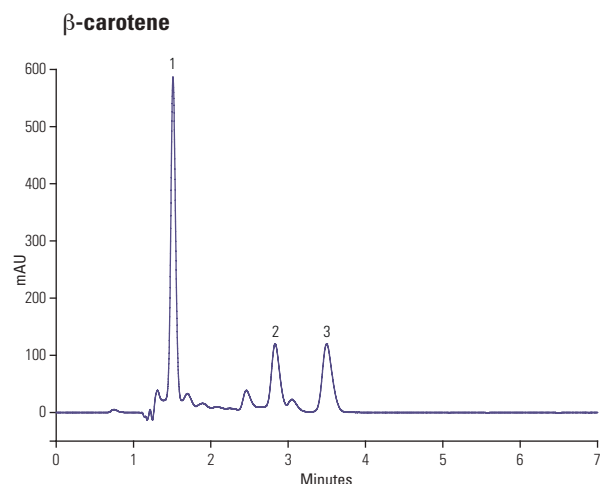
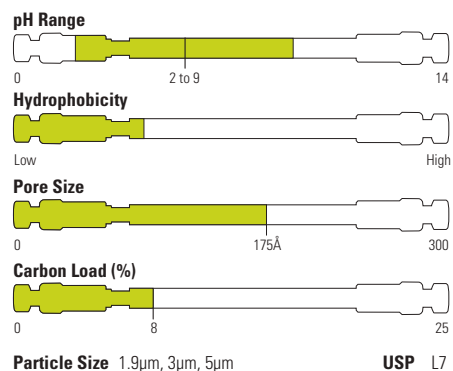
Particle Size (µm)	Format	Length (mm)	10mm ID	20mm ID	21mm ID	30mm ID	50mm ID
5	Preparative Guard Cartridge (3/pk)	10	<b>25005-019023</b>	<b>25005-019223</b>	-	-	-
	Preparative HPLC Column	50	<b>25005-059070</b>	-	-	<b>25005-059370</b>	<b>25005-059570</b>
		100	<b>25005-109070</b>	-	<b>25005-109270</b>	<b>25005-109370</b>	<b>25005-109570</b>
		150	<b>25005-159070</b>	-	<b>25005-159270</b>	<b>25005-159370</b>	<b>25005-159570</b>
		250	<b>25005-259070</b>	-	<b>25005-259270</b>	<b>25005-259370</b>	<b>25005-259570</b>
12	Preparative Guard Cartridge (3/pk)	10	<b>25012-019023</b>	<b>25012-019223</b>	-	-	-
	Preparative HPLC Column	50	<b>25012-059070</b>	-	<b>25012-059270</b>	<b>25012-059370</b>	<b>25012-059570</b>
		100	<b>25012-109070</b>	-	<b>25012-109270</b>	<b>25012-109370</b>	<b>25012-109570</b>
		150	-	-	<b>25012-159270</b>	<b>25012-159370</b>	<b>25012-159570</b>
		250	<b>25012-259070</b>	-	<b>25012-259270</b>	<b>25012-259370</b>	<b>25012-259570</b>
	Preparative Guard Cartridge Holder	10	<b>C-1000</b>	<b>854-00</b>	-	-	-



## 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



### 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

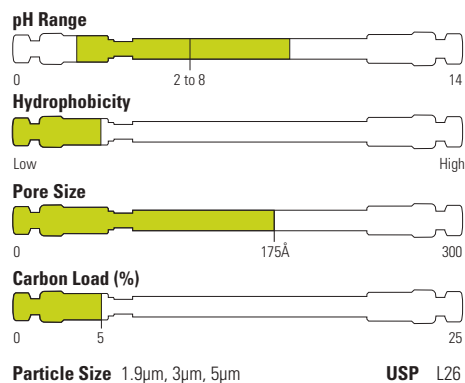
### Hypersil GOLD C8

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	20	-	<b>25202-022130</b>	-	-	-
		30	-	<b>25202-032130</b>	-	-	-
		50	-	<b>25202-052130</b>	<b>25202-053030</b>	-	<b>25202-054630</b>
		100	<b>25202-101030</b>	<b>25202-102130</b>	<b>25202-103030</b>	-	-
		150	-	<b>25202-152130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>25203-011001</b>	<b>25203-012101</b>	<b>25203-013001</b>	<b>25203-014001</b>	<b>25203-014001</b>
	HPLC Column	50	-	<b>25203-052130</b>	<b>25203-053030</b>	<b>25203-054030</b>	<b>25203-054630</b>
		100	<b>25203-101030</b>	<b>25203-102130</b>	<b>25203-103030</b>	<b>25203-104030</b>	<b>25203-104630</b>
		150	-	<b>25203-152130</b>	<b>25203-153030</b>	<b>25203-154030</b>	<b>25203-154630</b>
5	Drop-in Guard (4/pk)	10	-	<b>25205-012101</b>	<b>25205-013001</b>	<b>25205-014001</b>	<b>25205-014001</b>
	HPLC Column	50	-	<b>25205-052130</b>	<b>25205-053030</b>	-	<b>25205-054630</b>
		100	-	<b>25205-102130</b>	<b>25205-103030</b>	-	<b>25205-104630</b>
		150	-	<b>25205-152130</b>	<b>25205-153030</b>	<b>25205-154030</b>	<b>25205-154630</b>
		250	-	<b>25205-252130</b>	<b>25205-253030</b>	<b>25205-254030</b>	<b>25205-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

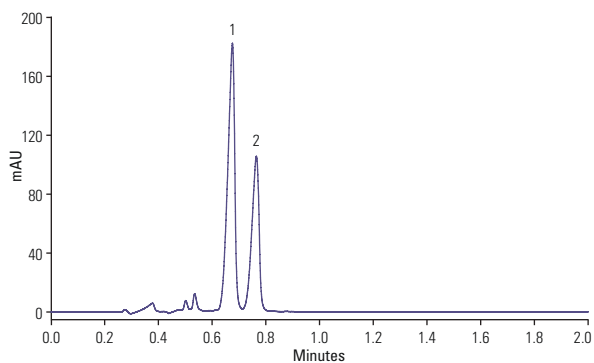
## Hypersil GOLD C4

Lower hydrophobicity than C18 or C8 recommended for very hydrophobic analytes

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



### Fatty acids



#### Hypersil GOLD C4 1.9µm, 100 x 2.1mm

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

### Hypersil GOLD C4

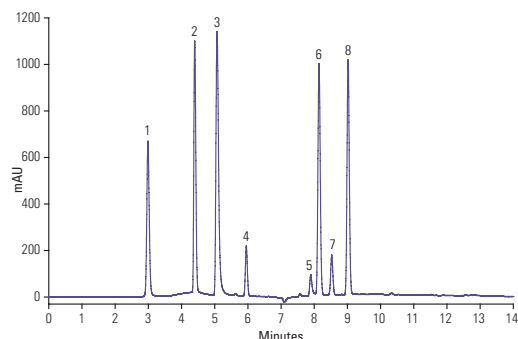
Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	<b>25502-052130</b>	-	-
		100	-	<b>25502-102130</b>	-	-
		150	-	<b>25502-152130</b>	-	-
3	Drop-in Guard (4/pk)	10	<b>25503-011001</b>	<b>25503-012101</b>	<b>25503-013001</b>	<b>25503-014001</b>
	HPLC Column	50	-	<b>25503-052130</b>	-	-
		100	-	<b>25503-102130</b>	<b>25503-103030</b>	<b>25503-104630</b>
		150	<b>25503-151030</b>	<b>25503-152130</b>	<b>25503-153030</b>	<b>25503-154630</b>
5	Drop-in Guard (4/pk)	10	-	<b>25505-012101</b>	<b>25505-013001</b>	<b>25505-014001</b>
	HPLC Column	50	-	<b>25505-052130</b>	-	<b>25505-054630</b>
		100	-	<b>25505-102130</b>	<b>25505-103030</b>	<b>25505-104630</b>
		150	-	<b>25505-152130</b>	-	<b>25505-154630</b>
		250	-	<b>25505-252130</b>	<b>25505-253030</b>	<b>25505-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>

## Hypersil GOLD aQ

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

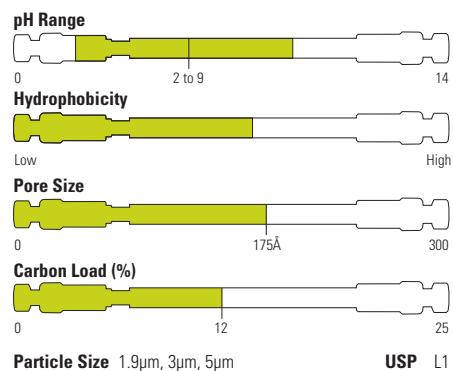
- Polar endcapped C18 phase for alternative selectivity
- Retention and resolution of polar analytes
- Stable in 100% aqueous mobile phases

### Water soluble vitamins



#### Hypersil GOLD aQ 5µm, 150 x 4.6mm

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



### Hypersil GOLD aQ

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	20	-	<b>25302-022130</b>	-	-	-
		30	-	<b>25302-032130</b>	-	-	-
		50	<b>25302-051030</b>	<b>25302-052130</b>	<b>25302-053030</b>	-	<b>25302-054630</b>
		100	<b>25302-101030</b>	<b>25302-102130</b>	<b>25302-103030</b>	-	-
		150	-	<b>25302-152130</b>	-	-	-
		200	-	<b>25302-202130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>25303-011001</b>	<b>25303-012101</b>	<b>25303-013001</b>	<b>25303-014001</b>	<b>25303-014001</b>
	HPLC Column	30	-	<b>25303-032130</b>	<b>25303-033030</b>	-	-
		50	-	<b>25303-052130</b>	<b>25303-053030</b>	<b>25303-054030</b>	<b>25303-054630</b>
		100	<b>25303-101030</b>	<b>25303-102130</b>	<b>25303-103030</b>	<b>25303-104030</b>	<b>25303-104630</b>
		150	<b>25303-151030</b>	<b>25303-152130</b>	<b>25303-153030</b>	<b>25303-154030</b>	<b>25303-154630</b>
5	Drop-in Guard (4/pk)	10	-	<b>25305-012101</b>	<b>25305-013001</b>	<b>25305-014001</b>	<b>25305-014001</b>
	HPLC Column	50	-	<b>25305-052130</b>	<b>25305-053030</b>	-	<b>25305-054630</b>
		100	-	<b>25305-102130</b>	<b>25305-103030</b>	-	<b>25305-104630</b>
		150	-	<b>25305-152130</b>	<b>25305-153030</b>	-	<b>25305-154630</b>
		250	-	<b>25305-252130</b>	-	<b>25305-254030</b>	<b>25305-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

### Hypersil GOLD aQ Preparative

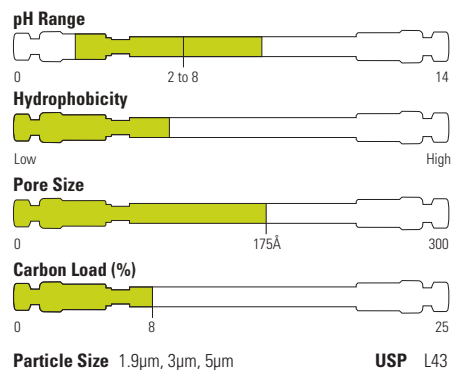
Particle Size (µm)	Format	Length (mm)	10mm ID	20mm ID	21mm ID	30mm ID	50mm ID
5	Preparative Guard Cartridge (3/pk)	10	<b>25305-019023</b>	<b>25305-019223</b>	-	-	-
	Preparative HPLC Column	50	<b>25305-059070</b>	-	<b>25305-059270</b>	<b>25305-059370</b>	<b>25305-059570</b>
		100	<b>25305-109070</b>	-	<b>25305-109270</b>	<b>25305-109370</b>	<b>25305-109570</b>
		150	<b>25305-159070</b>	-	<b>25305-159270</b>	<b>25305-159370</b>	<b>25305-159570</b>
		250	<b>25305-259070</b>	-	<b>25305-259270</b>	<b>25305-259370</b>	<b>25305-259570</b>



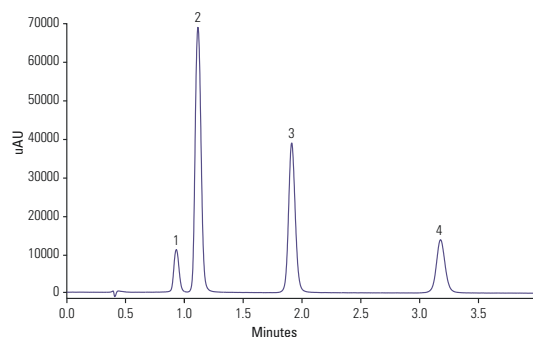
## Hypersil GOLD PFP

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

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



### Polyphenols



#### Hypersil GOLD PFP 1.9μm, 50 x 2.1mm

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

### Hypersil GOLD PFP

Particle Size (μm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	20	-	<b>25402-022130</b>	-	-	-
		30	-	<b>25402-032130</b>	-	-	-
		50	<b>25402-051030</b>	<b>25402-052130</b>	<b>25402-053030</b>	-	<b>25402-054630</b>
		100	<b>25402-101030</b>	<b>25402-102130</b>	<b>25402-103030</b>	-	-
		150	-	<b>25402-152130</b>	-	-	-
		200	-	<b>25402-202130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>25403-011001</b>	<b>25403-012101</b>	<b>25403-013001</b>	<b>25403-014001</b>	<b>25403-014001</b>
	HPLC Column	30	-	<b>25403-032130</b>	<b>25403-033030</b>	-	<b>25403-034630</b>
		50	-	<b>25403-052130</b>	<b>25403-053030</b>	<b>25403-054030</b>	<b>25403-054630</b>
		100	<b>25403-101030</b>	<b>25403-102130</b>	<b>25403-103030</b>	<b>25403-104030</b>	<b>25403-104630</b>
		150	<b>25403-151030</b>	<b>25403-152130</b>	<b>25403-153030</b>	-	<b>25403-154630</b>
		200	-	<b>25403-202130</b>	-	-	-
5	Drop-in Guard (4/pk)	10	-	<b>25405-012101</b>	<b>25405-013001</b>	<b>25405-014001</b>	<b>25405-014001</b>
	HPLC Column	50	-	<b>25405-052130</b>	<b>25405-053030</b>	-	-
		100	-	<b>25405-102130</b>	<b>25405-103030</b>	-	<b>25405-104630</b>
		150	-	<b>25405-152130</b>	<b>25405-153030</b>	<b>25405-154030</b>	<b>25405-154630</b>
		200	-	<b>25405-202130</b>	-	<b>25405-254030</b>	<b>25405-254630</b>
		250	-	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>
UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>	

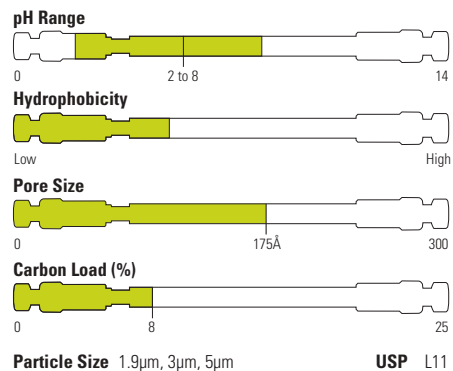
### Hypersil GOLD PFP Preparative

Particle Size (μm)	Format	Length (mm)	10mm ID	20mm ID	21mm ID	30mm ID	50mm ID
5	Preparative Guard Cartridge (3/pk)	10	<b>25405-019023</b>	<b>25405-019223</b>	-	-	-
	Preparative HPLC Column	50	<b>25405-059070</b>	-	<b>25405-059270</b>	<b>25405-059370</b>	<b>25405-059570</b>
		100	<b>25405-109070</b>	-	<b>25405-109270</b>	<b>25405-109370</b>	<b>25405-109570</b>
		150	<b>25405-159070</b>	-	<b>25405-159270</b>	<b>25405-159370</b>	<b>25405-159570</b>
		250	<b>25405-259070</b>	-	<b>25405-259270</b>	<b>25405-259370</b>	<b>25405-259570</b>

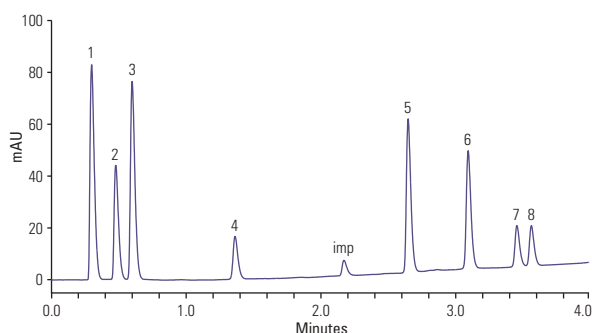
## Hypersil GOLD Phenyl

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

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



### Antidepressants



#### Hypersil GOLD Phenyl 1.9µm, 50 x 2.1mm

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

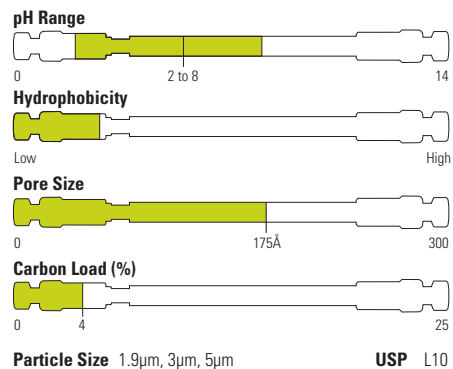
### Hypersil GOLD Phenyl

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	<b>25902-052130</b>	-	-	-
		100	-	<b>25902-102130</b>	-	-	-
		150	-	<b>25902-152130</b>	-	-	-
		200	-	<b>25902-202130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>25903-011001</b>	<b>25903-012101</b>	<b>25903-013001</b>	<b>25903-014001</b>	<b>25903-014001</b>
	HPLC Column	50	-	<b>25903-052130</b>	-	-	-
		100	-	<b>25903-102130</b>	<b>25903-103030</b>	-	<b>25903-104630</b>
5	HPLC Column	150	<b>25903-151030</b>	-	<b>25903-153030</b>	-	<b>25903-154630</b>
		10	-	<b>25905-012101</b>	<b>25905-013001</b>	<b>25905-014001</b>	<b>25905-014001</b>
		50	-	<b>25905-052130</b>	-	-	<b>25905-054630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	100	-	<b>25905-102130</b>	<b>25905-103030</b>	-	-
		150	-	-	-	-	<b>25905-154630</b>
		250	-	-	<b>25905-253030</b>	<b>25905-254030</b>	<b>25905-254630</b>
10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>		

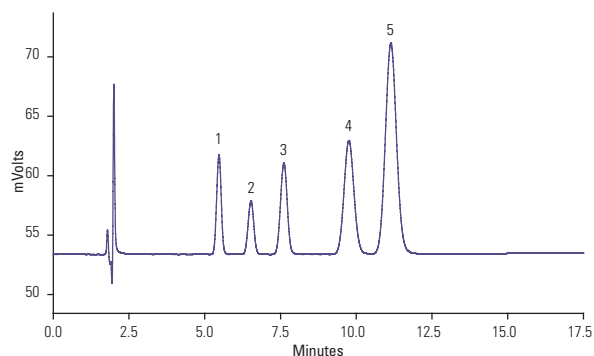
# Hypersil GOLD CN

For both normal phase and reversed-phase separations

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



## Organic acids



### Hypersil GOLD CN 5µm, 150 x 4.6mm

Mobile Phase A:	25 mM KH <sub>2</sub> PO <sub>4</sub> , pH2
Mobile Phase B:	MeOH
Temperature:	25°C
Flow Rate:	1.5mL/min
Detection:	UV, 230nm
Analytes:	1. 4-Fluorobenzoic 2. o-Toluic Acid 3. p-Toluic Acid 4. 2,4,6-Trimethylbenzoic Acid 5. 2,5-Dimethylbenzoic Acid

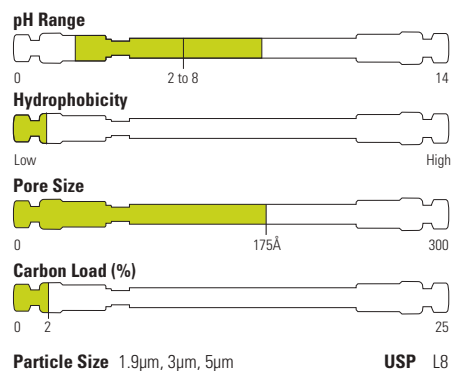
## Hypersil GOLD CN

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	<b>25802-052130</b>	-	-	-
		100	-	<b>25802-102130</b>	-	-	-
		200	-	<b>25802-202130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>25803-011001</b>	<b>25803-012101</b>	<b>25803-013001</b>	<b>25803-014001</b>	<b>25803-014001</b>
	HPLC Column	30	-	<b>25803-032130</b>	-	-	-
		50	-	<b>25803-052130</b>	-	-	-
		100	-	<b>25803-102130</b>	<b>25803-103030</b>	-	<b>25803-104630</b>
		150	<b>25803-151030</b>	<b>25803-152130</b>	<b>25803-153030</b>	-	<b>25803-154630</b>
5	Drop-in Guard (4/pk)	10	-	<b>25805-012101</b>	<b>25805-013001</b>	<b>25805-014001</b>	<b>25805-014001</b>
	HPLC Column	50	-	<b>25805-052130</b>	-	-	<b>25805-054630</b>
		100	-	<b>25805-102130</b>	<b>25805-103030</b>	-	-
		150	-	<b>25805-152130</b>	-	-	<b>25805-154630</b>
		250	-	<b>25805-252130</b>	<b>25805-253030</b>	<b>25805-254030</b>	<b>25805-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

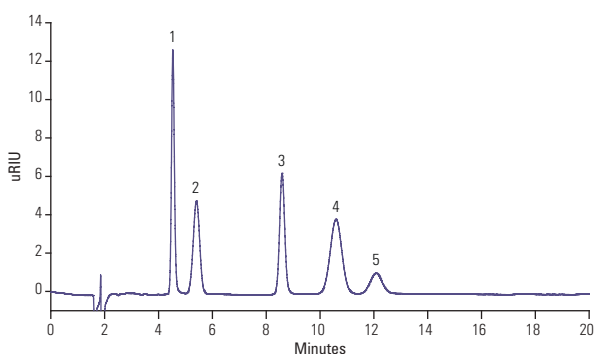
## Hypersil GOLD Amino

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

- Retains anions and organic acids in weak anion exchange
- Excellent for carbohydrate analysis in reversed-phase
- Alternative selectivity to silica columns in normal phase chromatography
- Outstanding peak shape and sensitivity



### Sugars



#### Hypersil GOLD Amino 5µm, 150 x 4.6mm

Mobile Phase:	MeCN/Water (80:20)
Temperature:	35°C
Flow Rate:	1.2mL/min
Injection Volume:	20µL
Detection:	RI
Analytes:	1. Fructose 2. Glucose 3. Sucrose 4. Maltose 5. Lactose

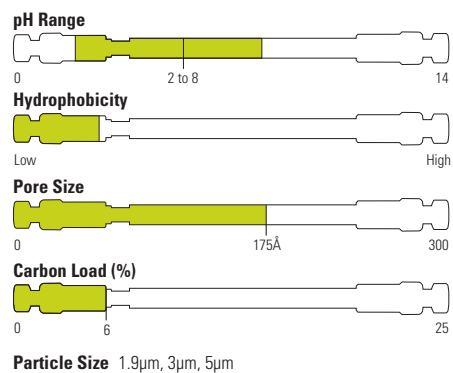
### Hypersil GOLD Amino

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	<b>25702-052130</b>	-	-	-
		100	-	<b>25702-102130</b>	-	-	-
		150	-	<b>25702-152130</b>	-	-	-
		200	-	<b>25702-202130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>25703-011001</b>	<b>25703-012101</b>	<b>25703-013001</b>	<b>25703-014001</b>	<b>25703-014001</b>
	HPLC Column	30	-	<b>25703-032130</b>	-	-	-
		50	-	<b>25703-052130</b>	-	-	-
		100	-	<b>25703-102130</b>	<b>25703-103030</b>	-	<b>25703-104630</b>
		150	<b>25703-151030</b>	<b>25703-152130</b>	<b>25703-153030</b>	-	<b>25703-154630</b>
5	Drop-in Guard (4/pk)	10	-	<b>25705-012101</b>	<b>25705-013001</b>	<b>25705-014001</b>	<b>25705-014001</b>
	HPLC Column	50	-	<b>25705-052130</b>	-	-	<b>25705-054630</b>
		100	-	<b>25705-102130</b>	<b>25705-103030</b>	-	-
		150	-	-	-	-	<b>25705-154630</b>
		250	-	<b>25705-252130</b>	<b>25705-253030</b>	<b>25705-254030</b>	<b>25705-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

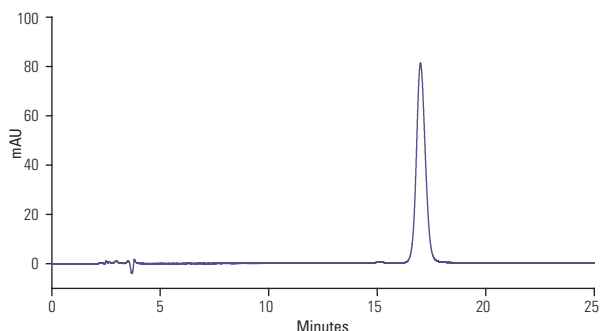
## Hypersil GOLD AX

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

- Weak anion exchange phase for multiple charged species
- Suitable for HILIC retention and separation of highly polar molecules
- Higher efficiency than polymer based ion exchange columns
- Outstanding peak shape and selectivity



### Vitamin C



#### Hypersil GOLD AX 5µm, 100 x 4.6mm

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

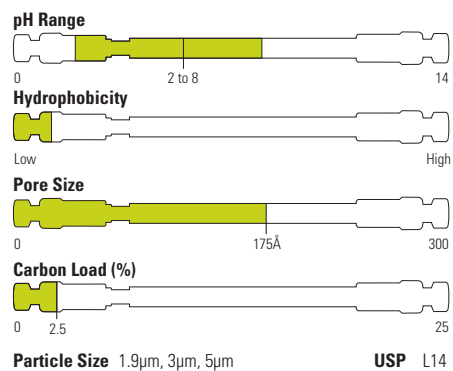
### Hypersil GOLD AX

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	<b>26102-052130</b>	-	-	-
		100	-	<b>26102-102130</b>	-	-	-
		150	-	<b>26102-152130</b>	-	-	-
		200	-	<b>26102-202130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>26103-011001</b>	<b>26103-012101</b>	<b>26103-013001</b>	<b>26103-014001</b>	<b>26103-014001</b>
	HPLC Column	30	-	<b>26103-032130</b>	-	-	-
		50	-	<b>26103-052130</b>	-	-	-
		100	-	<b>26103-102130</b>	-	-	<b>26103-104630</b>
		150	<b>26103-151030</b>	<b>26103-152130</b>	<b>26103-153030</b>	-	<b>26103-154630</b>
5	Drop-in Guard (4/pk)	10	-	<b>26105-012101</b>	<b>26105-013001</b>	<b>26105-014001</b>	<b>26105-014001</b>
	HPLC Column	50	-	-	-	-	<b>26105-054630</b>
		100	-	<b>26105-102130</b>	-	-	<b>26105-104630</b>
		150	-	<b>26105-152130</b>	-	-	<b>26105-154630</b>
		250	-	<b>26105-252130</b>	<b>26105-253030</b>	<b>26105-254030</b>	-
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

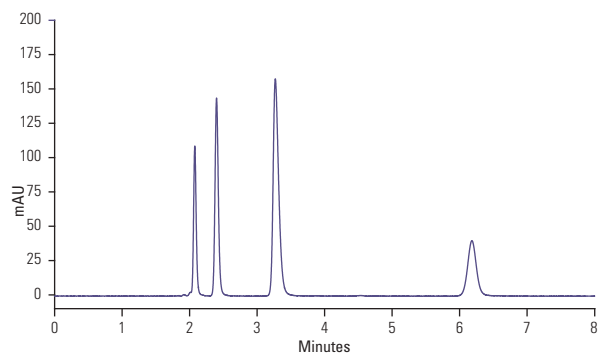
## Hypersil GOLD SAX

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

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



### Monophosphates



#### Hypersil GOLD SAX 5µm, 150 x 4.6mm

Mobile Phase: Aqueous  $\text{KH}_2\text{PO}_4$  (50 mM, pH 3)  
 Temperature: 40°C  
 Flow Rate: 1.0 mL/min  
 Injection Volume: 10 µL  
 Detection: UV, 254 nm

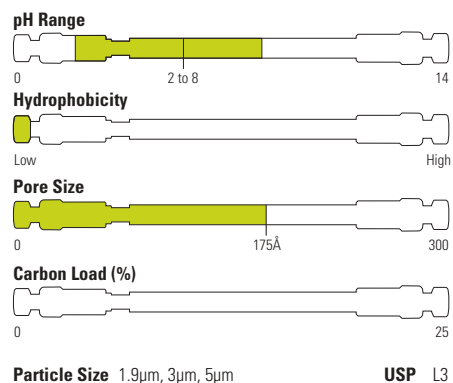
### Hypersil GOLD SAX

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	100	<b>26302-102130</b>	-	-	-
		150	<b>26302-152130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>26303-012101</b>	<b>26303-013001</b>	<b>26303-014001</b>	<b>26303-014001</b>
	HPLC Column	50	<b>26303-052130</b>	-	-	-
		100	<b>26303-102130</b>	<b>26303-103030</b>	-	<b>26303-104630</b>
		150	-	<b>26303-153030</b>	-	<b>26303-154630</b>
5	Drop-in Guard (4/pk)	10	<b>26305-012101</b>	<b>26305-013001</b>	<b>26305-014001</b>	<b>26305-014001</b>
	HPLC Column	50	<b>26305-052130</b>	-	-	-
		100	<b>26305-102130</b>	<b>26305-103030</b>	-	<b>26305-104630</b>
		150	<b>26305-152130</b>	-	-	<b>26305-154630</b>
		250	<b>26305-252130</b>	<b>26305-253030</b>	<b>26305-254030</b>	<b>26305-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

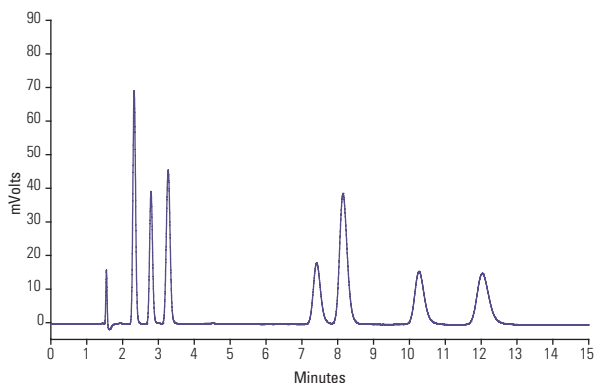
## Hypersil GOLD Silica

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

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



### Steroids



#### Hypersil GOLD Silica 5µm, 150 x 4.6mm

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

### Hypersil GOLD Silica

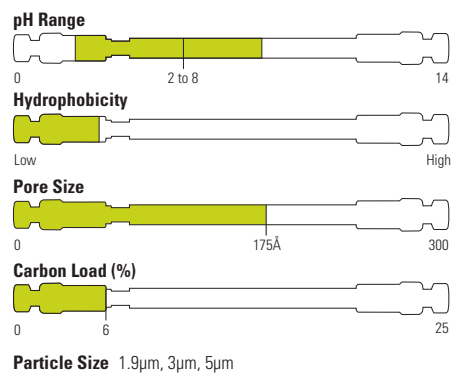
Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	<b>25102-052130</b>	-	-	-
		100	-	<b>25102-102130</b>	-	-	-
		150	-	<b>25102-152130</b>	-	-	-
		200	-	<b>25102-202130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>25103-011001</b>	<b>25103-012101</b>	<b>25103-013001</b>	<b>25103-014001</b>	<b>25103-014001</b>
	HPLC Column	30	-	<b>25103-032130</b>	-	-	<b>25103-034630</b>
		50	-	<b>25103-052130</b>	-	-	-
		100	-	<b>25103-102130</b>	<b>25103-103030</b>	-	-
		150	<b>25103-151030</b>	<b>25103-152130</b>	<b>25103-153030</b>	-	<b>25103-154630</b>
5	Drop-in Guard (4/pk)	10	-	<b>25105-012101</b>	<b>25105-013001</b>	<b>25105-014001</b>	<b>25105-014001</b>
	HPLC Column	50	-	<b>25105-052130</b>	-	-	-
		100	-	<b>25105-102130</b>	<b>25105-103030</b>	-	<b>25105-104630</b>
		150	-	<b>25105-152130</b>	-	-	<b>25105-154630</b>
		250	-	<b>25105-252130</b>	-	<b>25105-254030</b>	<b>25105-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>



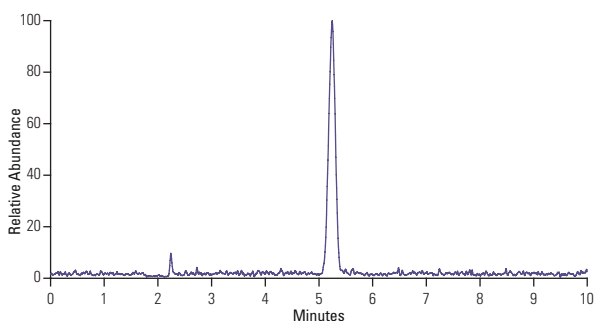
## Hypersil GOLD HILIC

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

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



### Urea

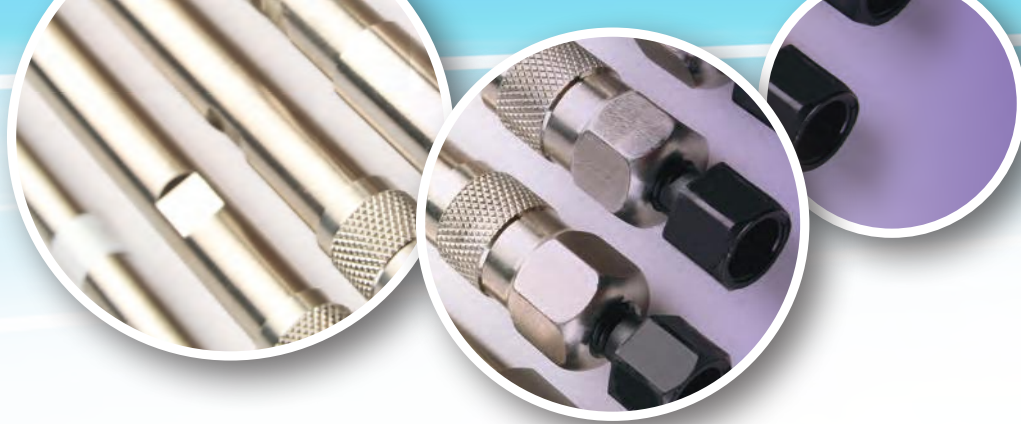


#### Hypersil GOLD HILIC 5µm, 150 x 4.6mm

Mobile Phase:	H <sub>2</sub> O/MeCN (10:90) + 0.1% formic acid
Temperature:	30°C
Flow Rate:	0.6mL/min
Injection Volume:	1µL
Detection:	+ESI
Analytes:	1. Urea

### Hypersil GOLD HILIC

Particle Size (µm)	Format	Length (mm)	1.0mm ID	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.9	UHPLC Column	50	-	<b>26502-052130</b>	-	-	-
		100	-	<b>26502-102130</b>	-	-	-
		150	-	<b>26502-152130</b>	-	-	-
3	Drop-in Guard (4/pk)	10	<b>26503-011001</b>	<b>26503-012101</b>	<b>26503-013001</b>	<b>26503-014001</b>	<b>26503-014001</b>
	HPLC Column	30	-	<b>26503-032130</b>	-	-	-
		50	-	<b>26503-052130</b>	-	-	-
		100	-	<b>26503-102130</b>	<b>26503-103030</b>	-	<b>26503-104630</b>
		150	<b>26503-151030</b>	<b>26503-152130</b>	<b>26503-153030</b>	-	<b>26503-154630</b>
5	Drop-in Guard (4/pk)	10	-	<b>26505-012101</b>	<b>26505-013001</b>	<b>26505-014001</b>	<b>26505-014001</b>
	HPLC Column	50	-	<b>26505-052130</b>	-	-	<b>26505-054630</b>
		100	-	<b>26505-102130</b>	<b>26505-103030</b>	-	-
		150	-	-	-	-	<b>26505-154630</b>
		250	-	<b>26505-252130</b>	<b>26505-253030</b>	<b>26505-254030</b>	<b>26505-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>851-00</b>	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

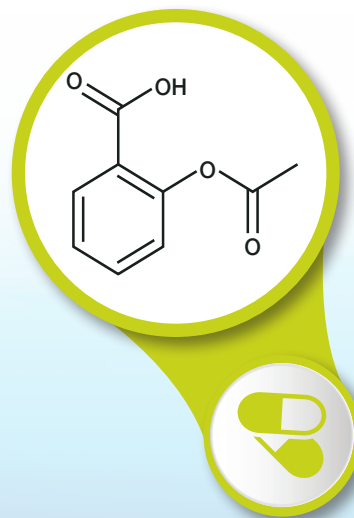


## Acclaim HPLC and UHPLC Columns

### 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



The Acclaim web page contains the latest news, applications and downloads for the Acclaim HPLC column range.

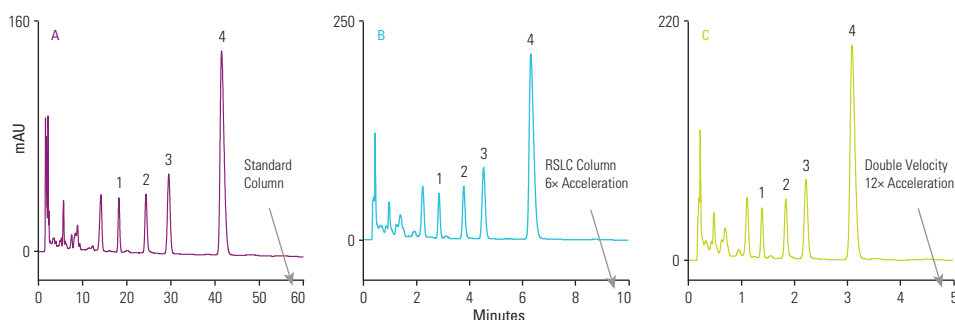
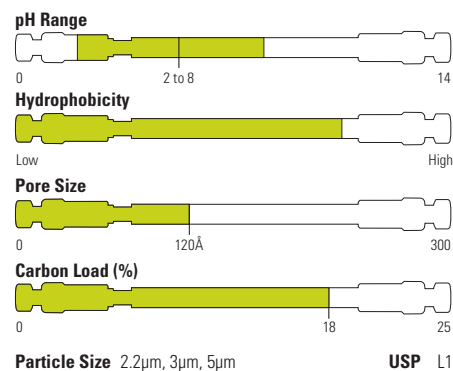
Visit [www.thermoscientific.com/acclaim](http://www.thermoscientific.com/acclaim)

## Acclaim 120 C18

High performance reversed-phase columns for reproducible results

- High hydrophobic retention
- Excellent efficiencies for maximum resolution
- Low silanol activity for excellent peak shapes for basic analytes
- Extremely low bleed, fully compatible with MS

The Acclaim 120 columns are designed for high resolution reversed-phase separations. The very high surface coverage and very low metal content together result in columns with excellent efficiencies. These columns provide exceptional performance for a variety of applications in the pharmaceutical, chemical, environmental and food separations areas.



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

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

### Acclaim 120 C18

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	<b>071402</b>	<b>071609</b>	-
		50	<b>068989</b>	<b>071608</b>	-
		75	-	<b>075699</b>	-
		100	<b>068990</b>	<b>071607</b>	-
		150	<b>071401</b>	-	-
		250	<b>074814</b>	-	-
3	HPLC Column	33	-	<b>066276</b>	-
		50	<b>077999</b>	<b>068973</b>	<b>063189</b>
		75	-	<b>066277</b>	-
		100	<b>077998</b>	<b>078000</b>	<b>078001</b>
		150	<b>063187</b>	<b>063705</b>	<b>063191</b>
		250	<b>077997</b>	<b>070080</b>	-
5	Guard Cartridge	10	<b>069692</b>	<b>071985</b>	<b>069699</b>
	HPLC Column	150	-	-	<b>063197</b>
		250	-	-	<b>063199</b>

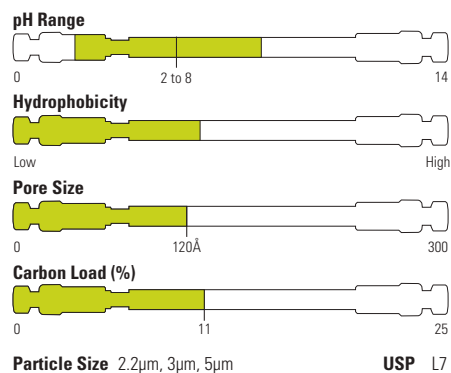
See page 4-037 for Acclaim Guard Holder Ordering Guide

## Acclaim 120 C8

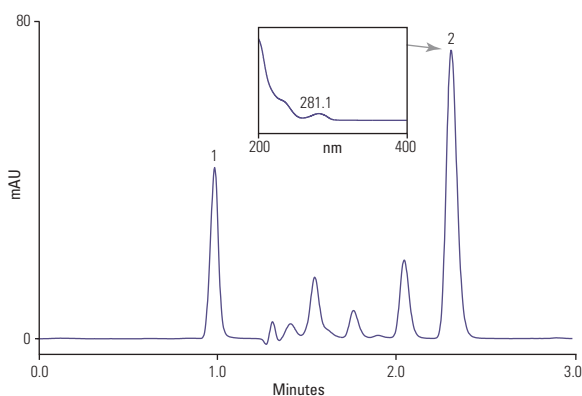
High performance reversed-phase columns with intermediate hydrophobic retention

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

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



### Triclosan in toothpaste



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

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

### Acclaim 120 C8

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	-	<b>072618</b>	-
		50	<b>072615</b>	<b>072619</b>	-
		100	<b>072616</b>	<b>072620</b>	-
		150	<b>072617</b>	-	-
		250	<b>074811</b>	-	-
3	HPLC Column	50	<b>059122</b>	-	<b>059125</b>
		100	<b>059123</b>	-	<b>059126</b>
		150	<b>059124</b>	<b>068970</b>	<b>059127</b>
		250	<b>076185</b>	-	-
5	Guard Cartridge	10	<b>069688</b>	<b>071979</b>	<b>069696</b>
	HPLC Column	50	<b>059134</b>	-	<b>059138</b>
		100	-	-	<b>059139</b>
		150	<b>059136</b>	-	<b>059140</b>
		250	-	-	<b>059141</b>

See page 4-037 for Acclaim Guard Holder Ordering Guide

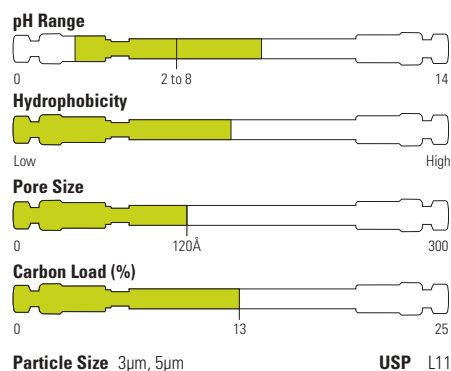
## Acclaim Phenyl-1

A unique reversed-phase column with high aromatic selectivity

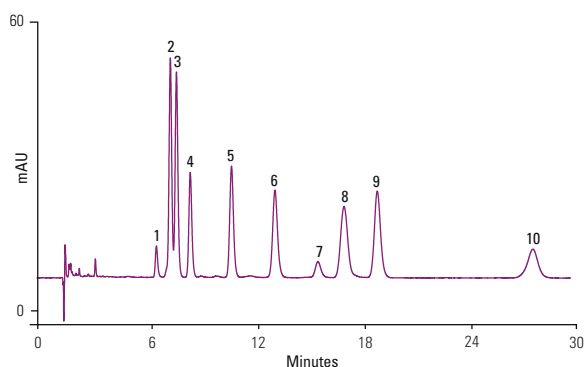
- High aromatic selectivity
- High hydrophobic retention
- Unique and complementary selectivity compared to any other phenyl type column
- Compatibility with highly aqueous mobile phase
- High efficiency and rugged packing

Acclaim Phenyl-1 has a higher pi-pi interaction than other phenyl phases and provides unique selectivity for aromatic compounds while maintaining sufficient hydrophobic interaction and aqueous compatibility for superior chromatographic performance.

The Acclaim Phenyl-1 column can be used in a wide range of applications in pharmaceutical, environmental, food testing and product-quality testing. This column is ideally suited for the analysis of aromatic analytes; some examples include glucocorticosteroids, estrogens, fat-soluble vitamins and phospholipids.



### Separation of fat-soluble vitamins



#### Acclaim Phenyl-1, 3µm, 150 x 3.0mm

Mobile Phase:	Methanol/water v/v 90/10
Temperature:	30°C
Flow Rate:	0.5mL/min
Injection Volume:	2µL
Detection:	UV, 220nm
Analytes:	(100 ppm each)
	1. Retinol acetate (vitamin A acetate)
	2. Vitamin D2
	3. Vitamin D3
	4. delta-Tocopherol
	5. gamma-Tocopherol
	6. alpha-Tocopherol (vitamin E)
	7. Impurity (unknown)
	8. Vitamin E acetate
	9. Vitamin K2
	10. Vitamin K1

### Acclaim Phenyl-1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	Guard Cartridge	10	<b>079934</b>	<b>071974</b>	<b>071973</b>
	HPLC Column	150	<b>071971</b>	<b>071970</b>	<b>071969</b>
5	HPLC Column	150	-	-	<b>088016</b>
		250	-	-	<b>079697</b>

### Acclaim Guard Holder

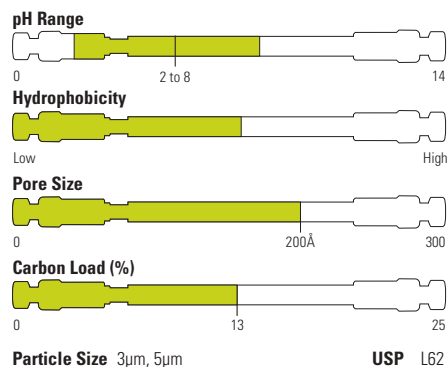
Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	<b>069580</b>
Acclaim Guard Kit (Holder and Coupler) V-2	<b>069707</b>
Guard to Analytical Column Coupler V-2	<b>074188</b>

## Acclaim C30

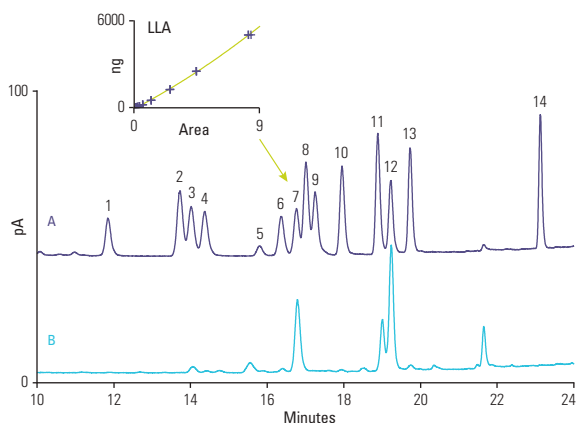
Columns for separating structurally related isomers

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

The Acclaim C30 is designed to provide high shape selectivity for separating hydrophobic structural related isomers and unique selectivity complementary to other reversed-phase columns (e.g. C18).



### Omega fatty acids



#### Acclaim C30, 5µm, 150 x 4.6mm

Mobile Phase A: Water:formic acid:mobile phase B  
900:3.6:100 (v/v)

Mobile Phase B: Acetone:acetonitrile:THF:formic acid  
675:225:100:4(v/v/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	<b>078666</b>	-	<b>078661</b>
		100	<b>078665</b>	-	-
		150	<b>075725</b>	<b>075724</b>	<b>075723</b>
		250	<b>078664</b>	<b>075726</b>	-
5	Guard Cartridge	10	<b>075722</b>	<b>075721</b>	<b>075720</b>
	HPLC Column	150	-	-	<b>075719</b>
		250	-	-	<b>075718</b>

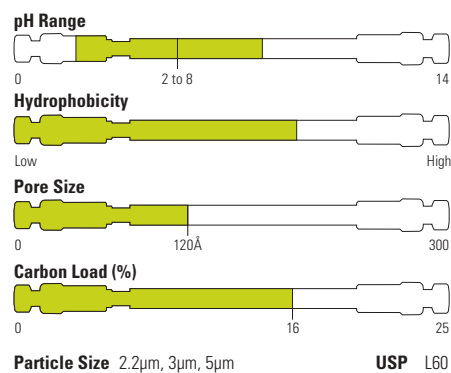
### Acclaim Guard Holder

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

## Acclaim PolarAdvantage

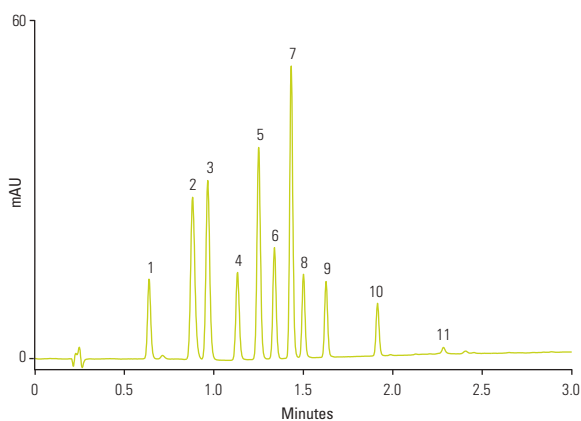
Novel polar-embedded reversed-phase columns with unique selectivity

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



Acclaim PolarAdvantage (PA) columns feature a patented bonding column chemistry that incorporates a polar sulfonamide group with an ether linkage near the silica surface. This unique chemistry provides low silanol activity, compatibility with 100% aqueous mobile phase. The Acclaim PA column offers great separation power to resolve a wide variety of polar and non-polar analytes and supports LC-MS analysis.

### EPA 604 phenols



#### Acclaim RSLC PolarAdvantage, 2.2µm, 50 x 3.0mm

Mobile Phase A: 10mM formic acid + 10mM ammonium formate, pH 3.75 ± 0.05

Mobile Phase B: Acetonitrile

Gradient: -1.5 0.0 0.3 2.6 3.0  
%A 70 70 70 10 10  
%B 30 30 30 90 90

Temperature: 30°C

Flow Rate: 1.25mL/min

Injection Volume: 0.5µL

Detection: UV, 280nm, 10Hz, 0.5s resp. time

Analytes: 1. Phenol  
2. 2,4-Dinitrophenol  
3. 4-Nitrophenol  
4. 2-Chlorophenol  
5. 2-Nitrophenol  
6. 2,4-Dimethylphenol  
7. 4,6-Dinitro-2-methylphenol  
8. 4-Chloro-3-methylphenol  
9. 2,4-Dichlorophenol  
10. 2,4,6-Trichlorophenol  
11. Pentachlorophenol

Sample: Calibration mix, 50µg/mL in water

### Acclaim PolarAdvantage

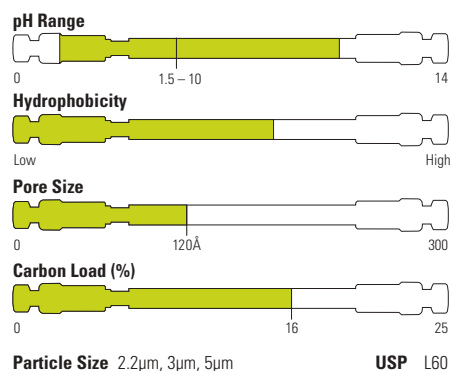
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	50	<b>072622</b>	-	-
		75	-	<b>075698</b>	-
		100	<b>072623</b>	<b>072627</b>	-
		150	<b>072624</b>	-	-
		250	<b>074813</b>	-	-
3	HPLC Column	50	<b>063174</b>	<b>068972</b>	-
		100	<b>061316</b>	<b>076214</b>	-
		150	<b>061317</b>	<b>063693</b>	<b>061318</b>
		250	-	<b>070079</b>	-
5	Guard Cartridge	10	<b>069691</b>	<b>071983</b>	<b>069698</b>
	HPLC Column	50	-	-	<b>061319</b>
		150	-	-	<b>061320</b>
		250	-	-	<b>061321</b>



## Acclaim PolarAdvantage II

Complementary selectivity and enhanced hydrolytic stability

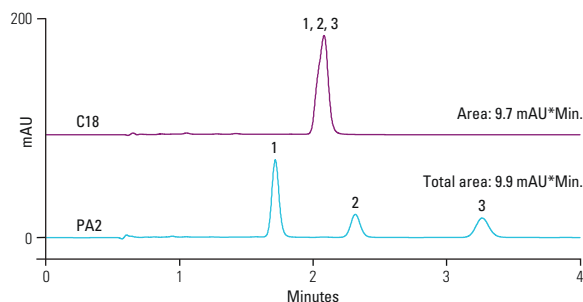
- Unique selectivity complementary to the C18 column
- Novel polar-embedded column chemistry for hydrolytic stability
- Compatible with 100% aqueous mobile phase
- Low bleed for MS compatibility
- Wide range of applications



Acclaim PolarAdvantage II (PA2) columns feature a patented surface chemistry that incorporates an amide-embedded polar group and multi-point attachment between the ligands and the silica surface. This unique chemistry provides enhanced hydrolytic stability from pH 1.5-10 with 100% aqueous mobile phases and exhibits high reversed-phase capacity, with selectivity complementary to conventional C18 columns.

The Acclaim PA2 column is specifically designed to withstand high pH conditions, making it a good choice for the separation of both basic and acidic analytes.

### Turmeric



**Acclaim RSLC 120 C18 2.2µm, 100 x 2.1mm**  
**Acclaim RSLC PA2, 2.2µm, 100 x 2.1mm**

Mobile Phase A:	15mM H <sub>3</sub> PO <sub>4</sub>
Mobile Phase B:	Methanol
Isocratic:	C18: 70% B (v/v) PA2: 80% B (v/v)
Temperature:	30°C
Flow Rate:	0.41mL/min
Detection:	UV, 428nm
Analytes:	1. Curcumin 2. Demethoxycurcumin 3. Bis-demethoxycurcumin
Sample:	Turmeric extract

### Acclaim PolarAdvantage II

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	30	<b>071402</b>	<b>071609</b>	-
		50	<b>068989</b>	<b>071608</b>	-
		100	<b>068990</b>	<b>071607</b>	-
		150	<b>071401</b>	-	-
		250	<b>074814</b>	-	-
3	HPLC Column	33	-	<b>066276</b>	-
		50	<b>077999</b>	<b>068973</b>	<b>063189</b>
		75	-	<b>066277</b>	-
		100	<b>077998</b>	<b>078000</b>	<b>078001</b>
		150	<b>063187</b>	<b>063705</b>	<b>063191</b>
		250	<b>077997</b>	<b>070080</b>	-
5	Guard Cartridge	10	<b>069692</b>	<b>071985</b>	<b>069699</b>
	HPLC Column	150	-	-	<b>063197</b>
		250	-	-	<b>063199</b>

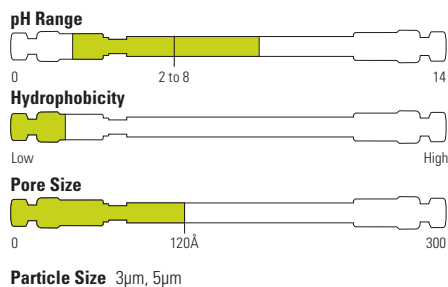
See page 4-037 for Acclaim Guard Holder Ordering Guide

## Acclaim HILIC-10

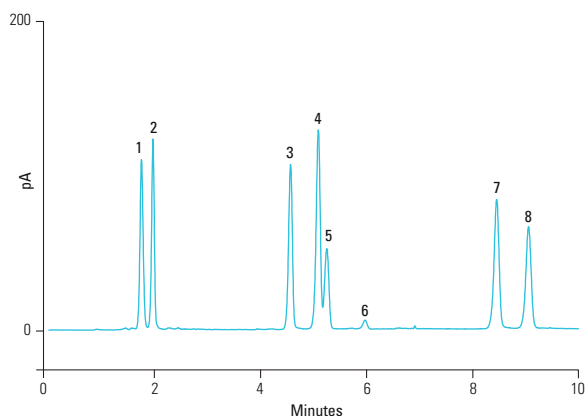
Designed with unique selectivity for hydrophilic molecules

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

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



### Glycerides



#### Acclaim HILIC-10, 3μm, 150 x 3.0mm

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

### Acclaim HILIC-10

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

### Acclaim Guard Holder

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

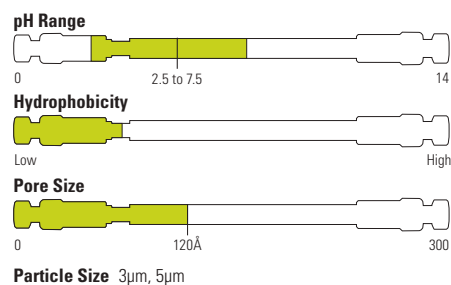
## Acclaim Mixed-Mode HILIC-1

Uniquely designed for both reversed-phase and HILIC operations

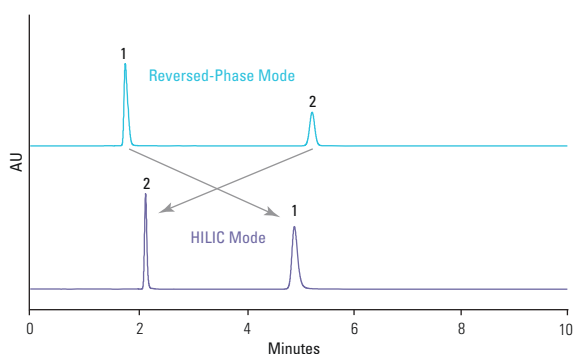
- Can operate in both RP and HILIC modes
- Retains highly polar molecules
- Unique selectivity complementary to RP columns
- Broader application range compared with conventional diol-based columns
- High-efficiency column for high-resolution separations

The Acclaim Mixed-Mode HILIC-1 column features a unique, high-efficiency, silica-based HPLC mixed-mode stationary phase that combines both reversed-phase (RP) and hydrophilic interaction liquid chromatography (HILIC) properties. This combination allows both hydrophobic and hydrophilic interactions to be utilized to optimize separations.

The functional group is of a hydrophobic alkyl chain with a diol group at the terminus. This unique combination results in the adjustable selectivity, making Acclaim Mixed-Mode HILIC-1 separate mixtures that would be impossible for a C18 column. This column is suitable for a broad range of applications, including non-ionic ethoxylated surfactants, drug metabolites, lipids, polyethylene glycols (PEGs), ethoxylated surfactants, and more.



### Cytosine and naphthalene



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

Mobile Phase:	CH <sub>3</sub> CN/0.1 M NH <sub>4</sub> OAc, pH 5.2 v/v 52/48 for RP mode v/v 92/8 for HILIC mode
Temperature:	30°C
Flow Rate:	1mL/min
Injection Volume:	10µL
Detection:	UV, 254nm
Analytes:	1. Cytosine (100 ppm) 2. Naphthalene (100 ppm)

### Acclaim Mixed-Mode HILIC-1

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	50	-	<b>071912</b>	-
		150	<b>070091</b>	<b>070090</b>	-
5	Guard Cartridge	10	<b>069694</b>	<b>071913</b>	<b>069706</b>
	HPLC Column	150	<b>066847</b>	-	<b>066843</b>
		250	-	-	<b>066844</b>

### Acclaim Guard Holder

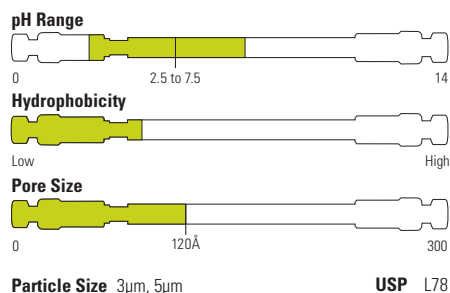
Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	<b>069580</b>
Acclaim Guard Kit (Holder and Coupler) V-2	<b>069707</b>
Guard to Analytical Column Coupler V-2	<b>074188</b>

## Acclaim Mixed-Mode WAX-1

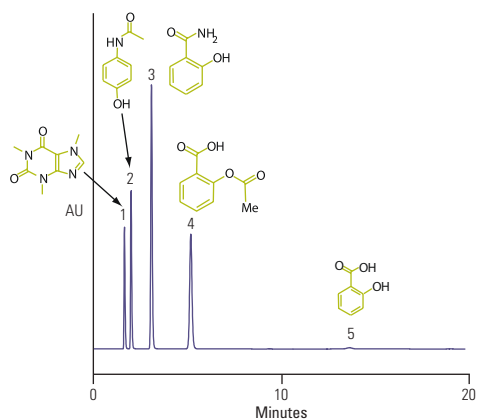
Designed for separating anionic molecules with powerful adjustable selectivity control

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

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



### Pain relief medicine



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

Mobile Phase: 40/60 v/v Acetonitrile/buffer  
(6.8 g potassium monophosphate and  
0.5 g pyrophosphate in 1000 g D.I. H<sub>2</sub>O,  
pH is adjusted to 6.0 with NaOH)

Temperature: 30°C

Flow Rate: 1mL/min

Injection Volume: 1µL

Detection: UV, 220nm

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	-	<b>071908</b>	-
		150	<b>070089</b>	<b>070088</b>	-
5	Guard Cartridge	10	<b>069686</b>	<b>071909</b>	<b>069704</b>
	HPLC Column	150	<b>067084</b>	-	<b>064984</b>
		250	-	-	<b>064985</b>

### Acclaim Guard Holder

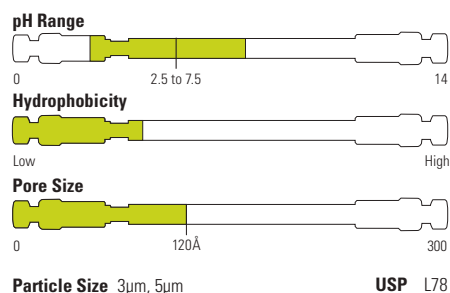
Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	<b>069580</b>
Acclaim Guard Kit (Holder and Coupler) V-2	<b>069707</b>
Guard to Analytical Column Coupler V-2	<b>074188</b>

## Acclaim Mixed-Mode WCX-1

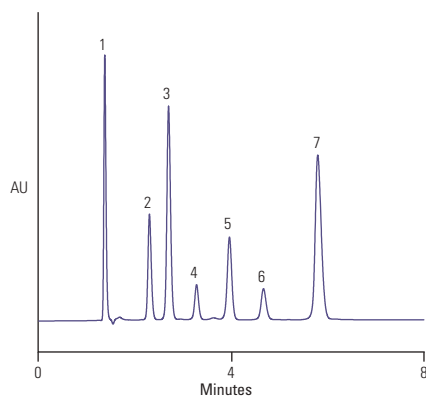
Designed for separating cationic molecules with adjustable selectivity control

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

The Acclaim Mixed-Mode WCX-1 is a novel, high-efficiency, silica-based column, with a proprietary ligand with both hydrophobic and weak cation exchange properties. Selectivity of ionizable and neutral compounds can be controlled independently or simultaneously by tuning mobile phase ionic strength, pH or organic modifier. This column therefore can separate using multiple separation modes: reversed-phase, cation exchange, and normal-phase/ HILIC and is recommended for a variety of industrial applications, including pharmaceutical, chemical, consumer products, foods and beverages.



### Pharmaceutical counterions



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

Mobile Phase:	40/60 v/v CH <sub>3</sub> CN/NH <sub>4</sub> OAc, pH 5.2 (20 mM total)
Temperature:	30°C
Flow Rate:	1mL/min
Injection Volume:	5µL
Detection:	UV (225 nm)
Analytes:	1. Maleate 50µg/mL 2. Ketoprofen 30µg/mL 3. Naproxen 30µg/mL 4. Hydrocortisone 60µg/mL 5. Dexamethasone 60µg/mL 6. Oxprenolol 300µg/mL 7. Timolol 250µg/mL

### Acclaim Mixed-Mode WCX-1

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

### Acclaim Guard Holder

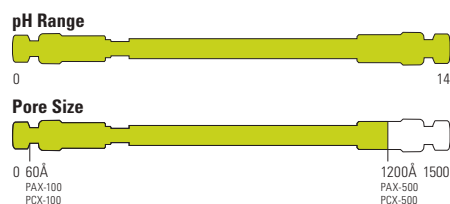
Format	Cat. No.
Acclaim Guard Cartridge Holder V-2	<b>069580</b>
Acclaim Guard Kit (Holder and Coupler) V-2	<b>069707</b>
Guard to Analytical Column Coupler V-2	<b>074188</b>

## OmniPac

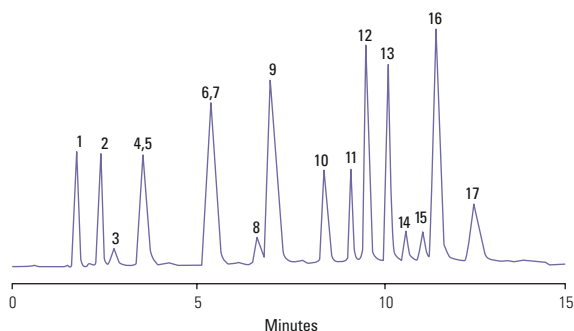
DVB polymer columns for combined ion exchange and reversed-phase separations

- 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	<b>042151</b>
		250	<b>042150</b>
PAX-500	Microporous	50	<b>042153</b>
		250	<b>042152</b>

### OmniPac Cation Exchange

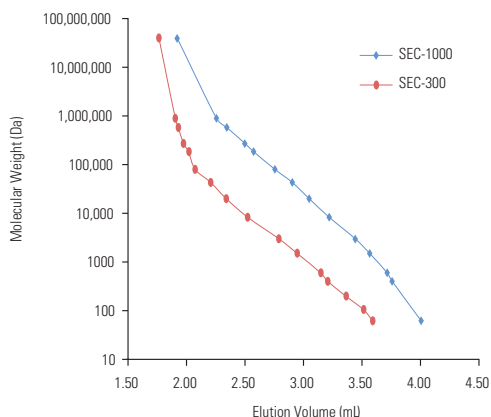
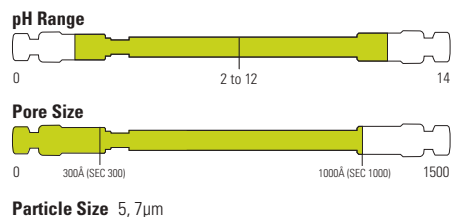
Description	Porosity	Length (mm)	4.0mm ID
PCX-100	Microporous	50	<b>042193</b>
		250	<b>042189</b>
PCX-500	Microporous	50	<b>042195</b>
		250	<b>042191</b>

## Acclaim Size Exclusion Chromatography (SEC)

High performance SEC columns for analysis of water soluble polymers

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

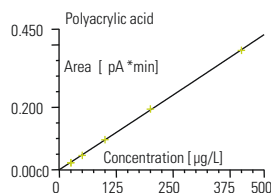
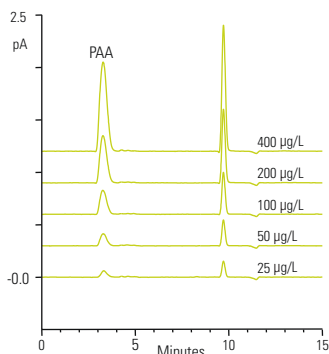
Thermo Scientific™ Acclaim™ SEC-300 and SEC-1000 are a family of resin based, high performance size exclusion chromatography columns specifically designed for the separation of water soluble polymers and oligomers.



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

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

## Polyacrylic acid using size-exclusion chromatography 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	<b>082740</b>	—
		HPLC Column	150	—	<b>079726</b>
			300	<b>079723</b>	<b>079725</b>
Acclaim SEC-1000	7	Guard	33	<b>082739</b>	—
		HPLC Column	150	—	<b>079722</b>
			300	<b>079724</b>	<b>079721</b>







# 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



The Application Specific column web page contains the latest news, applications and downloads for the Application Specific HPLC column range. Visit [www.thermoscientific.com/columns](http://www.thermoscientific.com/columns)

## Acclaim AmG C18

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

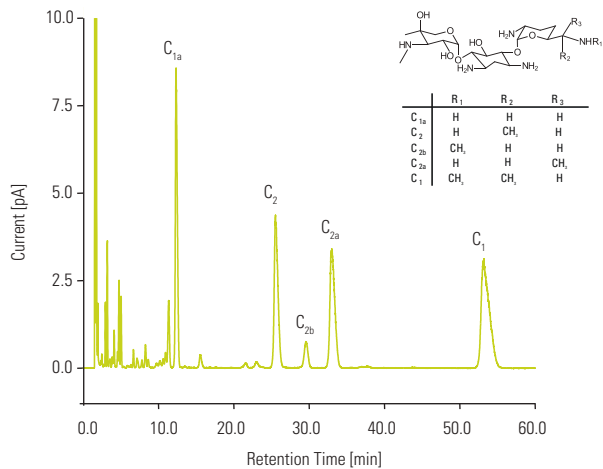
- Rugged and reproducible
- Excellent selectivity for the HPLC of aminoglycosides
- Superior resistance to acidic conditions for long column lifetime
- Easy to use with only aqueous mobile phase; TFA only, or TFA/HFBA or PFPA is needed
- Compatible with simple rugged methods; no solvents are required
- High efficiency and throughput



Aminoglycoside antibiotics are commonly used as clinical and veterinary medicines to treat bacterial infections. HPLC using ion-pairing reversed-phase separations is an effective technique for simultaneous qualitative and quantitative determination of aminoglycosides.

The Acclaim AmG C18 column is designed to provide excellent stability, selectivity and high resolution. It has a unique surface, a polymer encapsulated silica covalently bonded with a C18 ligand. This ensures ultra-stability when exposure to low pH (<1) and high temperature separation conditions.

### Isocratic separation of gentamicin sulfate using 100 mM TFA as the mobile phase



#### Acclaim AmG C18, 3µm, 150 x 3.0mm

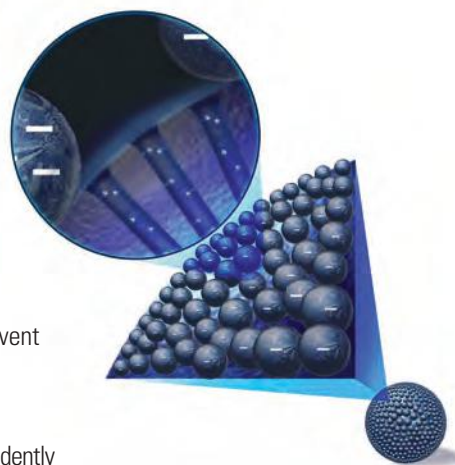
Mobile Phase:	100 mM TFA
Temperature:	30°C
Flow Rate:	0.425 mL/min
Injection Volume:	2µL
Detection:	Corona Veo RS (Filter = 5.0 s; Evaporation Temp = 35°C; Data Rate = 5 Hz; Power Function = 1.00)
Sample:	Gentamicin (1 mg/mL)

### Acclaim AmG C18

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	Guard Cartridges (2/pk)	10	<b>088754</b>	<b>088756</b>	<b>088758</b>
	HPLC Column	150	<b>088753</b>	<b>088755</b>	<b>088757</b>
Guard Cartridge Holder			<b>069580</b>	<b>069580</b>	<b>069580</b>

## Acclaim Trinity P1

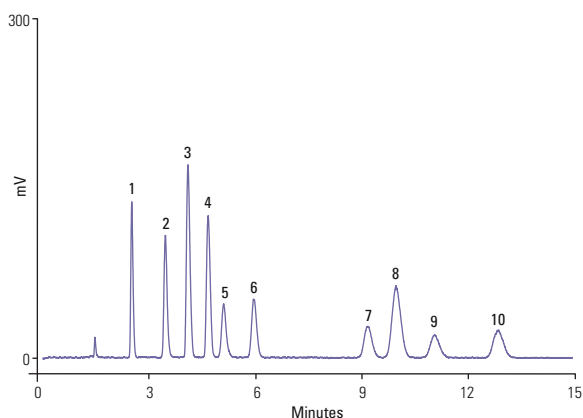
Mixed mode column technology combining reversed-phase, anion exchange and cation exchange functionality on a single support



- 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).

### Simultaneous separation of pharmaceutical counterions



**Acclaim Trinity P1, 3µm, 100 x 3.0mm**

Mobile Phase:	60/40 v/v CH <sub>3</sub> CN/20mM (total) NH <sub>4</sub> OAc, pH 5
Temperature:	30°C
Flow Rate:	0.5mL/min
Injection Volume:	2µL
Detection:	Corona ultra (Gain = 100 pA; Filter = med; Neb Temp = 30°C)
Analytes: (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

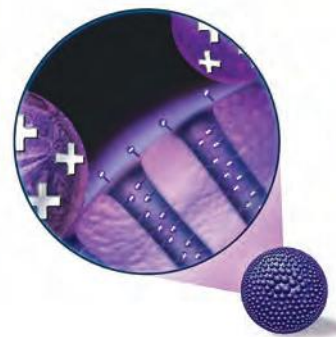
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID
3	Guard Cartridges (2/pk)	10	<b>071391</b>	<b>071390</b>
		HPLC Column	<b>075565</b>	<b>071388</b>
		100	<b>071389</b>	<b>071387</b>
		150	<b>075564</b>	<b>075563</b>

### Acclaim Guard Holder

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

## Acclaim Trinity P2

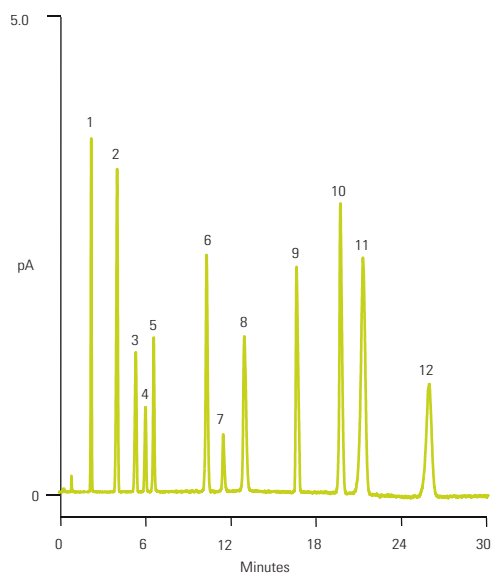
Mixed-mode column technology; hydrophilic interaction combining HILIC, anion exchange and cation exchange functionalities



- 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 NH <sub>4</sub> OFm, pH 3.65 gradient
Temperature:	30°C
Flow Rate:	0.60 mL/min
Injection Volume:	2µL
Detection:	Corona Veo Charged Aerosol Detector
Analytes:	1. Phosphate 2. Sodium 3. Potassium 4. Chloride 5. Malate 6. Bromide 7. Nitrate 8. Citrate 9. Fumarate 10. Sulfate 11. Magnesium 12. Calcium
Samples:	0.02 – 0.10 mg/mL each in D.I. water

Time (min)	H <sub>2</sub> O	0.1 M Ammonium formate, pH3.65
-10	0.760	1.474
0	80	20
2	80	20
22	0	100
30	0	100

### Acclaim Trinity P2

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID
3	Guard Cartridges (2/pk)	10	<b>085435</b>	<b>085436</b>
	HPLC Column	50	<b>085431</b>	<b>085433</b>
		100	<b>085432</b>	<b>085434</b>

### Acclaim Guard Holder

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

## Acclaim Organic Acid

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

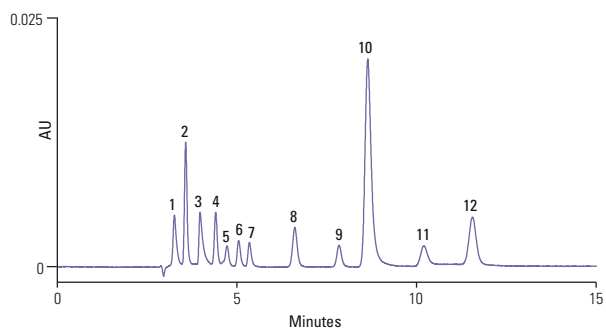
- Tested to guarantee consistent hydrophilic organic acid separations
- Compatible with 100% aqueous mobile phases
- Hydrolytic stability at low-pH conditions
- Ideal selectivity for separating a wide spectrum of organic acids
- Excellent column efficiency and peak shapes for organic acids



The Acclaim Organic Acid (OA) is a silica-based reversed-phase column designed for high-efficiency, high-throughput organic acids analysis. It offers unparalleled performance for separating hydroxyl aliphatic and aromatic organic acids.

The Acclaim OA is the recommended column for determining small hydrophilic organic acids, C1 to C7 aliphatic acids, and hydrophilic aromatic acid and is also valuable for the analysis and quality assurance of food and beverage products, pharmaceutical preparations, plating baths, and manufacturing chemicals, chemical intermediates, and environmental samples.

### Hydrophilic organic acids



#### Acclaim Organic Acid, 5µm, 4 × 250mm

Mobile Phase:	100mM Na <sub>2</sub> SO <sub>4</sub> , pH 2.65 (adjusted with methanesulfonic acid)
Temperature:	30°C
Flow Rate:	0.6mL/min
Injection Volume:	5µL
Detection:	UV, 210nm
Analytes:	<ol style="list-style-type: none"> <li>1. Oxalic acid 15mg/L (ppm)</li> <li>2. Tartaric acid 120</li> <li>3. Formic acid 180</li> <li>4. Malic acid 120</li> <li>5. iso-Citric acid 120</li> <li>6. Lactic acid 180</li> <li>7. Acetic acid 120</li> <li>8. Citric acid 120</li> <li>9. Succinic acid 120</li> <li>10. Fumaric acid 7</li> <li>11. cis-Aconitic acid *</li> <li>12. trans-Aconitic acid *</li> </ol>

\* 7ppm total for cis and trans isomers

### Acclaim Organic Acid

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID
3	HPLC Column	150	<b>070087</b>	<b>070086</b>	—
5	Guard Cartridges (2/pkg)	10	—	<b>071987</b>	<b>069700</b>
	HPLC Column	150	—	—	<b>062903</b>
		250	—	—	<b>062902</b>

### Acclaim Guard Holder

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

## Acclaim Surfactant

Excellent performance for separating a broad range of surfactants

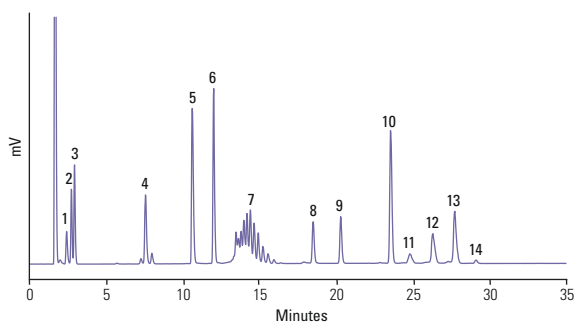
- Ideal selectivity for separation of anionic, nonionic, cationic and amphoteric surfactants
- Excellent peak shapes, especially for cationic surfactants
- Compatible with highly aqueous mobile phases
- Improved resolution for ethoxylated surfactants
- Rugged separations under a variety of conditions



The Acclaim Surfactant columns are the first generation high-efficiency, silica-based columns designed specifically for separating a wide variety of surfactants, including anionic, cationic, nonionic, ethoxylated and amphoteric surfactants using UV, ELSD or RI detection.

Surfactants are widely used in industrial, agricultural, and pharmaceutical markets, in products as diverse as pesticides, detergent powders, petroleum products, cosmetics, and pharmaceuticals. The Acclaim Surfactant column was designed specifically for HPLC separation of these surfactants.

### Inorganic anion, hydrotropes, cationic, nonionic, amphoteric, and anionic surfactants



#### Acclaim Surfactant, 5µm, 150 x 4.6mm

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

### Acclaim Surfactant

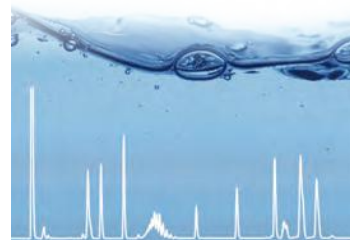
Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
3	HPLC Column	150	<b>070085</b>	<b>070084</b>	—
5	Guard Cartridges (2/pk)	10	<b>069693</b>	<b>071991</b>	<b>069701</b>
	HPLC Column	150	<b>068123</b>	—	<b>063201</b>
		250	—	—	<b>063203</b>

### Acclaim Guard Holder

Description	Cat. No.
Acclaim SST Guard Cartridge Holder V-2	<b>069580</b>
Acclaim Guard Kit (Holder and coupler) V-2	<b>069707</b>
Guard to Analytical Column Coupler V-2	<b>074188</b>

## Acclaim Surfactant Plus

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

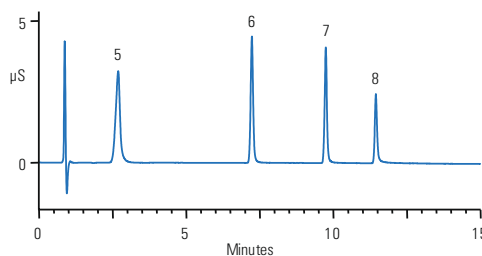
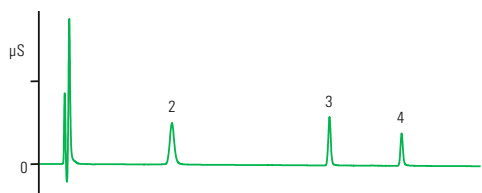


- Ideal selectivity for simultaneous separation of anionic, nonionic, cationic, and amphoteric surfactants
- Compatible with multiple detectors including MS, CAD, ELSD and UV
- Well suited for the determination of cationic surfactants
- High efficiency and fast analysis
- Rugged separations under a variety 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	<b>078955</b>	<b>078952</b>	—	—
		150	<b>078954</b>	<b>078951</b>	<b>078950</b>	—
		250	<b>078953</b>	—	—	—
5	Guard Cartridges (2/pk)	10	<b>078960</b>	<b>078959</b>	<b>082773</b>	—
		HPLC Column	250	—	—	<b>082767</b>
	HPLC Column	250	—	—	<b>082768</b>	—
		150	—	—	<b>082768</b>	<b>078956</b>

### Acclaim Guard Holder

Description	Cat. No.
Acclaim SST Guard Cartridge Holder V-2	<b>069580</b>
Acclaim Guard Kit (Holder and coupler) V-2	<b>069707</b>
Guard to Analytical Column Coupler V-2	<b>074188</b>



## Acclaim Explosives E2

The best solution for explosives analysis (EPA Method 8330)

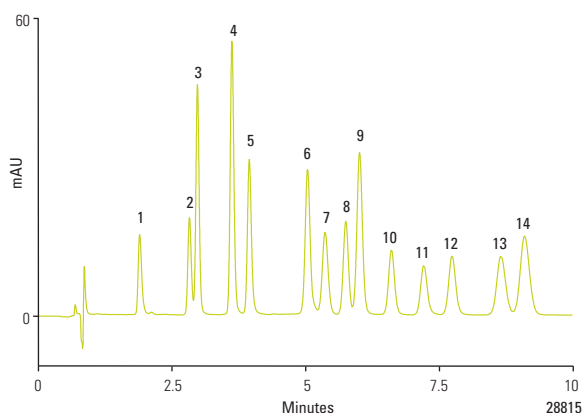
- Acclaim E2 columns provide baseline resolution of all 14 compounds targeted by EPA Method 8330
- Columns available in 2.2, 3 and 5µm particle size
- Simple isocratic elution conditions
- Rugged columns with good lot-to-lot reproducibility



Acclaim Explosives E2 columns are specifically designed to resolve all 14 explosives listed in EPA SW-846 Method 8330: Nitroaromatics and Nitramines by HPLC. The novel and unique chemistries of these columns provide superior resolution with complementary selectivities.

The Acclaim Explosives E2 may be used as either a primary or a confirmatory column. The unique selectivity and versatility of this column provides a wider application range, including the analysis of explosives beyond U.S. EPA Method 8330 (ISO22478).

### Rapid determination of EPA 8330A explosives



#### Acclaim RSLC Explosives E2, 2.2µm, 100 x 2.1mm

Mobile Phase:	Methanol:water 48:52 (v/v)														
Temperature:	31°C														
Flow Rate:	0.34mL/min (293 bar)														
Injection Volume:	1µL														
Detection:	UV, 254nm														
Analytes:	<table border="0"> <tr> <td>1. HMX</td> <td>8. 2,6-DNT</td> </tr> <tr> <td>2. RDX</td> <td>9. 2,4-DNT</td> </tr> <tr> <td>3. 1,3,5-TNB</td> <td>10. 2-NT</td> </tr> <tr> <td>4. 3,5-DNB</td> <td>11. 4-NT</td> </tr> <tr> <td>5. NB</td> <td>12. 3-NT</td> </tr> <tr> <td>6. 2,4,6-TNT</td> <td>13. 4-Am-2,6-DNT</td> </tr> <tr> <td>7. Tetryl</td> <td>14. 2-Am-4,6-DNT</td> </tr> </table>	1. HMX	8. 2,6-DNT	2. RDX	9. 2,4-DNT	3. 1,3,5-TNB	10. 2-NT	4. 3,5-DNB	11. 4-NT	5. NB	12. 3-NT	6. 2,4,6-TNT	13. 4-Am-2,6-DNT	7. Tetryl	14. 2-Am-4,6-DNT
1. HMX	8. 2,6-DNT														
2. RDX	9. 2,4-DNT														
3. 1,3,5-TNB	10. 2-NT														
4. 3,5-DNB	11. 4-NT														
5. NB	12. 3-NT														
6. 2,4,6-TNT	13. 4-Am-2,6-DNT														
7. Tetryl	14. 2-Am-4,6-DNT														
Sample:	Calibration mix, 25µg/mL in 50% acetonitrile														

### Acclaim Explosives E2

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	100	<b>076225</b>	<b>076227</b>	—
		150	<b>076226</b>	—	—
3	HPLC Column	150	<b>070083</b>	<b>070082</b>	—
		250	—	<b>070081</b>	—
5	Guard Cartridges (2/pk)	10	—	<b>071989</b>	<b>069703</b>
	HPLC Column	250	—	—	<b>064309</b>

See page 4-054 for Acclaim Guard Holder Ordering Guide

## Acclaim Trinity Q1

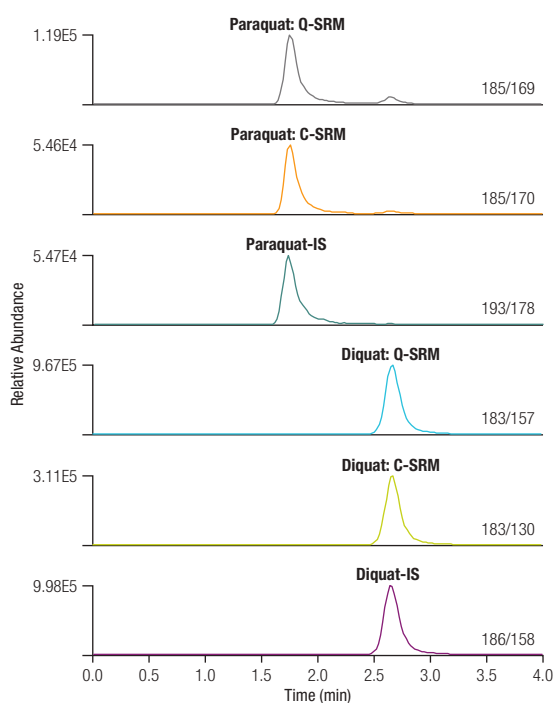
For trace analysis of diquat and paraquat

- Excellent resolution of diquat and paraquat
- Good peak shape
- Fast analysis
- LC-MS compatible
- No ion-pairing reagent needed



Acclaim Trinity Q1 columns are unique, high-efficiency, silica-based columns designed for the separation of the herbicides diquat and paraquat. These herbicides are toxic and residues are monitored in drinking water, wastewater and agricultural products. The Acclaim Trinity Q1 column is a tri-mode (WCX, WAX, RP), column based on Nano-polymer Silica Hybrid technology. It offers unmatched high-resolution and high-throughput trace analysis of the herbicides diquat and paraquat by LC-MS/MS and LC-UV methods.

### Diquat and paraquat



#### Acclaim Trinity Q1, 3µm, 50 x 3.0mm

Mobile Phase:	25% ammonium acetate (100mM, pH 5.0); 75% acetonitrile		
Temperature:	Ambient		
Flow Rate:	0.5mL/min		
Injection Volume:	5µL		
Detection:	Show Mass Spectrometric conditions and the scan events etc. table underneath are the peaks section		
Mass Spectrometric Conditions			
System:	Thermo Scientific TSQ Quantiva Access MAX Quadrupole Mass Spectrometer		
Interface:	Heated Electrospray Ionization with HESI II probe		
Spray Voltage:	1500 V		
Vaporizer Temp:	400 °C		
Sheath Gas Pressure:	70		
Aux Gas Pressure:	10		
Capillary Temp:	350 °C		
Quantitation Mode:	Selected Reaction Monitoring (SRM )		
Scan Events	Precursor	Quantitative SRM (CID)	Confirmative SRM (CID)
Paraquat	185	169 (27)	170 (17)
Paraquat-d <sub>6</sub>	193	178 (17)	
Diquat	183	157 (22)	130 (31)
Diquat-d <sub>3</sub>	186	158 (22)	

### Acclaim Trinity Q1

Particle Size		Length (mm)	2.1mm ID	3.0mm ID
3	HPLC Column	50	<b>083242</b>	<b>083241</b>
		100	<b>079717</b>	<b>079715</b>
5	Guard Cartridges (2/pk)	10	<b>083244</b>	<b>079719</b>

## Acclaim Carbamate

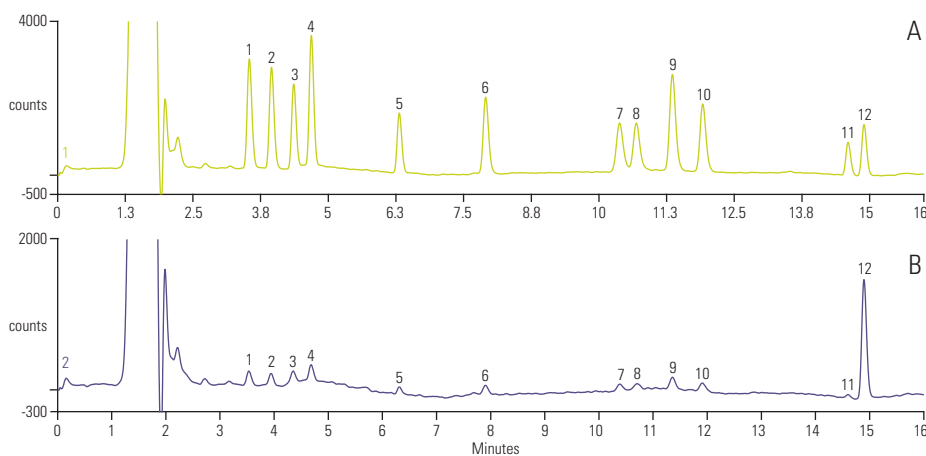
Designed for baseline separation of carbamate pesticides specified in US EPA Method 531.2

- Baseline separation of carbamate pesticides specified in US EPA Method 531.2
- Use with either LC/postcolumn derivatization/fluorescence or LC-MS detection
- Available in 2.2, 3 and 5µm particle size
- Compatible with both binary (methanol/water) and ternary (acetonitrile/methanol/water) mobile phase gradients
- High-efficiency, extremely low column bleed, and rugged column packing



Acclaim Carbamate columns are designed for baseline separation of carbamates (*N*-methylcarbamate and *N*-methylcarbamoyloxime pesticides) specified in US EPA Method 531.2. Carbamate pesticides are widely used throughout the world. Drinking water and raw surface water is monitored for the presence of carbamate pesticides and related compounds using an established EPA Method 531.2 that uses HPLC with postcolumn derivatization. LC-MS is the method of choice for the ultimate sensitivity.

### Carbamate standard - spiked rice samples



A: without dispersive SPE  
B: with dispersive SPE using PSA

#### Acclaim Carbamate, 3µm, 150 x 3.0mm

Mobile Phase:	Methanol-H <sub>2</sub> O
Gradient:	Methanol, -4.0-0.0 min, 14%; 2.0 min, 20%; 8.0 min, 40%; 13.6-16 min, 70%
Temperature:	50 °C
Flow Rate:	0.9mL/min
Injection Volume:	250µL
Detection:	Excitation/330nm and Emission/465nm
Analytes:	1. Aldicarb sulfoxide 2. Aldicarb sulfone 3. Oxamyl 4. Methomyl 5. 3-Hydroxy carbofuran 6. Aldicarb 7. Propoxur 8. Carbofuran 9. Carbaryl 10. 1-Naphthol 11. Methiocarb 12. BDMC (I.S.)

### Acclaim Carbamate

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	100	<b>075597</b>	—	—
		150	<b>075596</b>	—	—
3	Guard Cartridges (2/pk)	10	<b>072930</b>	<b>072929</b>	<b>072928</b>
	HPLC Column	150	<b>072927</b>	<b>072926</b>	<b>072925</b>
5	HPLC Column	250	—	—	<b>072924</b>

### Acclaim Guard Holder

Description	Cat. No.
Acclaim SST Guard Cartridge Holder V-2	<b>069580</b>
Acclaim Guard Kit (Holder and coupler) V-2	<b>069707</b>
Guard to Analytical Column Coupler V-2	<b>074188</b>

## Acclaim Carbonyl C18

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

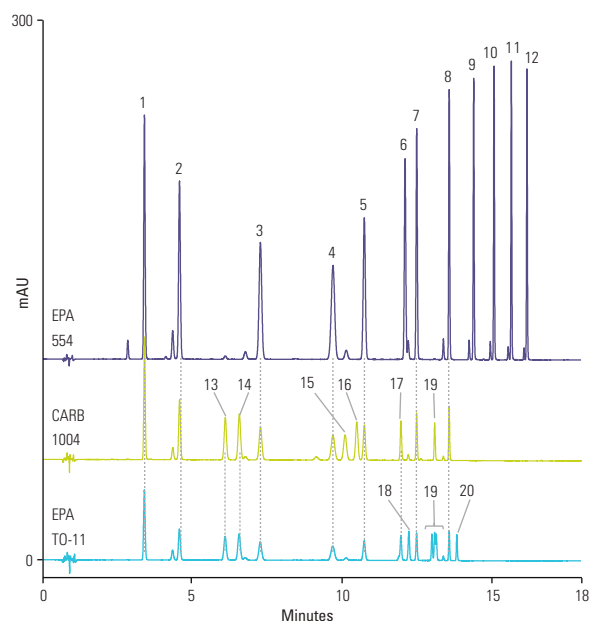
- Ideal selectivity for baseline resolution of DNPH derivatives of aldehydes and ketones regulated by various official methods, including EPA 554, EPA 8315, EPA 1667, EPA TO-11, and CARB 1004
- High efficiency for UHPLC performance
- Rugged columns with good lot-to-lot reproducibility
- Proven robust methods



Acclaim Carbonyl C18 columns are silica-based reversed phase columns designed specifically for separating DNPH derivatives of aldehydes and ketones. They exhibit superior resolution compared with other commercially available columns.

Aldehydes and ketones are common pollutants in air and water. Several standard methods have been developed to apply using dinitrophenylhydrazine (DNPH) to various environmental situations to measure these compounds. Some of the better known ones include CARB 1004 for vehicle exhaust, EPA 554 for drinking water, EPA 1667 for pharmaceutical wastewater, and EPA 8315 for general wastewater.

### DNPH aldehydes and ketones



#### Acclaim Carbonyl RSLC, 2.2µm, 150 x 2.1mm

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

### Acclaim Carbonyl C18

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
2.2	RSLC Column	100	<b>077972</b>	<b>077974</b>	—
		150	<b>077973</b>	—	—
3	HPLC Column	150	<b>079011</b>	<b>079010</b>	—
		250	—	<b>079009</b>	—
5	Guard Cartridge (2/pk)	10	<b>079012</b>	<b>079013</b>	<b>079014</b>
	HPLC Column	150	—	—	<b>079008</b>
		250	—	—	<b>083214</b>



## Hypercarb HPLC Columns

### 100% porous graphitic carbon for extended separation capabilities

Used for the retention and separation of highly polar species. Thermo Scientific™ Hypercarb™ columns are ideally suited to solve in both reversed phase and normal phase HPLC and LC-MS applications.

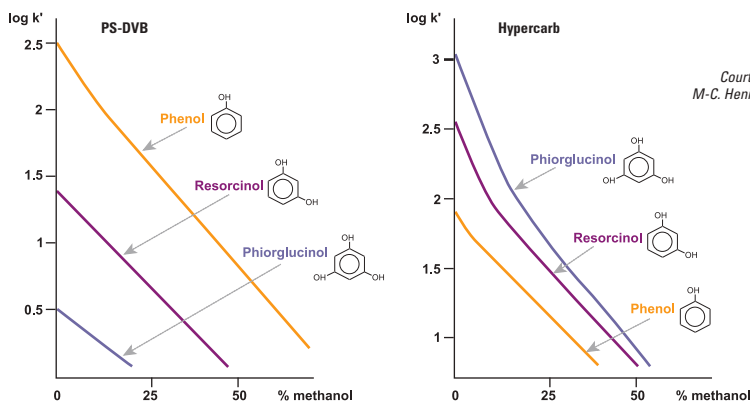
- **Exceptional Retention of Very Polar Analytes**  
Ideal for complex separations
- **Separates Structurally Related Substances**  
More effective than silica-based columns
- **pH Stable from 0 to 14**  
Extended temperature and pressure capabilities



The Hypercarb web page contains the latest news, applications and downloads for the Hypercarb HPLC column range. Visit [www.thermoscientific.com/hypercarb](http://www.thermoscientific.com/hypercarb)

### 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.

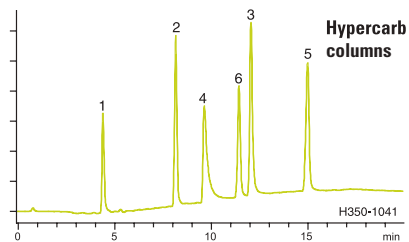
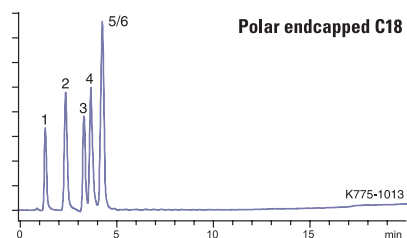


Retention on Hypercarb columns increases as polarity of the analyte increases, which is the opposite of typical reversed phase materials such as PS-DVB

### 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

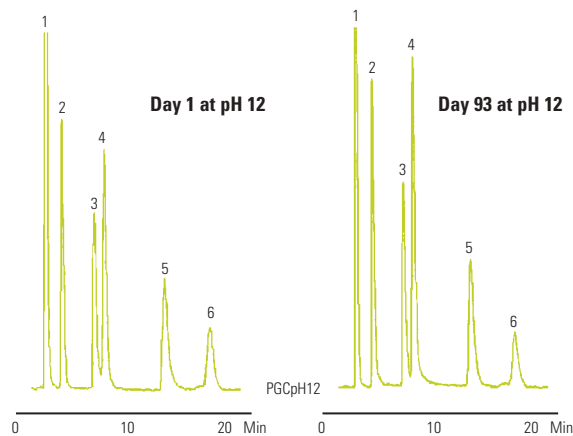
with typical silica-based columns. Hypercarb columns offer more choice in buffer selection while handling both high temperature and high pressure.



Additional retention is achieved for polar compounds using a Hypercarb column compared to a polar endcapped C18. Note also the change in elution order.

### Hypercarb, 5µm, 100 x 0.32mm

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



### Hypercarb, 5µm, 100 x 4.6mm

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

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



**Hypercarb**

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.		
3	Drop-in Guard (4/pk)	10	2.1	<b>35003-012101</b>		
			3.0	<b>35003-013001</b>		
			4.6	<b>35003-014001</b>		
	HPLC Column	30	30	1.0	<b>35003-032130</b>	
				3.0	<b>35003-033030</b>	
				2.1	<b>35003-052130</b>	
				3.0	<b>35003-053030</b>	
				4.6	<b>35003-054630</b>	
				2.1	<b>35003-102130</b>	
		100	30	3.0	<b>35003-103030</b>	
				4.6	<b>35003-104630</b>	
				2.1	<b>35003-152130</b>	
				3.0	<b>35003-153030</b>	
				4.6	<b>35003-154630</b>	
				2.1	<b>35003-032146</b>	
	High Temperature HPLC Column	50	2.1	<b>35003-052146</b>		
		100	4.6	<b>35003-054646</b>		
			2.1	<b>35003-102146</b>		
	5	Drop-in Guard (4/pk)	10	2.1	<b>35005-012101</b>	
				3.0	<b>35005-013001</b>	
				4.6	<b>35005-014001</b>	
HPLC Column		30	30	2.1	<b>35005-032130</b>	
				3.0	<b>35005-033030</b>	
				4.6	<b>35005-034630</b>	
				2.1	<b>35005-052130</b>	
				3.0	<b>35005-053030</b>	
				4.6	<b>35005-054630</b>	
		100	30	2.1	<b>35005-102130</b>	
				3.0	<b>35005-103030</b>	
				4.6	<b>35005-104630</b>	
				2.1	<b>35005-152130</b>	
				3.0	<b>35005-153030</b>	
				4.6	<b>35005-154630</b>	
		High Temperature HPLC Column	30	2.1	<b>35005-032146</b>	
			50	4.6	<b>35005-034646</b>	
				2.1	<b>35005-052146</b>	
		100	30	4.6	<b>35005-054646</b>	
				2.1	<b>35005-102146</b>	
				4.6	<b>35005-104646</b>	
Javelin HTS Column	20			2.1	<b>35005-022135</b>	
	Preparative HPLC Column			100	10	<b>35005-109070</b>
					21.2	<b>35005-109270</b>
30		<b>35005-109370</b>				
150	100	10	<b>35005-159070</b>			
		21.2	<b>35005-159270</b>			

Format	Length (mm)	ID (mm)	Cat. No.
UNIGUARD Guard Cartridge Holder	10	1.0	<b>851-00</b>
		2.1	<b>852-00</b>
		3.0	<b>852-00</b>
		4.6	<b>850-00</b>



## Synchronis HPLC and UHPLC Columns

### Remarkable separations guaranteed time after time

Thermo Scientific™ Synchronis™ HPLC columns are used to achieve consistent, reproducible separations. Chemistries available for a variety of applications.

- **Consistent Separations**

Highly pure, high surface area silica

- **Dense Bonding and  
Double Endcapping**

Reduction of residual silanols available  
to interact with basic analytes

- **Strong Quality Control**

Rigorously tested to ensure quality



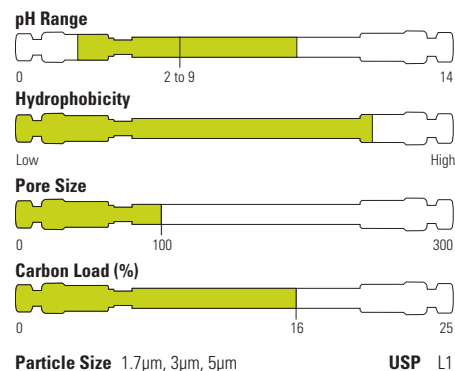
The Synchronis web page contains the latest news, applications  
and downloads for the Synchronis HPLC column range.  
Visit [www.thermoscientific.com/synchronis](http://www.thermoscientific.com/synchronis)



## Synchronis C18

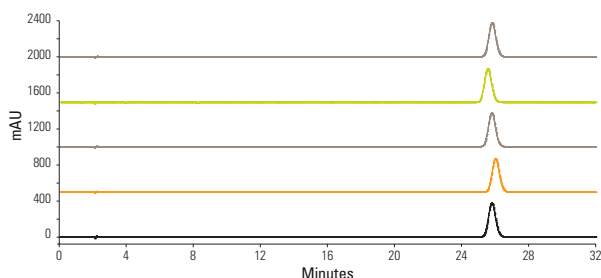
Synchronis C18 columns deliver remarkable separations, time after time

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



Synchronis C18 columns show excellent column to column reproducibility, as illustrated here by the analysis of zidovudine using five separate columns. The reproducibility in terms of retention time and peak area is less than or equal to 0.5%, column to column.

### Zidovudine



#### Synchronis C18, 5µm, 150 x 4.6mm

Mobile Phase:	Water:Methanol (4:1)
Temperature:	25°C
Flow Rate:	1.0mL/min
Injection Volume:	10µL
Detection:	UV, 265nm
Analytes:	1. Zidovudine

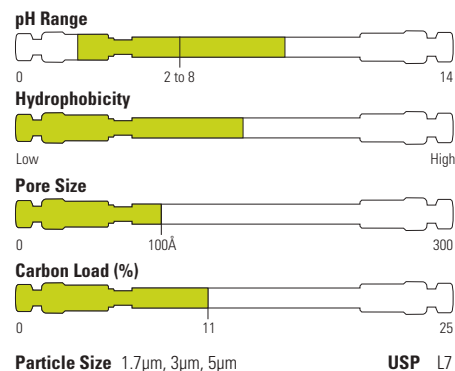
### Synchronis C18

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	30	<b>97102-032130</b>	-	-
		50	<b>97102-052130</b>	-	-
		100	<b>97102-102130</b>	-	-
3	HPLC Column	30	<b>97103-032130</b>	-	-
		50	<b>97103-052130</b>	-	<b>97103-054630</b>
		100	<b>97103-102130</b>	<b>97103-103030</b>	<b>97103-104630</b>
		150	<b>97103-152130</b>	-	<b>97103-154630</b>
5	Drop-in Guard (4/pk)	10	<b>97105-012101</b>	<b>97105-013001</b>	<b>97105-014001</b>
	HPLC Column	30	<b>97105-032130</b>	-	-
		50	<b>97105-052130</b>	<b>97105-053030</b>	<b>97105-054630</b>
		100	<b>97105-102130</b>	<b>97105-103030</b>	<b>97105-104630</b>
		150	<b>97105-152130</b>	<b>97105-153030</b>	<b>97105-154630</b>
		250	<b>97105-252130</b>	<b>97105-253030</b>	<b>97105-254630</b>
UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	

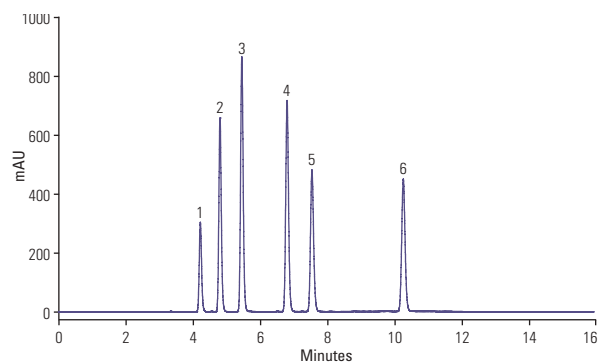
## Synchronis C8

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

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



### Uron herbicides



#### Synchronis C8, 5µm, 150 x 4.6mm

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

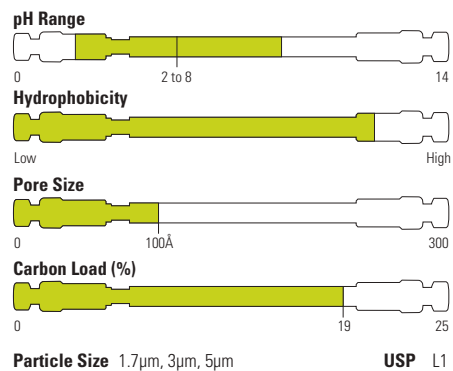
### Synchronis C8

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	50	<b>97202-052130</b>	-	-
		100	<b>97202-102130</b>	-	-
3	HPLC Column	50	<b>97203-052130</b>	-	-
		100	-	<b>97203-103030</b>	<b>97203-104630</b>
		150	-	-	<b>97203-154630</b>
5	Drop-in Guard (4/pk)	10	<b>97205-012101</b>	<b>97205-013001</b>	<b>97205-014001</b>
		30	<b>97205-032130</b>	-	-
	HPLC Column	50	<b>97205-052130</b>	<b>97205-053030</b>	<b>97205-054630</b>
		100	<b>97205-102130</b>	<b>97205-103030</b>	<b>97205-104630</b>
		150	<b>97205-152130</b>	<b>97205-153030</b>	<b>97205-154630</b>
		250	-	<b>97205-253030</b>	<b>97205-254630</b>
UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	

## Synchronis aQ

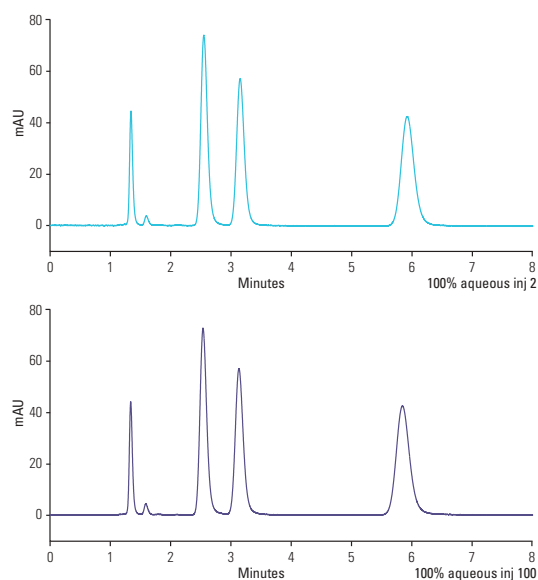
Polar endcapped Synchronis aQ columns provide a controlled interaction mechanism that retains and resolves polar analytes

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



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

### Stability of Synchronis aQ in 100% aqueous mobile phase



**Synchronis aQ, 5µm, 100 x 4.6mm**

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

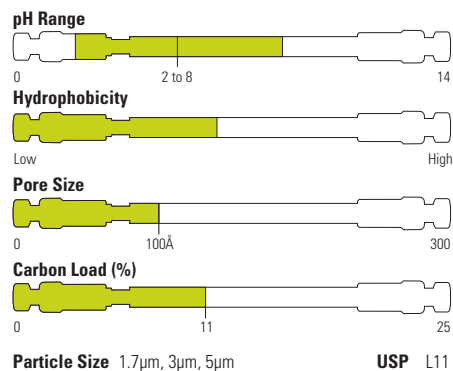
### Synchronis aQ

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.7	UHPLC Column	50	<b>97302-052130</b>	-	-	<b>97302-054630</b>
		100	<b>97302-102130</b>	<b>97302-103030</b>	-	-
3	HPLC Column	50	<b>97303-052130</b>	-	-	-
		100	-	<b>97303-103030</b>	-	<b>97303-104630</b>
		150	-	-	-	<b>97303-154630</b>
5	Drop-in Guard (4/pk)	10	<b>97305-012101</b>	<b>97305-013001</b>	<b>97305-014001</b>	<b>97305-014001</b>
		50	<b>97305-052130</b>	<b>97305-053030</b>	-	<b>97305-054630</b>
		100	<b>97305-102130</b>	-	-	<b>97305-104630</b>
		150	<b>97305-152130</b>	<b>97305-153030</b>	<b>97305-154030</b>	<b>97305-154630</b>
		250	-	<b>97305-253030</b>	<b>97305-254030</b>	<b>97305-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

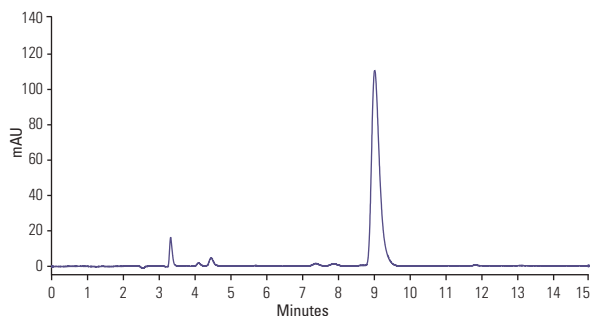
## Synchronis Phenyl

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

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



### Oxacillin sodium (USP)



#### Synchronis Phenyl, 5µm, 300 x 4.0mm

Mobile Phase:	Phosphate Buffer: MeCN:MeOH (70:30:10)
Temperature:	25°C
Flow Rate:	1.0mL/min (2mL/min in USP method)
Injection Volume:	10µL
Detection:	UV, 225nm
Analytes:	1. Oxacillin Sodium (0.11mg/mL)

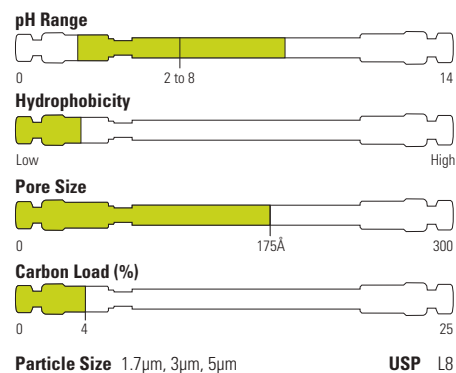
### Synchronis Phenyl

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	50	<b>97902-052130</b>	-	-
		100	<b>97902-102130</b>	-	-
3	HPLC Column	50	<b>97903-052130</b>	-	-
		100	-	-	<b>97903-104630</b>
		150	-	-	<b>97903-154630</b>
5	Drop-in Guard (4/pk)	10	<b>97905-012101</b>	<b>97905-013001</b>	<b>97905-014001</b>
	HPLC Column	50	-	<b>97905-053030</b>	<b>97905-054630</b>
		100	-	<b>97905-103030</b>	<b>97905-104630</b>
		150	<b>97905-152130</b>	-	<b>97905-154630</b>
		250	-	-	<b>97905-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>

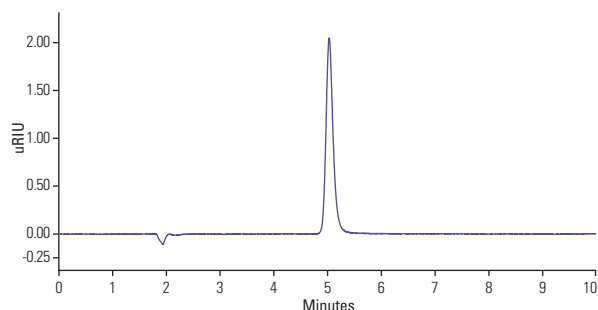
## Synchronis Amino

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

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



### Lactulose



#### Synchronis Amino 5µm, 150 x 4.6mm

Mobile Phase:	Water: MeCN (30:70)
Temperature:	35°C
Flow Rate:	1.0mL/min
Detection:	RI
Injection Volume:	5µL
Analytes:	1. Lactulose

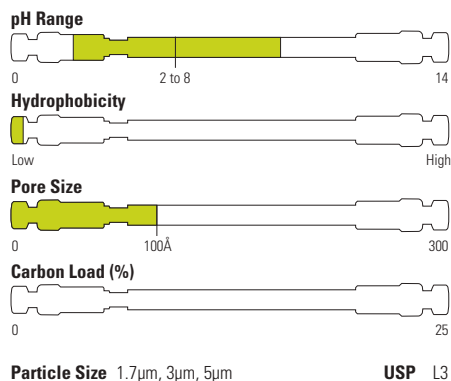
### Synchronis Amino

Particle Size (µm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.7	UHPLC Column	50	<b>97702-052130</b>	-	-	-
		100	<b>97702-102130</b>	-	-	-
3	HPLC Column	50	<b>97703-052130</b>	-	-	-
5	Drop-in Guard (4/pk)	10	<b>97705-012101</b>	<b>97705-013001</b>	<b>97705-014001</b>	<b>97705-014001</b>
	HPLC Column	30	<b>97705-032130</b>	-	-	-
		50	<b>97705-052130</b>	-	-	<b>97705-054630</b>
		150	<b>97705-152130</b>	<b>97705-153030</b>	<b>97705-154030</b>	<b>97705-154630</b>
		250	-	<b>97705-253030</b>	<b>97705-254030</b>	<b>97705-254630</b>
UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>	

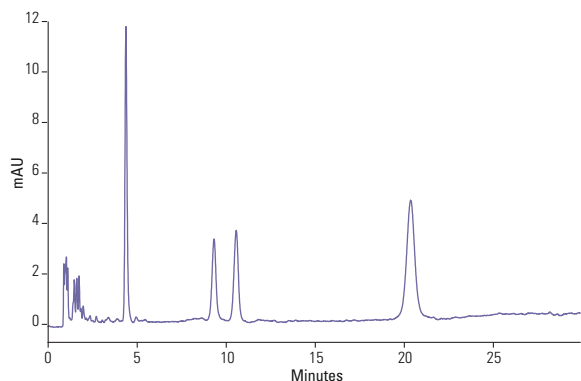
## Synchronis Silica

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

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



### Tocopherols



#### Synchronis Silica 5 μm, 150 x 4.6mm

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

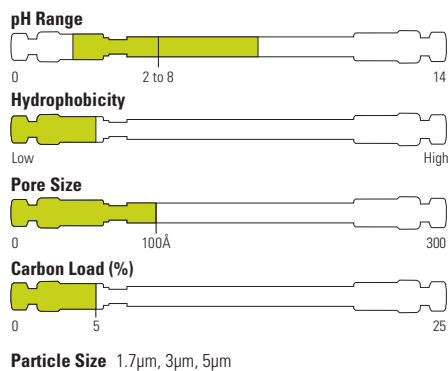
### Synchronis Silica

Particle Size (μm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.0mm ID	4.6mm ID
1.7	UHPLC Column	50	<b>97002-052130</b>	-	-	-
		100	<b>97002-102130</b>	-	-	-
3	HPLC Column	50	<b>97003-052130</b>	-	-	-
5	Drop-in Guard (4/pk)	10	<b>97005-012101</b>	<b>97005-013001</b>	<b>97005-014001</b>	<b>97005-014001</b>
	HPLC Column	50	<b>97005-052130</b>	-	-	-
		100	<b>97005-102130</b>	-	-	-
		150	<b>97005-152130</b>	<b>97005-153030</b>	<b>97005-154030</b>	<b>97005-154630</b>
		250	-	<b>97005-253030</b>	<b>97005-254030</b>	<b>97005-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>	<b>850-00</b>

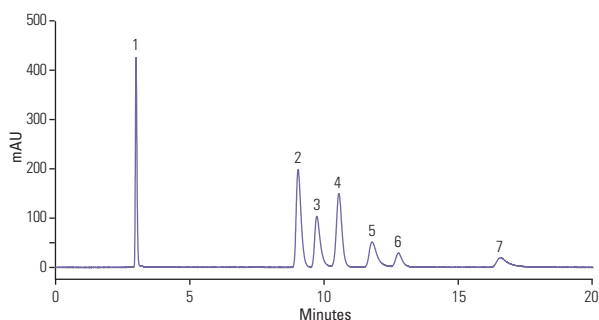
## Synchronis HILIC

Provides enhanced retention of polar and hydrophilic analytes

- Alternative selectivity to Synchronis C18
- Improved sensitivity with MS detection
- No need for ion-pair or derivatization
- Outstanding peak shape and sensitivity
- Highly pure, high surface area silica particles
- Neutral (uncharged), highly polar surface



### Catecholamines

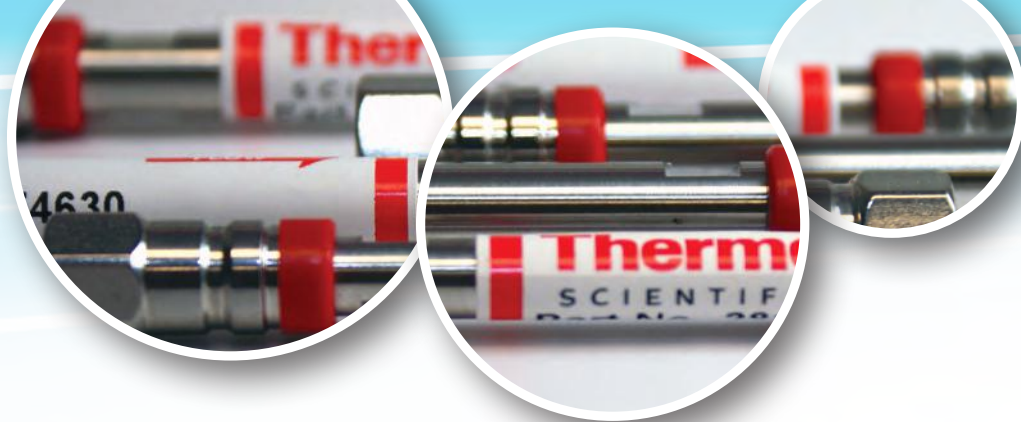


#### Synchronis HILIC, 5μm, 250 x 4.6mm

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

### Synchronis HILIC

Particle Size (μm)	Format	Length (mm)	2.1mm ID	3.0mm ID	4.6mm ID
1.7	UHPLC Column	50	<b>97502-052130</b>	-	<b>97502-054630</b>
		100	<b>97502-102130</b>	-	-
3	HPLC Column	50	<b>97503-052130</b>	-	-
		100	-	-	<b>97503-104630</b>
		150	-	-	<b>97503-154630</b>
5	Drop-in Guard (4/pk)	10	<b>97505-012101</b>	<b>97505-013001</b>	<b>97505-014001</b>
	HPLC Column	50	<b>97505-052130</b>	-	<b>97505-054630</b>
		100	<b>97505-102130</b>	-	<b>97505-104630</b>
		150	<b>97505-152130</b>	<b>97505-153030</b>	<b>97505-154630</b>
		250	-	-	<b>97505-254630</b>
	UNIGUARD Drop-in Guard Cartridge Holder	10	<b>852-00</b>	<b>852-00</b>	<b>850-00</b>



## 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



The Hypersil BDS/Classical web page contains the latest news, applications and downloads for the Hypersil BDS/Classical HPLC column range. Visit [www.thermoscientific.com/columns](http://www.thermoscientific.com/columns)



# 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	<b>28102-012101</b>	<b>28202-012101</b>	-	-		
			4.0/4.6	<b>28102-014001</b>	<b>28202-014001</b>	-	-		
		50	2.1	<b>28102-052130</b>	<b>28202-052130</b>	-	-		
			4.6	<b>28102-054630</b>	-	-	-		
	100	2.1	2.1	<b>28102-102130</b>	<b>28202-102130</b>	-	-		
			4.6	<b>28102-104630</b>	<b>28202-104630</b>	-	-		
		4.6	-	<b>28202-154630</b>	-	-	-		
			-	-	-	-	-		
	3	Drop-in Guard (4/pk)	10	2.1	<b>28103-012101</b>	<b>28203-012101</b>	-	-	
				3.0	<b>28103-013001</b>	<b>28203-013001</b>	-	-	
4.0/4.6				<b>28103-014001</b>	<b>28203-014001</b>	<b>28903-014001</b>	<b>28803-014001</b>		
HPLC Column		30	2.1	<b>28103-032130</b>	-	-	-		
			2.1	<b>28103-052130</b>	<b>28203-052130</b>	-	-		
			3.0	<b>28103-053030</b>	-	-	-		
		100	4.6	4.6	<b>28103-054630</b>	<b>28203-054630</b>	-	-	
				2.1	<b>28103-102130</b>	-	-	-	
				3.0	<b>28103-103030</b>	-	-	-	
			4.0	4.0	<b>28103-104030</b>	-	-	-	
				4.6	<b>28103-104630</b>	<b>28203-104630</b>	-	-	
				2.1	<b>28103-152130</b>	-	-	-	
		150	3.0	3.0	<b>28103-153030</b>	<b>28203-153030</b>	-	-	
				4.0	<b>28103-154030</b>	-	-	-	
			4.6	4.6	<b>28103-154630</b>	<b>28203-154630</b>	<b>28903-154630</b>	<b>28803-154630</b>	
-				-	-	-	-		
-				-	-	-	-		
5		Drop-in Guard (4/pk)	10	2.1	<b>28105-012101</b>	<b>28205-012101</b>	-	-	
				3.0	<b>28105-013001</b>	<b>28205-013001</b>	-	-	
				4.0/4.6	<b>28105-014001</b>	<b>28205-014001</b>	<b>28905-014001</b>	<b>28805-014001</b>	
		HPLC Column	50	2.1	<b>28105-052130</b>	<b>28205-052130</b>	-	-	
				3.0	<b>28105-053030</b>	<b>28205-053030</b>	-	-	
	4.6			<b>28105-054630</b>	<b>28205-054630</b>	-	-		
	100			2.1	<b>28105-102130</b>	<b>28205-102130</b>	-	-	
				3.0	<b>28105-103030</b>	-	-	-	
				4.0	<b>28105-104030</b>	-	-	-	
	125		4.6	4.6	<b>28105-104630</b>	<b>28205-104630</b>	-	-	
				3.0	<b>28105-123030</b>	-	-	-	
				4.0	<b>28105-124030</b>	-	-	-	
			4.6	4.6	<b>28105-124630</b>	-	-	-	
				2.1	<b>28105-152130</b>	-	-	-	
				3.0	<b>28105-153030</b>	-	-	-	
	150		4.0	4.0	<b>28105-154030</b>	<b>28205-154030</b>	-	-	
				4.6	<b>28105-154630</b>	<b>28205-154630</b>	<b>28905-154630</b>	<b>28805-154630</b>	
				2.1	<b>28105-252130</b>	-	-	-	
			250	3.0	3.0	<b>28105-253030</b>	-	-	-
					4.0	<b>28105-254030</b>	<b>28205-254030</b>	<b>28905-254030</b>	-
				4.6	4.6	<b>28105-254630</b>	<b>28205-254630</b>	<b>28905-254630</b>	<b>28805-254630</b>
		-			-	-	-	-	
		-		-	-	-	-		

Format	Length (mm)	ID (mm)	Cat. No.
UNIGUARD Guard Cartridge Holder	10	1.0	<b>851-00</b>
		2.1	<b>852-00</b>
		3.0	<b>852-00</b>
		4.0/4.6	<b>850-00</b>

# 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	<b>30103-012101</b>		
			3.0	<b>30103-013001</b>		
			4.0/4.6	<b>30103-014001</b>		
	HPLC Column	50	50	3.0	<b>30103-053030</b>	
				4.6	<b>30103-054630</b>	
				100	2.1	<b>30103-102130</b>
					3.0	<b>30103-103030</b>
					4.0	<b>30103-104030</b>
				125	4.6	<b>30103-104630</b>
		150	4.0		<b>30103-124030</b>	
			4.6		<b>30103-124630</b>	
		250	150	150	2.1	<b>30103-152130</b>
					3.0	<b>30103-153030</b>
					4.0	<b>30103-154030</b>
			4.6	150	4.6	<b>30103-154630</b>
	250				2.1	<b>30103-252130</b>
					3.0	<b>30103-253030</b>
			4.0	<b>30103-254030</b>		
	4.6		<b>30103-254630</b>			
	5		Drop-in Guard (4/pk)	10	2.1	<b>30105-012101</b>
		3.0			<b>30105-013001</b>	
4.0/4.6		<b>30105-014001</b>				
HPLC Column		50	50	3.0	<b>30105-053030</b>	
				4.6	<b>30105-054630</b>	
				100	2.1	<b>30105-102130</b>
					3.0	<b>30105-103030</b>
					4.0	<b>30105-104030</b>
				125	4.6	<b>30105-104630</b>
		150	3.0		<b>30105-123030</b>	
			4.0		<b>30105-124030</b>	
		150	4.6	<b>30105-124630</b>		
			200	150	2.1	<b>30105-152130</b>
					3.0	<b>30105-153030</b>
		4.0			<b>30105-154030</b>	
4.6		200	4.6	<b>30105-154630</b>		
			250	2.1	<b>30105-202130</b>	
				4.0	<b>30105-204030</b>	
4.6		<b>30105-204630</b>				
250		250	250	2.1	<b>30105-252130</b>	
				3.0	<b>30105-253030</b>	
	4.0			<b>30105-254030</b>		
4.6	<b>30105-254630</b>					

### Hypersil ODS-2

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
3	Drop-in Guard (4/pk)	10	4.0/4.6	<b>31603-014001</b>
	HPLC Column	50	4.6	<b>31603-054630</b>
		100	4.0	<b>31603-104030</b>
			4.6	<b>31603-104630</b>
		150	4.6	<b>31603-154630</b>
5	Drop-in Guard (4/pk)	10	4.0/4.6	<b>31605-014001</b>
	HPLC Column	50	4.6	<b>31605-054630</b>
		100	4.6	<b>31605-104630</b>
		150	4.6	<b>31605-154630</b>
		250	4.0	<b>31605-254030</b>
	4.6	<b>31605-254630</b>		

### Hypersil MOS (C8)

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

### 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	<b>30305-014001</b>
	HPLC Column	150	4.6	<b>30305-154630</b>
		250	4.0	<b>30305-254030</b>
			4.6	<b>30305-254630</b>

### Hypersil SAS (C1)

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.0/4.6	<b>30505-014001</b>
	HPLC Column	150	4.6	<b>30505-154630</b>
		250	4.6	<b>30505-254630</b>

### Hypersil Phenyl

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.0/4.6	<b>30905-014001</b>
	HPLC Column	50	4.6	<b>30905-054630</b>
		150	4.6	<b>30905-154630</b>
		250	4.0	<b>30905-254030</b>
	4.6	<b>30905-254630</b>		

### Hypersil Phenyl-2

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.0/4.6	<b>31905-014001</b>
	HPLC Column	150	4.6	<b>31905-154630</b>
		250	4.6	<b>31905-254630</b>

**Hypersil CPS**

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
3	Drop-in Guard (4/pk)	10	4.0/4.6	<b>30803-014001</b>
	HPLC Column	150	4.6	<b>30803-154630</b>
5	Drop-in Guard (4/pk)	10	4.0/4.6	<b>30805-014001</b>
	HPLC Column	150	4.6	<b>30805-154630</b>
		250	4.0	<b>30805-254030</b>
			4.6	<b>30805-254630</b>

**Hypersil CPS-2**

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
5	Drop-in Guard (4/pk)	10	4.6	<b>31805-014001</b>
	HPLC Column	150	4.6	<b>31805-254630</b>
		250	4.6	<b>31805-254630</b>

**Hypersil APS-2**

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.	
3	Drop-in Guard (4/pk)	10	2.1	<b>30703-012101</b>	
			4.6	<b>30703-014001</b>	
	HPLC Column	50	4.6	<b>30703-054630</b>	
			100	2.1	<b>30703-102130</b>
			150	2.1	<b>30703-152130</b>
5	Drop-in Guard (4/pk)	10	4.6	<b>30703-154630</b>	
			3.0	<b>30705-013001</b>	
	HPLC Column	100	4.0/4.6	<b>30705-014001</b>	
			3.0	<b>30705-103030</b>	
			4.6	<b>30705-104630</b>	
			4.6	<b>30705-154630</b>	
			250	4.0	<b>30705-254030</b>
	4.6	<b>30705-254630</b>			

**Hypersil Silica**

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.	
3	Drop-in Guard (4/pk)	10	2.1	<b>30003-012101</b>	
			3.0	<b>30003-013001</b>	
			4.0/4.6	<b>30003-014001</b>	
	HPLC Column	50	2.1	<b>30003-052130</b>	
			4.6	<b>30003-054630</b>	
			150	4.6	<b>30003-154630</b>
5	Drop-in Guard (4/pk)	10	3.0	<b>30005-013001</b>	
			4.0/4.6	<b>30005-014001</b>	
	HPLC Column	50	4.6	<b>30005-054630</b>	
			100	4.6	<b>30005-104630</b>
			150	4.6	<b>30005-154630</b>
			250	4.0	<b>30005-254030</b>
	4.6	<b>30005-254630</b>			

## Hypersil Classical *continued*

### Hypersil SAX

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

### Hypersil Green PAH

Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
3	Guard Cartridge	10	2.1	<b>31103-012101</b>
			3.0	<b>31103-013001</b>
			4.6	<b>31103-014001</b>
	HPLC Column	100	2.1	<b>31103-102130</b>
			3.0	<b>31103-103030</b>
			4.6	<b>31103-104630</b>
	HPLC Column	150	2.1	<b>31103-152130</b>
			4.6	<b>31103-154630</b>
			4.6	<b>31103-154630</b>
5	Guard Cartridge	10	4.6	<b>31105-014001</b>
	HPLC Column	100	4.6	<b>31105-104630</b>
		150	4.6	<b>31105-154630</b>
		250	4.6	<b>31105-254630</b>

## 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™ 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.

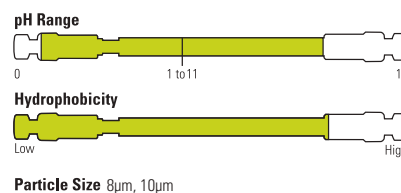
### IonPac NS1 and NS2

Description	Particle Size (µm)	Format	Length (mm)	2.0mm ID	4.0mm ID
IonPac NS1	5	HPLC Column	150	–	<b>039568</b>
	10	Guard Column	35	<b>088763</b>	<b>039567</b>
		HPLC Column	250	<b>088762</b>	<b>035321</b>
IonPac NS2	5	Guard Column	35	–	<b>088788</b>
		HPLC Column	150	–	<b>088787</b>
			250	–	<b>088786</b>

# HyperREZ XP

Polymer-based columns for carbohydrate analysis

- Designed for the determination of carbohydrates, saccharides, organic acids, and alcohols
- Efficient and reproducible monodisperse particles
- Stable for long column lifetimes even at low pH and high temperatures



## HyperREZ XP

	Particle Size (µm)	Format	Length (mm)	ID (mm)	Cat. No.
HyperREZ XP Carbohydrate H+	8	Guard Cartridge (2/pk)	5	3.0	<b>69008-903027</b>
		Guard Column	50	7.7	<b>69008-057726</b>
		HPLC Column	300	7.7	<b>69008-307780</b>
HyperREZ XP Carbohydrate Ca <sup>2+</sup>	8	Guard Cartridge (2/pk)	5	3.0	<b>69208-903027</b>
		Guard Column	50	7.7	<b>69208-057726</b>
		HPLC Column	300	7.7	<b>69208-307780</b>
HyperREZ XP Carbohydrate Pb <sup>2+</sup>	8	Guard Cartridge (2/pk)	5	3.0	<b>69108-903027</b>
		Guard Column	50	7.7	<b>69108-057726</b>
		HPLC Column	300	7.7	<b>69108-307780</b>
HyperREZ XP Carbohydrate Na+	10	Guard Cartridge (2/pk)	5	3.0	<b>69310-903027</b>
		Guard Column	50	7.7	<b>69310-057726</b>
		HPLC Column	300	7.7	<b>69310-307780</b>
HyperREZ XP Organic Acids	8	Guard Cartridge (2/pk)	5	3.0	<b>69008-903027</b>
		HPLC Column	100	7.7	<b>69608-107780</b>
HyperREZ XP Sugar Alcohols	8	Guard Cartridge (2/pk)	5	3.0	<b>69208-903027</b>
		HPLC Column	250	4.0	<b>69708-254080</b>

Format	Length (mm)	ID (mm)	Cat. No.
HyperRez Guard Cartridge Holder	5	3	<b>60002-354</b>

## Retention Times of Common Saccharides (min)

Saccharide	H <sup>+</sup>	Ca <sup>2+</sup>	Pb <sup>2+</sup>
Adonitol	11.5	14.9	20.4
Arabinose	11.4	13.6	19.4
Erythritol	12.7	15.6	20.3
Fructose	10.6	13.5	19.3
Fucose	12.2	13.7	17.1
Galactose	1.07	12.2	15.6
Glucose	9.9	11.1	13.9
Glycerol	14.1	16.1	19.5
Lactose	8.6	9.7	12.8
Maltose	8.4	9.5	12.5
Maltotriose	7.7	8.7	11.9
Mannitol	11.0	17.3	28.9
Mannose	1.5	12.5	16.7
Raffinose	8.2	8.6	11.4
Sorbitol	11.1	20.7	N/A
Sucrose	9.8	9.4	11.9
Xylose	10.6	12.0	15.0

### HyperREZ Carbohydrate H+ 300 x 7.7mm HyperREZ Carbohydrate Ca<sup>2+</sup> 300 x 7.7mm HyperREZ Carbohydrate Pb<sup>2+</sup> 300 x 7.7mm

Mobile Phase:	H <sub>2</sub> O
Flow Rate:	0.6mL/min
Detection:	RI
Temperature:	75°C (H <sup>+</sup> )
	85°C (Ca <sup>2+</sup> )
	80°C (Pb <sup>2+</sup> )
Note: partial hydrolysis may occur with some saccharides using H <sup>+</sup> .	



## 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



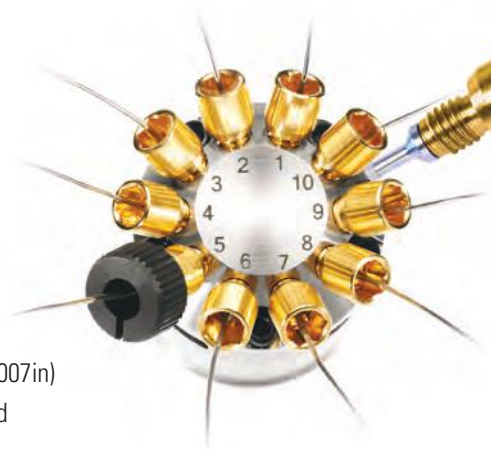
Learn more about LC Accessories.  
Visit [www.thermoscientific.com/columns](http://www.thermoscientific.com/columns)



## 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™ Dionex™ 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	<b>6040.2207</b>	<b>6040.2307</b>	<b>6040.2357</b>
150	<b>6040.2215</b>	<b>6040.2315</b>	<b>6040.2360</b>
250	<b>6040.2225</b>	<b>6040.2325</b>	<b>6040.2385</b>
350	<b>6040.2235</b>	<b>6040.2335</b>	<b>6040.2375</b>
450	<b>6040.2245</b>	<b>6040.2345</b>	<b>6040.2365</b>
550	<b>6040.2255</b>	<b>6040.2305</b>	<b>6040.2355</b>
650	<b>6040.2265</b>	<b>6040.2310</b>	<b>6040.2395</b>
750	-	<b>6040.2320</b>	<b>6040.2370</b>
850	-	<b>6040.2330</b>	<b>6040.2380</b>
950	-	<b>6040.2340</b>	<b>6040.2390</b>

**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	-	<b>6041.9075*</b>	<b>6042.2306</b>	-	-	-
150	<b>6041.5615</b>	-	<b>6042.2320</b>	-	<b>6041.5616</b>	<b>6042.2315</b>
250	<b>6041.5625</b>	<b>6041.9025</b>	<b>6042.2330</b>	-	-	<b>6042.2327</b>
350	-	-	<b>6042.2340</b>	-	-	<b>6042.2337</b>
450	-	-	<b>6042.2350</b>	-	-	<b>6042.2365</b>
550	-	-	<b>6042.2360</b>	-	-	<b>6042.2355</b>
650	<b>6041.5665</b>	-	<b>6042.2370</b>	<b>6042.2363</b>	-	<b>6042.2380</b>
750	<b>6041.5675</b>	-	<b>6042.2390</b>	<b>6042.2373</b>	-	<b>6042.2375</b>
850	<b>6041.5685</b>	-	-	-	-	-
950	-	-	<b>6042.2395</b>	-	-	<b>6042.2385</b>

\* 75mm length

**Viper Accessories**

Description	Cat. No.	Quantity
Plug, Biocompatible	<b>6040.2303</b>	1 Each
Union, SST	<b>6040.2304</b>	1 Each
Calibration Tool	<b>6040.2312</b>	1 Each
Inline Filter	<b>6036.1045</b>	1 Each



## 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	<b>6040.2302</b>	<b>6040.2301</b>
Viper Capillary Kit for HPG pumps	<b>6040.2309</b>	<b>6040.2308</b>
Viper Capillary Kit for biocompatible RSLC systems	–	<b>6841.2301</b>
Online SPE Solution Kit for x2 Dual Standard or RSLC systems	<b>6040.2802</b>	<b>6040.2801</b>
Tandem Operation Solution Kit for x2 Dual Standard or RSLC systems	<b>6040.2804</b>	<b>6040.2803</b>
Application Switching Solution Kit for x2 Dual Standard or RSLC systems	<b>6040.2806</b>	<b>6040.2805</b>
Parallel Setup Solution Kit for x2 Dual Standard or RSLC systems	<b>6040.2810</b>	<b>6040.2809</b>
Inverse Gradient Kit for x2 Dual Standard or RSLC systems	<b>6040.2819</b>	<b>6040.2820</b>
Automated Method Scouting Solution Kit for Standard or RSLC systems	<b>6040.2808</b>	<b>6040.2807</b>
MS Connection Kit for MS-frontends with WPS autosampler, excluding UV detection	<b>6720.0355</b>	<b>6720.0370</b>
MS Connection Kit for MS-frontends with WPS autosampler, including UV detection	<b>6720.0365</b>	<b>6720.0375</b>
MS Connection Kit for MS-frontends with HPG-RS pump and OAS autosampler excluding UV detection	–	<b>6720.0372</b>
MS Connection Kit for MS-frontends with HPG-RS pump and OAS autosampler including UV detection	–	<b>6720.0377</b>

Description	XRS Systems
Viper Capillary Kit for standalone system with with WPS autosampler	<b>6043.2301</b>
Viper Capillary Kit for standalone system with with OAS autosampler	<b>6845.2301A</b>
MS Connection Kit for MS-frontends with WPS autosampler excluding UV detection	<b>6720.0380</b>
MS Connection Kit for MS-frontends with WPS autosampler including UV detection	<b>6720.0385</b>
MS Connection Kit for MS-frontends with LPG-XRS pump and OAS autosampler excluding UV detection	<b>6720.0372</b>
MS Connection Kit for MS-frontends with LPG-XRS pump and OAS autosampler including UV detection	<b>6720.0377</b>

## 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	<b>88200</b>	<b>88700</b>	<b>88400</b>	4 Pack

## ColumnSaver Precolumn Filters

Filter mesh size 2µm

### ColumnSaver Precolumn Filters

Filter Mesh Size (µm)	Cat. No	Quantity
2	<b>60140-412</b>	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



### UNIFILTER Direct-Connection HPLC Filter Systems

Description	2.1/3.0mm ID	4.0/4.6mm ID	Quantity
UNIFILTER Direct Connection Holder	<b>27002</b>	<b>27000</b>	1 Each
Replacement Filter, 0.5µm	<b>22017</b>	<b>22155</b>	5 Pack
Replacement Tip, CPI, Standard	<b>850-RT</b>	<b>850-RT</b>	1 Each
Replacement Tip, Waters End-fitting	<b>850-WT</b>	<b>850-WT</b>	1 Each

## UHPLC Filter

Column protection for Hypersil GOLD 1.9µm and Synchronis 1.7µm columns without compromising performance

- Low volume filter cartridge design
- Maintain peak shape
- Minimal efficiency loss through dispersion



### UHPLC Filter

Description	Cat. No.	Quantity
UHPLC Direct Connect Filter Holder	<b>27006</b>	1 Each
2.1mm ID Replacement Filter Cartridge, 0.2µm	<b>22180</b>	5 Pack
1.0mm ID Replacement Filter Cartridge, 0.2µm	<b>22185</b>	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	<b>60170-370</b>	1 Each



## Solvent Filters

- Efficient draw
- 100% PTFE polymer, including 2µm filters
- Built-in helium sparge port and frit

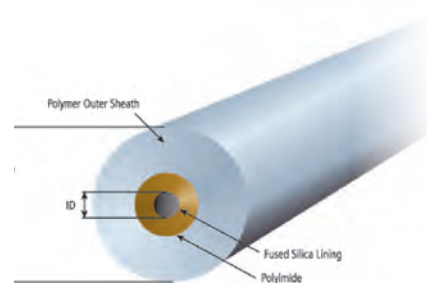
### Solvent Filters

	Type	For Use with	Cat. No.	Quantity
	Stainless Steel	Fit 1/16in OD tube to 1/8in OD plastic tubing	<b>A-302</b>	1 Each
	Stainless Steel	Fit to 1/8in OD plastic tubing using 1/8in PP nut	<b>A-302A</b>	1 Each
	Bottom-of-the-Bottle	3/16in OD plastic tubing	<b>A-436</b>	1 Each
	Bottom-of-the-Bottle	1/8in OD tubing	<b>A-437</b>	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	<b>60182-500</b>	5 Pack
	20	<b>60182-501</b>	5 Pack
	50	<b>60182-502</b>	2 Pack
0.004	10	<b>60182-503</b>	5 Pack
	20	<b>60182-504</b>	5 Pack
	50	<b>60182-505</b>	2 Pack
0.007	10	<b>60182-506</b>	5 Pack
	20	<b>60182-507</b>	5 Pack
	50	<b>60182-508</b>	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	<b>F-227</b>	1 Each
0.010	Blue	<b>F-228</b>	1 Each
0.012	Natural	<b>F-229</b>	1 Each
0.015	Orange	<b>F-230</b>	1 Each
0.021	Natural	<b>F-231</b>	1 Each
0.030	Natural	<b>F-232</b>	1 Each



## 316 Stainless Steel Capillary Tubing

Cleaned, polished, passivated and ready-to-use

- Suitable for ultra high pressure applications
- Wide chemical compatibility
- Prefinished, square, burr-free ends and interiors to minimize dead volume connections
- Not recommended for biological samples
- Rough internal surface may lead to sample carryover



### 316 Stainless Steel Capillary Tubing

ID (in)	Length (cm)	Color	Cat. No.	Quantity
<b>1/16in OD Precut Tubing</b>				
0.005	5	Red	<b>U-152</b>	1 Each
	10	Red	<b>U-153</b>	1 Each
	20	Red	<b>U-154</b>	1 Each
	30	Red	<b>U-155</b>	1 Each
	50	Red	<b>U-156</b>	1 Each
	100	Red	<b>U-157</b>	1 Each
0.007	5	Black	<b>U-126</b>	1 Each
	10	Black	<b>U-127</b>	1 Each
	20	Black	<b>U-128</b>	1 Each
	30	Black	<b>U-129</b>	1 Each
	50	Black	<b>U-130</b>	1 Each
	100	Black	<b>U-131</b>	1 Each
0.010	5	Blue	<b>U-111</b>	1 Each
	10	Blue	<b>U-112</b>	1 Each
	20	Blue	<b>U-113</b>	1 Each
	30	Blue	<b>U-114</b>	1 Each
	50	Blue	<b>U-132</b>	1 Each
	100	Blue	<b>U-133</b>	1 Each
<b>1/32in OD Precut Tubing with 1/16in Sleeves</b>				
0.005	10.5	Red	<b>30011-FLEX</b>	1 Each
	15	Red	<b>30015-FLEX</b>	1 Each
	28	Red	<b>30028-FLEX</b>	1 Each
	40	Red	<b>30040-FLEX</b>	1 Each
0.007	10.5	Yellow	<b>39011-FLEX</b>	1 Each
	15	Yellow	<b>39015-FLEX</b>	1 Each
	28	Yellow	<b>39028-FLEX</b>	1 Each
	40	Yellow	<b>39040-FLEX</b>	1 Each

### 1/16in 316 Stainless Steel Tubing, 5-Foot Coil

ID (in)	Cat. No.	Quantity
0.005	<b>U-158</b>	1 Each
0.007	<b>U-108</b>	1 Each
0.010	<b>U-106</b>	1 Each
0.020	<b>U-105</b>	1 Each
0.030	<b>U-107</b>	1 Each
0.040	<b>U-144</b>	1 Each

### Terry Tool Tubing Cutters

Description	Cat. No.	Quantity
1/16in stainless steel tubing	<b>60182-509</b>	1 Each
1/8in stainless steel tubing	<b>60182-510</b>	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	<b>37003-5</b>	1 Each
	10	Natural	<b>37003-10</b>	1 Each
	20	Natural	<b>37003-20</b>	1 Each
	30	Natural	<b>37003-30</b>	1 Each
	50	Natural	<b>37003-50</b>	1 Each
0.005	5	Red	<b>37005-5</b>	1 Each
	10	Red	<b>37005-10</b>	1 Each
	20	Red	<b>37005-20</b>	1 Each
	30	Red	<b>37005-30</b>	1 Each
	50	Red	<b>37005-50</b>	1 Each
0.007	5	Yellow	<b>37007-5</b>	1 Each
	10	Yellow	<b>37007-10</b>	1 Each
	20	Yellow	<b>37007-20</b>	1 Each
	30	Yellow	<b>37007-30</b>	1 Each
	50	Yellow	<b>37007-50</b>	1 Each
0.010	5	Blue	<b>37010-5</b>	1 Each
	10	Blue	<b>37010-10</b>	1 Each
	20	Blue	<b>37010-20</b>	1 Each
	30	Blue	<b>37010-30</b>	1 Each
	50	Blue	<b>37010-50</b>	1 Each
0.020	5	Orange	<b>37020-5</b>	1 Each
	10	Orange	<b>37020-10</b>	1 Each
	20	Orange	<b>37020-20</b>	1 Each
	30	Orange	<b>37020-30</b>	1 Each
	50	Orange	<b>37020-50</b>	1 Each

### 1/16in OD PEEK Tubing, 5-Foot Coil

ID (in)	Cat. No.	Quantity
0.003	<b>37003</b>	1 Each
0.005	<b>37005</b>	1 Each
0.007	<b>37007</b>	1 Each
0.010	<b>37010</b>	1 Each
0.020	<b>37020</b>	1 Each
0.030	<b>37030</b>	1 Each
0.040	<b>37040</b>	1 Each

### Polymer Tubing Cutter

Description	Cat. No.	Quantity
Polymeric Tubing Cutter	<b>A-327</b>	1 Each
Replacement blades	<b>A-328</b>	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	<b>F-190</b>	1 Each	Replacement PEEK Ferrules	<b>F-192x</b>	10 Pack
 Male hex nut	<b>U-400x</b>	10 Pack	Universal Ferrules, 0.625in	<b>U-401x</b>	10 Pack
 Valco male hex nut, 10-32 thread	<b>U-320x</b>	10 Pack	Valco ferrules, 0.625in	<b>U-321x</b>	10 Pack
 Male hex nut, Waters compatible	<b>U-410x</b>	10 Pack	Universal Ferrules, 0.625in	<b>U-401x</b>	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	<b>60182-357</b>	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	<b>F-120x</b>	10 Pack
 One-Piece Long Fingertight Fitting, 1/16in, 0.37in head	<b>F-130x</b>	10 Pack
 One-Piece PEEK Fingertight Fitting, 1/32in, 0.25in head	<b>M-645</b>	1 Each
 Two-Piece Fingertight Wing Nut with Ferrule, 1/16in	<b>F-300x</b>	10 Pack
 Replacement PEEK Ferrules	<b>F-142x</b>	10 Pack
 Column End Plug, 1/16in, 10-32 coned, Delrin, Red	<b>U-467R</b>	1 Each
 Column End Plug, 1/16in, 10-32 coned, Delrin, Black	<b>U-467BLK</b>	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	<b>U-435</b>	1 Each
	Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless steel nuts and ferrules	0.020	0.134	<b>U-402</b>	1 Each
	Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless steel nuts and ferrules	0.050	0.836	<b>U-437</b>	1 Each
	Union, stainless steel, Upchurch Scientific/Parker fittings compatible, includes 2 stainless steel nuts and ferrules	0.062	~0.0	<b>U-438</b>	1 Each
	Union, stainless steel, Waters fittings compatible, includes 2 stainless steel nuts and ferrules	0.020	0.129	<b>U-412</b>	1 Each
	Union, stainless steel, Valco fittings compatible, includes 2 stainless steel nuts and ferrules	0.020	0.103	<b>U-322</b>	1 Each
	Tee, stainless steel, 10-32 fittings for use with 1/16in OD tubing	0.020	0.57	<b>U-428</b>	1 Each
	Cross, stainless steel, 10-32 fittings for use with 1/16in OD tubing	0.020	0.72	<b>U-430</b>	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	<b>P-742</b>	1 Each
	Union, PEEK polymer, includes two PEEK 2-piece fittings	0.020	0.28	<b>P-704</b>	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	<b>P-727</b>	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	<b>P-729</b>	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	<b>7725</b>	1 Each
7725i	Dual	Continuous flow, position sensing switch	<b>7725i</b>	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	<b>7755-020</b>	1 Each
	10µL	0.30 / 0.012	<b>7755-021</b>	1 Each
	20µL	0.30 / 0.012	<b>7755-022</b>	1 Each
	50µL	0.51 / 0.020	<b>7755-023</b>	1 Each

### RheBuild Kits

For Use with Rheodyne Models	Cat. No.	Quantity
7725/7725i	<b>7725-999</b>	1 Each

### Rheodyne Stators

For Use with Rheodyne Models	Cat. No.	Quantity
7725	<b>7725-010</b>	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	<b>9725</b>	1 Each
9725i	Dual	Continuous flow, position sensing switch	<b>9725i</b>	1 Each

### PEEK Sample Loops

Description	Volume	ID (mm / in)	Cat. No.	Quantity
Sample loops for 9725 and 9725i injectors	2µL	Internal	<b>7755-015</b>	1 Each
	5µL	0.18 / 0.007	<b>9055-020</b>	1 Each
	10µL	0.25 / 0.010	<b>9055-021</b>	1 Each
	20µL	0.25 / 0.010	<b>9055-022</b>	1 Each
	50µL	0.51 / 0.020	<b>9055-023</b>	1 Each
	100µL	0.51 / 0.020	<b>9055-024</b>	1 Each
	200µL	0.51 / 0.020	<b>9055-025</b>	1 Each
	500µL	0.76 / 0.030	<b>9055-026</b>	1 Each
	1mL	0.76 / 0.030	<b>9055-027</b>	1 Each
	5mL	0.76 / 0.030	<b>9055-029</b>	1 Each

### Rheodyne Suction Needle Adapter

For Use with	Cat. No.	Quantity
Rheodyne Injector Models 9725 and 9725i	<b>9125-076</b>	1 Each

## 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	<b>8125</b>	1 Each

### Stainless Steel Sample Loops

Description	Volume	ID (mm / in)	Cat. No.	Quantity
Sample loops for 8125 injectors	5µL	0.20 / 0.008	<b>8020</b>	1 Each
	10µL	0.20 / 0.008	<b>8021</b>	1 Each
	20µL	0.25 / 0.010	<b>8022</b>	1 Each
	50µL	0.30 / 0.012	<b>8023</b>	1 Each

### RheBuild Kits

For Use with Rheodyne Models	Cat. No.	Quantity
8125	<b>8125-999</b>	1 Each

### Rheodyne Replacement Rotor Seals for Injectors

For Use with Rheodyne Models	Cat. No.	Quantity
<b>Vespel Seals</b>		
8125/8126	<b>8125-038</b>	1 Each
<b>Tefzel Seals</b>		
8125	<b>8125-097</b>	1 Each

### Rheodyne Stators

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

### Rheodyne Stator Face Assemblies

For Use with Rheodyne Models	Cat. No.	Quantity
8125	<b>8125-074</b>	1 Each

## Rheodyne 7010 Sample Injector

Single-mode sample injector designed for the complete filling method



### Rheodyne 7010 Sample Injector

Model	Mode	Features	Cat. No.	Quantity
7010	Single	Complete filling method	<b>7010</b>	1 Each

### Compatible with:

Sample loop sizes 5µL to 20mL

### Rheodyne Ports for Rheodyne Injectors

For Use with Rheodyne Model	Cat. No.	Quantity
7010 Filler Port, Stainless Steel	<b>7012</b>	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	<b>7020</b>	1 Each
	10µL	0.30 / 0.012	<b>7021</b>	1 Each
	20µL	0.30 / 0.012	<b>7022</b>	1 Each
	50µL	0.51 / 0.020	<b>7023</b>	1 Each
	100µL	0.51 / 0.020	<b>7024</b>	1 Each
	200µL	0.76 / 0.030	<b>7025</b>	1 Each
	500µL	0.76 / 0.030	<b>7026</b>	1 Each
	1mL	0.76 / 0.030	<b>7027</b>	1 Each
	5mL	1.0 / 0.040	<b>7029</b>	1 Each

### RheBuild Kits

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

### Rheodyne Replacement Rotor Seals for Injectors

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

## Rheodyne 9010 Sample Injector

Single-mode sample injector designed for the complete filling method

- Compatible with sample loop sizes 5 $\mu$ L 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	<b>9010</b>	1 Each

### Rheodyne Ports for Rheodyne Injectors

For Use with Rheodyne Model	Cat. No.	Quantity
9010 Filler Port, PEEK	<b>9012</b>	1 Each
9010 Needle Port, PEEK	<b>9013</b>	1 Each

### PEEK Sample Loops

Description	Volume	ID (mm / in)	Cat. No.	Quantity
Sample loops for 9010 injectors	2 $\mu$ L	Internal	<b>7755-015</b>	1 Each
	5 $\mu$ L	0.18 / 0.007	<b>9055-020</b>	1 Each
	10 $\mu$ L	0.25 / 0.010	<b>9055-021</b>	1 Each
	20 $\mu$ L	0.25 / 0.010	<b>9055-022</b>	1 Each
	50 $\mu$ L	0.51 / 0.020	<b>9055-023</b>	1 Each
	100 $\mu$ L	0.51 / 0.020	<b>9055-024</b>	1 Each
	200 $\mu$ L	0.51 / 0.020	<b>9055-025</b>	1 Each
	500 $\mu$ L	0.76 / 0.030	<b>9055-026</b>	1 Each
	1mL	0.76 / 0.030	<b>9055-027</b>	1 Each
	5mL	0.76 / 0.030	<b>9055-029</b>	1 Each

### Rheodyne Replacement Rotor Seals for Injectors

For Use with Rheodyne Models	Cat. No.	Quantity
<b>Tefzel Seals</b>		
9010	<b>9010-051</b>	1 Each

### Rheodyne Stators

For Use with Rheodyne Models	Cat. No.	Quantity
9010	<b>9125-043</b>	1 Each





### Rheodyne Stator Face Assemblies

For Use with Rheodyne Models	Cat. No.	Quantity
9125	<b>8125-094</b>	1 Each

## RheFlex High Pressure Fittings

Precision machined from 316 stainless steel

### RheFlex High Pressure Fittings

	Type	Cat. No.	Quantity
	Short Fittings Set	<b>6000-109</b>	5 Pack
	Short Fittings Set	<b>6000-209</b>	10 Pack
	Long Fittings Set	<b>6000-111</b>	5 Pack
	Long Fittings Set	<b>6000-211</b>	10 Pack
	Extra Long Fittings Set	<b>6000-162</b>	5 Pack
	Extra Long Fittings Set	<b>6000-262</b>	10 Pack
	1/16in Ferrule	<b>6000-110</b>	5 Pack
	1/16in Ferrule	<b>6000-210</b>	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



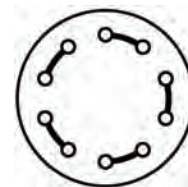
### RheFlex Two-Piece PEEK Fittings

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



## Cheminert Model C2 Microbore Injector

Can be used as an injector or switching valve



- 1/16in fittings
- 0.010in ports
- Available in 6-port or 10-port configurations
- Available with manual or microelectric actuator

### Cheminert Model C2 Microbore Injector

Description	Sample Volume	Cat. No.	Quantity
Model C2 injector, N60 stainless stator, 5µL loop, manual	6 ports	<b>C2-1006</b>	1 Each
	10 ports	<b>C2-1000</b>	1 Each
Model C2 injector, N60 stainless stator, 5µL loop, microelectric actuator	6 ports	<b>C2-1006EH</b>	1 Each
	10 ports	<b>C2-1000EP</b>	1 Each
Sample injector loops, stainless steel	5µL	<b>CSL5</b>	1 Each
	10µL	<b>CSL10</b>	1 Each
	20µL	<b>CSL20</b>	1 Each
	50µL	<b>CSL50</b>	1 Each
	100µL	<b>CSL100</b>	1 Each
Model C4 injector, PAEK stator, 5µL loop, microelectric actuator	6 ports	<b>C2-1346EH</b>	1 Each
Sample injector loops, PAEK	5µL	<b>CZSL5PK</b>	1 Each
	10µL	<b>CZSL10PK</b>	1 Each
	50µL	<b>CZSL50PK</b>	1 Each

## Valco Injector Model C6W

Description	Volume	Cat. No.	Quantity
Model C6W injector, six 0.016in ports, manual	20µL loop	<b>C6W</b>	1 Each
Model EPC6W injector, six 0.016in ports, microelectric actuator	20µL loop	<b>EPC6W</b>	1 Each
Replacement rotor	—	<b>SSAC6W</b>	1 Each
Sample injector loop, stainless steel	2µL	<b>SL2CW</b>	1 Each
Sample injector loop, stainless steel	5µL	<b>SL5CW</b>	1 Each
Sample injector loop, stainless steel	10µL	<b>SL10CW</b>	1 Each
Sample injector loop, stainless steel	20µL	<b>SL20CW</b>	1 Each
Sample injector loop, stainless steel	50µL	<b>SL50CW</b>	1 Each
Sample injector loop, stainless steel	100µL	<b>SL100CW</b>	1 Each

## Valco Accessories

Description	Volume	Cat. No.	Quantity
Valco syringe ports	22 ga. needles; 1/16in fittings	<b>VISF-1</b>	1 Each
Valco syringe ports	22 ga. 2in needles	<b>VISF-2</b>	1 Each
Valco Nuts and Ferrules	1/16in standard nut	<b>ZN1-10</b>	10 Pack
Valco Nuts and Ferrules	1/16in long nut	<b>LZN1-10</b>	10 Pack
Valco Nuts and Ferrules	1/16in SS ferrule	<b>ZF1-10</b>	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	<b>365DLG21</b>	1 Each	<b>365RNL15</b>	5 Pack
25	50	22	90° Blunt End	<b>365FLG31</b>	1 Each	<b>365RNL25</b>	5 Pack
50	50	22	90° Blunt End	<b>365GLG41</b>	1 Each	<b>365RNL25</b>	5 Pack
100	50	22	90° Blunt End	<b>365HLG51</b>	1 Each	<b>365RNL25</b>	5 Pack
500	50	22	90° Blunt End	<b>365JLG71</b>	1 Each	<b>365RNL25</b>	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	<b>365DL263</b>	1 Each
25	50	22	90° Blunt End	<b>365F6315</b>	1 Each
50	50	22	90° Blunt End	<b>365G6316</b>	1 Each
100	50	22	90° Blunt End	<b>365H6317</b>	1 Each
500	50	22	90° Blunt End	<b>365J6319</b>	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	<b>365CL221</b>	1 Each
10	50	22	90° Blunt End	<b>365DL231</b>	1 Each
25	50	22	90° Blunt End	<b>365FL241</b>	1 Each
50	50	22	90° Blunt End	<b>365GL251</b>	1 Each
100	50	22	90° Blunt End	<b>365HL261</b>	1 Each
250	50	22	90° Blunt End	<b>365IL271</b>	1 Each
500	50	22	90° Blunt End	<b>365JL281</b>	1 Each



## 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	<b>365ILT21</b>	1 Each
500	50	22	LCQ	<b>365JLT41</b>	1 Each
250	–	–	AS1000, AS3000	<b>365ILT91</b>	1 Each
500	–	–	AS1000, AS3000	<b>365JLT61</b>	1 Each
2500	–	–	AS3000, AS3500	<b>365LLT81</b>	1 Each

### Mass Spectrometry Replacement ESI Probe Needles

Instrument	Cat. No.	Quantity
LCQ, XP, DECA, Advantage	<b>365RNL1</b>	1 Each
LCQ MS	<b>365RNL2</b>	1 Each
LCQ XSQ	<b>365RNL3</b>	1 Each

### Fixed Needle Syringes for CTC Instruments

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	50	22	–	<b>365DL991</b>	1 Each
25	50	22	–	<b>365FL715</b>	1 Each
50	50	22	–	<b>365GL810</b>	1 Each
100	50	22	–	<b>365HL331</b>	1 Each

### PTFE Luer-Lok Syringes

Volume (mL)	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
1	<b>365KL531</b>	1 Each	<b>365RNL22</b>	2 Pack
2.5	<b>365LL541</b>	1 Each	<b>365RNL22</b>	2 Pack
5	<b>365ML551</b>	1 Each	<b>365RNL22</b>	2 Pack
10	<b>365NL561</b>	1 Each	<b>365RNL22</b>	2 Pack
25	<b>365PL571</b>	1 Each	<b>365RNL22</b>	2 Pack

### Syringes for Macro Volume Sampling

Volume (mL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
1	50	22s	Bevel	<b>365K3051</b>	1 Each
2.5	50	22s	Bevel	<b>365LL375</b>	1 Each
5	50	22s	Bevel	<b>365M5212</b>	1 Each
10	50	22s	Bevel	<b>365N5214</b>	1 Each

# HOT POCKET and COOL POCKET Column Temperature Controllers

Wrap-around column temperature control systems

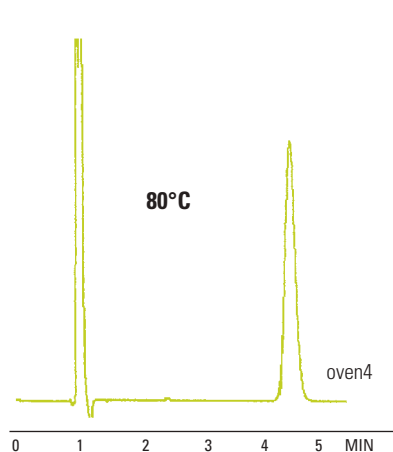
- Easy to install and use with a variety of column lengths
- Dual display of both actual and set point temperature
- HOT POCKET range from just above ambient to 85°C
- COOL POCKET range from 5°C to 55°C
- Explore sample selectivity and stability on both sides of ambient



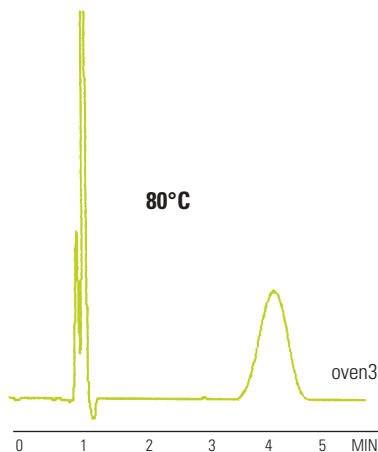
## Product Specifications

	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

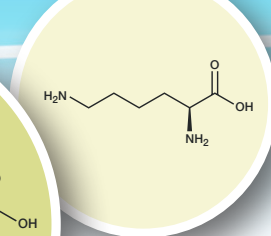
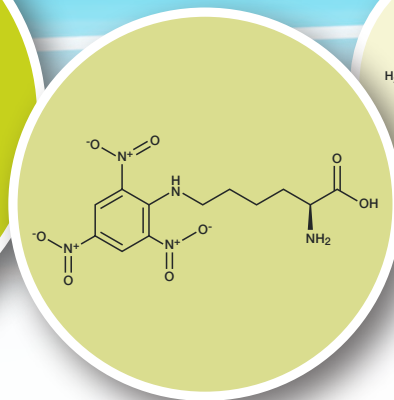
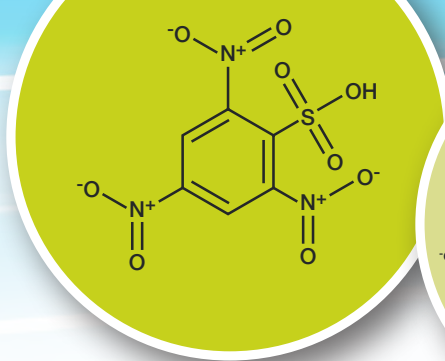


Effect of eluent pre-heater on efficiency

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



## 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

The LC Reagents web page contains the latest news, applications and downloads for the LC Reagents HPLC column range. Visit [www.thermoscientific.com/columns](http://www.thermoscientific.com/columns)



# LC Reagents

## Technical Resources



visit [www.thermoscientific.com/chromexpert](http://www.thermoscientific.com/chromexpert) to access the following information:

- Derivatization and Visualization Reagents for HPLC
- Developments in Amino Acid Analysis
- Hydrolysis
- Methods for Fractionation of Peptide Mixtures



## 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 <b>TS-25003</b>	1 Each
Heptafluorobutyric Acid, HPLC Grade	10 x 1mL ampules	<b>TS-53104</b>	1 Pack

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

### Triethylamine (TEA)

Ideal for HPLC separation and analysis of peptides

Triethylamine is an ion-pairing reagent that alters selectivity in reversed-phase HPLC separations. By pairing with peptides, it effectively sharpens peaks, resulting in improved peak resolution.

- 99.5% triethylamine purity, allowing sensitive peptide detection at low UV wavelengths in reverse-phase HPLC peptide separation systems
- Packaged in amber glass bottles with protective PTFE-lined fluorocarbon caps for reagent integrity
- Has a low UV absorbance to provide the most sensitive detection across all wavelengths

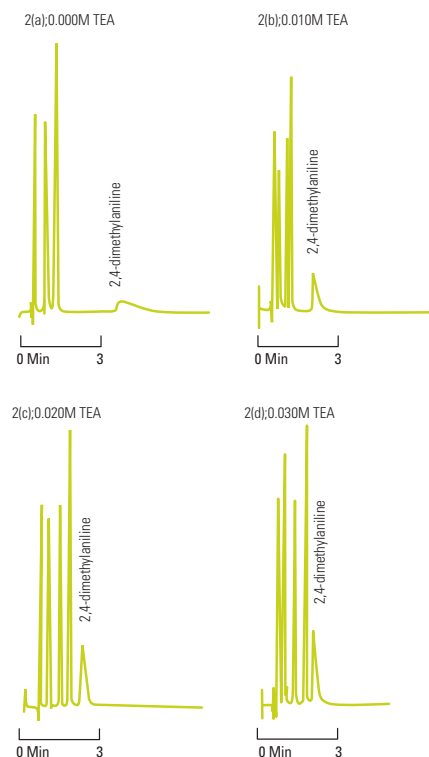
#### Properties of Triethylamine

- Alternate names TEA, Diethylethanamine
- Molecular formula  $C_6H_{15}N$
- Molecular weight 101.19
- Density 0.726g/mL

#### Triethylamine (TEA)

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

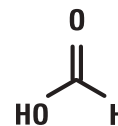
X in the ordering table indicates that hazardous shipping charges apply.





## 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 known to improve the peak shapes of the resulting separation. Unlike trifluoroacetic acid (TFA), formic acid is not an ion-pairing reagent, and it does not suppress MS ionization of polypeptides when used as a mobile phase component.

- Prescored, nitrogen-flushed, amber glass to protect formic acid from light and moisture
- 99% purity for consistent LC baselines and no interference introduced into LC and mass spectrometry applications
- Convenient format simplifies preparation of gradient and isocratic mobile phases containing 0.1% (v/v) formic acid in water or acetonitrile
- Contents of a single vial in a final volume of 1L solvent yields a mobile phase of the most common formic acid concentration

### Formic Acid Ampules

Description	Quantity	Cat. No.	Quantity
Formic Acid 99+%	10 x 1mL ampules	<b>TS-28905</b>	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

### Trifluoroacetic Acid (TFA)

Routinely used ion-pairing agent in reversed-phase peptide separations

- Purity: >99.5% TFA and exceptional clarity allows sensitive, non-destructive peptide detection at low UV wavelengths
- High-performance packaging: Packaged under nitrogen in amber glass with protective TFE-lined fluorocarbon caps to ensure TFA integrity
- Choice of formats for convenience: 1mL ampules can prepare 1L of 0.1% v/v TFA solution for the mobile phase in reversed-phase chromatography in moments

#### Trifluoroacetic Acid (TFA)

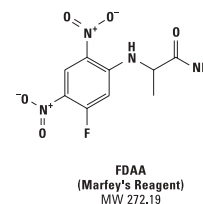
Description	Quantity	Cat. No.	Quantity
Trifluoroacetic Acid, Sequencing Grade	500mL	X <b>TS-28901</b>	1 Each
Trifluoroacetic Acid, Sequencing Grade	100g	X <b>TS-28903</b>	1 Each
Trifluoroacetic Acid, Sequencing Grade	10 × 1mL	X <b>TS-28904</b>	1 Pack
Trifluoroacetic Acid, Sequencing Grade	1g	X <b>TS-28902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

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

### FDAA, Marfey's Reagent

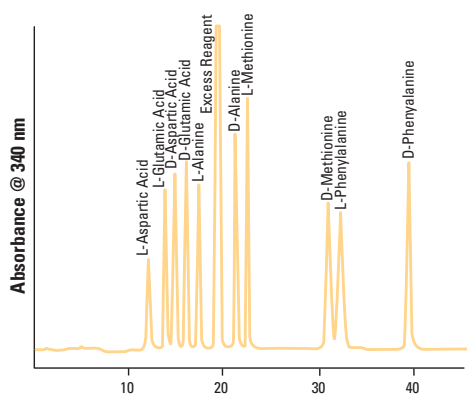
Makes separation and quantitation of optical isomers of amino acids by reversed-phase chromatography quick and easy

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



#### FDAA, Marfey's Reagent

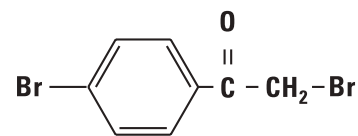
Description	Quantity	Cat. No.	Quantity
FDAA, Marfey's Reagent	50mg	<b>TS-48895</b>	1 Each



## 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	<b>TS-48891</b>	1 Each

## TNBSA (Trinitrobenzene Sulfonic Acid)

An excellent choice for spectrophotometric detection

- Couples with primary amines, sulfhydryls and hydrazides in aqueous solution at pH 8, without undesirable side reactions
- Excellent for solution or solid phase analysis
- Suitable for qualitative and quantitative estimation of biomolecules; including amino acids, peptides or proteins
- Chromogenic,  $O_{\max} = 335\text{nm}$
- Colored derivatives are monitored at 345nm and have extinction coefficients in range of  $1-1.5 \times 10^4$

### TNBSA

Description	Quantity	Cat. No.	Quantity
TNBSA	100mL	X <b>TS-28997</b>	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	<b>TS-24308</b>	1 Pack

### Amino Acid Standard H

High-purity calibration standard for protein hydrolysates

- Uses L-form configuration to permit standardization of microbial and other assays
- Molar concentration verified by conventional amino acid analysis methods
- With the exception of cystine, each amino acid is supplied at a concentration of 2.5µmoles/mL in 0.1N HCl

#### The following amino acids are included in Amino Acid Standard H:

L-Alanine, Ammonia [(NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>], L-Arginine, L-Aspartic Acid, L-Cystine, L-Glutamic Acid, Glycine, L-Histidine, L-Isoleucine, L-Leucine, L-Lysine•HCl, L-Methionine, L-Phenylalanine, L-Proline, L-Serine, L-Threonine, L-Tyrosine, L-Valine.

#### Amino Acid Standard H

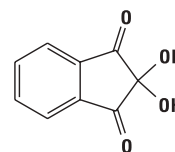
Description	Quantity	Cat. No.	Quantity
Amino Acid Standard H	10 × 1mL	<b>TS-20088</b>	1 Pack

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.

## Amino Acid Detection Reagents

### Ninhydrin

The reagent of choice for detection of amino acids



**Ninhydrin**  
MW 178.14

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

#### Ninhydrin

Description	Quantity	Cat. No.	Quantity
Ninhydrin	500g	<b>TS-21003</b>	1 Each

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

## HPLC and Spectrophotometric Grade Solvents

Ultrapure solvents are carefully packed for thorough protection

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

#### Acetonitrile, HPLC Grade, Physical Properties

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

#### Water, HPLC Grade, Physical Properties

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

#### Dimethylformamide (DMF), Sequencing Grade, Physical Properties

- $\text{HCON}(\text{CH}_3)_2$
- Purity (GC): ≥99%
- MW: 73.09
- Density: 0.944
- B.P. 153°C
- Water: 0.1%

#### Dimethylsulfoxide (DMSO), Sequencing Grade, Physical Properties

- $\text{C}_2\text{H}_6\text{OS}$
- Purity (GC): >99.5%
- MW: 78.13
- Density: 1.101
- Water: ≤0.2%

#### Pyridine, Physical Properties

- $\text{C}_5\text{H}_5\text{N}$
- Purity (GC): ≥99%
- MW: 79.10
- Density: 0.978
- B.P. 115°C

#### HPLC and Spectrophotometric Grade Solvents

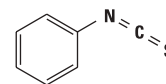
Description	Quantity		Cat. No.	Quantity
Acetonitrile	1L	X	<b>TS-51101</b>	1 Each
Water	1L		<b>TS-51140</b>	1 Each
Dimethylformamide (DMF)	50mL	X	<b>TS-20673</b>	1 Each
Dimethylsulfoxide (DMSO)	950mL	X	<b>TS-20688</b>	1 Each
Pyridine	100g	X	<b>TS-25104</b>	1 Each

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 phenylthiocarbonyl 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	<b>TS-26922</b>	1 Pack

## Peptide Standards

### Peptide Retention Standard

Allows accurate prediction of elution time for peptides of known amino acid composition up to 20 residues in length

- Save time in peptide purification
- Simplify identification of specific peptides in a complex mixture
- Increase the efficiency of predicting peptide elution profiles
- Determine the relative order of peptide elution of a complex mixture
- Evaluate reverse-phase supports of varying n-alkyl chain lengths and ligand densities

Retention times are predicted by totaling the values that represent the contribution in minutes of each amino acid residue and the peptide terminal groups. Retention time is dependent upon the molecular weight of the peptide. The effect on retention is relatively unimportant with a small peptide, but it increases with the size of the molecule. The accuracy of predicting peptide retention time significantly decreases beyond 20 residues. To ensure accuracy, a peptide standard is used to correct for instrument variation, column aging, n-alkyl chain length variation and ligand density.

#### Peptide Retention Standard

Description	Quantity	Cat. No.	Quantity
Peptide Retention Standard, S1-S5	1 vial	<b>TS-31700</b>	1 Each

### Peptide Retention Time Calibration Mixture

Heavy peptide mixture for column assessment and prediction of peptide retention times

- Assessment of chromatography and MS instrument performance
- Prediction of peptide retention across multiple instrument platforms
- Prediction of peptide retention time from sequence using calculated hydrophobicity factor
- Optimization of scheduled MS acquisition windows for improving quantification and increased multiplexing
- Internal standard to normalize for variation in retention times and peak intensities between runs

#### Peptide Retention Time Calibration Mixture

Description	Quantity	Cat. No.	Quantity
Peptide Retention Time Calibration Mixture, 0.5pmol/μL	50μL	<b>TS-88320</b>	1 Each
Peptide Retention Time Calibration Mixture, 5pmol/μL	200μL	<b>TS-88321</b>	1 Each

## LC and LC-MS Instruments

Our liquid chromatographs and mass spectrometers advance scientific knowledge, enable drug discovery, improve manufacturing processes and protect people and the environment. You can expect the best results and highest productivity, keeping your research or processes moving smoothly.

### Vanquish Flex System

The Thermo Scientific™ Vanquish™ Flex system is a biocompatible UHPLC system with state-of-the-art quaternary solvent blending, ideally suited for the biopharma industry.

The Vanquish UHPLC platform is designed to set new benchmarks on accuracy, precision, and sensitivity in liquid chromatography. As a new part of this family, the Vanquish Flex system shares all Vanquish-inherent values, such as a design focus on uptime, robustness and reliability.



### Vanquish System

The Vanquish system takes high-end UHPLC to a new level, offering more resolution while meeting the throughput demands of modern laboratories. The system is driven by the gold standard Thermo Scientific™ Dionex™ Chromeleon™ Chromatography Data System (CDS) software and delivers better separations, more results and easier interaction. The Vanquish system delivers these values simultaneously, without compromise.

When combined with the Thermo Scientific Charger module, the Vanquish system allows for added sample capacity, performing the highest throughput UHPLC analysis. This setup combines enough sample capacity to run over the weekend, while Chromeleon CDS ensures convenient sample tracking and results processing of even the largest sample sets.

Visit [www.thermoscientific.com/vanquish](http://www.thermoscientific.com/vanquish)



## Basic Automated and Standard (SD) Systems

The Thermo Scientific™ Dionex™ UltiMate™ 3000 Basic Automated System is optimized for reliability and ease-of-use with routine LC applications, and also offers full UHPLC compatibility. The ACC-3000 Autosampler Column Compartment is at the heart of the system. Its unique instrument design combines a rugged sample injection principle with a powerful column oven.

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