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.
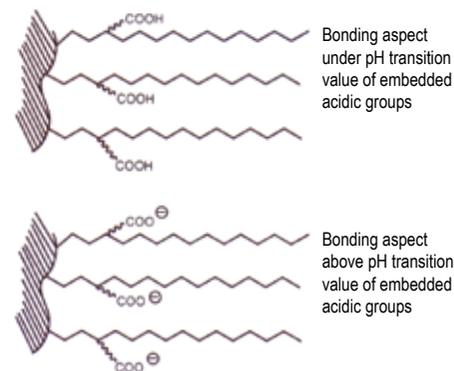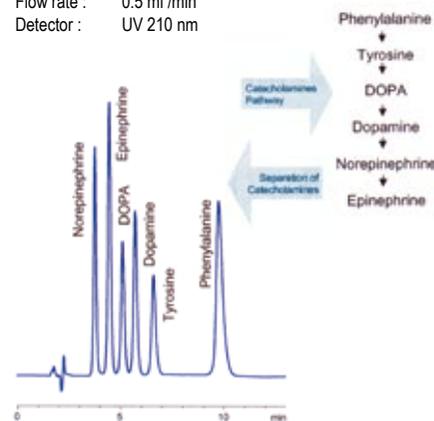
Columns operate in several acidic environments :

◖ **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
Analytical columns			
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
Preparative columns			
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_2O/meCN/TFA - 90/10/0.1
Flow rate : 0.5 ml /min
Detector : UV 210 nm

Bonding aspect under pH transition value of embedded acidic groups

Bonding aspect above pH transition value of embedded acidic groups

Sample Prep — Analysis — Biochromatography — Consumables — Purification — Chemistry

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.
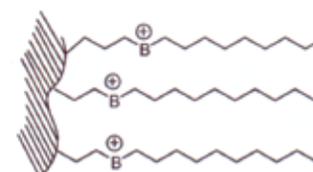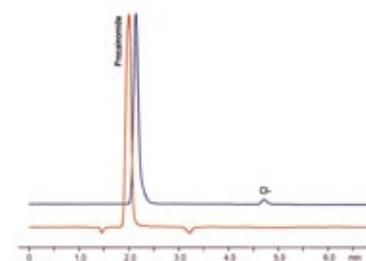
◖ **Primesep B4**
Primesep B4 is a reverse phase stationary phase with a short length modification that exhibits basic functionality. Separation of acidic compounds is via ion exchange and ion exclusion mechanisms facilitate the retention of hydrophobic base. This stationary phase is also relevant for 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

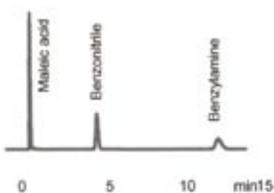Primesep B - Primesep B2
Chemistry Schematic

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.
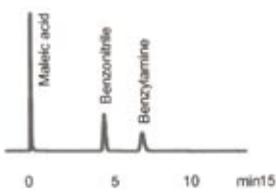
Primesep columns comparison

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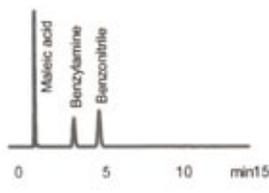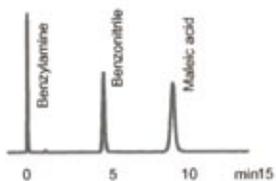Eluent : Water/MeCN/TFA-60/40/0.1
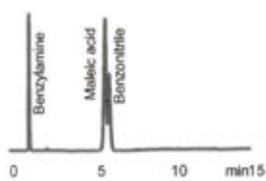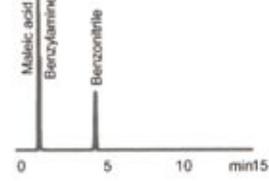
Primesep A

Primesep 100

Primesep 200

Primesep B
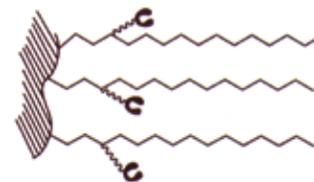
Primesep B2

Common C18

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 unparallelled 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$_2$O-15/85 TEA acetate 20 mM pH 5.0
Flow rate :	1.0 ml /min
Detector :	ELSD, T° 35°C)
Injection :	5 mc
Sample :	0.6 mg /ml each analyte
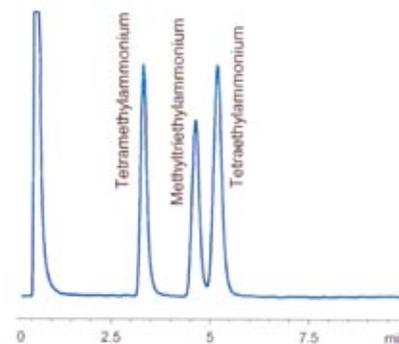
Primesep™ P 5 µm columns

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.
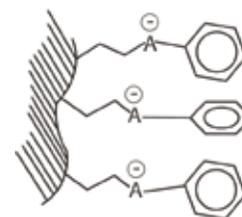
Chemistry Schematic

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