

# Alltech® Alltima™ HP Introduction



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

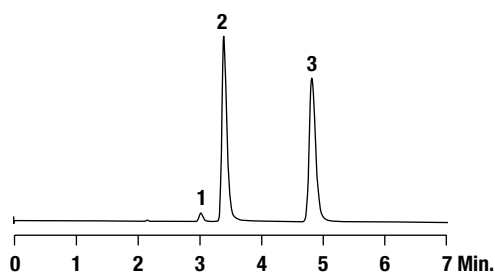
- Better Peak Symmetry—high-purity silica eliminates peak tailing problems
- Long Column Life—exceptional column stability minimizes downtime and reduces cost
- Ideal for Microbore or Critical Analysis—low to no detectable column bleed
- Variety of Phases and Formats—optimizes retention, resolution, 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 <sup>2</sup> /g	12%	Monomeric	Yes	L1
C18 EPS	Reversed-phase C18 with extended polar selectivity	Silica	Spherical	3, 5µm	190Å	200 m <sup>2</sup> /g	4%	Monomeric	Yes	L1
C18 HiLoad	Higher carbon load for stronger retention	Silica	Spherical	3, 5µm	100Å	450 m <sup>2</sup> /g	24%	Monomeric	Yes	L1
C18 AQ	100% water wettable	Silica	Spherical	3, 5µm	100Å	450 m <sup>2</sup> /g	20%	Monomeric	Yes	L1
C18 Amide	Low bleed polar-embedded phase compatible with microbore	Silica	Spherical	3, 5µm	190Å	200 m <sup>2</sup> /g	12%	Monomeric	Yes	L1
C8	For reversed-phase applications where C18 is too retentive	Silica	Spherical	3, 5µm	190Å	200 m <sup>2</sup> /g	8%	Monomeric	Yes	L7
Cyano	Stable, long-life cyano phase	Silica	Spherical	3, 5µm	190Å	200 m <sup>2</sup> /g	4%	Monomeric	Yes	L10
Silica	For general purpose normal-phase applications	Silica	Spherical	3, 5µm	100Å	450 m <sup>2</sup> /g	—	—	No	L3
HILIC	Hydrophilic Interaction Chromatography for highly polar analytes	Silica	Spherical	1.5, 3, 5µm	120Å	230 m <sup>2</sup> /g	—	—	—	L3

### Basic Compounds at Neutral pH



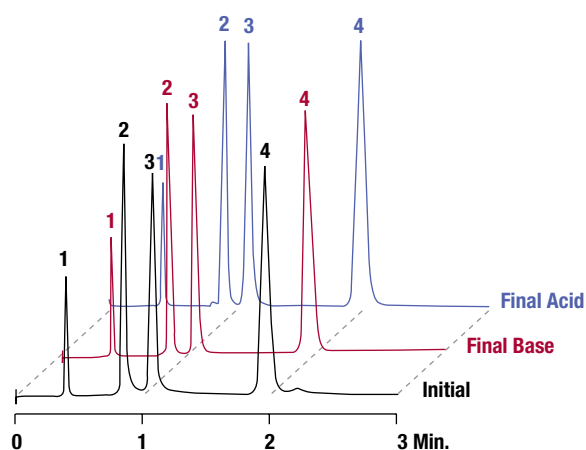
Peak	USP Tailing*
1. Diphenhydramine	1.29
2. Nortriptyline	1.41
3. Amitriptyline	1.27

\*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.

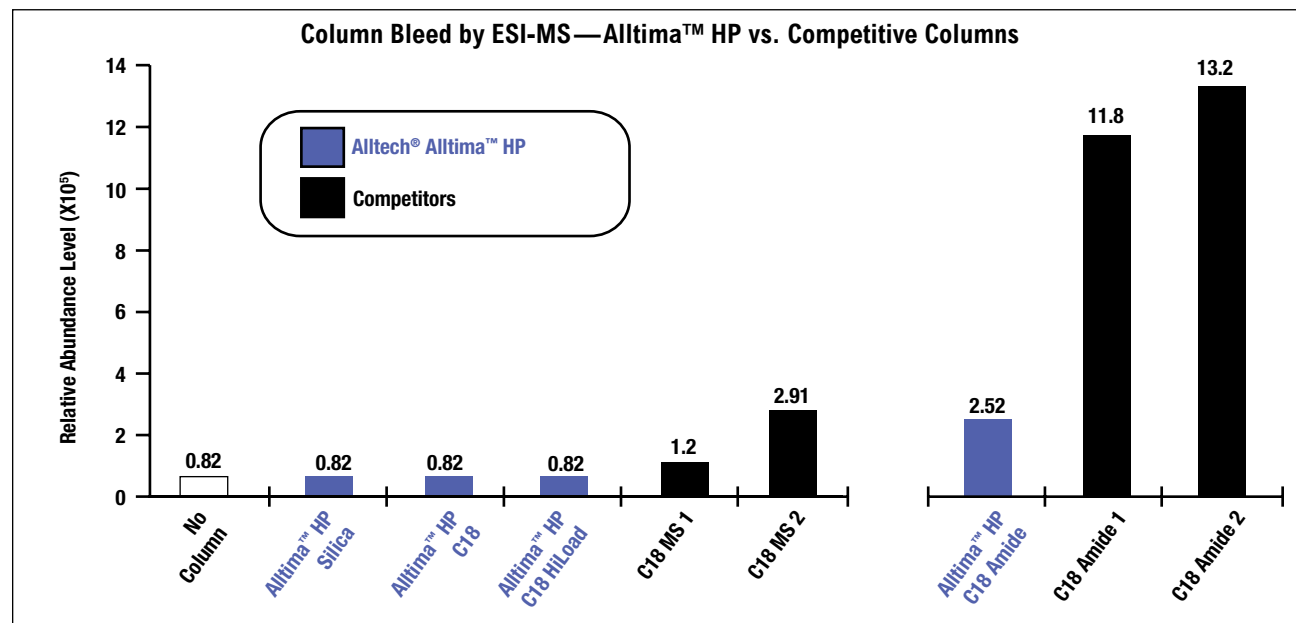
The Alltima™ HP phases demonstrate exceptional stability from pH 1.0 to 10.



# 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.





# 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

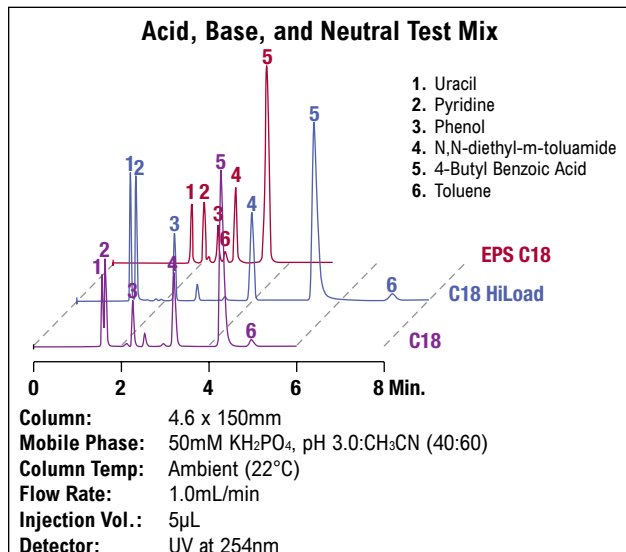
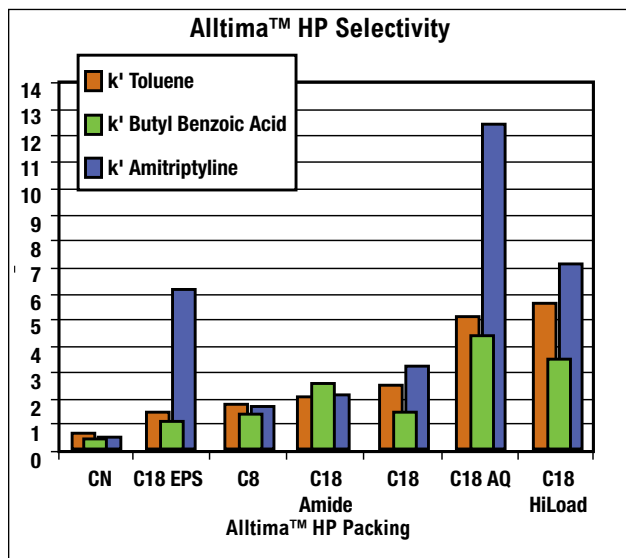
### C18 Amide:

- 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

hplc columns | small molecule



### 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 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	
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		
C18 EPS, 3µm	Rocket™	7 x 33mm	87811		
	Rocket™	7 x 53mm	87812		
	C18 EPS, 5µm	Microbore	2.1 x 150mm	87821	
		Microbore	2.1 x 250mm	87822	
		Analytical	4.6 x 150mm	87819	
		Analytical	4.6 x 250mm	87820	
		C18 EPS, 3µm	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
			Analytical	4.6 x 50mm	87833
			Analytical	4.6 x 100mm	87703
Analytical			4.6 x 150mm	87704	
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 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	<b>22190</b>	
	Capillary	0.300 x 50mm	<b>22193</b>	
	Expedite™ MS	2.1 x 20mm	<b>87692</b>	
	Microbore	2.1 x 50mm	<b>87506</b>	
	Microbore	2.1 x 100mm	<b>87687</b>	
	Microbore	2.1 x 150mm	<b>87688</b>	
	Solvent-Reducer	3.0 x 150mm	<b>87610</b>	
	Expedite™ MS	4.6 x 20mm	<b>87694</b>	
	Analytical	4.6 x 50mm	<b>87827</b>	
	Analytical	4.6 x 100mm	<b>87685</b>	
C18 Hi-Load, 5µm	Analytical	4.6 x 150mm	<b>87686</b>	
	Rocket™	7 x 53mm	<b>87690</b>	
	Microbore	2.1 x 150mm	<b>87699</b>	
	Microbore	2.1 x 250mm	<b>87700</b>	
	Solvent-Reducer	3.0 x 150mm	<b>87611</b>	
	Solvent-Reducer	3.0 x 250mm	<b>87612</b>	
	Analytical	4.6 x 150mm	<b>87697</b>	
	Analytical	4.6 x 250mm	<b>87698</b>	
	C18 Amide, 3µm*	Capillary	0.150 x 50mm	<b>22255</b>
		Capillary	0.300 x 50mm	<b>22258</b>
Expedite™ MS		2.1 x 20mm	<b>87728</b>	
Microbore		2.1 x 50mm	<b>87510</b>	
Microbore		2.1 x 100mm	<b>87723</b>	
Microbore		2.1 x 150mm	<b>87724</b>	
Solvent-Reducer		3.0 x 150mm	<b>87607</b>	
Analytical		4.6 x 50mm	<b>87829</b>	
Analytical		4.6 x 100mm	<b>87721</b>	
Analytical		4.6 x 150mm	<b>87722</b>	
C18 Amide, 5µm	Rocket™	7 x 33mm	<b>87725</b>	
	Rocket™	7 x 53mm	<b>87726</b>	
	Microbore	2.1 x 150mm	<b>87735</b>	
	Microbore	2.1 x 250mm	<b>87736</b>	
	Solvent-Reducer	3.0 x 150mm	<b>87608</b>	
	Solvent-Reducer	3.0 x 250mm	<b>87609</b>	
	Analytical	4.6 x 150mm	<b>87733</b>	
	Analytical	4.6 x 250mm	<b>87734</b>	
	C8, 3µm*	Capillary	0.150 x 50mm	<b>22479</b>
		Capillary	0.150 x 100mm	<b>22480</b>
Capillary		0.150 x 150mm	<b>22481</b>	
Capillary		0.300 x 50mm	<b>22482</b>	
Capillary		0.300 x 100mm	<b>22483</b>	
Capillary		0.300 x 150mm	<b>22484</b>	
Expedite™ MS		2.1 x 20mm	<b>87746</b>	
Microbore		2.1 x 50mm	<b>87512</b>	
Microbore		2.1 x 100mm	<b>87741</b>	
Microbore		2.1 x 150mm	<b>87742</b>	
C8, 5µm	Solvent-Reducer	3.0 x 150mm	<b>87613</b>	
	Expedite™ MS	4.6 x 20mm	<b>87748</b>	
	Analytical	4.6 x 100mm	<b>87739</b>	
	Analytical	4.6 x 150mm	<b>87740</b>	
	Rocket™	7 x 53mm	<b>87744</b>	
	Microbore	2.1 x 150mm	<b>87753</b>	
	Solvent-Reducer	3.0 x 150mm	<b>87614</b>	
	Solvent-Reducer	3.0 x 250mm	<b>87615</b>	
	Analytical	4.6 x 150mm	<b>87751</b>	
	Analytical	4.6 x 250mm	<b>87752</b>	

\*Other particle sizes and dimensions are also available.

## Alltima™ HP-Guard Cartridges

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

\*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.

### technical assistance

Contact Tech Support: Phone: 1.800.255.8324 (North America)  
Email: [contact.alltech@grace.com](mailto:contact.alltech@grace.com)  
Online: [www.discoverysciences.com](http://www.discoverysciences.com)

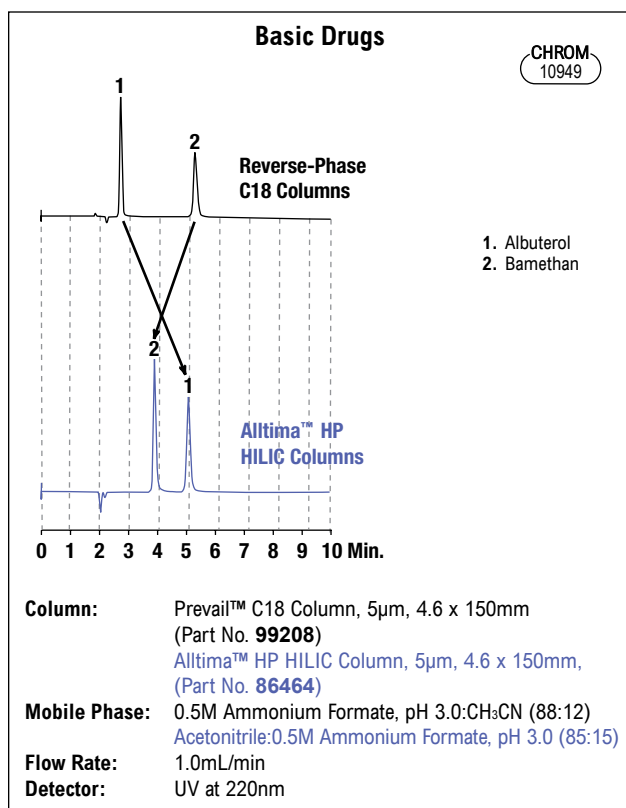


# Alltech® Alltima™ HP HILIC Columns

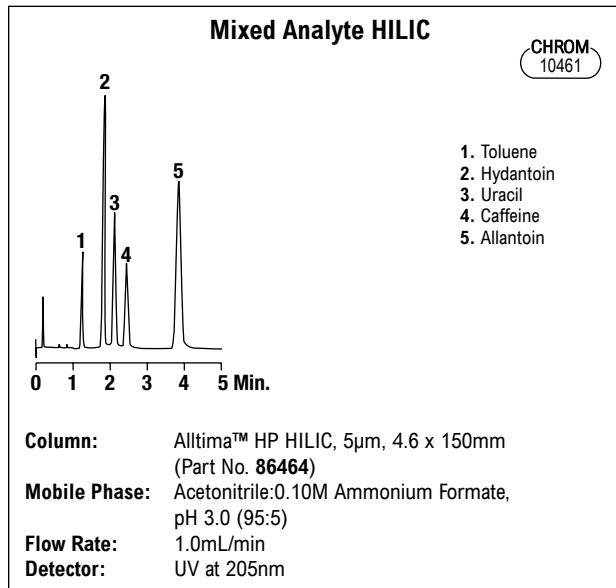
## Hydrophilic Interaction (HILIC) Columns for Highly Polar Basic Analytes

- 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.



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
	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
	Microbore	2.1 x 50mm	86461
HILIC, 5µm	Microbore	2.1 x 150mm	86463
	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.

### 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



Expedite™ Columns



### Alltima™ HP HILIC Guard Cartridges

Packing	i.d. x Length	Qty.	Part No.
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

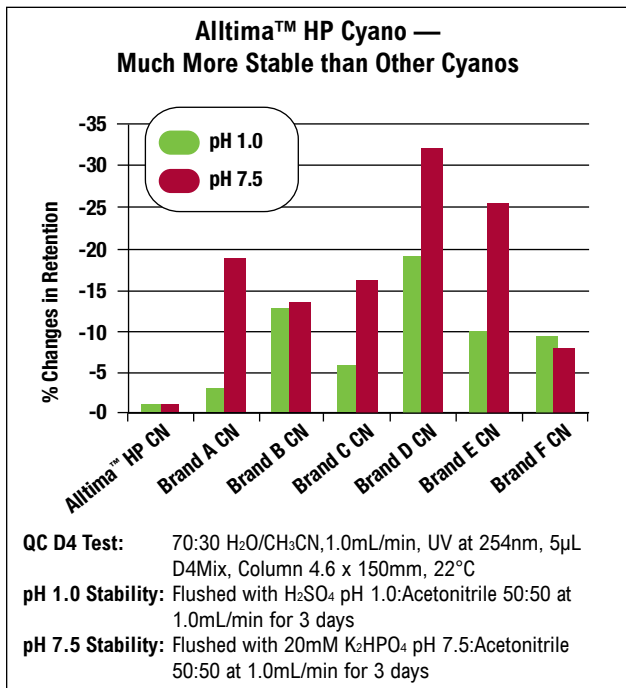
\*All-Guard™ holder required.

\*\*Other particle sizes and dimensions are available.



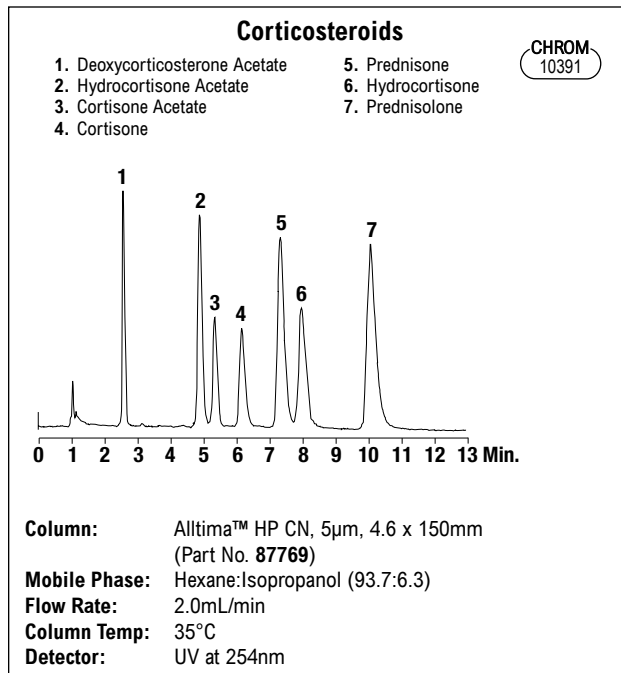
# Alltech® Alltima™ HP Normal-Phase Columns

- 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	Microbore	2.1 x 50mm	<b>87514</b>
	Microbore	2.1 x 150mm	<b>87760</b>
	Solvent-Reducer	3.0 x 150mm	<b>87616</b>
	Analytical	4.6 x 50mm	<b>87825</b>
	Analytical	4.6 x 100mm	<b>87757</b>
	Analytical	4.6 x 150mm	<b>87758</b>
	Rocket™	7 x 33mm	<b>87761</b>
Cyano, 5µm	Rocket™	7 x 53mm	<b>87762</b>
	Microbore	2.1 x 150mm	<b>87781</b>
	Solvent-Reducer	3.0 x 250mm	<b>87618</b>
	Analytical	4.6 x 150mm	<b>87769</b>
Silica, 3µm	Analytical	4.6 x 250mm	<b>87780</b>
	Microbore	2.1 x 150mm	<b>87788</b>
	Solvent-Reducer	3.0 x 150mm	<b>87619</b>
	Analytical	4.6 x 50mm	<b>87831</b>
	Analytical	4.6 x 150mm	<b>87786</b>
	Rocket™	7 x 33mm	<b>87789</b>
Rocket™	7 x 53mm	<b>87790</b>	



### Alltima™ HP HPLC Columns (continued)

Packing	Format	i.d. x Length	Part No.
Silica, 5µm	Microbore	2.1 x 150mm	<b>87799</b>
	Microbore	2.1 x 250mm	<b>87802</b>
	Solvent-Reducer	3.0 x 150mm	<b>87620</b>
	Solvent-Reducer	3.0 x 250mm	<b>87621</b>
	Analytical	4.6 x 150mm	<b>87797</b>
	Analytical	4.6 x 250mm	<b>87798</b>

### Alltima™ HP All-Guard™ Cartridges\*

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

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

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

### more applications

To view our complete searchable chromatogram database visit [www.discoverysciences.com/chromdb/](http://www.discoverysciences.com/chromdb/)



hplc columns | small molecule



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