

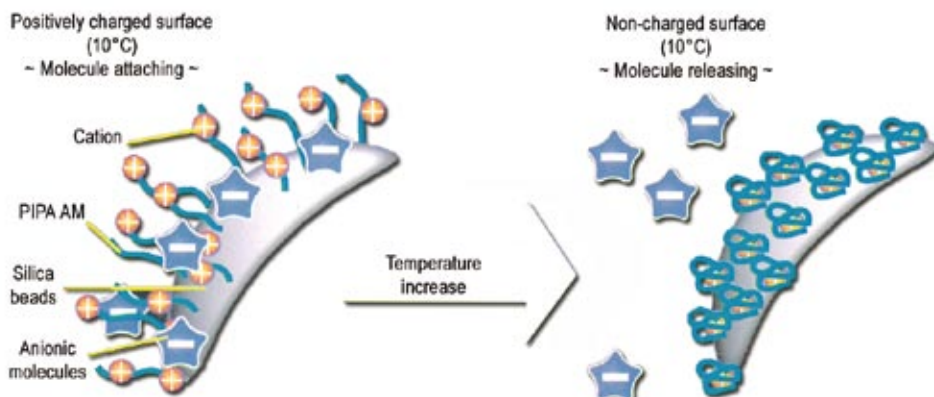
# Analysis - HPLC

## Aqua Way™ Cation columns

This column is based on a thermo-responsive polymer synthesized and grafted onto 5 µm 120Å silica beads. The surfaces of this grafted silica show charge properties at lower temperatures and, as the temperature increases, transform to uncharged surface properties. Selectivity is lead by controlling the column temperature. No gradient elution of high salt concentration is needed.

### Thermo-responsive bonding

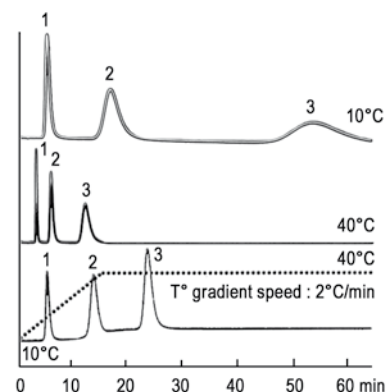
Mechanism of the thermo-responsive beads :



### Nucleotides

150 x 4.6 mm column  
 Mobile phase : 66.7mM phosphate buffer (pH 7.0)  
 Flow rate : 1.0 mL /min  
 Detector : UV 254 nm

Samples :  
 1. AMP  
 2. ADP  
 3. ATP



### Description

5 µm, 250 x 4.6 mm  
 5 µm, 150 x 4.6 mm  
 5 µm, 50 x 4.6 mm

### P/N

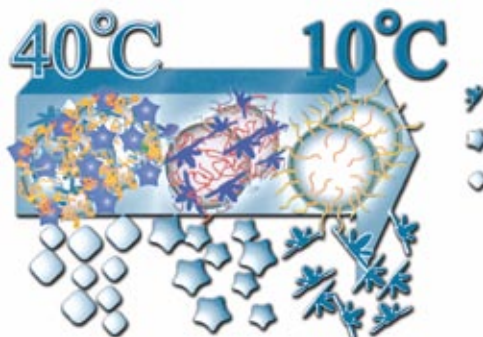
AWC046250  
 AWC046150  
 AWC046050

# Analysis - HPLC

## Aqua Way™ Philic columns

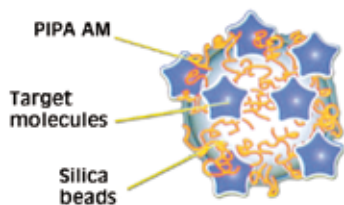
This column is based on a thermo-responsive polymer synthesized and grafted onto 5 µm 120Å aminopropyl silica. The surface of the grafted silica is hydrophobic at elevated temperatures and, as temperature decreases, transforms to hydrophilic surface properties. Selectivity and retention are lead by controlling the column temperature. No acetonitrile required within the mobile phase.

### Thermo-responsive bonding

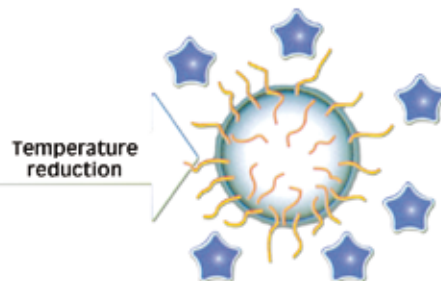


Gradient effect through temperature control :

**Hydrophobic surface (40°C)**  
~ Molecule attaching ~



**Hydrophilic surface (10°C)**  
~ Molecule releasing ~

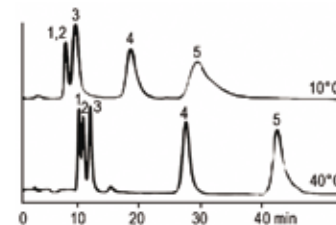


### Small molecules on Aqua Way Philic

150mm x 4.6mm ID  
Eluent : water  
Flow rate : 1.0 mL /min  
Detector : UV 254 mm

Samples :

1. Hydrocortisone
2. Cortisone
3. Prednisolone
4. Prednisolone acetate
5. Testosterone



### Description

5 µm, 250 x 4.6 mm  
5 µm, 150 x 4.6 mm  
5 µm, 50 x 4.6 mm

### P/N

AWA046250  
AWA046150  
AWA046050

# Analysis - HPLC

## FluoroSep columns

FluoroSep is an ultrapure silica based media with hydrophobic fluorated silanes for reverse phase. It is compatible with all primary reverse phase eluents including ion pair reagents.

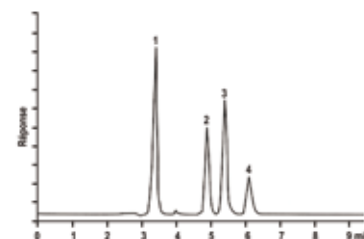
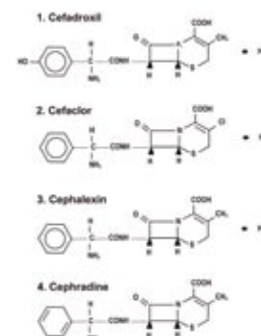
Two types of FluoroSep are available :

- FluoroSep RP is adapted for the halogenated compound analysis. Columns facilitate the separation of aromatic compounds having isomers of position like pesticides and herbicides.
- FluoroSep Octyl dedicated to the pharmaceutical compounds analysis, showing special selectivity in comparison with classical C8 sorbents.

Description	FluoroSep phenyl	FluoroSep octyl
Analytical columns w/5 $\mu$ m particle size		
250 x 4.6 mm	793410	545310
150 x 4.6 mm	732030	732110
100 x 4.6 mm	732130	CI0970
50 x 4.6 mm	CI0890	CI0980
Analytical columns w/3 $\mu$ m particle size		
250 x 2.0 mm	CI0900	CI0990
150 x 2.0 mm	CI0910	CI1000
100 x 2.0 mm	CI0920	CI1010
50 x 2.0 mm	CI0930	CI1020
Analytical columns w/3 $\mu$ m particle size		
150 x 4.6 mm	732060	
50 x 4.6 mm	CI0940	
Analytical columns w/3 $\mu$ m particle size		
150 x 2.0 mm	CI0950	
50 x 2.0 mm	CI0960	

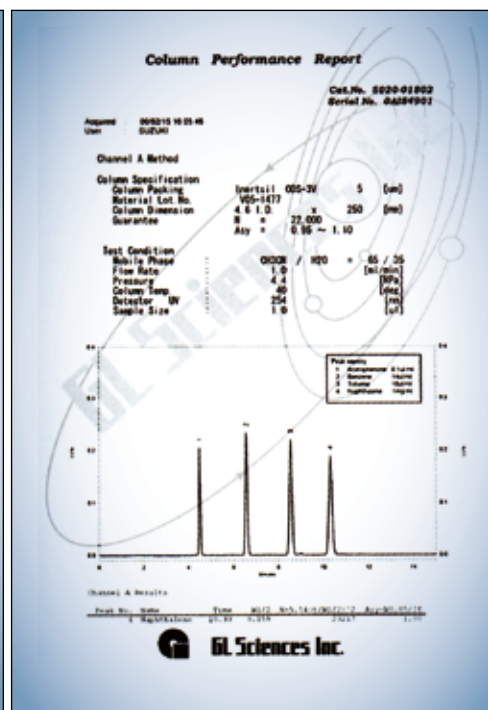
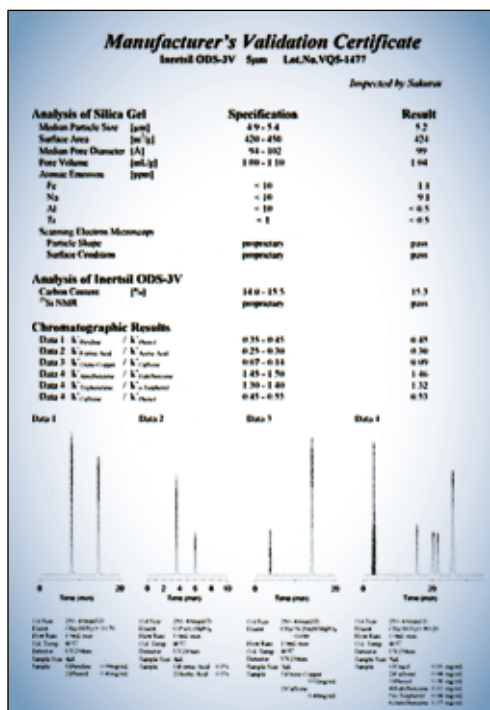
### Cephalosporin antibiotics FluoroSep-RP™ Phenyl 5 $\mu$

60 Å, 25 cm x 4.6 mm  
Eluent : Acetonitrile : pH 4 acetate buffer 12:88  
Flow rate : 1.0 ml /min  
Pressure : 103 bars  
Detector : UV @ 260 nm



### Inertsil® ODS-3 V columns

All Inertsil® 5µ ODS-3 V columns are shipped with a silica batch certificate and an analysis certificate of the column. They guarantee that the column is manufactured according to "Good Laboratory Practice" and "Good Manufacturing Practice".



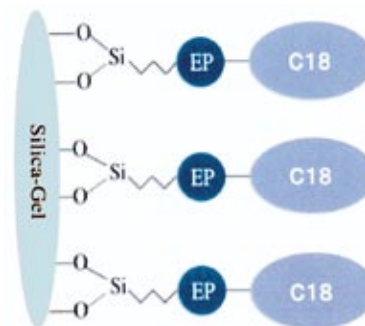
Description	1 column from the same batch	3 columns from the same batch	3 columns from three different batches
250 x 4.6 mm	5020-01802	5020-[4.6X250-1BATCH]	5020-[4.6X250-3BATCHES]
150 x 4.6 mm	5020-01801	5020-[4.6X150-1BATCH]	5020-[4.6X150-3BATCHES]
250 x 4.0 mm	5020-01812	5020-[4.0X250-1BATCH]	5020-[4.0X250-3BATCHES]
150 x 4.0 mm	5020-01811	5020-[4.0X150-1BATCH]	5020-[4.0X150-3BATCHES]
250 x 3.0 mm	5020-01822	5020-[3.0X250-1BATCH]	5020-[3.0X250-3BATCHES]
150 x 3.0 mm	5020-01821	5020-[3.0X150-1BATCH]	5020-[3.0X150-3BATCHES]



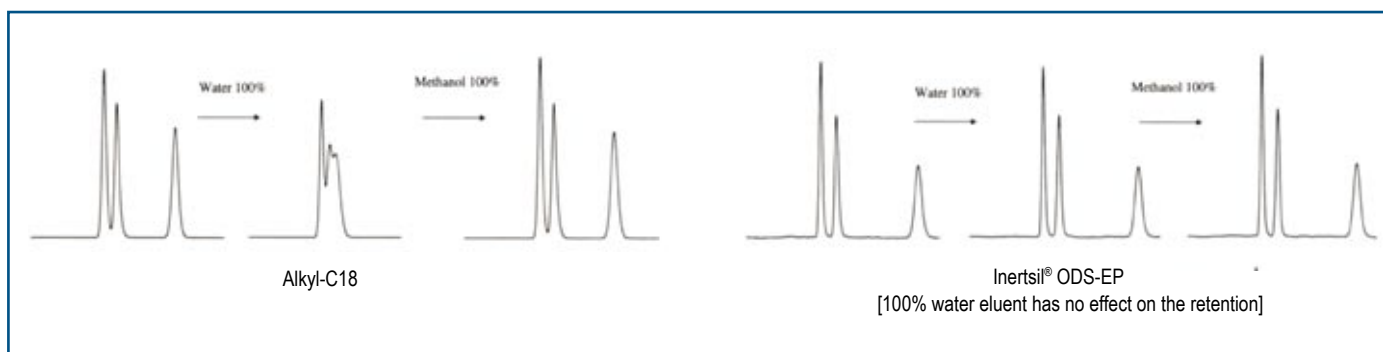
### Inertsil® ODS-EP columns

Most reverse phases lose their retention capacity while the eluent contains a high amount of water. The inserted polar group of this bonding permits a special hydrophilic behaviour and then leads to reproducible analysis.

- 100% water compatible
- Alternative selectivity to classical C18
- Fiting to LC/MS analysis



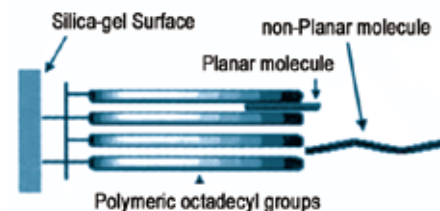
Internal diameter	Length	33 mm		
		50 mm	150 mm	250 mm
Analytical Columns				
0.2 mm		5020-01975-ODSEP-5U	5020-01976-ODSEP-5U	
0.3 mm		5020-01870-ODSEP-5U	5020-01871-ODSEP-5U	
0.5 mm		5020-01872-ODSEP-5U	5020-01873-ODSEP-5U	
1.0 mm	5020-18211	5020-18212	5020-18215	5020-18216
2.1 mm		5020-01975-ODSEP-5U	5020-02615	5020-02616
3.0 mm			5020-02625	5020-02626
4.0 mm			5020-02635	5020-02636
4.6 mm		5020-02642	5020-02645	5020-02646
Preparative columns				
10 mm		5020-18252		5020-18256
Guard column				
10 x 4.0 mm		5020-08200-5U-ODS3		



### Inertsil® ODS-P columns

This silica sorbent modified with a polyfunctional bonding is dedicated to steric recognition separation. Molecules having different planar representation interact more or less with the bonding & are eluted successively. This chemistry offers an alternative method for separation compared to a classical monofunctional C18.

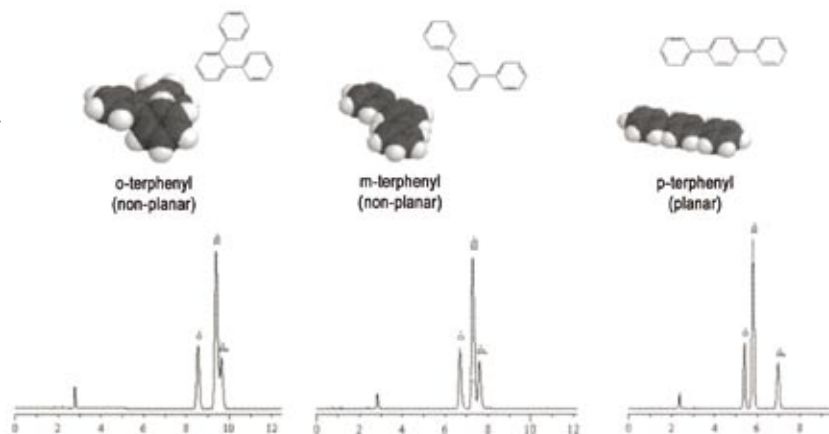
- Steric recognition
- Efficient PAH analysis



Internal diameter	Length mm			
	33	50	150	250
Analytical Column				
0.2 mm		5020-01975-ODSP-5U	5020-01976-ODSP-5U	
0.3 mm		5020-01870-ODSP-5U	5020-01871-ODSP-5U	
0.5 mm		5020-01872-ODSP-5U	5020-01873-ODSP-5U	
1.0 mm	5020-84711	5020-84712	5020-84715	5020-84716
2.1 mm		5020-04712	5020-04715	5020-04716
3.0 mm			5020-04725	5020-04726
4.0 mm			5020-04735	5020-04736
4.6 mm		5020-04742	5020-02001	5020-84715
Preparative columns				
250 x 10 mm				5020-84756
50 x 10 mm		5020-84752		
Guard column				
10 x 4.0mm :	5020-08200-5U-ODSP			

Terphenyl isomer analysis showing the best ability to separate those compounds due to their spatial configuration. Results are compared to monofunctional ODS-2 & ODS-3.

4.6 x 150mm  
Eluent : Acetonitrile/Water (85:15)  
Flow rate : 1.0 mL/min  
Temperature : 40°C  
Detector : UV 254 nm



# Analysis - HPLC

## Inertsil® Sulfa C18 columns

Analysis of antibiotic drugs and drug residues in products of animal origin has become an important element of ensuring food safety.

Inertsil Sulfa C18 is suitable not only for the analyses of sulfa drugs but also for the screening of synthetic anti-bacterial agents which are directed in the food safety investigate guideline.

### Anti-bacterial agent analysis

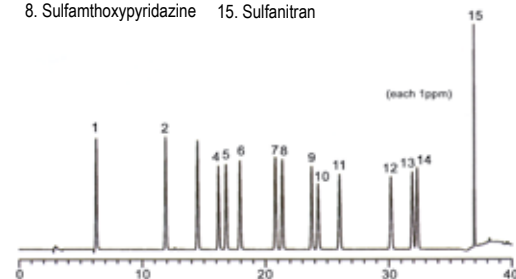
Each column is tested with the following analytes and delivered with the relative chromatogram.

Description	Sulfa C18
Analytical columns w/5 µm particle size	
250 x 4.6 mm	5020-07576
150 x 4.6 mm	5020-07575
250 x 3.0 mm	5020-07556
150 x 3.0 mm	5020-07555
150 x 3.0 mm	5020-07546
150 x 3.0 mm	5020-07545
Analytical columns w/3 µm particle size	
150 x 4.6 mm	5020-07535
100 x 4.6 mm	5020-07534
150 x 3.0 mm	5020-07515
100 x 2.1 mm	5020-07504

### Analyse of 15 sulfa reagents

System : GL-7400 HPLC system  
 Column : Inertsil sulfa C18 (3µm, 150 x 4.6 mm I.D.)  
 Eluent : A) CH<sub>3</sub>CN/CH<sub>3</sub>COOH=777.66 /3.15w/w  
 B) CH<sub>3</sub>COOH/H<sub>2</sub>O = 3.15:997 . w/w  
 A/B = 0/100 - 33 min- 33/67 -3min- 90/10 -4min- 90/10  
 Flow rate : 1.0 ml/min  
 Col. Temp. : 40°C  
 Detection : UV 270 nm  
 Injection Vol. : 10 µL

- |                         |                          |
|-------------------------|--------------------------|
| 1. Sulfanilamide        | 9. Sulfamonomethoxine    |
| 2. Sulfacetamide        | 10. Sulfachlorpyridazine |
| 3. Sulfadiazine         | 11. Sulfamethoxazole     |
| 4. Sulfathiazole        | 12. Sulfabenzamide       |
| 5. Sulfapyridine        | 13. Sulfadimethoxine     |
| 6. Sulfacymidine        | 14. Sulfaquinoxaline     |
| 8. Sulfamthoxypridazine | 15. Sulfanitran          |



# Analysis - HPLC

## Inertsil® ODS Sprint columns

Inertsil® ODS-Sprint is super base deactivated and optimally bonded to retain polar compounds without excessive retention of non-polar compounds. ODS-Sprint operates at low back pressure, even at high flow rates, showing outstanding longevity and reproducibility from column to column and batch to batch.

To complement this new phase, we have created a zero-dead-volume column, hardware format, known as Sprint-HG hardware, further enhancing peak symmetry.

- Fast analysis of polar and non polar compounds

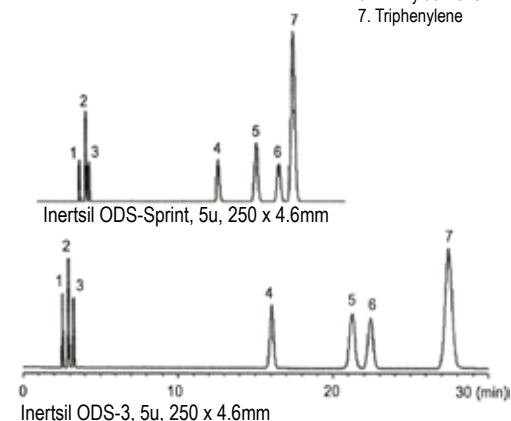
Description	ODS Sprint
Analytical columns	
250 x 4.6 mm	5020-02746
150 x 4.6 mm	5020-02745
100 x 4.6 mm	5020-02744
75 x 4.6 mm	5020-02743
50 x 4.6 mm	5020-02742
20 x 4.6 mm	5020-02741
250 x 2.1 mm	5020-02716
150 x 2.1 mm	5020-02715
100 x 2.1 mm	5020-02714
75 x 2.1 mm	5020-02713
50 x 2.1 mm	5020-02712
20 x 2.1 mm	5020-02711
Guard column	
10 x 4.0 mm	5020-08200-5U-ODS-SP

Hydrophobic compounds eluted in about half the time of Inertsil® ODS-3 while maintaining retention of polar compounds.

System : GL7400 system HPLC  
Eluent : CH<sub>3</sub>OH=80/20  
Flow rate : 1.0ml /min  
T° : 40°C  
Detector : 245nm

Samples :

1. Uracil
2. Caffeine
3. Phenol
4. n-Butylbenzene
5. o-Terphenyl
6. n-Amylbenzene
7. Triphenylene



# Analysis - HPLC

## Primesep™ 5 μm columns

Primesep™ columns feature double functionality of the bonding i.e. : alkyl chain with anionic or cationic group, chelating group. This feature creates unique selectivities when using an appropriate mobile phase.

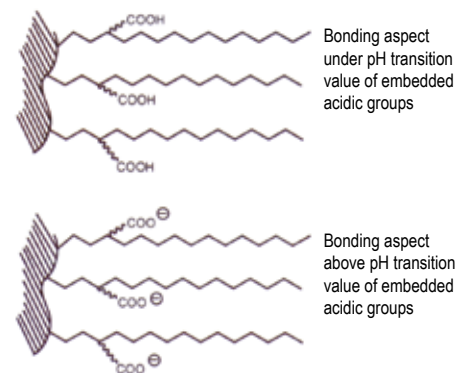
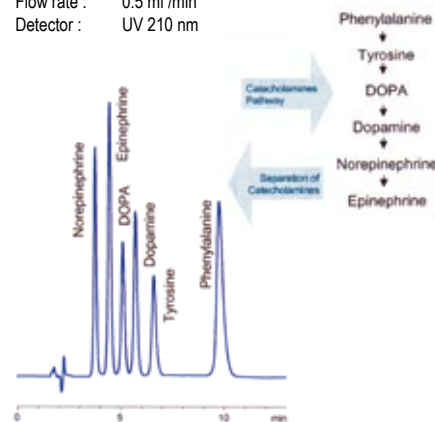
Columns operate in several acidic environments :

- Primesep A** (ionized in all working pH)  
 The most acidic sorbent. Strongly retains weak bases and amino compounds and presents a unique selectivity with neutral compounds.
- Primesep 100** (~ 50% of embedded acidic groups ionized at transition pH 1)  
 The most universal column of the Primesep range. It can be used for the separation of basic, acidic, neutral or zwitterionic compounds. Acids are separated due to ion exclusion. Bases being controlled by cationic exchange.
- Primesep 200** (~ 50% of embedded acidic groups ionized at transition pH 2)  
 Less acidic than Primesep 100, it is more suited to reverse phase mode. Selectivity is directly related to the use of less acidic mobile phases in order to favour basic compound elution.

Description	Primesep A	Primesep 100	Primesep 200
<b>Analytical columns</b>			
250 x 4.6 mm	A-46.250.0510	100-46.250.0510	200-46.250.0510
150 x 4.6 mm	A-46.150.0510	100-46.150.0510	200-46.150.0510
50 x 4.6 mm	A-46.050.0510	100-46.050.0510	200-46.050.0510
250 x 3.2 mm	A-32.250.0510	100-32.250.0510	200-32.250.0510
150 x 3.2 mm	A-32.150.0510	100-32.150.0510	200-32.150.0510
50 x 3.2 mm	A-32.050.0510	100-32.050.0510	200-32.050.0510
250 x 2.1 mm	A-21.250.0510	100-21.250.0510	200-21.250.0510
150 x 2.1 mm	A-21.150.0510	100-21.150.0510	200-21.150.0510
50 x 2.1 mm	A-21.050.0510	100-21.050.0510	200-21.050.0510
150 x 1.0 mm	A-10.150.0510	100-10.150.0510	200-10.150.0510
50 x 1.0 mm	A-10.050.0510	100-10.050.0510	200-10.050.0510
<b>Preparative columns</b>			
250 x 22 mm	A-220.250.0510	100-220.250.0510	200-220.250.0510
150 x 22 mm	A-220.150.0510	100-220.150.0510	200-220.150.0510

### Ion exchange and hydrophobic mechanism for separation of neurotransmitters on Primesep 200 column

Column : 150 x 3.2 mm  
 Eluent : H<sub>2</sub>O/meCN/TFA - 90/10/0.1  
 Flow rate : 0.5 ml/min  
 Detector : UV 210 nm



# Analysis - HPLC

## Primesep™ B 5 μm columns

All B-type columns provide at least two main interactions with analytes : the reverse-phase interaction and the anion-exchange interaction. Neutral analytes are retained by reverse phase interaction. The presence of the charged group in the alkyl chain provides additional selectivity uncommon for typical reverse-phase columns. Acidic analytes can be retained by both anion-exchange and reverse-phase mechanisms.

Columns are in three basic environments :

### Primesep B

Primesep B is a strong basic column. The recommended pH range is from 1.5 to 4 created by the addition of trifluoroacetic, phosphoric, perchloric, or formic acid to the mobile phase.

### Primesep B2

Primesep B2 is a weak basic column. It also has carboxylic acidic functional group. When mobile phase pH is below 5, acidic groups are not ionized and B2 column surface becomes positively charged. This dual chemistry offers an extended pH range from 0.5 to 7, suitable for ammonium acetate and ammonium formate buffered mobile phases.

### Primesep B4

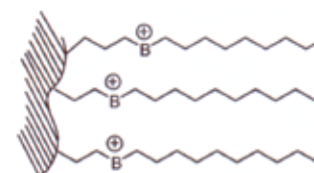
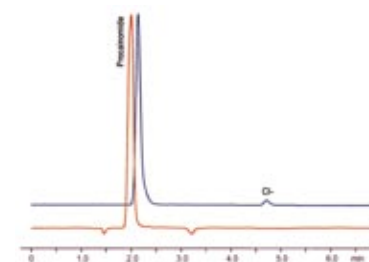
Primesep B4 is a reverse phase stationary phase with a short length modification that exhibits basic functionality. Separation of acidic compounds is via ion exchange and ion exclusion mechanisms facilitate the retention of hydrophobic base. This stationary phase is also relevant for acidic and basic surfactant analysis. pH stability 2 -to- 4.5

Description	Primesep B	Primesep B2	Primesep B4
Analytical columns			
250 x 4.6 mm	B-46.250.0510	B2-46.250.0510	B4-46.250.0510
150 x 4.6 mm	B-46.150.0510	B2-46.150.0510	B4-46.150.0510
50 x 4.6 mm	B-46.050.0510	B2-46.050.0510	B4-46.050.0510
250 x 3.2 mm	B-32.250.0510	B2-32.250.0510	B4-32.250.0510
150 x 3.2 mm	B-32.150.0510	B2-32.150.0510	B4-32.150.0510
50 x 3.2 mm	B-32.050.0510	B2-32.050.0510	B4-32.050.0510
250 x 2.1 mm	B-21.250.0510	B2-21.250.0510	B4-21.250.0510
150 x 2.1 mm	B-21.150.0510	B2-21.150.0510	B4-21.150.0510
50 x 2.1 mm	B-21.050.0510	B2-21.050.0510	B4-21.050.0510
150 x 1.0 mm	B-10.150.0510	B2-10.150.0510	B4-10.150.0510
50 x 1.0 mm	B-10.050.0510	B2-10.050.0510	B4-10.050.0510
Semi preparative columns			
250 x 22 mm	B-220.250.0510	B2-220.250.0510	B4-220.250.0510
150 x 22 mm	B-220.150.0510	B2-220.150.0510	B4-220.150.0510



Both a cationic drug and chloride anion analyzed with single isocratic method

Primesep B : 150 x 3.2 mm  
 Flow rate : 1.0 ml/min  
 Detector : ELSD, UV 210 nm  
 Eluent : Water/MeCN/AmAc-40/60/0.2



Primesep B - Primesep B2  
 Chemistry Schematic

# Analysis - HPLC

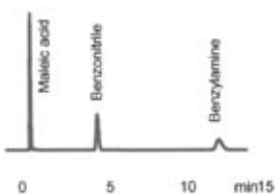
## Primesep™ column comparison

Primesep™ columns differ in the degree they retain ionic compounds. Neutral compounds display similar retention on all Primesep columns. Primesep A, 100, 200 are cation exchange columns with different strengths of embedded functional groups. Primesep B and B2 are anion exchange columns. Primesep is a silica based material which is stable in all organic solvents and water at pH range from 1.0 to 7.5.

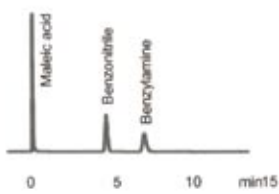
### Primesep columns comparison

5µm, 150 x 4.6 mm column  
Flow rate : 1,0 ml /min  
Detector : UV 210 nm  
Eluent : Water/MeCN/TFA-60/40/0.1

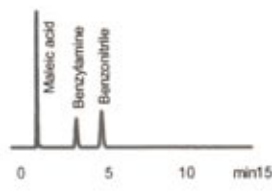
#### Primesep A



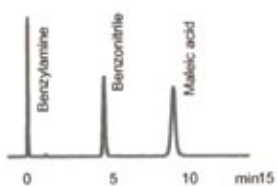
#### Primesep 100



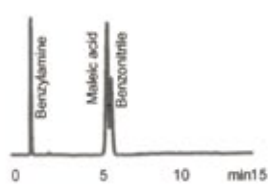
#### Primesep 200



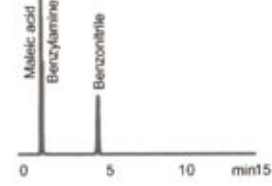
#### Primesep B



#### Primesep B2



#### Common C18





# Analysis - HPLC

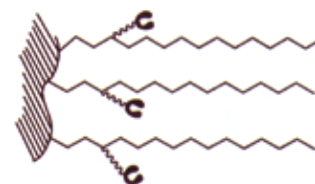
## Primesep™ C 5 µm columns

Primesep™ C columns are the latest addition to the range which combine reverse-phase, cation exchange, and complex-formation properties in interaction with amines, sulfonium, phosphonium and metal ions.

This column has a unique unparalleled selectivity for separating complex mixtures.

The pH working range for these columns is from 1 to 7, but their complex formation and cation-exchange properties are substantially suppressed at a pH below 3 and therefore to facilitate the complex formation, the pH of the mobile phase should remain in the range of 3-7. The degree of complex formation can be adjusted by selecting the pH of the mobile phase.

### Complex Interaction

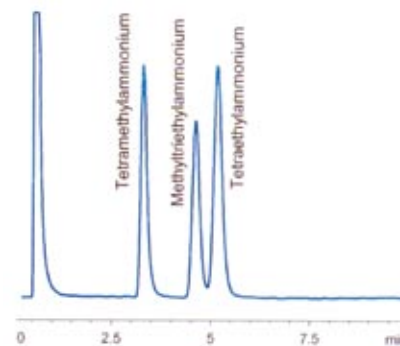


Schematic chemistry

Description	Primesep C
Analytical Columns	
250 x 4.6 mm	C-46.250.0510
150 x 4.6 mm	C-46.150.0510
50 x 4.6 mm	C-46.050.0510
250 x 3.2 mm	C-32.250.0510
150 x 3.2 mm	C-32.150.0510
50 x 3.2 mm	C-32.050.0510
250 x 2.1 mm	C-21.250.0510
150 x 2.1 mm	C-21.150.0510
50 x 2.1 mm	C-21.050.0510
150 x 1.0 mm	C-10.150.0510
50 x 1.0 mm	C-10.050.0510
Semi preparative columns	
250 x 22 mm	C-220.250.0510
150 x 22 mm	C-220.150.0510

### Quaternary amines separated on Primesep C

Primesep C : 150 x 4.6 mm x 5 µm  
Eluent : MeCN/H<sub>2</sub>O-15/85 TEA acetate 20 mM pH 5.0  
Flow rate : 1.0 ml/min  
Detector : ELSD, T° 35°C)  
Injection : 5 µl  
Sample : 0.6 mg/ml each analyte



# Analysis - HPLC

## Primesep™ P 5 μm columns

Primesep™ P columns provide three unique interactions with analytes.

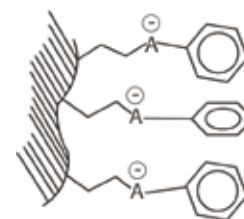
- Reverse phase interaction
- $\pi$ - $\pi$  interaction
- Strong cation exchange interaction

Depending on analyte properties, one, two, or all three interactions can be applied to the separation.

This stationary phase facilitates the separation of structural isomers of aromatic compounds.

Additional  $\pi$ - $\pi$  interaction creates a difference in the bind state for structural isomers and often resolves critical pairs of compounds. The degree of  $\pi$ - $\pi$  interaction can be adjusted by varying the amount of acetonitrile in the mobile phase.

When methanol is used as an organic modifier, the highest degree of aromatic interaction can be achieved.



Chemistry Schematic

Description	Primesep P
Analytical columns	
250 x 4.6 mm	P-46.250.0510
150 x 4.6 mm	P-46.150.0510
50 x 4.6 mm	P-46.050.0510
250 x 3.2 mm	P-32.250.0510
150 x 3.2 mm	P-32.150.0510
50 x 3.2 mm	P-32.050.0510
250 x 2.1 mm	P-21.250.0510
150 x 2.1 mm	P-21.150.0510
50 x 2.1 mm	P-21.050.0510
150 x 1.0 mm	P-10.150.0510
50 x 1.0 mm	P-10.050.0510
Preparative columns	
250 x 22 mm	P-220.250.0510
150 x 22 mm	P-220.150.0510