

Alltech® Alltima™ HP Introduction

Alltech



High-Stability, High-Purity, High-Performance, Low-Bleed Columns for Demanding Applications

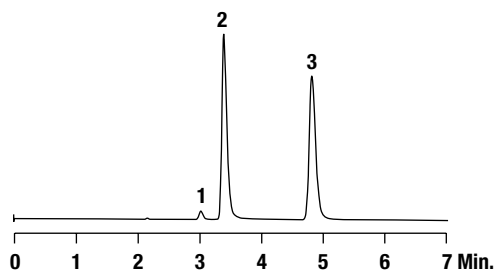
- Better Peak Symmetry—high-purity silica eliminates peak tailing problems
- Long Column Life—exceptional column stability minimizes downtime and reduces cost
- Ideal for Microbore or Critical Analysis—low to no detectable column bleed
- Variety of Phases and Formats—optimizes retention, resolution, and analysis time

Alltima™ HP combines our best phase chemistries with high-purity silica. The result is one product family with selectivity and performance needed to overcome your most challenging separation needs.

Alltech® Alltima™ HP Phase Specifications

Phase	Description	Base	Particle	Particle Size	Pore Size	Surface Area	Carbon Load	Phase	End-capped?	USP
C18	For classic reversed-phase applications	Silica	Spherical	3, 5µm	190Å	200 m ² /g	12%	Monomeric	Yes	L1
C18 EPS	Reversed-phase C18 with extended polar selectivity	Silica	Spherical	3, 5µm	190Å	200 m ² /g	4%	Monomeric	Yes	L1
C18 HiLoad	Higher carbon load for stronger retention	Silica	Spherical	3, 5µm	100Å	450 m ² /g	24%	Monomeric	Yes	L1
C18 AQ	100% water wettable	Silica	Spherical	3, 5µm	100Å	450 m ² /g	20%	Monomeric	Yes	L1
C18 Amide	Low bleed polar-embedded phase compatible with microbore	Silica	Spherical	3, 5µm	190Å	200 m ² /g	12%	Monomeric	Yes	L1
C8	For reversed-phase applications where C18 is too retentive	Silica	Spherical	3, 5µm	190Å	200 m ² /g	8%	Monomeric	Yes	L7
Cyano	Stable, long-life cyano phase	Silica	Spherical	3, 5µm	190Å	200 m ² /g	4%	Monomeric	Yes	L10
Silica	For general purpose normal-phase applications	Silica	Spherical	3, 5µm	100Å	450 m ² /g	—	—	No	L3
HILIC	Hydrophilic Interaction Chromatography for highly polar analytes	Silica	Spherical	1.5, 3, 5µm	120Å	230 m ² /g	—	—	—	L3

Basic Compounds at Neutral pH



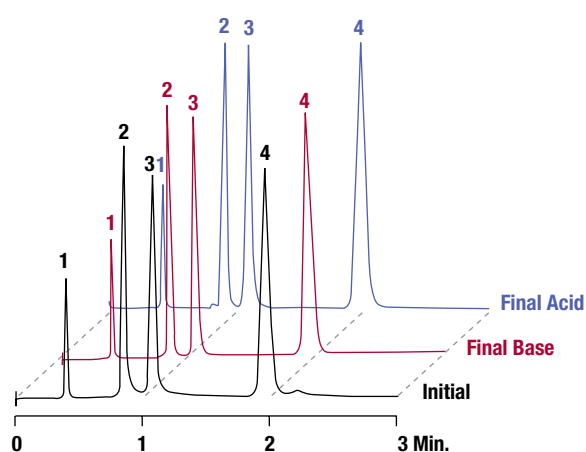
Peak	USP Tailing*
1. Diphenhydramine	1.29
2. Nortriptyline	1.41
3. Amitriptyline	1.27

*Tailing Factor was determined in accordance with USP method.

Column: Alltima™ HP C18, 5µm, 4.6 x 150mm
Mobile Phase: 25mM Potassium Phosphate, pH 7.0:Methanol (15:85)
Flow Rate: 1.0mL/min
Detector: UV at 254nm

The Alltima™ HP phases demonstrate excellent peak symmetry of highly basic analytes at pH 7.0.

Basic Compound Stability at pH1 and pH10



Retention Times	CHROM 10249	CHROM 10250	CHROM 10252
	1. Uracil	0.56	0.55
2. Phenol	0.82	0.81	0.81
3. N,N-Diethyl-m-Toluamide	1.08	1.08	1.08
4. Toluene	1.89	1.88	1.89

Column: Alltima™ HP C18, 5µm, 4.6 x 50mm
Mobile Phase: Acetonitrile:Water (58:42)
Flow Rate: 1.0mL/min
Detector: UV at 254nm

Final Acid: washed with 24,000 column volumes of Acetonitrile:Dilute Sulfuric Acid, pH 1.0 (50:50) at 60°C.

Final Base: washed with 24,000 column volumes of Acetonitrile:Ammonium Hydroxide, pH 10 (50:50) at 20°C.

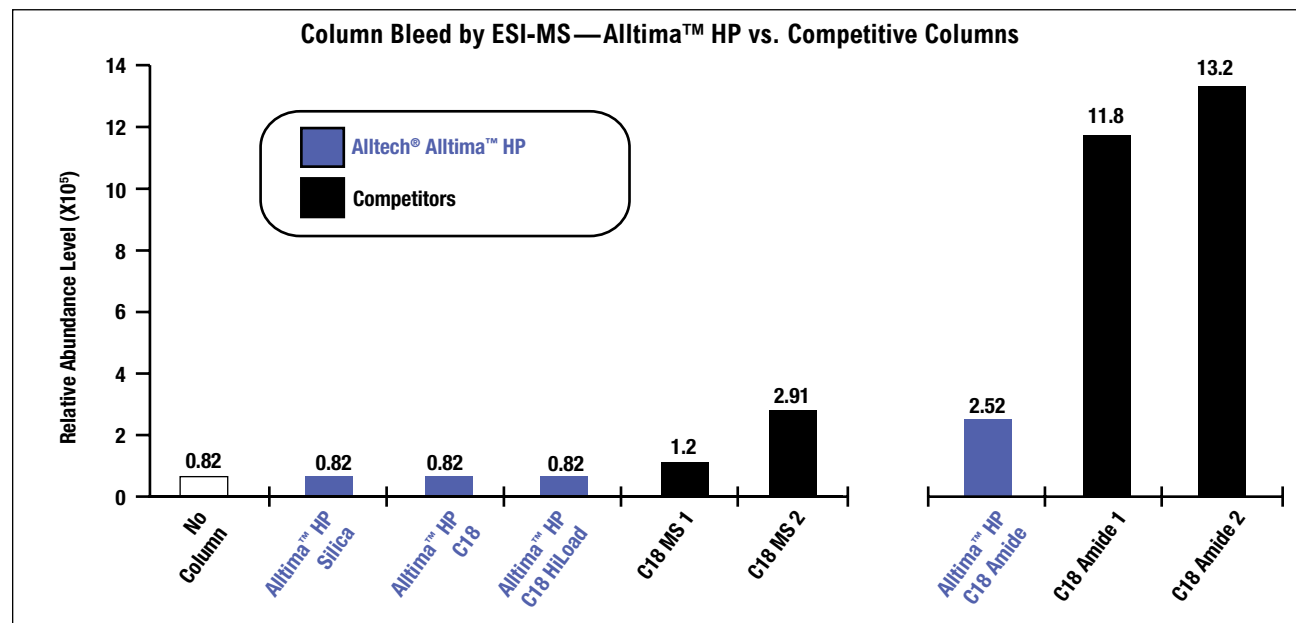
The Alltima™ HP phases demonstrate exceptional stability from pH 1.0 to 10.



Alltech® Alltima™ HP Introduction

The Alltima™ HP Family Demonstrates Low Bleed

Alltima™ HP columns are among the lowest-bleed columns available, making them ideal for microbore applications. Our C18 Amide polar-embedded phase has significantly lower column bleed than competitive amide columns.



Alltima™ HP Method Development Kits

best value

Three Different Kits with Different Selectivities

Whether you are developing a new method, or just not satisfied with an existing separation, the Alltima™ HP family can help optimize your separation. Your best value for method development—purchase a kit and receive three columns for the price of two.



Alltima™ HP Method Development Kits

Description	Includes:	i.d. x Length	Part No.
<i>Kit 1—C18 Mix, 3µm</i>			
Expedite™ MS Kit 1	C18, C18 HiLoad, C18 Amide (87674, 87692, 87728)	2.1 x 20mm	87854
Analytical Kit 1	C18, C18 HiLoad, C18 Amide (87668, 87686, 87722)	4.6 x 150mm	87850
Rocket™ Kit 1	C18, C18 HiLoad, C18 Amide (87672, 87690, 87726)	7 x 53mm	87852
<i>Kit 2—Alternate Mix, 3µm</i>			
Expedite™ MS Kit 2	C18 HiLoad, C8, CN (87692, 87746, 87764)	2.1 x 20mm	87864
Analytical Kit 2	C18 HiLoad, C8, CN (87686, 87740, 87760)	4.6 x 150mm	87860
Rocket™ Kit 2	C18 HiLoad, C8, CN (87690, 87744, 87762)	7 x 53mm	87862
<i>Kit 3—Polar Mix, 3µm</i>			
Expedite™ MS Kit 3	C18 EPS, C18 Amide, CN (87710, 87728, 87764)	2.1 x 20mm	87874
Analytical Kit 3	C18 EPS, C18 Amide, CN (87704, 87722, 87758)	4.6 x 150mm	87870
Rocket™ Kit 3	C18 EPS, C18 Amide, CN (87708, 87726, 87762)	7 x 53mm	87872

tech tip

Want high throughput on a conventional (non-ultra high-pressure) system?

Choose the Rocket™ column format—no modifications necessary to your existing HPLC system. Choose Expedite™ columns for low volume and microbore systems. See page 31 for more explanation of the Rocket™ and Expedite™ formats.



Alltech® Alltima™ HP Reversed-Phase Columns

Selectivity Options in One Product Family

C18:

- Classic reversed-phase retention and selectivity

C18 AQ:

- 100% water wettable and high carbon loading for greater mobile phase range

EPS C18:

- Unique selectivity that succeeds when traditional reversed-phase columns fail
- Greater retention and enhanced peak symmetry for polar compounds

C18 HiLoad:

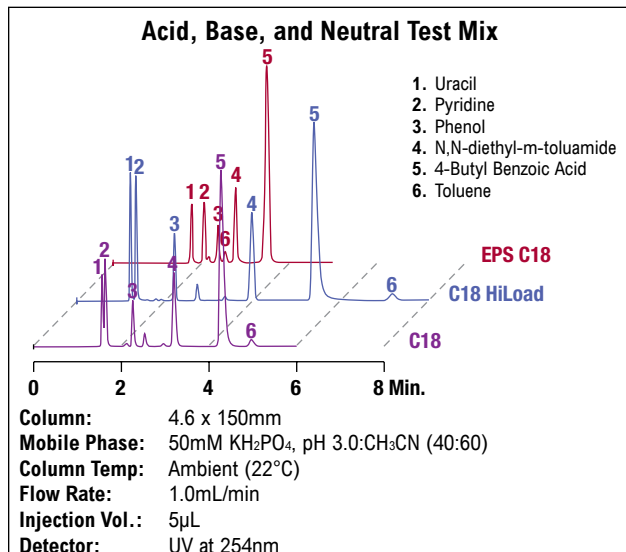
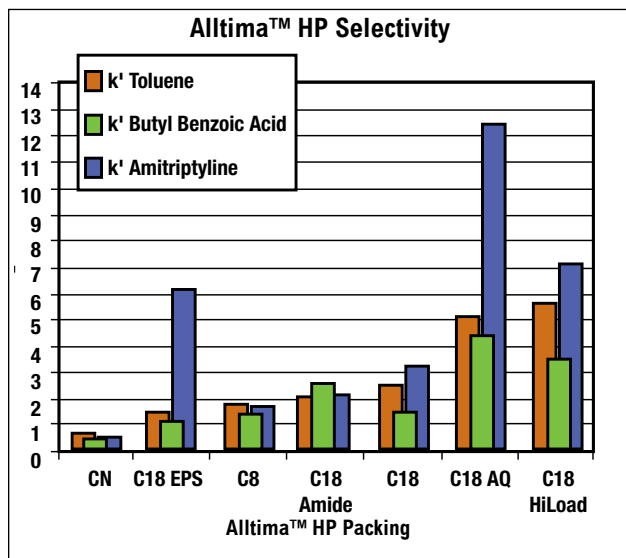
- Superior retention and loadability for resolution of complex samples

C18 Amide:

- The first polar-embedded packing ideal for microbore
- Excellent peak shape without phase bleed
- Ideal for basic compounds in neutral to alkaline pH

C8:

- Less hydrophobic retention than C18



Alltima™ HP HPLC Columns

Packing	Format	i.d. x Length	Part No.		
C18, 3µm*	Capillary	0.150 X 50mm	22153		
	Capillary	0.150 X100mm	22154		
	Capillary	0.150 X150mm	22155		
	Capillary	0.300 X 50mm	22156		
	Capillary	0.300 X100mm	22157		
	Capillary	0.300 X150mm	22158		
	Expedite™ MS	2.1 x 10mm	87673		
	Expedite™ MS	2.1 x 20mm	87674		
	Microbore	2.1 x 50mm	87504		
	Microbore	2.1 x 100mm	87669		
	Microbore	2.1 x 150mm	87670		
	Solvent-Reducer	3.0 x 150mm	87601		
	Expedite™ MS	4.6 x 10mm	87675		
	Expedite™ MS	4.6 x 20mm	87676		
C18, 5µm	Analytical	4.6 x 50mm	87826		
	Analytical	4.6 x 100mm	87667		
	Analytical	4.6 x 150mm	87668		
	Rocket™	7 x 33mm	87671		
	Rocket™	7 x 53mm	87672		
	C18 AQ, 3µm*	Microbore	2.1 x 150mm	87681	
		Microbore	2.1 x 250mm	87682	
		Solvent-Reducer	3.0 x 150mm	87602	
		Solvent-Reducer	3.0 x 250mm	87603	
		Analytical	4.6 x 150mm	87679	
		Analytical	4.6 x 250mm	87680	
		C18 AQ, 5µm	Capillary	0.150 x 50mm	22560
			Capillary	0.150 x 100mm	22561
			Capillary	0.150 x 150mm	22562
Capillary			0.300 x 50mm	22563	
Capillary			0.300 x 100mm	22564	
Capillary			0.300 x 150mm	22565	
Expedite™ MS			2.1 x 10mm	87813	
Expedite™ MS			2.1 x 20mm	87814	
Microbore	2.1 x 100mm		87809		
Microbore	2.1 x 150mm		87810		
Expedite™ MS	4.6 x 10mm		87815		
Expedite™ MS	4.6 x 20mm		87816		
Analytical	4.6 x 50mm		87832		
Analytical	4.6 x 100mm		87807		
Analytical	4.6 x 150mm	87808			
Rocket™	7 x 33mm	87811			
Rocket™	7 x 53mm	87812			
C18 EPS, 3µm	Microbore	2.1 x 150mm	87821		
	Microbore	2.1 x 250mm	87822		
	Analytical	4.6 x 150mm	87819		
	Analytical	4.6 x 250mm	87820		
	Expedite™ MS	2.1 x 10mm	87709		
	Expedite™ MS	2.1 x 20mm	87710		
	Microbore	2.1 x 50mm	87508		
	Microbore	2.1 x 100mm	87705		
	Microbore	2.1 x 150mm	87706		
	Solvent-Reducer	3.0 x 150mm	87604		
	Expedite™ MS	4.6 x 10mm	87711		
	Expedite™ MS	4.6 x 20mm	87712		
	Analytical	4.6 x 50mm	87833		
	Analytical	4.6 x 100mm	87703		
Analytical	4.6 x 150mm	87704			
Rocket™	7 x 33mm	87707			
Rocket™	7 x 53mm	87708			
C18 EPS, 5µm	Microbore	2.1 x 150mm	87717		
	Microbore	2.1 x 250mm	87718		
	Solvent-Reducer	3.0 x 150mm	87605		
	Solvent-Reducer	3.0 x 250mm	87606		
	Analytical	4.6 x 150mm	87715		
	Analytical	4.6 x 250mm	87716		

*Other particle sizes and dimensions are available.



Alltech® Alltima™ HP Reversed-Phase Columns

Alltima™ HP HPLC Columns (continued)

Packing	Format	i.d. x Length	Part No.	
C18 Hi-Load, 3µm*	Capillary	0.150 x 50mm	22190	
	Capillary	0.300 x 50mm	22193	
	Expedite™ MS	2.1 x 10mm	87691	
	Expedite™ MS	2.1 x 20mm	87692	
	Microbore	2.1 x 50mm	87506	
	Microbore	2.1 x 100mm	87687	
	Microbore	2.1 x 150mm	87688	
	Solvent-Reducer	3.0 x 150mm	87610	
	Expedite™ MS	4.6 x 10mm	87693	
	Expedite™ MS	4.6 x 20mm	87694	
	Analytical	4.6 x 50mm	87827	
	Analytical	4.6 x 100mm	87685	
	Analytical	4.6 x 150mm	87686	
	Rocket™	7 x 33mm	87689	
	Rocket™	7 x 53mm	87690	
	C18 Hi-Load, 5µm	Microbore	2.1 x 150mm	87699
		Microbore	2.1 x 250mm	87700
Solvent-Reducer		3.0 x 150mm	87611	
Solvent-Reducer		3.0 x 250mm	87612	
Analytical		4.6 x 150mm	87697	
Analytical		4.6 x 250mm	87698	
C18 Amide, 3µm*	Capillary	0.150 x 50mm	22255	
	Capillary	0.300 x 50mm	22258	
	Expedite™ MS	2.1 x 10mm	87727	
	Expedite™ MS	2.1 x 20mm	87728	
	Microbore	2.1 x 50mm	87510	
	Microbore	2.1 x 100mm	87723	
	Microbore	2.1 x 150mm	87724	
	Solvent-Reducer	3.0 x 150mm	87607	
	Expedite™ MS	4.6 x 10mm	87729	
	Expedite™ MS	4.6 x 20mm	87730	
	Analytical	4.6 x 50mm	87829	
	Analytical	4.6 x 100mm	87721	
	Analytical	4.6 x 150mm	87722	
	Rocket™	7 x 33mm	87725	
	Rocket™	7 x 53mm	87726	
	C18 Amide, 5µm	Microbore	2.1 x 150mm	87735
		Microbore	2.1 x 250mm	87736
Solvent-Reducer		3.0 x 150mm	87608	
Solvent-Reducer		3.0 x 250mm	87609	
Analytical		4.6 x 150mm	87733	
Analytical		4.6 x 250mm	87734	
C8, 3µm*	Capillary	0.150 x 50mm	22479	
	Capillary	0.150 x 100mm	22480	
	Capillary	0.150 x 150mm	22481	
	Capillary	0.300 x 50mm	22482	
	Capillary	0.300 x 100mm	22483	
	Capillary	0.300 x 150mm	22484	
	Expedite™ MS	2.1 x 10mm	87745	
	Expedite™ MS	2.1 x 20mm	87746	
	Microbore	2.1 x 50mm	87512	
	Microbore	2.1 x 100mm	87741	
	Microbore	2.1 x 150mm	87742	
	Solvent-Reducer	3.0 x 150mm	87613	
	Expedite™ MS	4.6 x 10mm	87747	
	Expedite™ MS	4.6 x 20mm	87748	
	Analytical	4.6 x 50mm	87830	
	Analytical	4.6 x 100mm	87739	
	Analytical	4.6 x 150mm	87740	
	Rocket™	7 x 33mm	87743	
	Rocket™	7 x 53mm	87744	
	C8, 5µm	Microbore	2.1 x 150mm	87753
		Microbore	2.1 x 250mm	87754
		Solvent-Reducer	3.0 x 150mm	87614
		Solvent-Reducer	3.0 x 250mm	87615
Analytical		4.6 x 150mm	87751	
Analytical		4.6 x 250mm	87752	

Alltima™ HP-Guard Cartridges

Packing	i.d. x Length	Qty.	Part No.
C18 Capillary Guard, 3µm**	0.150 x 10mm	ea	22578
	0.300 x 10mm	ea	22579
C18 All-Guard™, 5µm*	2.1 x 7.5mm	3	87683
	3.0 x 7.5mm	3	87622
	4.6 x 7.5mm	3	87684
C18 AQ Capillary Guard, 3µm**	0.150 x 10mm	ea	22638
	0.300 x 10mm	ea	22639
C18 AQ All-Guard™, 5µm*	2.1 x 7.5mm	3	87823
	4.6 x 7.5mm	3	87824
C18 EPS All-Guard™, 5µm*	2.1 x 7.5mm	3	87719
	3.0 x 7.5mm	3	87623
	4.6 x 7.5mm	3	87720
C18 Hi-Load Capillary Guard, 3µm**	0.150 x 10mm	ea	22588
C18 Hi-Load All-Guard™, 5µm*	0.300 x 10mm	ea	22589
	2.1 x 7.5mm	3	87701
	3.0 x 7.5mm	3	87624
	4.6 x 7.5mm	3	87702
C18 Amide Capillary Guard, 3µm**	0.150 x 10mm	ea	22598
C18 Amide All-Guard™, 5µm*	0.300 x 10mm	ea	22599
	2.1 x 7.5mm	3	87737
	3.0 x 7.5mm	3	87625
	4.6 x 7.5mm	3	87738
C8 Capillary Guard, 3µm**	0.150 x 10mm	ea	22648
	0.300 x 10mm	ea	22648
C8 All-Guard™, 5µm*	2.1 x 7.5mm	3	87755
	3.0 x 7.5mm	3	87627
	4.6 x 7.5mm	3	87756
All-Guard™ Cartridge Holder (Includes Direct-Connect Column Coupler)		ea	80101
Capillary Guard Cartridge Holder			
Guard Holder for 0.100mm and 0.150mm Guards		ea	GR-3710E
Guard Holder for 0.300mm and 0.500mm Guards		ea	GR-3710A

*All-Guard™ holder required.

**Other particle sizes and dimensions are available.

tech tip

Which guard format should I choose?

Ideally, the guard should have the same or slightly smaller i.d. as the HPLC column. Efficiency will suffer, if the guard i.d. is larger than that of the column.

*Other particle sizes and dimensions are also available.

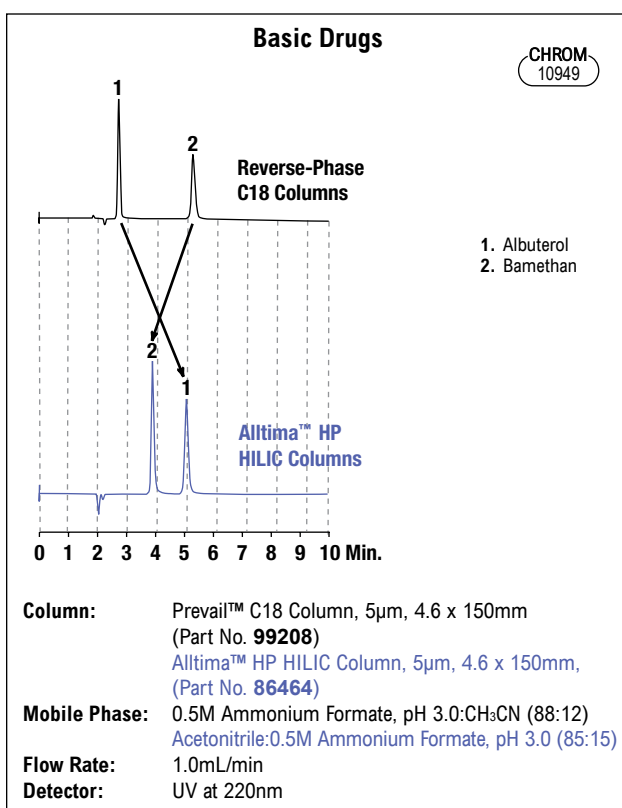


Alltech® Alltima™ HP HILIC Columns

Hydrophilic Interaction (HILIC) Columns for Highly Polar Basic Analytes

- Superior retention of highly polar compounds
- Increased sensitivity and lower detection limits with microbore
- Available in 1.5µm particle size

Hydrophilic Interaction Chromatography is ideal for separating and retaining very polar compounds that may not retain on traditional reversed-phase packings. Unlike reversed-phase columns, HILIC columns retain highly polar compounds with only small amounts of water in the mobile phase. These more volatile mobile phases increase sensitivity with microbore applications.



Use Alltima™ HP HILIC's alternate selectivity for greater separation possibilities.

tech tip

Want high throughput on a conventional (non-ultra high-pressure) system?

Choose the Rocket™ column format—no modifications necessary to your existing HPLC system. Choose Expedite™ columns for low volume and microbore systems. See page 31 for more explanation of the Rocket™ and Expedite™ formats.

Rocket™ Columns



6904

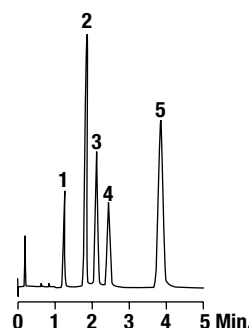
Expedite™ Columns



6113

Mixed Analyte HILIC

CHROM 10461



1. Toluene
2. Hydantoin
3. Uracil
4. Caffeine
5. Allantoin

Column: Alltima™ HP HILIC, 5µm, 4.6 x 150mm (Part No. 86464)

Mobile Phase: Acetonitrile:0.10M Ammonium Formate, pH 3.0 (95:5)

Flow Rate: 1.0mL/min

Detector: UV at 205nm

Alternate selectivity compared to reversed-phase columns allows more separation possibilities.

Alltima™ HP HILIC HPLC Columns

Packing	Format	i.d. x Length	Part No.
HILIC, 1.5µm	Expedite™ MS	2.1 x 20mm	86471
	Expedite™ MS	4.6 x 20mm	86472
	Rocket™	7 x 33mm	86467
	Rocket™	7 x 53mm	86468
HILIC, 3µm*	Capillary	0.150 x 50mm	22515
	Capillary	0.150 x 100mm	22516
	Capillary	0.150 x 150mm	22517
	Capillary	0.300 x 50mm	22518
	Capillary	0.300 x 100mm	22519
	Capillary	0.300 x 150mm	22520
	Expedite™ MS	2.1 x 10mm	86473
	Expedite™ MS	2.1 x 20mm	86475
	Microbore	2.1 x 50mm	86461
	Microbore	2.1 x 150mm	86463
HILIC, 5µm	Expedite™ MS	4.6 x 10mm	86474
	Expedite™ MS	4.6 x 20mm	86476
	Analytical	4.6 x 50mm	86460
	Analytical	4.6 x 150mm	86462
	Rocket™	7 x 33mm	86469
	Rocket™	7 x 53mm	86470
	Microbore	2.1 x 150mm	86465
	Analytical	4.6 x 150mm	86464
	Analytical	4.6 x 250mm	86466

*Other particle sizes and dimensions are available.

Alltima™ HP HILIC Guard Cartridges

Packing	i.d. x Length	Qty.	Part No.
HILIC Capillary Guard,	0.150 x 10mm	ea	22658
3µm**	0.300 x 10mm	ea	22659
HILIC All-Guard™, 5µm*	2.1 x 7.5mm	3	86479
	4.6 x 7.5mm	3	86480
All-Guard™ Cartridge Holder (Includes Direct-Connect™ Column Coupler)		ea	80101
Capillary Guard Cartridge Holder			
Guard Holder for 0.100mm and 0.150mm Guards		ea	GR-3710E
Guard Holder for 0.300mm and 0.500mm Guards		ea	GR-3710A

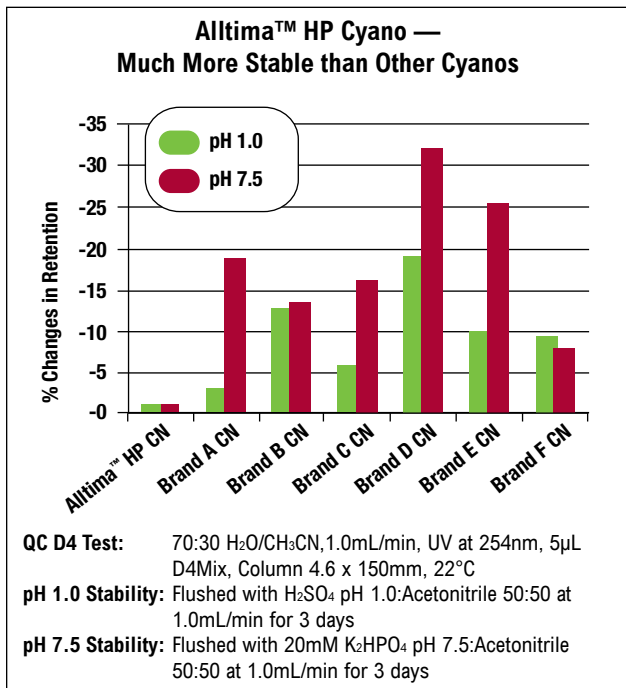
*All-Guard™ holder required.

**Other particle sizes and dimensions are available.



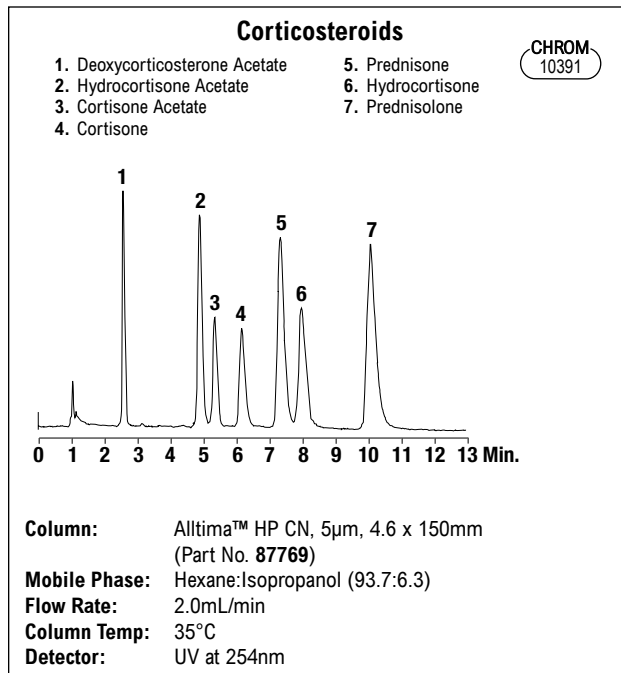
Alltech® Alltima™ HP Normal-Phase Columns

- Cyano:**
- Superior stability
 - More reproducible separations than silica for normal-phase applications
 - Ideal for basic drug analysis
- Silica:**
- Normal phase



Alltima™ HP HPLC Columns

Packing	Format	i.d. x Length	Part No.
Cyano, 3µm	Expedite™ MS	2.1 x 10mm	87763
	Expedite™ MS	2.1 x 20mm	87764
	Microbore	2.1 x 50mm	87514
	Microbore	2.1 x 100mm	87759
	Microbore	2.1 x 150mm	87760
	Solvent-Reducer	3.0 x 150mm	87616
	Expedite™ MS	4.6 x 10mm	87765
	Expedite™ MS	4.6 x 20mm	87766
	Analytical	4.6 x 50mm	87825
	Analytical	4.6 x 100mm	87757
	Analytical	4.6 x 150mm	87758
	Rocket™	7 x 33mm	87761
	Rocket™	7 x 53mm	87762
	Cyano, 5µm	Microbore	2.1 x 150mm
Microbore		2.1 x 250mm	87782
Solvent-Reducer		3.0 x 150mm	87617
Solvent-Reducer		3.0 x 250mm	87618
Analytical		4.6 x 150mm	87769
Analytical		4.6 x 250mm	87780
Silica, 3µm	Expedite™ MS	2.1 x 10mm	87791
	Expedite™ MS	2.1 x 20mm	87792
	Microbore	2.1 x 50mm	87516
	Microbore	2.1 x 100mm	87787
	Microbore	2.1 x 150mm	87788
	Solvent-Reducer	3.0 x 150mm	87619
	Expedite™ MS	4.6 x 10mm	87793
	Expedite™ MS	4.6 x 20mm	87794
	Analytical	4.6 x 50mm	87831
	Analytical	4.6 x 100mm	87785
	Analytical	4.6 x 150mm	87786
	Rocket™	7 x 33mm	87789
	Rocket™	7 x 53mm	87790



Alltima™ HP All-Guard™ Cartridges*

Packing	i.d. x Length	Qty.	Part No.
Cyano, 5µm	2.1 x 7.5mm	3	87783
	3.0 x 7.5mm	3	87626
	4.6 x 7.5mm	3	87784
Silica, 5µm	2.1 x 7.5mm	3	87803
	3.0 x 7.5mm	3	87628
	4.6 x 7.5mm	3	87804

All-Guard™ Cartridge Holder
(Includes Direct-Connect Column Coupler)

*All-Guard™ holder required. Other particle sizes available.