

ZODIAC<sup>®</sup>  
Life Sciences



Zodiac Products are Available World Wide

# PRODUCT CATALOGUE

# Overview



# Zodiac Life Sciences



*Is a company which evolved to offer chromatography solutions for discovery, development and production in the pharmaceutical and life science industries. Founded in 1999, Zodiac Life Sciences is dedicated to supplying the highest quality HPLC columns and consumables to the chromatography industry.*

*We offer products for chromatography viz. HPLC Columns, GC columns, spares & consumables. Zodiac life sciences is in field from a decade, supplying chromatography products to many Pharmaceutical manufacturers, R&D Centres, Environmental Analysis, Chemical research & Food industries.*

Zodiac's intense research and long standing experience with commercially available silica has led to our new ultra pure silica-Zodiac Silica, which is the basis of our top quality stationary phases. Zodiac life Sciences combined its silica knowledge and expertise with an own developed, proven packing technology to create high-quality, high performance columns- Zodiac HPLC columns - that deliver performance and speed, setting a new standard in the world of HPLC. Thus we have transformed into a separation technology company to serve chemists, biochemists or chromatographers in the field of drug discovery, drug testing, environmental analysis, chemical research and food industry. The Zodiac brand stands for overall high quality and attractive performance. Our marketing activities consider the needs of our customers all over the world.

The constant changing of customer demands continually flow into new and ongoing developments of our products and services. Our company conducts business throughout the world. Because of our unique business structure and superior production process, we are able to provide products of the highest quality at very competitive prices. The ability to work in a creative and innovative environment enables us to offer solution for any application while ensuring that you, the customer, never have to compromise on quality, support or service. We aspire to offer matchless solutions coupled with top quality services to extend reliable support and contribute to the future of Pharma, Life sciences and all other Chemical industries. Zodiac has an uncompromised quality policy of business. All of our products are guaranteed for customer satisfaction. Customer demands provide the basis for our strategy and actions.

*We are satisfied only if you are!*

# Zodiac C18 Column



**Perfect "all -purpose" column for analytical use**  
**High resolution of complex mixtures**  
**Ideal retention**

Zodiac C18 columns are prepared with ultra pure and high surface area silica.

The silica surface area is 440m<sup>2</sup>/g. The column has high carbon load of about 24% and unique bonding technology to achieve excellent resolution, good peak symmetry and high performance.

These are long life columns which deliver best results over very wide pH range.

Zodiac C18 columns produce faster & better results with an extended column life when compared to its competitors.

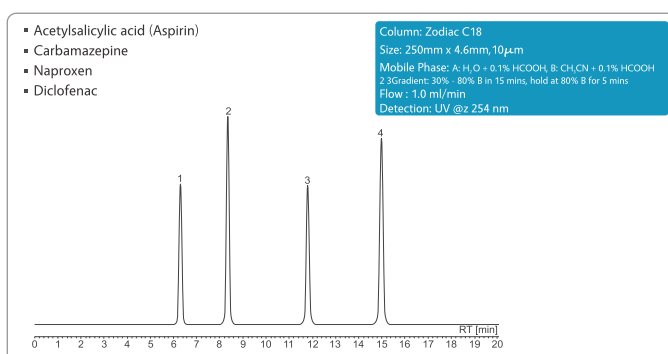
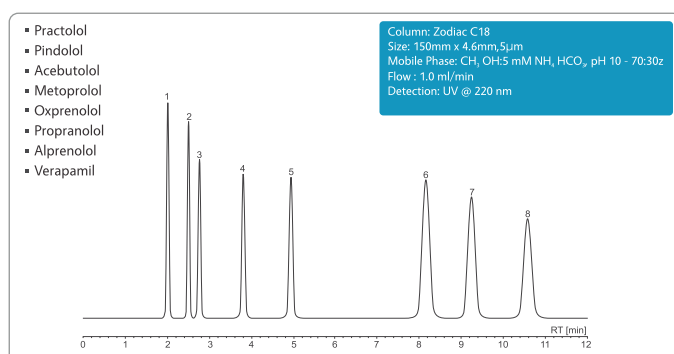
The column comes with protective end-capping to give better peak without tailing and high durability of column. Zodiac C18 columns are designed to increase productivity, as they offer maximum loadability, excellent stability while maintaining superior resolution.

Zodiac C18 column is an ideal choice for polar compounds. Zodiac C18 columns provide consistent performance, uncompromised chromatography and have extended lifetime even under the most demanding conditions.

*For Ordering Information see Page No. 15*

## Technical Specifications

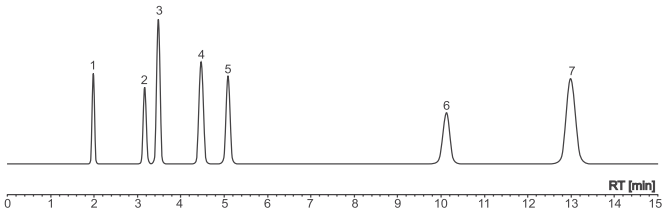
Particle Size mm	Pore Size Å	Surface Area m <sup>2</sup> /g	Pore Volume cm <sup>3</sup> /g	Carbon Load%	pH Range	USP
3,5,10	100	440	1.1	24.0	1.5 - 10	L1



# Applications

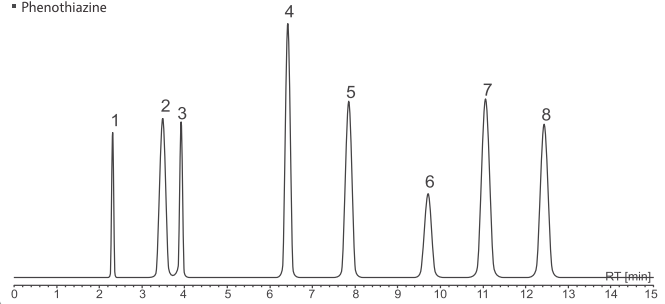
- Homovanillic acid
- Acetylsalicylic acid (Aspirin)
- Sorbic acid
- Salicylic acid
- o-Toluic acid
- Tolmetin
- Naproxen

Column: Zodiac C18  
 Size: 150mm x 4.6mm, 5µm  
 Mobile Phase: A: H<sub>2</sub>O + 0.1% HCOOH, B: CH<sub>3</sub>CN + 0.1% HCOOH  
 A:B - 60:40  
 Flow: 1.0 ml/min  
 Detection: UV @ 254 nm



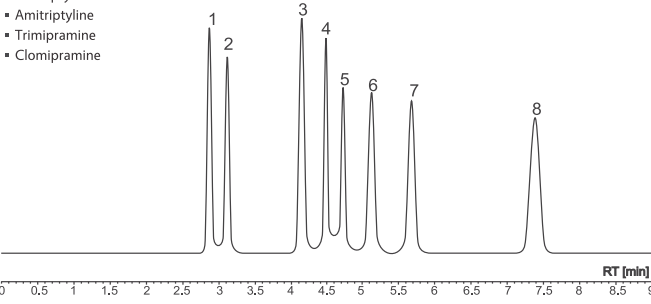
- Molindone
- Norclozapine
- Olanzapine
- Clozapine
- Perphenazine
- Fluphenazine
- Loxapine succinate
- Phenothiazine

Column: Zodiac C18  
 Size: 150mm x 4.6mm, 5µm  
 Mobile Phase: CH<sub>3</sub>CN:5mM N<sub>4</sub>H HCO<sub>3</sub>, pH 10 - 55:45  
 Flow: 1.0 ml/min  
 Detection: UV @ 254 nm



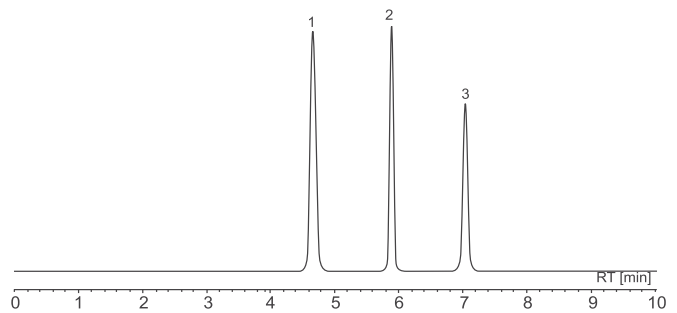
- Nordoxepin
- Doxepin
- Desipramine
- Imipramine
- Nortriptyline
- Amitriptyline
- Trimipramine
- Clomipramine

Column: Zodiac C18  
 Size: 150mm x 4.6mm, 5µm  
 Mobile Phase: A: H<sub>2</sub>O + 0.1% HCOOH, B: CH<sub>3</sub>CN + 0.1% HCOOH  
 Gradient: 30% - 40% B in 15 mins  
 Flow: 1.0 ml/min  
 Detection: UV @ 254 nm



- Acetaminophen
- Chlorpheniramine maleate
- Diphenhydramine

Column: Zodiac C18  
 Size: 250mm x 4.6mm, 10µm  
 Mobile Phase: A: H<sub>2</sub>O + 0.1% HCOOH, B: CH<sub>3</sub>CN + 0.1% HCOOH  
 Gradient: 15% - 70% B in 10 mins  
 Flow: 1.0 ml/min  
 Detection: UV @ 254 nm



# Zodiac C18(1) Column



*All round application  
Perfect hydrophobic selectivity  
Speeds up separations  
Eminent capability and reliability*

Zodiac C18 (1) columns are prepared with ultra pure and optimal surface area silica. The silica surface area is 200m<sup>2</sup>/g.

The column has reduced carbon load of about 13% and unique bonding technology to achieve excellent resolution, good peak symmetry and high performance.

The optimally modified column chemistry along with protective end capping gives the advantage of faster separations, better resolution and consistent results in an extended 1.5 to 10 pH range in reverse phase chromatography.

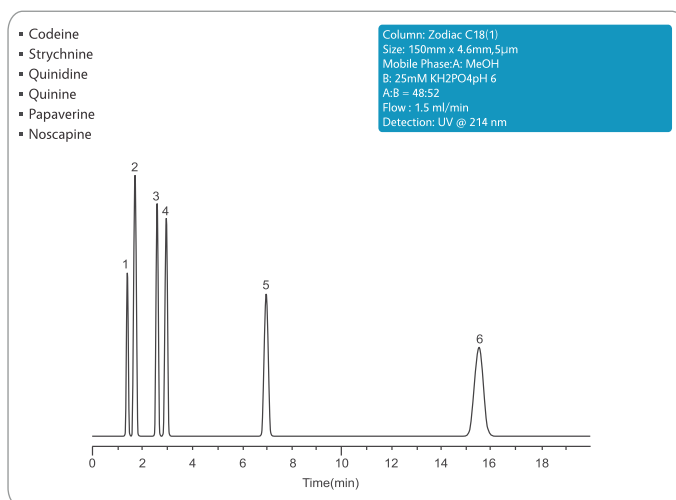
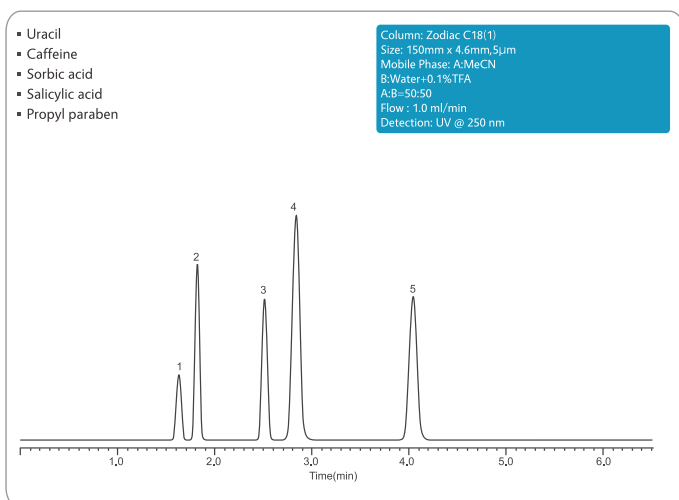
The column comes with protective end-capping to give better peak without tailing and high durability of column. Columns possess longer life and have ideal column-to-column reproducibility when compared to its competitors. Zodiac C18 (1) columns possess reduced hydrophobicity for attaining perfect hydrophobic selectivity and superior resolution.

Zodiac C18 (1) column is perfect choice for all round application in the analysis of acidic, basic and neutral compounds.

*For Ordering Information see Page No. 15*

## Technical Specifications

Particle Size $\mu\text{m}$	Pore Size $\text{\AA}$	Surface Area $\text{m}^2/\text{g}$	Pore Volume $\text{cm}^3/\text{g}$	Carbon Load%	pH Range	USP
3,5,10	190	200	1.1	12.9	1.5 - 10	L1



# Zodiac C8 Column



**Excellent resolution for critical separations**  
**Faster analysis compared to C18**  
**Increased selectivity**  
**Exceptional reproducibility**

Zodiac C8 is an admirable choice for separations that need marginally more polar phase than C18.

The high surface area that is about 440m<sup>2</sup>/g in Zodiac C8 column provides additional resolution to polar phase.

Zodiac C8 column is less hydrophobic column with high surface area, optimal carbon load and unique bonded silica packing.

This column is ideal choice when analytical laboratories need extra selectivity and more speed than the C18 column.

The superior resolution of Zodiac C8 yields out and out separation first time, speeding up method development and validation.

These columns are highly stable and produce ever reliable results with an extended column life.

The column comes with protective end-capping for a better peak without tailing and high durability of column.

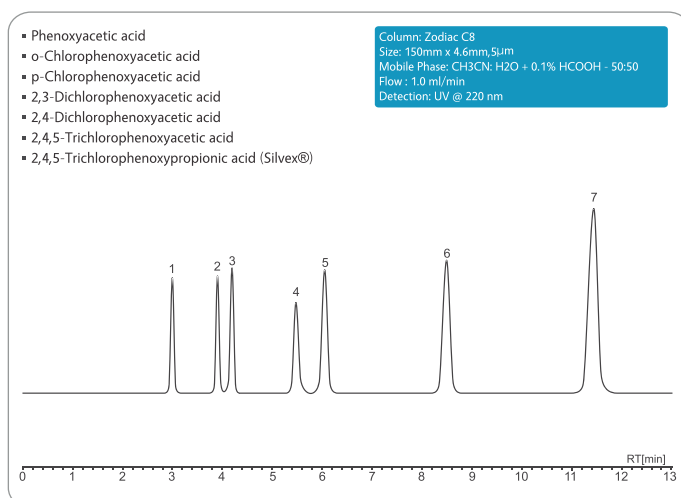
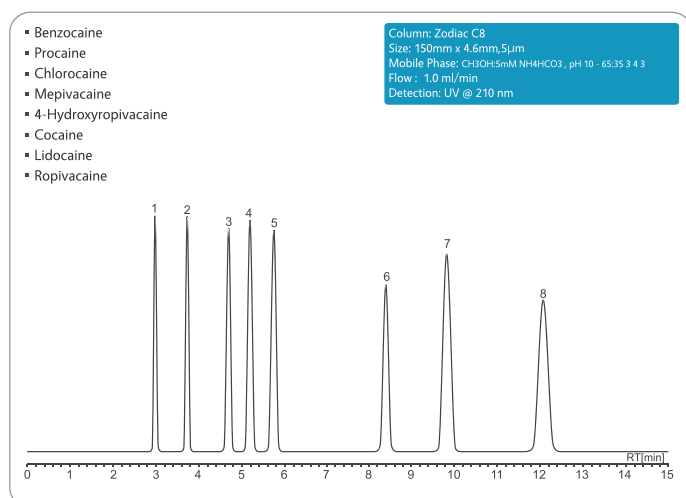
Faster, sharp and reproducible responses are definitely possible with Zodiac C8 columns.

Column packing sustains pH range between 1.5 and 10 for longer periods due to the innovative bonding technology.

*For Ordering Information see Page No. 15*

## Technical Specifications

Particle Size $\mu\text{m}$	Pore Size $\text{\AA}$	Surface Area $\text{m}^2/\text{g}$	Pore Volume $\text{cm}^3/\text{g}$	Carbon Load%	pH Range	USP
3,5,10	100	440	1.1	15.0	1.5 - 10	L7



# Zodiac C8(1) Column



*Faster separations than the C18(1) column  
Ideal for selectivity of polar compounds  
Improved peak symmetry for better resolution*

Zodiac C8 (1) column has a modified chemistry and is designed to be less hydrophobic than the C18 (1)column.

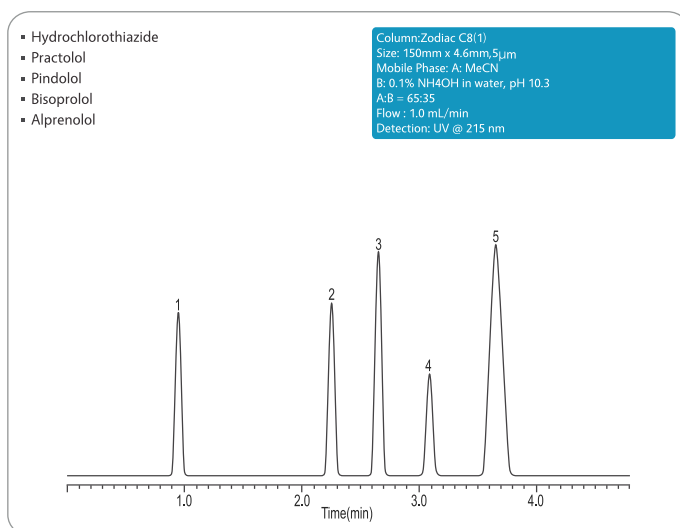
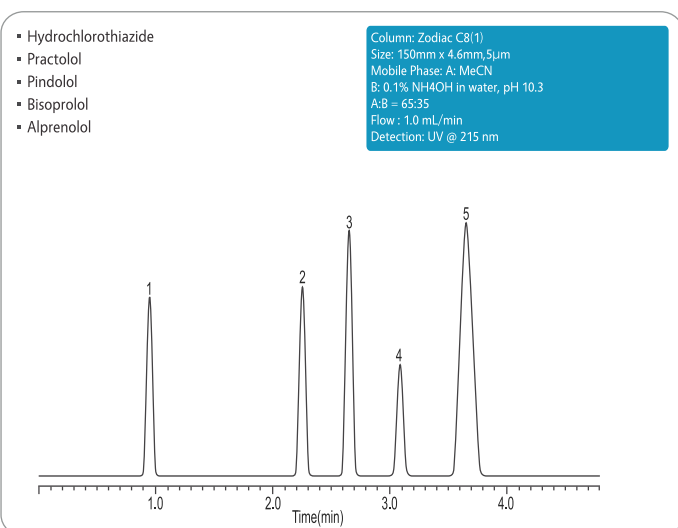
The ultra pure silica has a surface area of 200m<sup>2</sup>/g. The column has reduced carbon load of about 8% which leads to faster separation of the compounds and results in flawless peak symmetry.

The column comes with protective end-capping for a better peak without tailing and high durability of column. The column chemistry is perfectly suitable for working in the wide pH range of 1.5 to 10.0 due to outstanding column stability because of stable particle technology.

*For Ordering Information see Page No. 15*

## Technical Specifications

Particle Size mm	Pore Size Å	Surface Area m <sup>2</sup> /g	Pore Volume cm <sup>3</sup> /g	Carbon Load%	pH Range	USP
3,5,10	190	200	1.1	7.4	1.5 - 10	L7





# Zodiac Phenyl Column



**Extraordinary resolution**  
**Excellent choice for separating mixture of polar and non polar analytes**  
**Superior selectivity of structurally comparable compounds**

Employing ultra pure, higher stability silica and unique bonding technology, Zodiac-Phenyl columns are exceptionally designed to ensure maximum performance. Zodiac-Phenyl columns contain carbon load of about 14.0% which gives best retention. The silica phase packing and protective end capping of column is completely controlled, that ensures column-to-column reproducibility.

The uniform ultra pure silica particles have high surface area of 440m<sup>2</sup>/g with a controlled pore size of 100Å. Zodiac-Phenyl columns show great selectivity and peak symmetry with fairly high retention for separation of mixtures of polar and non polar compounds.

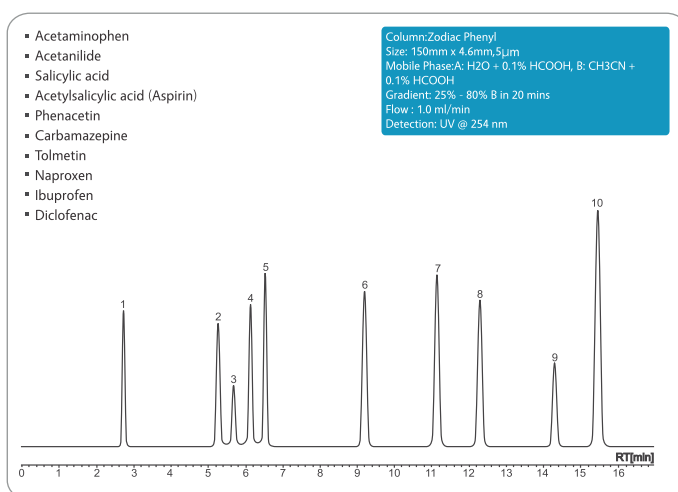
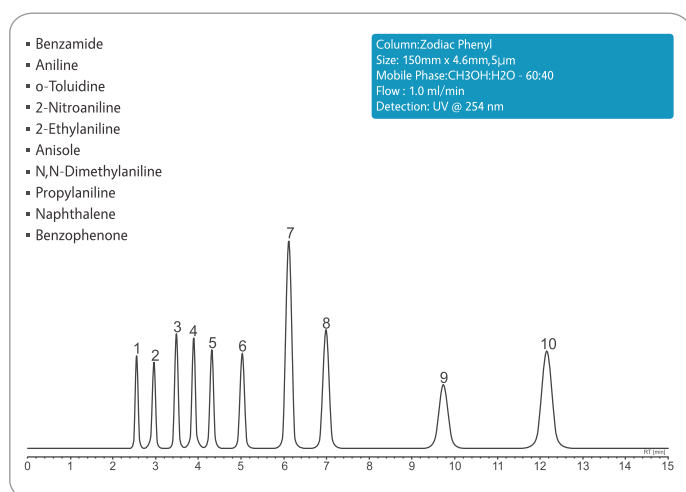
The pi-pi interactions in the phenyl stationary phase influence the solute pi electrons which causes ultimate separation of compounds containing isomers.

The column is conveniently usable in a pH range between 1.5 and 8.0 pH for longer lifetime.

*For Ordering Information see Page No. 15*

## Technical Specifications

Particle Size mm	Pore Size Å	Surface Area m <sup>2</sup> /g	Pore Volume cm <sup>3</sup> /g	Carbon Load%	pH Range	USP
3,5,10	100	440	1.1	14.0	1.5 - 8	L11



# Zodiac Phenyl(1) Column



**Reduced retention for very fast separations**  
**Best selectivity and peak symmetry**  
**Best use for aromatic, polar compounds**

Employing ultra pure, higher stability silica and unique bonding technology, Zodiac-Phenyl (1) columns are exceptionally designed to ensure maximum performance.

It contains carbon load of about 8.0% which gives positively reduced retention which in-turn leads to very fast separation without any effect on selectivity and peak symmetry.

The silica phase packing and end capping of column is completely controlled, that ensures column-to-column reproducibility. The uniform ultra pure silica particles have optimal surface area of 200m<sup>2</sup>/g. Zodiac-Phenyl (1) columns show great selectivity and peak symmetry with a favorable low retention for separation of aromatic, polar compounds and difficult pharmaceuticals.

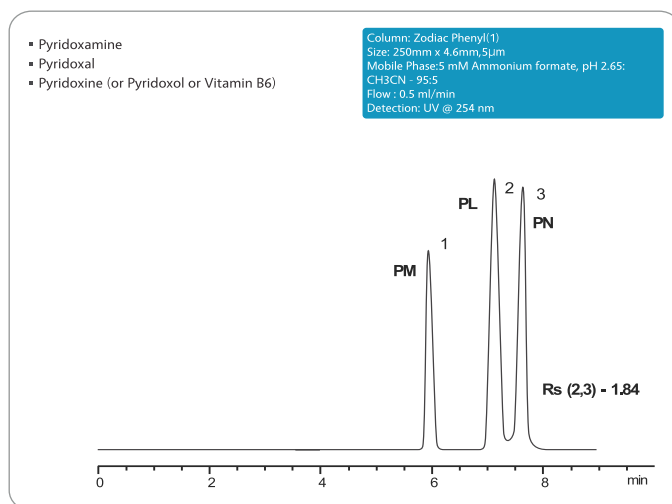
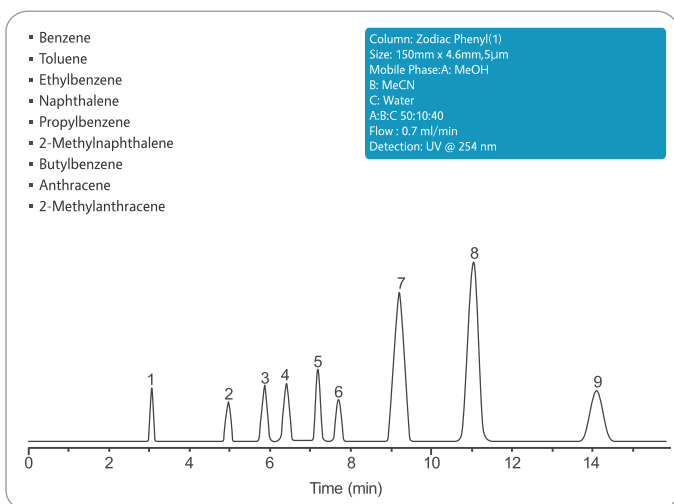
The pi-pi interactions in the phenyl stationary phase influence the solute pi electrons which causes ultimate separation of the compounds. The column exhibits good stability in a pH range between 1.5 and 8.0 pH.

The column comes with protective end-capping to give better peak without tailing and high durability of column.

*For Ordering Information see Page No. 15*

## Technical Specifications

Particle Size mm	Pore Size Å	Surface Area m <sup>2</sup> /g	Pore Volume cm <sup>3</sup> /g	Carbon Load%	pH Range	USP
3,5,10	190	200	1.1	7.4	1.5 - 8.0	L11



## Zodiac Silica



**Best choice for polar compounds separations**

Zodiac Silica columns are made with spherical, highly pure silica particles (99.999% Pure). Zodiac Silica is the basis for our high quality Zodiac stationary Phases

### Technical Specifications

*For Ordering Information see Page No. 15*

Particle Size mm	Pore Size Å	Surface Area m <sup>2</sup> /g	Pore Volume cm <sup>3</sup> /g	Carbon Load%	pH Range	USP
3,5,10	100	450	1.1	0	2 - 6	L3

## Zodiac RP Amide



**Different selectivity than C18 or C8  
Less retention than C18 phase**

Zodiac RP Amide stationary surface has been covalently modified with palmit amidopropyl groups and endcapped. It has all the benefits of enhanced polar compound retention and selectivity, without any of the disadvantages

### Technical Specifications

*For Ordering Information see Page No. 15*

Particle Size mm	Pore Size Å	Surface Area m <sup>2</sup> /g	Pore Volume cm <sup>3</sup> /g	Carbon Load%	pH Range	USP
3,5,10	190	200	1.1	15	2 - 8	L60

## Zodiac Cyano



**Best peak shape and efficiency  
Unique selectivity compared to a C18 & C8 phase  
Very low operating back pressure**

Zodiac Cyano phase has unique selectivity, long column operating life, and excellent peak shapes in both reverse phase and normal phase modes. Ready for LC/MS Applications

### Technical Specifications

*For Ordering Information see Page No. 15*

Particle Size mm	Pore Size Å	Surface Area m <sup>2</sup> /g	Pore Volume cm <sup>3</sup> /g	Carbon Load%	pH Range	USP
3,5,10	100	450	1.1	15	2 - 7-5	L10

## Zodiac PFP



**Excellent for separating peptides or proteins  
Possesses multiple types of interactions: dispersive, dipole-dipole, p-p, charge-transfer  
Unique selectivity  
Extra Retention for Halogenated Specie**

Zodiac PFP is a pentafluorophenyl phase with a propyl spacer, this bonded phase provides reversed-phase separations that are distinctly different from C18 silica surface for a unique aromatic selectivity due to highly electronegative fluorine atoms on the periphery of the phenyl ring ligand.

### Technical Specifications

*For Ordering Information see Page No. 15*

Particle Size mm	Pore Size Å	Surface Area m <sup>2</sup> /g	Pore Volume cm <sup>3</sup> /g	Carbon Load%	pH Range	USP
3,5,10	190	200	1.1	15	2-8	L43

The image features two stainless steel preparative columns. One column is positioned diagonally on the left, and the other is vertical on the right. Both columns have a polished, reflective surface and a complex top assembly with several ports and a central cap. The background is a soft-focus bokeh of green and yellow light spots against a dark blue gradient.

**ZODIAC**<sup>®</sup>  
PREPARATIVE  
COLUMNS

# Zodiac Preparative Column



*High efficiency and wide pH range – from pH 1.5 to 10.  
Excellent resolution of complex mixture of compounds.  
Maximum loadability.  
Excellent column lifetime.*

Preparative chromatography is an important stage in liquid chromatography employed for scale-ups, isolation of proteins, peptides or impurities and purification of samples in pharma and life sciences industries. Zodiac provides various ranges of preparative columns for analytical and preparative separations.

Our product range is ideal in meeting your requirements to deliver end-to-end results.

Employing high purity and higher stability silica and unique bonding technology, Zodiac Prep columns are exceptionally designed to ensure maximum performance. The columns possess uniform and stable packing for maximum column efficiency, performance and column life.

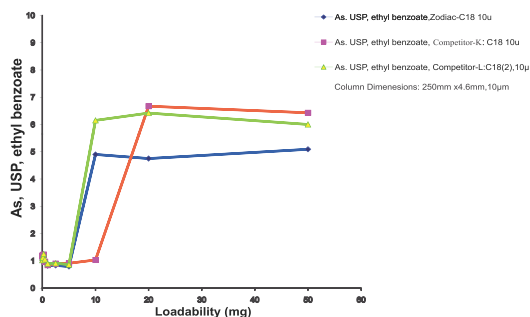
The whole column manufacturing process is completely controlled under stringent testing procedures by Zodiac to provide best satisfaction to users with the quality implemented by us. The silica phase packing of column is completely controlled, that ensures column-to-column reproducibility.

Our novel column chemistry is a high impact strategy that is competitive and economical. We also provide bulk packing phases for preparative chromatography. Whether the most important factor is analysis speed, pH stability, resolution, peak symmetry, sensitivity, adjustable selectivity or analyte molecular weight; from a variety of particle sizes and chemistries (C18, C8, C4, phenyl, cyano and silica) Zodiac offers greater flexibility in selection of preparative column to suit your application.

*For Ordering Information see Page No.15*

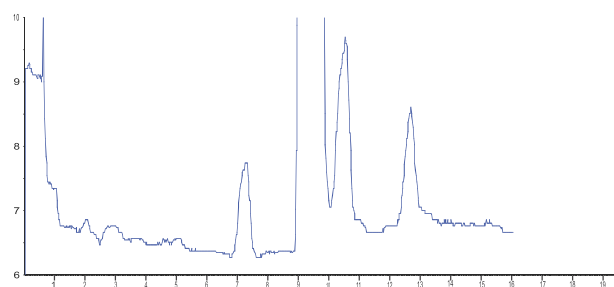
# Applications

Loadability-Peak Shape Correlation of Zodiac-C18 10u vs. benchmark phases

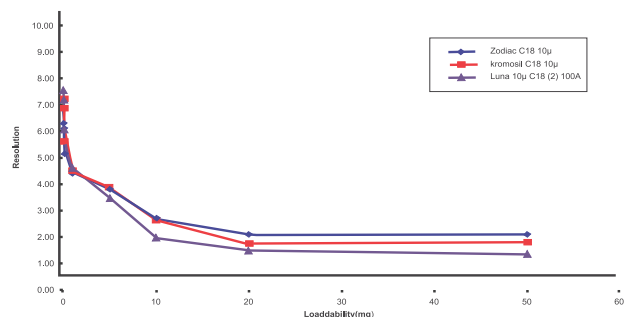


Nimodipine Purification: Linear Scaleup

Column: Zodiac C18  
 Size: 250mm x 51mm, 10µm  
 Mobile Phase: A:H<sub>2</sub>O+0.1% TFA, B: CH<sub>3</sub>CN+0.1% TFA50% - 90%  
 8 in 10 mins, hold at 90% B for 5 mins  
 Flow: 125 ml/min  
 Detection: UV @ 254 nm



Loadability\*Resolution Correlation of Zodiac C18, benchmark phases



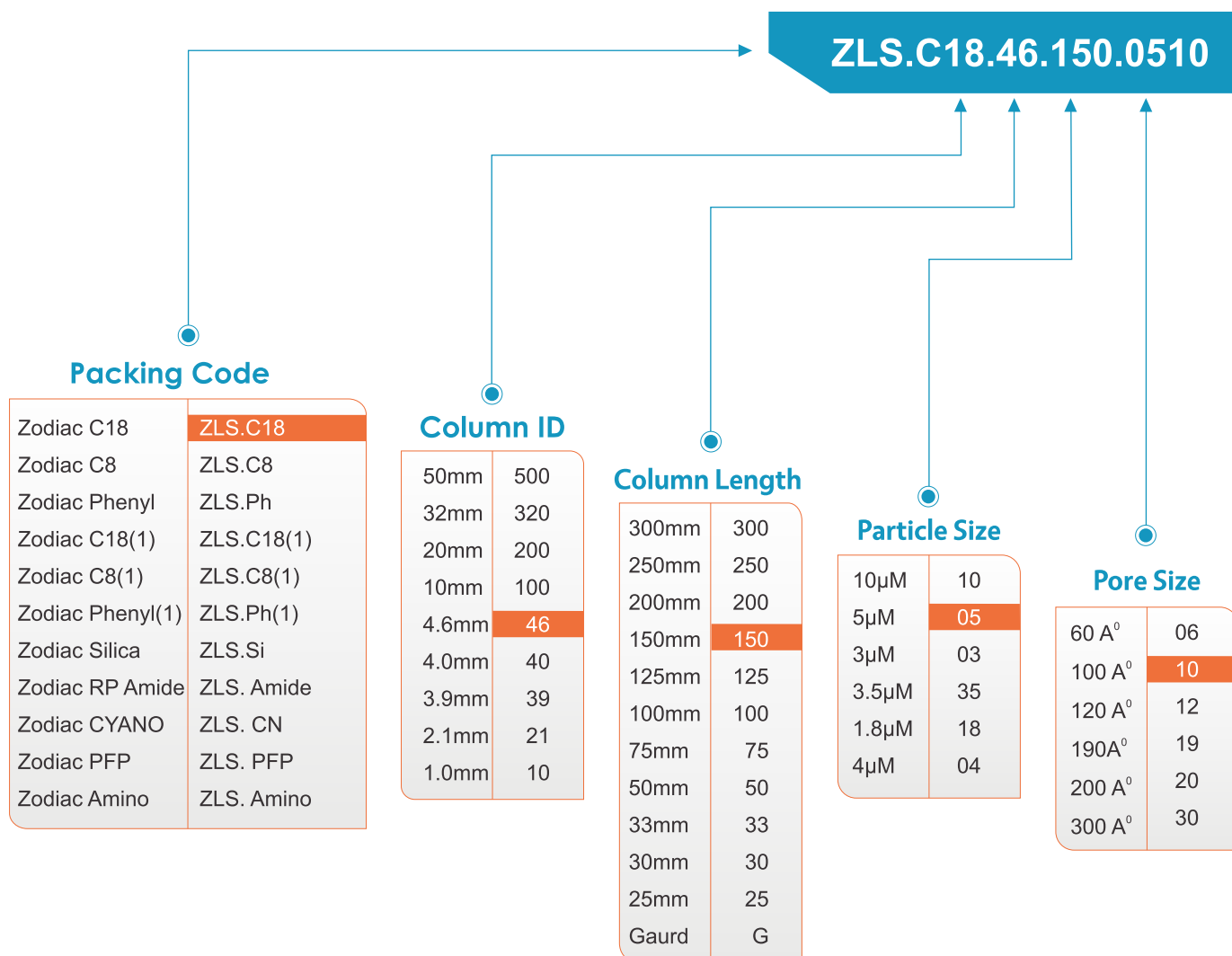
## Preparative Columns Available:

Column List	Column Code	Lengths available (mm)	ID s available (mm)	Particle sizes available (µm)
Zodiac C18 Prep column	ZLS.C18 Prep	50, 100, 150, 200, 300, 500	10, 20, 30,40, 50	10, 15, 20, 30
Zodiac C8 Prep column	ZLS.C8 Prep	50, 100, 150, 200, 300, 500	10, 20, 30,40, 50	10, 15, 20, 30
Zodiac Phenyl Prep column	ZLS.PhPrep	50, 100, 150, 200, 300, 500	10, 20, 30,40, 50	10, 15, 20, 30
Zodiac C18(1) Prep column	ZLS.C18(1)Prep	50, 100, 150, 200, 300, 500	10, 20, 30,40, 50	10, 15, 20, 30
Zodiac C8(1) Prep column	ZLS.C8(1)Prep	50, 100, 150, 200, 300, 500	10, 20, 30,40, 50	10, 15, 20, 30
Zodiac Phenyl(1) Prep column	ZLS.Ph(1)Prep	50, 100, 150, 200, 300, 500	10, 20, 30,40, 50	10, 15, 20, 30

# Order Information

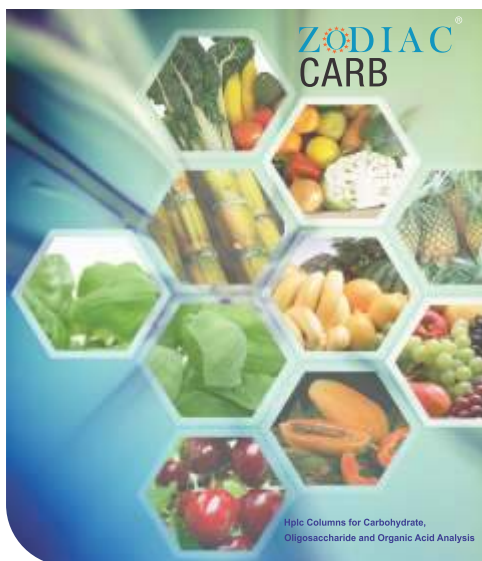
## Columns part number generator

How to generate part number for Zodiac C18 150mm X 4.6mm 5mm 100A<sup>o</sup>



★ For Preparative Columns see packing code on page number 14

# Zodiac Carbo Hydrate HPLC Column



Analysis of carbohydrates, sugars & sugar alcohols in different formulations, matrices and substances is a complex process. Because carbohydrates have more physical and chemical similarity, they are bit difficult to analyze when compared to many other compounds and drugs. Any one Carbo column cannot separate all carbohydrates.

Hence, Zodiac provides a range of columns to select from in order to achieve specific, selected separations and analysis of carbohydrates.

Ligand exchange is the preferred method for the separation of many sugars and sugar alcohols due to the simple water eluent. In ligand exchange, the negatively charged hydroxyl groups on the carbohydrate molecule interact with the positively charged metal loaded groups on the chromatography substrates. The carbohydrates are eluted by the polar water eluent mobile phase which competes for the sites on the metal ion.

The Carbohydrate columns are made of cross-linked polystyrene /divinylbenzene (PS /DVB) spherical particles which are further modified with the metal ligands that finally yield columns with Sodium, Potassium, Silver, Lead or Calcium ligand form. In order to maximize the separation of a wide variety of samples, Zodiac has developed the most complete line of carbohydrate analysis columns available on the market by combining ligand exchange (metals), size exclusion and partitioning (cross-linkage of polymer), particle size (column efficiency) and column size (speed versus resolution).

Zodiac carbohydrate columns are designed for achieving high resolution separation of water soluble and partially water soluble compounds like carbohydrates, sugars and many other small bio organic molecules. Zodiac's unique column preparation process guarantees the column to exhibit excellent separation performance for all kinds of carbohydrates, saccharides and sugars..



# Column List

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## Zodiac Carb 620:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 6.0% cross-linkage, with Ligand exchange Calcium (Ca) form and with particle size of 10mm.

## Zodiac Carb USP L19:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 8.0% cross-linkage, with Ligand exchange Calcium (Ca) form and with particle size of 8mm.

## Zodiac Carb 87C:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 8.0% cross-linkage, with Ligand exchange Calcium (Ca) form and with particle size of 9mm.

## Zodiac Carb 87N:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 8.0% cross-linkage, with Ligand exchange Sodium (Na) form and with particle size of 9mm.

## Zodiac Carb 87K:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 8.0% crosslinkage, with Ligand exchange Potassium (K) form and with particle size of 9mm.

## Zodiac Carb 87P:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 8.0% crosslinkage, with Ligand exchange Lead (Pb) form and with particle size of 9mm.

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## Advantages

- ★ Columns are packed with chemically very stable polymeric phases of PS /DVB.
- ★ The varied percentage cross-linkage of copolymers and varied particle sizes gives choice of selecting required column.
- ★ High temperature stability is exhibited by the columns (up to 95°C).
- ★ Excellent performance and consistency is guaranteed from column to column and batch to batch.
- ★ Choice of eluents can be used depending on the column and compound requirement, the simplest eluent being Water.
- ★ Any required combination of cross-linkage, particle size, metal ligands or other column specifications can be provided on request.

## Zodiac Carb Columns perfectly suits your needs as per key samples

Zodiac	Cross Linkage	Ionic Form	Particle Size( $\mu\text{M}$ )	Key Samples	Comments
Zodiac Carb 511 N	5	Sodium	5	Oligosaccharides through Dp8	
Zodiac Carb 620 C	6	Calcium	6	Versatile analysis of corn syrup, sugars, sugar alcohols	
Zodiac Carb USP L-19	8	Calcium	8	Mannitol and Sorbitol - USP approved	
Zodiac Carb 87C	9	Calcium	9	General sugar analysis	Higher efficiency version of Zodiac - 87C
Zodiac Carb 87C Fast Analysis	8	Calcium	8	Fast analysis of simple Sugars	
Zodiac Carb 87C	8	Calcium	8	Industry standard for analysis of general sweeteners	
Zodiac Carb 87K	8	Potassium	8	Sugar samples such as brewing wort, betaine	Use with samples containing potassium
Zodiac Carb 87N	8	Sodium	8	Molasses and other sugars high salt samples	Easy to regenerate sodium form low selectivity
Zodiac Carb 87P	8	Lead	8	Monosaccharides and cellulose products	Less resolution than Zodiac Carbo 87p, 7mm partial high flow rate

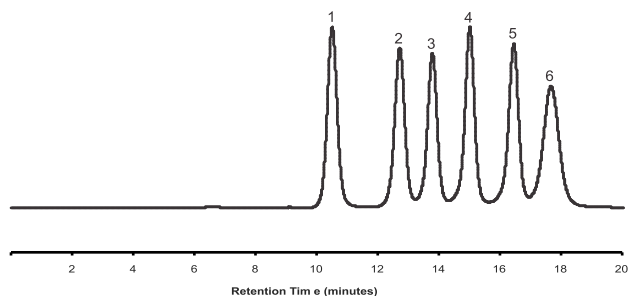
Zodiac	Cross Linkage	Ionic Form	Particle Size( $\mu\text{M}$ )	Key Samples	Comments
Zodiac Carb511 N	5	Sodium	12	Oligosaccharides through Dp8	
Zodiac Carb620 C				Versatile analysis of corn syrup, sugars, sugar alcohols	
Zodiac Carb USP L-19	8	Calcium	8	Mannitol and Sorbitol - USP approved	
Zodiac Carb87C				General sugar analysis	Higher efficiency version of COREGel-87C
Zodiac Carb87C Fast Analysis	8	Calcium	9	Fast analysis of simple Sugars	
Zodiac Carb87C				Industry standard for analysis of general sweeteners	
Zodiac Carb87K	8	Potassium	9	Sugar samples such as brewing wort, betaine	Use with samples containing potassium
Zodiac Carb87N				Molasses and other sugars high salt samples	Easy to regenerate sodium form low selectivity
Zodiac Carb 87P	8	Lead	9	Monosaccharides and cellulose products	Less resolution than CHO-882, high flow rate

# Applications

## Separation of Carbohydrates

- Cellobiose
- Glucose
- Xylose
- Galactose
- Arabinose
- Mannose

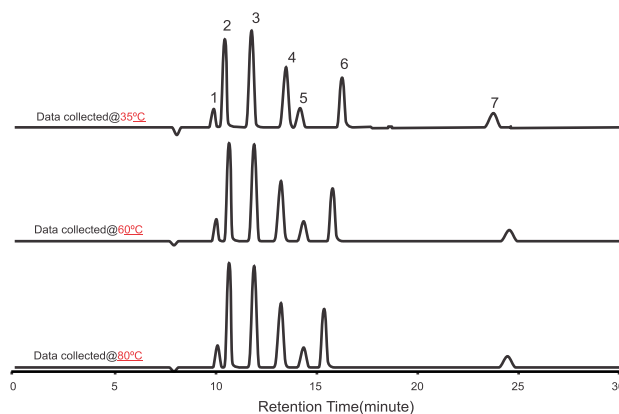
Column: Zodiac Carb - 70P  
 Size: 300mm X 7.8mm, 7µm  
 Mobile Phase: Water  
 Flow: 0.6 ml/min  
 Temp: 70cent  
 Detection: RI



## Separation of Sugars, Alcohols & Organic Acids

- Glucose
- Xylose
- Xylitol
- Lactic acid
- Glycerol
- Acetic acid
- Ethanol

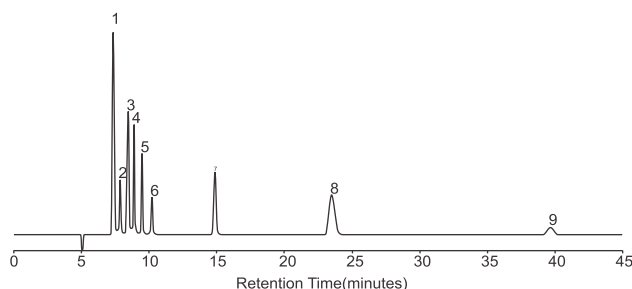
Column: Zodiac Carb H - 10  
 Size: 300mm X 7.8mm, 8µm  
 Mobile Phase: 5mM H2SO4  
 Flow: 0.5 ml/min  
 Temp: 70cent  
 Detection: RI



## Separation of Biomass Standard

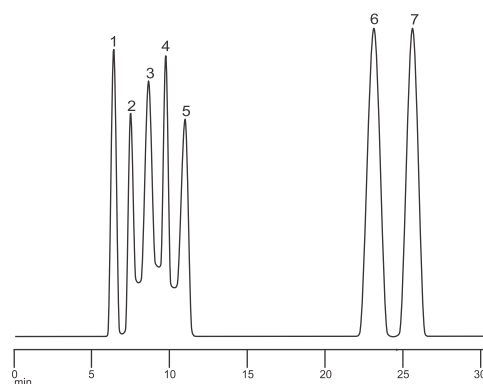
- Xylitol
- Succinic acid
- Lactic acid
- Glycerol
- Formic acid
- Acetic acid
- Ethanol
- HMF
- Furfural

Column: Zodiac Carb H-10  
 Size: 300mm X 7.8mm, 8µm  
 Mobile Phase: 8mM H2SO4  
 Flow: 0.8 ml/min  
 Temp: 35cent  
 Detection: RI



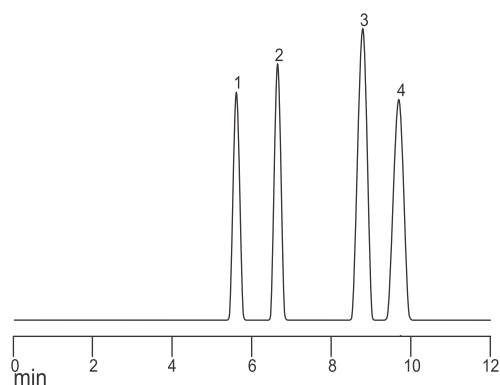
- Raffinose
- Sucrose
- Maltose
- Lactose
- Glucose
- Galactose
- Fructose

Column: Zodiac Carb 87P  
 Size: 300mm X 7.8mm, 9µm  
 Mobile Phase: 100% Water  
 Flow: 0.6ml/min  
 Temp: 85C  
 Detection: RI



- Raffinose
- Sucrose
- Glucose
- Fructose

Column: Zodiac Carb 87N  
 Size: 300mm X 7.8mm, 9µm  
 Mobile Phase: 100% Water  
 Flow: 0.6 ml/min  
 Temp: 90C  
 Detection: RI



# Zodiac Organic Acid Column



Ion exclusion method is the best possible method for the separation of organic acids and alcohols. Zodiac provides a range of columns to select from, which result in varying efficiencies and selectivities for the separation of weak acids by ion exclusion.

The Organic Acid columns are made of sulphonated polystyrene /divinylbenzene (PS /DVB) cross-linked copolymer spherical particles which possess a negative charge. This negative charge of polymer particles plays a role in selectivity by adsorbing the compounds having no charge and allowing to enter into the spheres. Illustrated below is the process:

**R-COO<sup>-</sup>+H<sup>+</sup><—>R-COOH (repelled)(retained).**

The pKa constant of the organic acid or alcohol regulates equilibrium and therefore, compounds that are analyzed by ion exclusion elute according to their pKa value.

In order to maximize the separation of a wide variety of samples, Zodiac has developed the required organic acid columns and further ready to bring up most complete line of the organic acid columns by custom making of columns as per the customer requirements. Zodiac Carbo and Organic Acid columns are applicable for analysis of organic compounds of carbohydrates, alcohols, organic acids, sugars in food, beverage, biochemical, biomedical, biotechnology and pharma industries.

## Column List

### Zodiac Carb USP L17:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 8.0% crosslinkage, with sulphonyl functional groups and with particle size of 8mm.

### Zodiac Carb 87H:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 9.0% crosslinkage, with sulphonyl functional groups and with particle size of 9mm.

### Zodiac Carb 67H:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 6.7% crosslinkage, with sulphonyl functional groups and with particle size of 9mm.

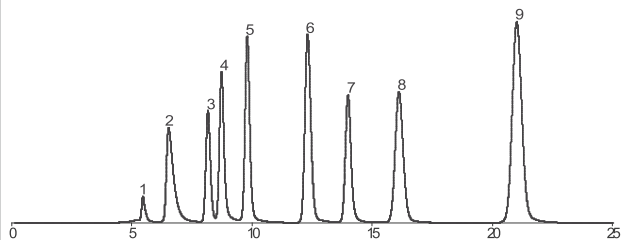
### Zodiac Carb 64H:

The column is made of spherical, porous, Polystyrene Divinyl benzene copolymer of 6.4% crosslinkage, with sulphonyl functional groups and with particle size of 9mm.

# Applications

- Impurity
- Oxalic acid
- Citric acid
- Malic acid
- Succinic acid
- Formic acid
- Fumaric acid
- Thiodoglycol

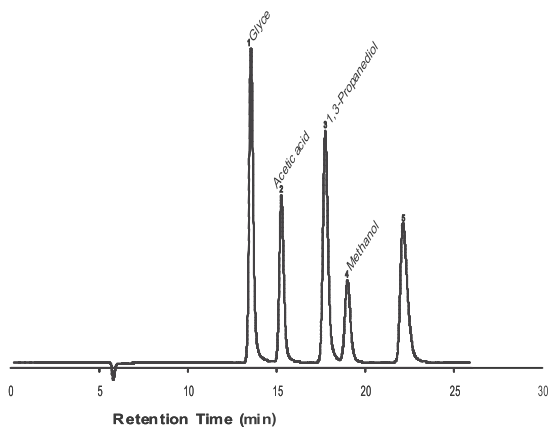
Column: Zodiac Carb - 87H  
 Size: 300mm X 7.8mm, 9µm  
 Mobile Phase: 8mM H2SO4  
 Flow: 0.6 ml/min  
 Temp: 35C  
 Detection: UV @ 210 nM



## Separation of Running Con

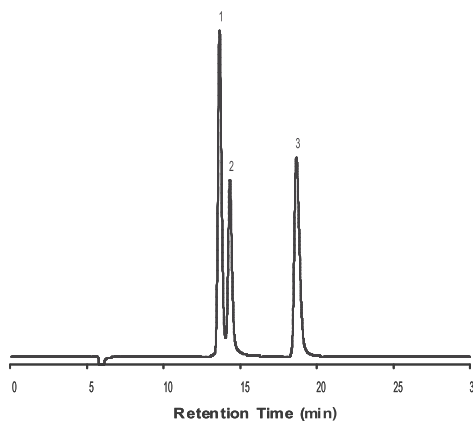
- Glycerol
- Acetic acid
- 1, 3-Propanediol
- Methanol
- Butyric acid
- 7H3 at 50°C on mode

Column: Zodiac Carb - 87H  
 Size: 300mm X 7.8mm, 9µm  
 Mobile Phase: 8mM H2SO4  
 Flow: 0.6 ml/min  
 Temp: 90C  
 Detection: RI



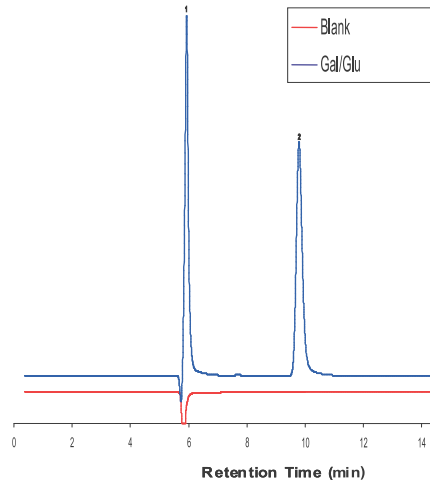
- Formaldehyde
- Formic acid
- Methanol

Column: Zodiac Carb - 87H  
 Size: 300mm X 7.8mm, 9µm  
 Mobile Phase: 20mM H2SO4  
 Flow: 0.6 ml/min  
 Temp: 35C



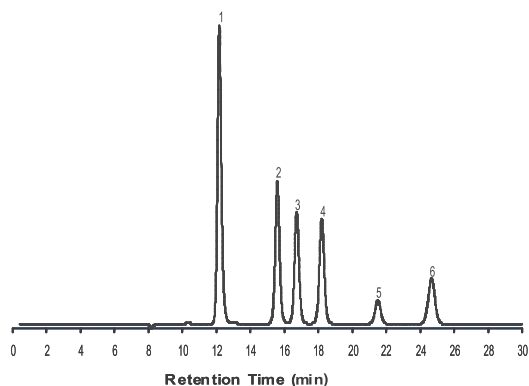
- Glucosamine
- Galactose

Column: Zodiac Carb - 87H  
 Size: 300mm X 7.8mm, 9µm  
 Mobile Phase: 8mM H2SO4  
 Flow: 0.6 ml/min  
 Temp: 90C  
 Detection: RI



- D - Cellobiose
- D - Glucose
- D - Xylose
- L - Arabinose
- Lactic Acid
- Acetic Acid

Column: Zodiac Carb - 60H  
 Size: 300mm X 7.8mm, 7µm  
 Mobile Phase: 8.5mM H2SO4  
 Flow: 0.4 ml/min  
 Temp: 65C  
 Detection: RI



# Ordering Information

Column	Dimensions (mm)	Particle Size( $\mu\text{M}$ )	Part Number
Zodiac Carb 620	300mm $\times$ 6.5mm	10	ZLS.Carb.65.300.10.60Ca
Zodiac Carb USP L19	250mm $\times$ 4.0mm.	8	ZLS.Carb.40.250.08.80Ca
Zodiac Carb 87C	300mm $\times$ 7.8mm	9	ZLS.Carb.78.300.09.80Ca
Zodiac Carb 87N	300mm $\times$ 7.8mm	9	ZLS.Carb.78.300.09.80Na
Zodiac Carb 87K	300mm $\times$ 7.8mm	9	ZLS.Carb.78.300.09.80K
Zodiac Carb 87P	300mm $\times$ 7.8mm	9	ZLS.Carb.78.300.09.80Pb
Zodiac Carb USP L17	250mm $\times$ 4.1mm	8	ZLS.Carb.41.250.08.USPL17
Zodiac Carb 87 H	300mm $\times$ 7.8mm	9	ZLS.Carb87H.78.300.09.87H
Zodiac Carb 67 H	300mm $\times$ 7.8mm	9	ZLS.Carb67H.78.300.09.67H
Zodiac Carb 64 H	300mm $\times$ 7.8mm	10	ZLS.Carb64H.78.300.10.64H

## Advantages

- ★ Columns are packed with chemically very stable polymeric phases of PS /DVB.
- ★ The varied percentage cross-linkage of copolymers and varied particle sizes gives choice of selecting required column.
- ★ Temperature stability is exhibited by the columns up to 90 °C.
- ★ The stable cross-linked polymeric phase gives sustainability throughout the pH range of 0 to 14.
- ★ Excellent performance and consistency is guaranteed from column to column and batch to batch. Can undoubtedly achieve high resolution and high efficiency.
- ★ Any required combination of cross-linkage, particle size or other column specifications can be provided on request.

# OUR PRODUCTS SPECTRUM





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