Transgenomic®
Advancing Personalized Medicine

Chromatography Products

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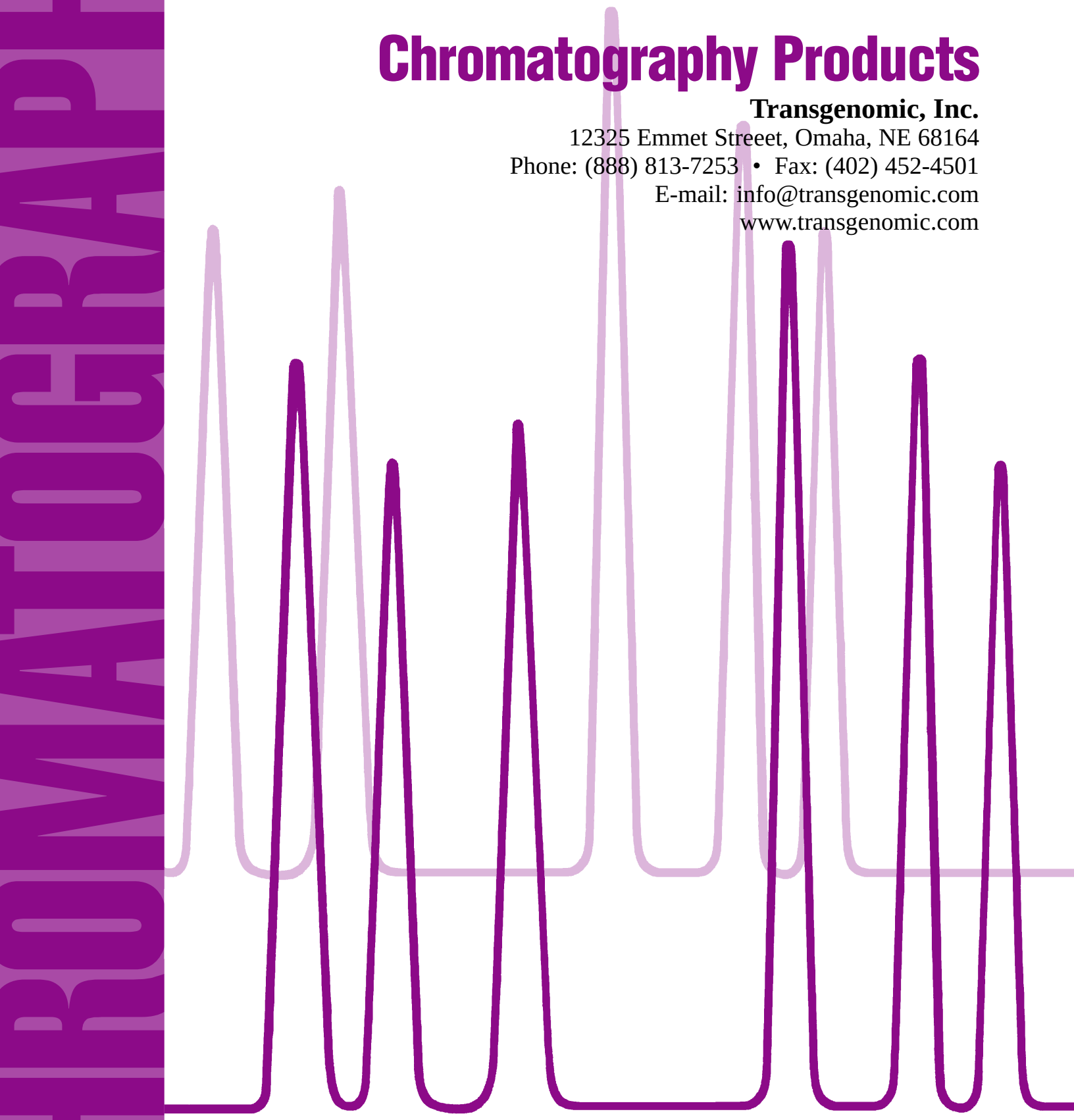

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Column Index

Amino Acid Columns

Transgenomic Na^+ 6, 7, 8
Transgenomic Li^+ 6, 7, 8
Transgneomic Na^+ Column for System Gold 8
AMINOSep AA-911 10
AMINOSep AA-511 10

Carbohydrate Analysis Columns

CARBOSep CHO-620 ..... 15, 17, 19
CARBOSep CHO-682 ..... 13, 16, 17, 19
CARBOSep CHO-820 ..... 14, 15, 19
CARBOSep CHO-611 ..... 13, 18, 20
CARBOSep CHO-411 ..... 15, 16, 20
CARBOSep USP-L19 ..... 13, 21
CARBOSep COREGEL-87C 14, 21
CARBOSep COREGEL-87K 21
CARBOSep COREGEL-87N 22
CARBOSep COREGEL-87P 22

Organic Acid Analysis Columns

ICSep ION-300 ..... 25, 26, 30
ICSep ION-310 ..... 25, 26, 28, 31
ICSep ORH-801 ..... 27, 28, 29, 30
ICSep COREGEL-87H 27, 29, 30
ICSep ARH-601 ..... 27, 28, 31
ICSep COREGEL-64H 31

Oligonucleotide Analysis Columns

OLIGOSep-1 ..... 34, 35

Polymeric Reversed Phase Columns

RPSep POLYRP C0 ..... 39, 40, 41, 43
RPSep ACT-1 ..... 39, 40, 41, 42
RPSep PRX-1 42

Ion Analysis Columns

ICSep AN1 48
ICSep AN1S 48
ICSep AN2 48
ICSep ANSC 47, 49
ICSep AN300 ..... 47, 49
ICSep AN300B 47, 49
ICSep ION-120 50
ICSep CN2 50

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Table of Contents

About Transgenomic ---------- 1

Amino Acid Analysis ---------- 5

Carbohydrate Analysis ---------- 11

Organic Acid Analysis ---------- 23

Nucleic Acid Analysis ---------- 33

Polymeric Reversed Phase ---------- 37

Ion Chromatography ---------- 45

Guard-Disc® Protection System ---------- 51

Solid Phase Extraction ---------- 53

Bulk Polymeric Resin ---------- 59

Index ---------- 63

Transgenomic®
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About Transgenomic

Transgenomic focuses on the development of novel tools for the life science researcher. Transgenomic's key focus is in the development of tools for nucleic acid analysis.

WAVE® Nucleic Acid Analysis Solutions

Transgenomic WAVE® system is a fully automated system for the analysis of single and double stranded DNA(ssDNA and dsDNA) for molecular biology research. Using the WAVE® system nucleic acids can be analyzed for:

- DNA mutation analysis
- Genotyping
- RNA and oligonucleotide purification

Mutation Analysis

The WAVE® system performs DNA mutation detection and analysis via a technique called temperature modulated heteroduplex analysis (TMHA) also known as denaturing HPLC (DHPLC). TMHA is performed by hybridizing a wild-type (reference) DNA with a sample (mutated) DNA. If a mutation is present in the sample DNA, the resultant mixture will contain both homoduplexes and heteroduplexes. This DNA mixture is then analyzed on a WAVE® system. The system employs ion-pair reversed-phase chromatography across a DNASep® Cartridge under partially denaturing conditions to resolve homoduplexes from heteroduplexes if a mutation is present. This separation technique provides a rapid method for the screening of DNA samples for the presence of mutations.

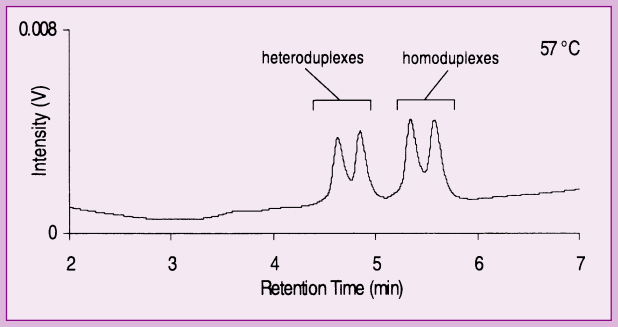
Genotyping

The WAVE® system performs genotyping under non-denaturing conditions via fragment length analysis. A strand of DNA is cleaved with a WAVE Optimized™ endonuclease to form a mixture of DNA with strands of differing length. This mixture of DNA is then analyzed on the WAVE® system. The fragments are separated across the DNASep® Cartridge and reported. This separation is completely sequence independent and based entirely on fragment length.

Mutation Detection

Temperature Modulated Heteroduplex Analysis™

- Detects single base mutations in heteroduplex fragments, accurately and reproduccibly.
- One complete sample analysis in 7 to 10 minutes. Up to 96 samples within 12 hours (overnight, unattended).



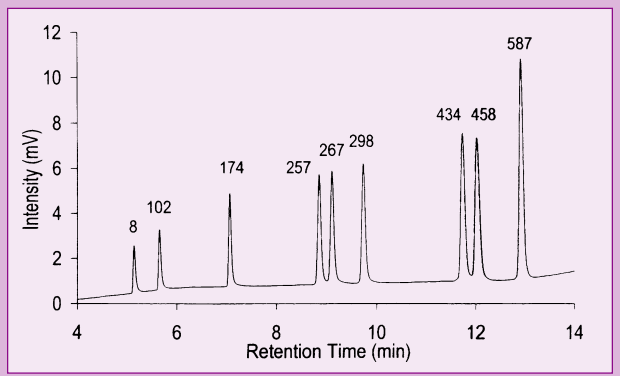
Wave trace of 209 bp heterozygous locus*

*Seielstad. M. T., et al. 1994, Hum Mol. Genet. 3:2159-2161

Size-based DNA Fragment Analysis

Non-Denaturing, Sequence Independent

Double-Stranded DNA Resolution
- Fragment length up to 200 bp ± 2% in 15 minutes
- Fragment length up to 1000 bp ± 4% in 15 minutes



Wave trace of pUC18 HaeIII digest

About Transgenomic

The sample can be additionally tested under partially or fully denaturing conditions. This provides complimentary information on both size and sequence characteristics.

Purification

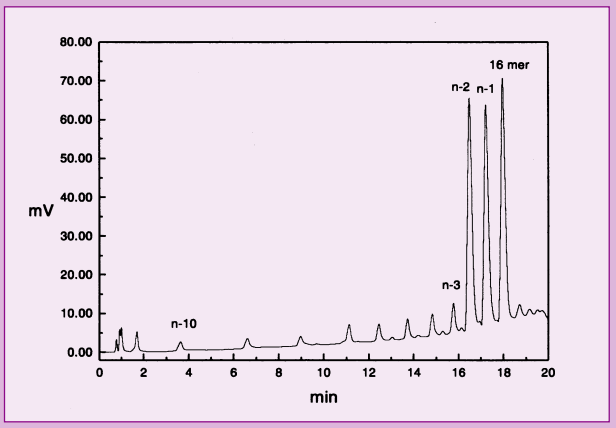
Finally, the WAVE® system can be used to purify ssDNA, oligonucleotides, PCR products or RNA. Purification is accomplished by first separating the mixture into individual components across the DNASep® or OLIGOSep Cartridge. Then collect the component of interest with the WAVE® Fragment Collector in a fully automated fashion.

Size-based DNA Fragment Analysis

Non-Denaturing, Sequence Independent

Single-Stranded DNA Resolution

• Fragment length up to 60 bases, single-base resolution



Separation of three oligonucleotides (14, 15, 16 mer). The WAVE employs both size dependent separations for performing failure sequence analysis, and size and sequence depended separations for purification and analysis.

For more information on Transgenomic Nucleic Acid Analysis products contact us directly or visit our web-site at www.transgenomic.com.

Transgenomic Separation Products

At Transgenomic, we have a long history of developing and manufacturing high-quality chromatography products. Our history dates back to the late 70's. We have over 25 years experience developing high-quality separation products. Today, we specialize in the manufacture of polymer-based, application specific columns, bulk resins, extraction products and other specialty separation products.

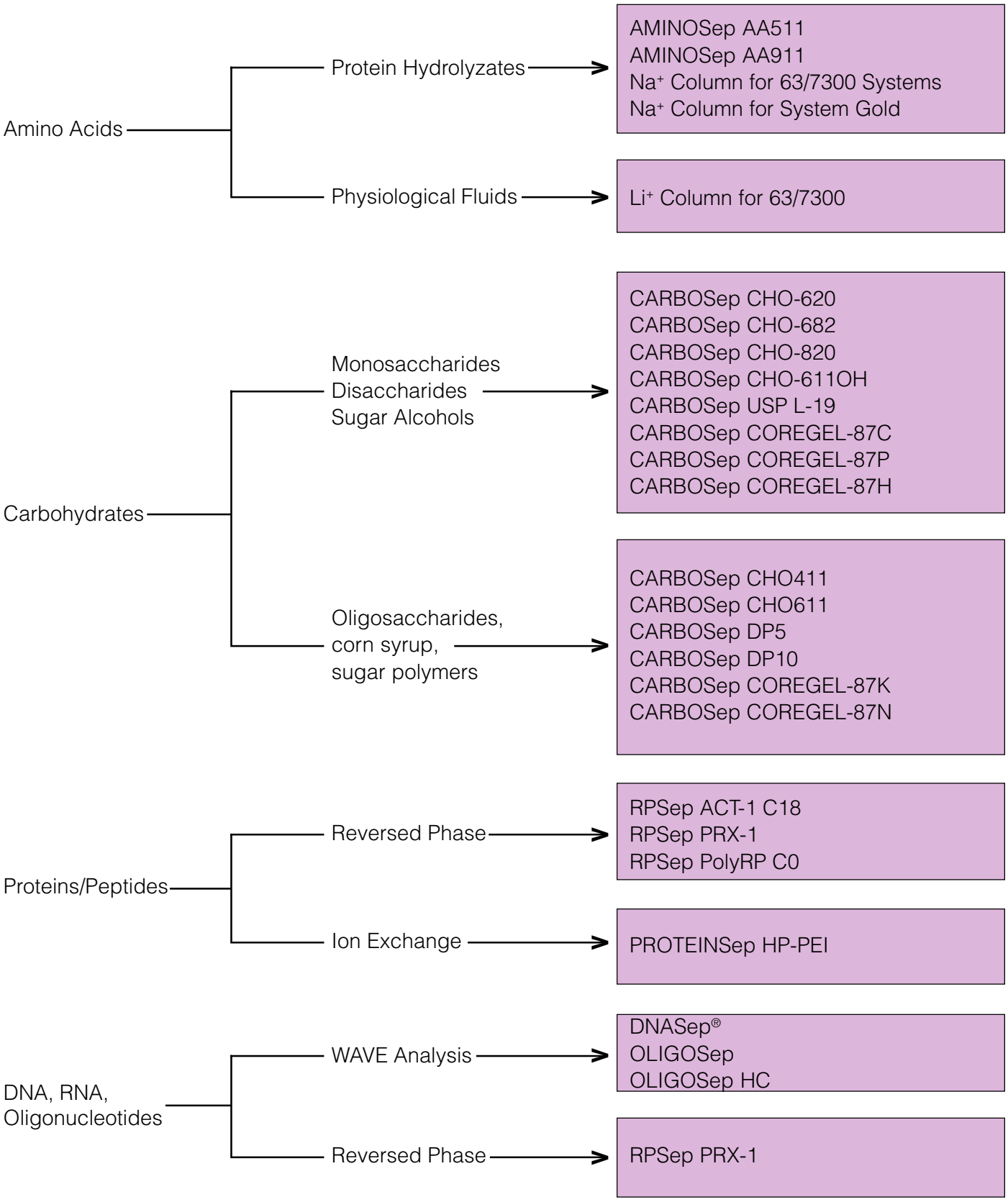
The applications that we have solutions for include:

- Amino Acid Analysis
- Carbohydrates
- Organic Acids
- Nucleic Acids
- Inorganic Ions
- Polymer-based Reversed Phase Applications
- Solid Phase Extraction
- Purification and Synthesis

These solutions are all discussed in detail in this catalogue.

Thank you for considering Transgenomic Separation products.

Application Selection Guide



About Transgenomic

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Amino Acid Analysis

Transgenomic Columns for Amino Acid Analysis

Ion exchange has historically been the most popular mode for the separation and analysis of amino acids. Amino acids are Zwitterionic, they have both positive and negative charges on the molecule. Transgenomic offers a complete line of polymeric cation exchangers that separate amino acids based on their differences in positive charge.

With cation exchange resins, the amino acids are bound to the resin by their attraction to the negatively charged ion exchange sites on the resin surface. After they are bound, they are selectively eluted with buffers. These buffers are comprised of molecules that also have positive charges. The positively charged buffers then compete with the amino acids for the negatively charged ion exchange sites. Since the strength of the interaction of each amino acid with the cation exchange surface is different they are separated.

The key features of the Transgenomic cation exchange columns are:

- Polymeric Substrate
- High efficiency
- High resolution
- Reproducibility lot-to-lot and column-to-column
- Rugged
- Available for both physiological and protein hydrolysate amino acids

Since Transgenomic columns are based on a polymeric substrate consisting of polystyrene/divinylbenzene copolymers they are stable in the pH range of 0 to 14, they are temperature stable and very rugged. The Transgenomic amino acid columns have been shown to last for thousands of runs without cleaning. And, they show very good lot-to-lot and column-to column reproducibility with retention times varying by less than 1%.

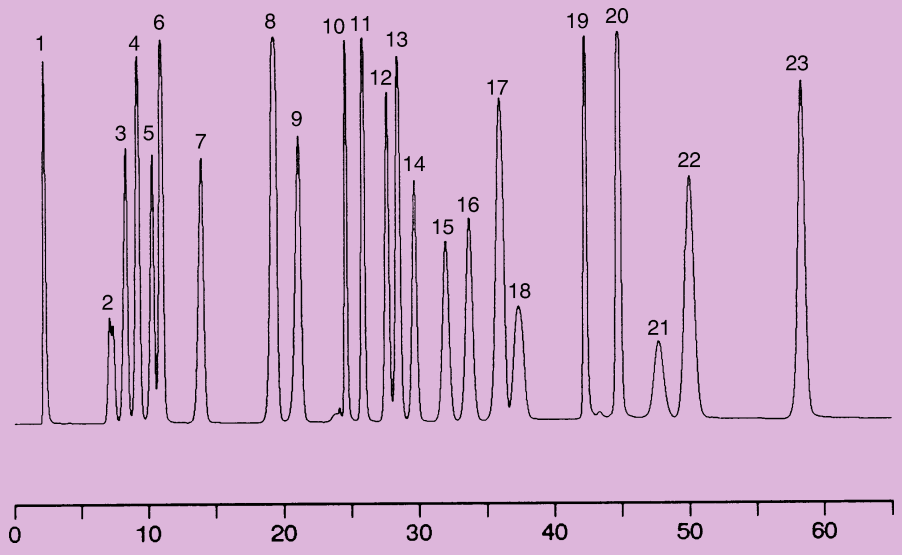
Transgenomic amino acid columns have been designed to provide the highest efficiency and highest resolution of any ion exchange amino acid columns on the market. And, they are available for both routine hydrolysate analysis as well as amino acid analysis in complex physiological fluids.

Amino Acid Analysis

Oxidized Hydrolysate Standards

Analysis Conditions:
Column: Transgenomic Sodium Column for 6300
Flow rate: 0.233 mL/min
Temperature: 48-70-77°C
Pressure: 655 PSIG
Detection: Flourescence
Injection: 20 µL

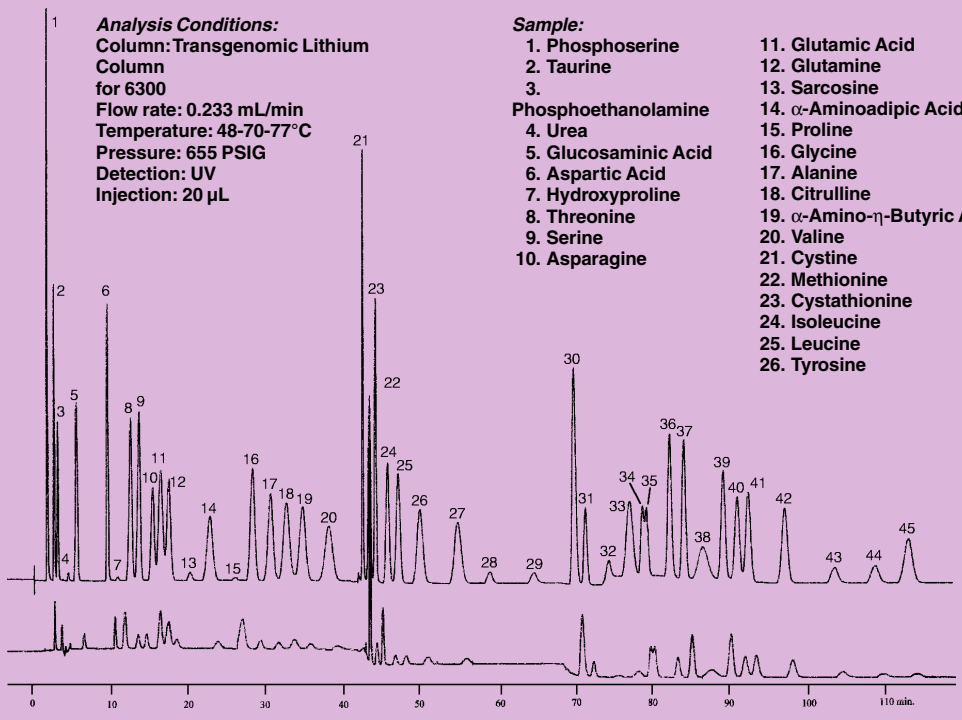
Sample:
1. L-Cysteic Acid
2. Methionine Sulfoxide
3. L-Aspartic Acid
4. Methionine Sulfone
5. L-Threonine
6. L-Serine
7. L-Glutamic Acid
8. Glycine
9. L-Alanine
10. L-Valine
11. L-Methionine
12. L-Isoleucine
13. L-Leucine
14. Norlfuline
15. L-Tyrosine
16. L-Phenylalanine
17. Glucosamine
18. Galactosamine
19. L-Histidine
20. L-Lysine
21. Tryptophan
22. Ammonia
23. L-Arginine



Physiological Fluid Amino Acids

Analysis Conditions:
Column: Transgenomic Lithium Column for 6300
Flow rate: 0.233 mL/min
Temperature: 48-70-77°C
Pressure: 655 PSIG
Detection: UV
Injection: 20 µL

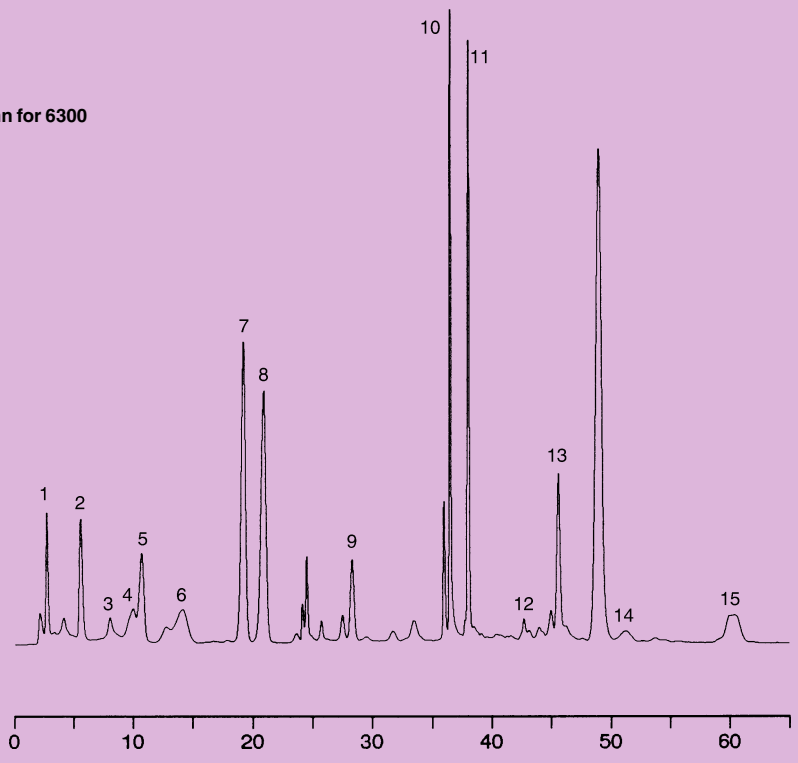
Sample:
1. Phosphoserine
2. Taurine
3. Phosphoethanolamine
4. Urea
5. Glucosaminic Acid
6. Aspartic Acid
7. Hydroxyproline
8. Threonine
9. Serine
10. Asparagine
11. Glutamic Acid
12. Glutamine
13. Sarcosine
14. α-Aminoadipic Acid
15. Proline
16. Glycine
17. Alanine
18. Citrulline
19. α-Amino-η-Butyric Acid
20. Valine
21. Cystine
22. Methionine
23. Cystathionine
24. Isoleucine
25. Leucine
26. Tyrosine
27. Phenylalanine
28. β-Alanine
29. β-Aminoisobutyric Acid
30. Homocystine
31. γ-Aminobutyric Acid
32. Ethanolamine
33. Ammonia
34. Hydroxylysine
35. *allo*-Hydroxylsine
36. Aminoethylcysteine
37. Ornithine
38. Tryptophan
39. Lysine
40. 1-Methylhistidine
41. Histidine
42. 3-Methylhistidine
43. Anserine
44. Carnosine
45. Arginine



Amino Acid in Red Wine

Analysis Conditions:
Column: Transgenomic Sodium Column for 6300
Flow rate: 0.233 mL/min
Temperature: 48-70-77°C
Pressure: 575 PSIG
Detection: Flourescence
Injection: 20 µL

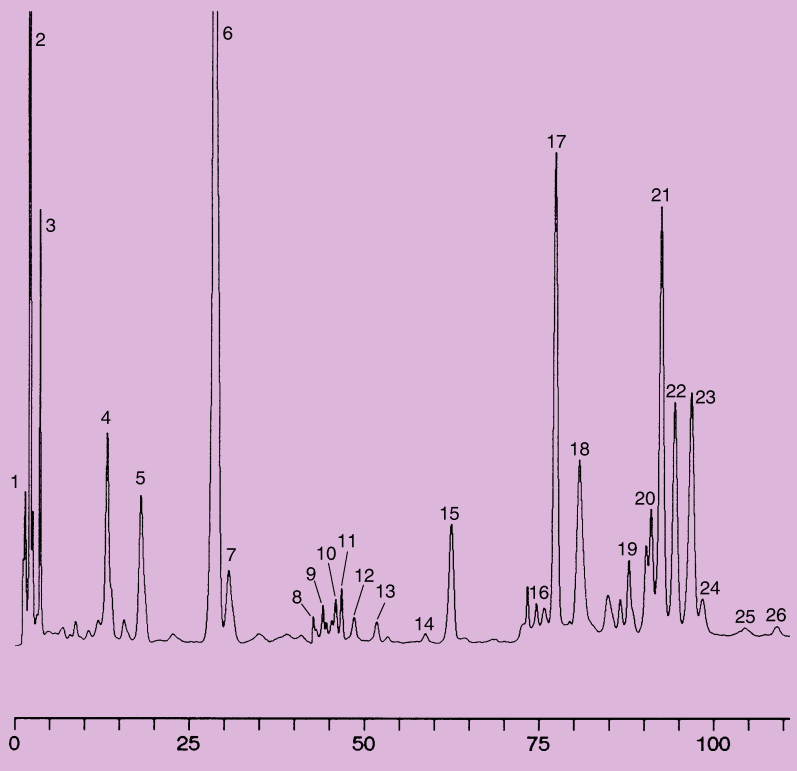
Sample:
1. Cysteic Acid
2. ASP
3. MTO2
4. THR
5. GLU
6. GLY
7. ALA
8. MET
9. Glucosamine
10. Galactosamine
11. HIS
13. LYS
14. NH3
15. ARG



Amino Acid in Urine

Analysis Conditions:
Column: Transgenomic Lithium Column for 6300
Flow rate: 0.333 mL/min
Temperature: 32.5-63-80°C
Pressure: 1200 PSIG
Detection: Flourescence
Injection: 20 µL

Sample:
1. PER
2. TAU
3. PETN
4. THR
5. GLU
6. GLY
7. ALA
8. Met
9. CYST
10. ILE
11. LEU
12. TYR
13. PHE
14. BALA
15. BABA
16. TRP
17. EIN
18. NH3
19. ORN
20. LYS
21. 1 ME-HIS
22. HIS
23. 3 ME-HIS
24. ANS
25. CARN
26. ARG



Amino Acid Analysis

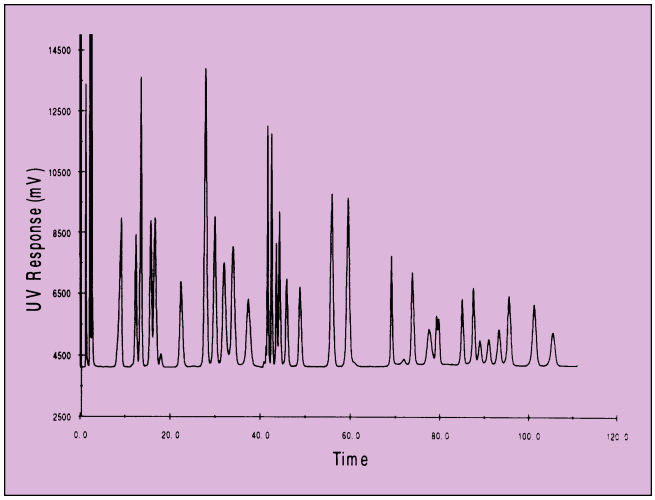
Transgenomic Lithium Amino Acid Column

(4 x 100 mm)
P/N AAA-99-6311

- Designed for use with the Beckman® 6300 and 7300 Amino Acid Analyzers using either the Beckman or Pickering Lithium buffer systems
- The Lithium column is ideal for Physiological amino acid analysis
- Highly efficient 6 micron particle size

AMINOSep Lithium Guard Cartridge

2/PK P/N AAA-99-1311



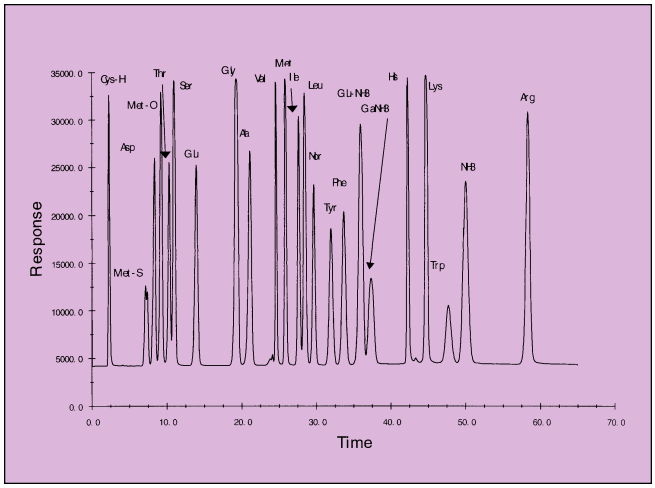
Transgenomic Sodium Amino Acid Column

(4 x 120 mm)
P/N AAA-99-6312

- Designed for use with the Beckman 6300 and 7300 Amino Acid Analyzers using either the Beckman or Pickering Sodium buffer systems
- The Sodium column is ideally suited for routine hydrolyzate analysis
- Extremely rugged polymer

AMINOSep Sodium Guard Cartridge

2/PK P/N 99-1312



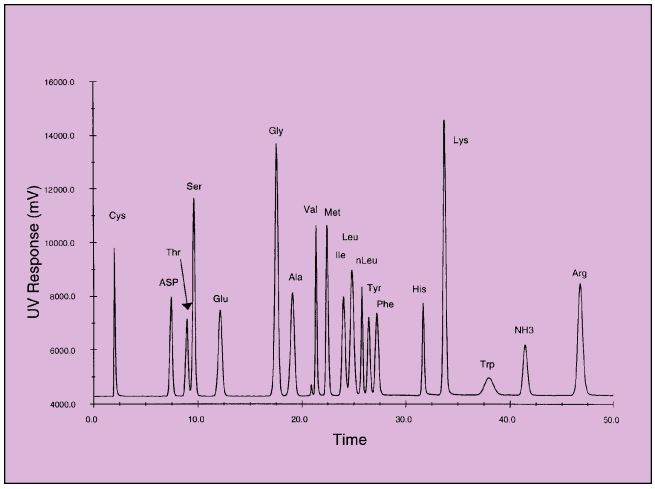
Transgenomic Sodium Sodium Amino Acid Column for Use with System Gold

(4 x 200 mm)
P/N AAA-99-6310

- Designed for use with the Beckman System Gold Amino Acid Analyzer
- This Sodium cation exchange column is ideal for the separation of hydrolyzate amino acids.

AMINOSep Sodium Guard Cartridge

2/PK P/N 99-1312



Pickering Buffers for use with Beckman Amino Acid Columns

Sodium Buffers for Beckman 63/7300 Amino Acid Analysis System

Pickering Sodium pH 2.70 Buffer
1 case (4 x 950ml)
P/N AAA-99-0080

Pickering Sodium pH 3.15 Buffer
1 case (4 x 950ml)
P/N AAA-99-0081

Pickering Sodium pH 3.28 Buffer
1 case (4 x 950ml)
P/N AAA-99-0082

Pickering Sodium pH 4.25 Buffer
1 case (4 x 950ml)
P/N AAA-99-0083

Pickering Sodium pH 6.40 Buffer
1 case (4 x 950ml)
P/N AAA-99-0084

Pickering Sodium Column Regenerant
950ml
P/N AAA-99-0085

Pickering Sodium Diluent pH 2.20
1 case (4 x 250ml)
P/N AAA-99-0086

Pickering Protein Hydrolysate Calibration Standard 0.25mMole/ml, 5ml
P/N AAA-99-0087

Pickering Collagen Hydrolysate Calibration Standard 0.25mMole/ml, 5ml
P/N AAA-99-0088

Pickering Oxidized Protein Hydrolysate Calibration Standard 0.25mMole/ml, 5ml
P/N AAA-99-0089

Lithium Buffers for Beckman 63/7300 Amino Acid Analysis System

Pickering Lithium pH 2.92 Buffer
1 case (4 x 950ml)
P/N AAA-99-0070

Pickering Lithium pH 3.65 Buffer
1 case (4 x 950ml)
P/N AAA-99-0071

Pickering Lithium pH 3.75 Buffer
1 case (4 x 950ml)
P/N AAA-99-0072

Pickering Lithium Column Regenerant
950ml
P/N AAA-99-0073

Pickering Lithium Diluent pH 2.20
1 case (4 x 250ml)
P/N AAA-99-0074

Pickering Physiological Fluid Calibration Standard 5ml
P/N AAA-99-0075

Accessories and Post Column Reagents

Trione® Ninhydrin Reagent (3 month shelf life), 950mL
P/N AAA-99-0091

1 Case (4 x 950mL)
P/N AAA-99-0092

Trione® Two-Part Ninhydrin Reagent (12 month shelf life), 1 Case (4 x 900mL)
P/N AAA-99-0093

URIPREP Preparation for Urine
P/N AAA-99-0094

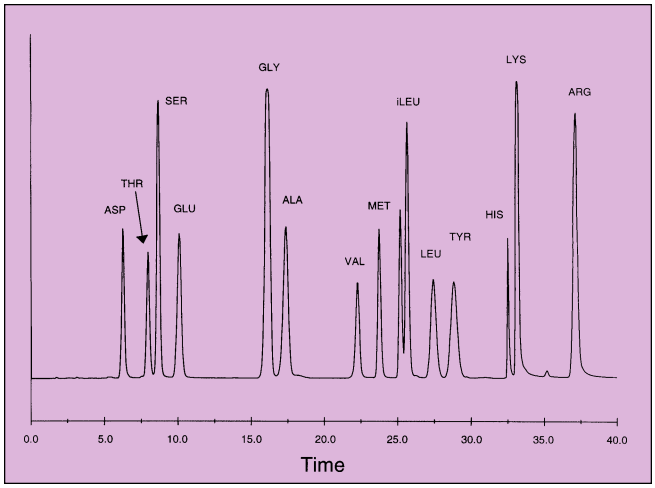
SERAPREP Preparation for Serum
P/N AAA-99-0095

Amino Acid Analysis

AMINOSep AA-911 Sodium Column
(4.6 x 250mm)
P/N AAA-99-8553

AMINOSep GC-911 Guard Kit
P/N AAA-99-2353

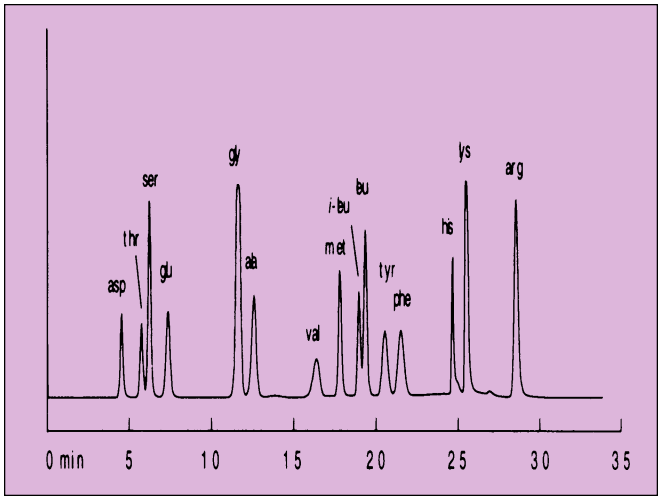
AMINOSep GC-911 Guard Cartridge
2 /PK P/N AAA-99-1353



AMINOSep AA-511 Sodium Column
(4.6 x 150mm)
P/N AAA-99-7554

AMINOSep GC-511 Guard Kit
P/N AAA-99-2354

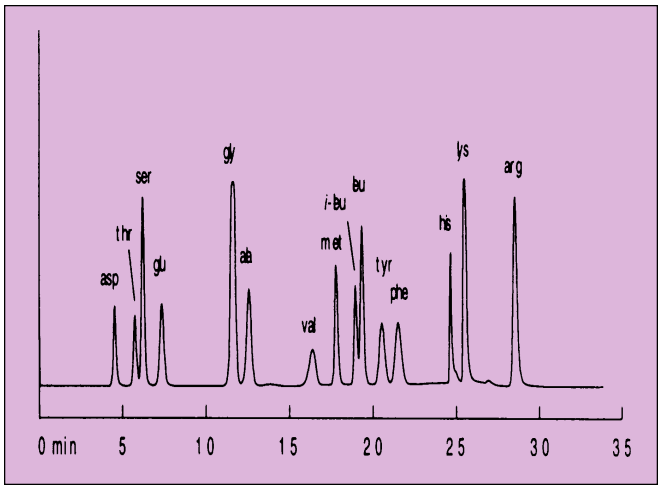
AMINOSep GC-511 Guard Cartridge
2 /PK P/N AAA-99-1354



AMINOSep AA-511
High Speed Sodium Column
(4.6 x 120mm)
P/N AAA-99-6554

AMINOSep GC-511 Guard Kit
P/N AAA-99-2354

AMINOSep GC-511 Guard Cartridge
2 /PK P/N AAA-99-1354



Transgenomic®
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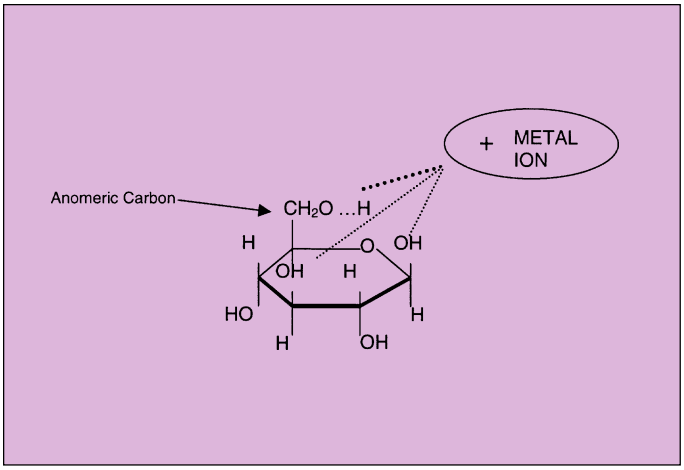
Carbohydrate Analysis Columns

CARBOSep Columns

Transgenomic manufactures a line of polymeric columns for carbohydrate analysis called CARBOSep columns. CARBOSep columns employ a technique called ligand-exchange chromatography for the separation of monosaccharides, disaccharides and oligosaccharides up to 15 glucose units long.

The principle behind ligand exchange is that each of the hydroxyls on a sugar molecule carry a very slight negative charge. The hydroxyl group on the anomeric carbon can be deprotonated and thus have a strong negative charge. It is the interaction between these negative charges on the sugar molecule and the positive charge contributed by the metal ion secured to the resin surface that causes the sugars to be retained and thus separated.



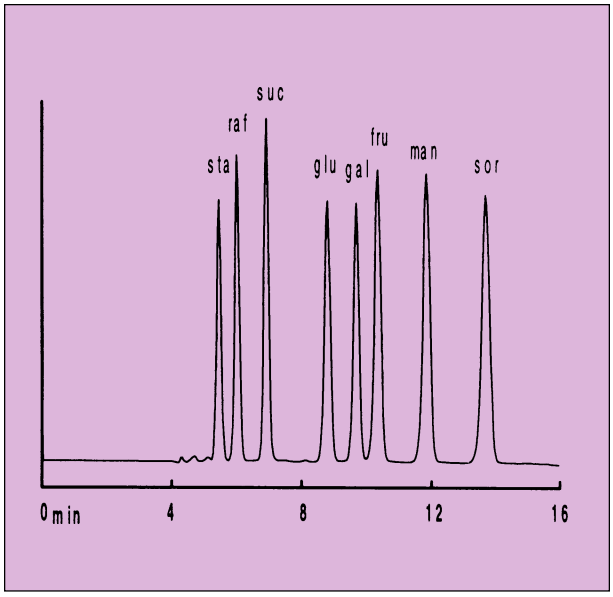
Ligand exchange resins are highly sulfonated cation exchange resins that have group 1, 2 or transition series metals loaded on. The sulfonic acid groups on the resin tightly hold the metal ions via an ionic attraction so that it is not released during analysis or through the life of the column. It is this metal ion that provides the positive charge that interacts with the negative charge on the sugar.

During analysis, the carbohydrates are introduced onto the column. The sugars are attracted to the metals by a weak ionic interaction; so, the sugars become weakly bound to the metal on the resin. Water also has a very weak ionic interaction with the metals in the column. So, water molecules exchange with the sugar for these weak charge sites. This ionic adsorption, desorption occurs for the sugars through the column. Since the weak ionic charge is different for every sugar, separation occurs.

Selectivity is easily controlled by resin type, metal selected, and other factors such as temperature and mobile phase. CARBOSep columns are provided in a large variety of resin types and metals to provide selectivities that meet your separation needs.

CARBOSep CHO-620

- Calcium form ligand-exchange column
- Ideal for the separation of monosaccharides and sugar alconols
- Very reproducible



Carbohydrate Analysis Columns

Selectivity Chart for Carbohydrate Columns

CARBOSep Column Type							
Component	**CHO-620**	**CHO-682**	**CHO-820**	**COREGEL 87C**	**COREGEL 87P**	**COREGEL 87K**	**ICSep COREGEL 87H**
Stachyose	5.94	11.84	8.46	7.85	11.35	6.32	6.94
Raffinose	6.56	12.01	9.01	8.31	14.41	6.96	7.65
Maltotriose	6.68	12.63	9.16	8.35	15.24	7.36	7.18
Sucrose	7.48	13.51	9.94	9.18	15.77	8.08	ND
Cellobiose	7.36	13.53	9.79	9.01	15.65	NA	7.76
Trehalose	7.32	NA	NA	9.14	16.05	8.22	8.00
Maltose	7.59	14.43	10.06	9.24	16.68	8.56	7.78
Melibiose	7.67	15.25	NA	9.43	17.70	NA	7.88
Lactose	7.84	15.09	10.49	9.51	17.44	8.72	8.13
Lactulose	8.53	18.93	11.49	10.24	20.77	NA	NA
Maltitol	9.15	NA	NA	12.29	30.45	8.16	NA
Glucose	9.36	16.09	12.09	11.22	19.21	11.20	10.11
Sorbose	10.22	19.45	NA	12.90	22.45	13.16	9.90
Xylose	10.31	17.96	NA	12.37	20.71	12.24	10.33
Rhamnose	10.41	19.53	NA	12.93	22.63	13.37	11.20
Mannose	10.51	20.39	14.06	12.83	25.57	12.48	9.98
Fructose	11.14	22.59	15.61	13.68	25.90	12.16	10.39
Fucose	11.33	27.93	15.41	13.89	24.23	11.98	12.05
Arabinose	11.63	21.73	15.76	14.00	24.02	13.44	11.23
Mannitol	12.76	34.51	20.54	17.89	40.07	10.08	NA
Arabitol	13.23	33.98	20.94	18.43	39.80	10.80	NA
Sorbitol	14.91	50.76	25.61	21.41	55.56	10.64	8.32
Xylitol	15.06	44.76	25.03	22.03	51.14	11.36	8.35
Ribose	16.46	45.59	26.38	21.89	54.33	14.16	9.21

NA = Not Analyzed ND = Not Detected

Carbohydrate Columns Specifications Chart

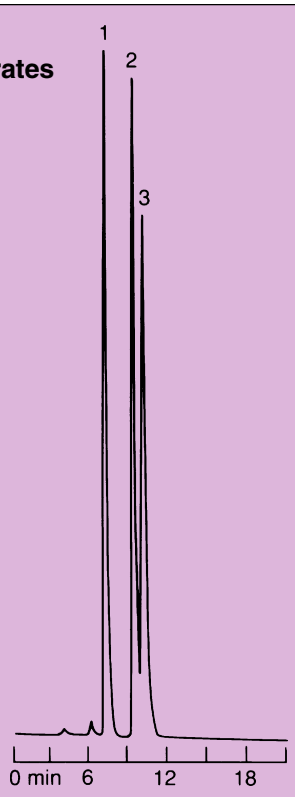
Column	Application	Form	Particle Size (µ)	Typical Mobile Phase	Flow Range (mL/min)	Temp °C
CARBOSep CHO-411	Oligosaccharide analysis, Corn Syrup, Molasses	Sodium	20	Water	0.4-0.6	75
CARBOSep CHO-611OH	Oligo and Mono Saccharides with PAD detection	Sodium	10	Sodium Hydroxide	0.5-0.7	90
CARBOSep CHO-620	Monosaccharides and sugar alcohols in foods	Calcium	10	Water	0.5-0.7	90
CARBOSep CHO-682	Mono and Oligo saccharides and alcohols	Lea	7	Water	0.4-0.5	80
CARBOSep CHO-820	More stable column for the analysis of simple sugars and sugar alcohols	Calcium	8	Water	0.6-1.0	90
CARBOSep COREGEL 87C	Mono, di and tri-saccharides, sugar alcohols	Calcium	9	Water	0.6-1.1	85
CARBOSep COREGEL 87H	Organic acids, alcohols, sugar mixtures	Hydrogen	9	Water	0.6-1.1	85
CARBOSep COREGEL 87K	Beet sugar, cane sugar, corn syrup	Potassium	8	Water	0.6-1.1	85
CARBOSep COREGEL 87N	Mono, oligo saccharides	Sodium	8	Water	0.6-1.1	85
CARBOSep COREGEL 87P	Monosaccharides, xylose, mannose, etc.	Lea	8	Water	0.6-1.1	85

Carbohydrate Analysis Columns

Separate Carbohydrates with PAD

Analysis Conditions:
Column: CHO-611OH
(150 x 6.5 mm)
Eluent: 0.015 *M* NaOH
Flow rate: 0.6 mL/min
Temperature: 85°C
Detection: PAD
Injection: 5 µL

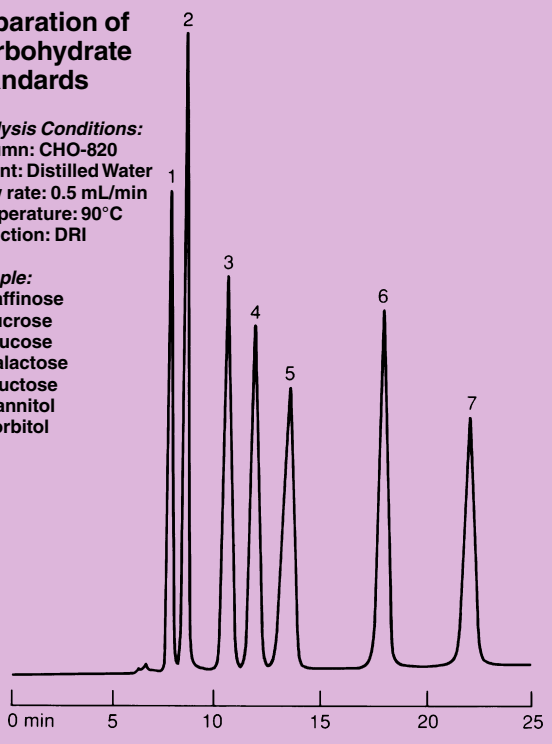
Sample:
1. Sucrose (500 ppm)
2. Glucose (250 ppm)
3. Arabinose (250 ppm)



Separation of Carbohydrate Standards

Analysis Conditions:
Column: CHO-820
Eluent: Distilled Water
Flow rate: 0.5 mL/min
Temperature: 90°C
Detection: DRI

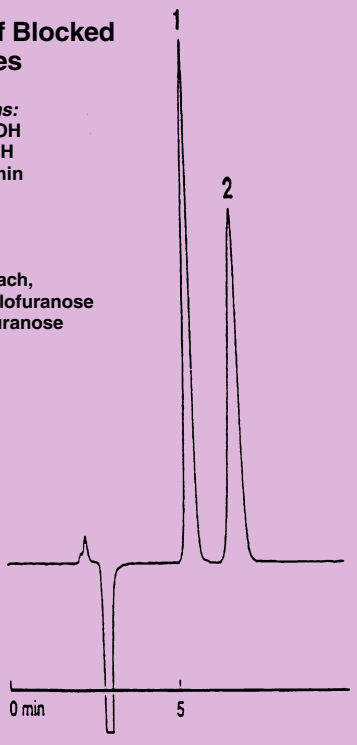
Sample:
1. Raffinose
2. Sucrose
3. Glucose
4. Galactose
5. Fructose
6. Mannitol
7. Sorbitol



Separation of Blocked Carbohydrates

Analysis Conditions:
Column: CHO-611OH
Eluent: 0.01 *N* NaOH
Flow rate: 0.5 mL/min
Temperature: 85°C
Detection: RI
Injection: 10 µL

Sample: **1 mg/ml each,**
1. Monoacetone xylofuranose
2. Diacetone xylofuranose



Separation of Mannitol and Sorbitol for USP-L-19

Analysis Conditions:
Column: CHO-820 L-19
Eluent: Distilled Water
Flow rate: 0.2 mL/min
Temperature: 30°C
Detection: Refractive Index

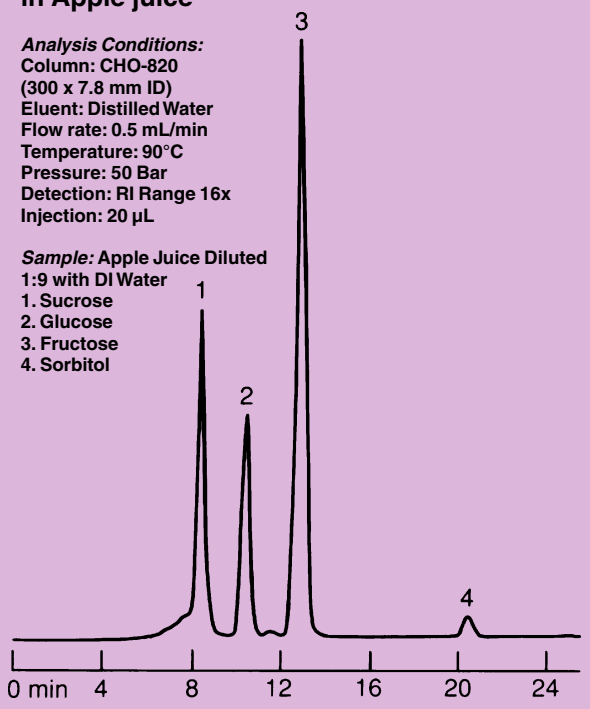
Sample:
1. Mannitol
2. Sorbitol

Carbohydrate Analysis Columns

Separation of Sugars in Apple juice

Analysis Conditions:
Column: CHO-820
(300 x 7.8 mm ID)
Eluent: Distilled Water
Flow rate: 0.5 mL/min
Temperature: 90°C
Pressure: 50 Bar
Detection: RI Range 16x
Injection: 20 µL

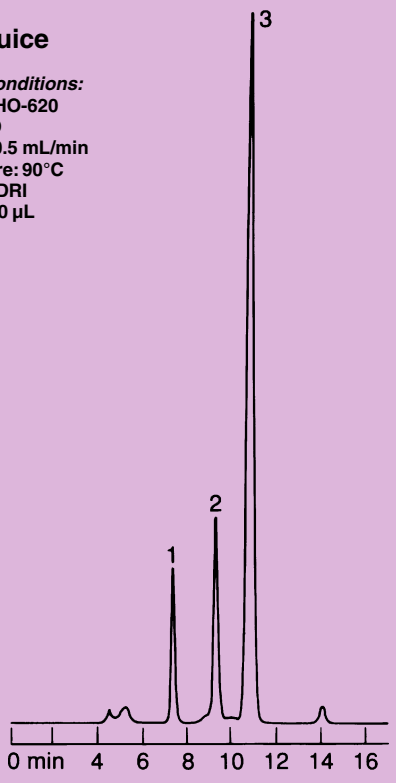
Sample: **Apple Juice Diluted 1:9 with DI Water**
1. Sucrose
2. Glucose
3. Fructose
4. Sorbitol



Apple Juice

Analysis Conditions:
Column: CHO-620
Eluent: H_2O
Flow rate: 0.5 mL/min
Temperature: 90°C
Detection: DRI
Injection: 20 µL

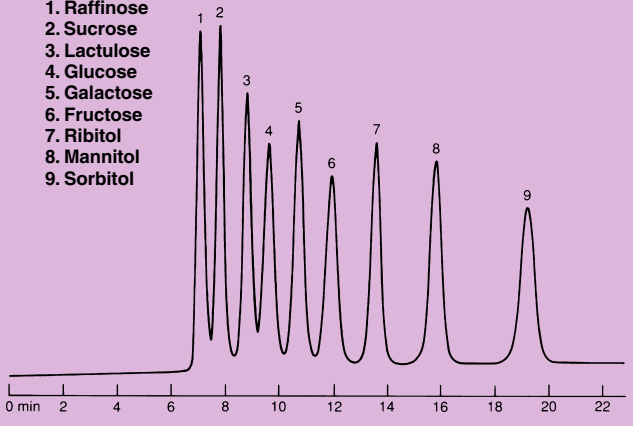
Sample:
1. Sucrose
2. Glucose
3. Fructose



Separation of Various Sugars and Sugar Alcohols on a Coregel-87C Column

Analysis Conditions:
Column: Coregel-87C
(300 x 7.8 mm ID)
Eluent: Distilled Water
Flow rate: 0.6 mL/min
Temperature: 85°C
Pressure: 425 psig
Detection: RI Range 18x
Injection: 20 µL

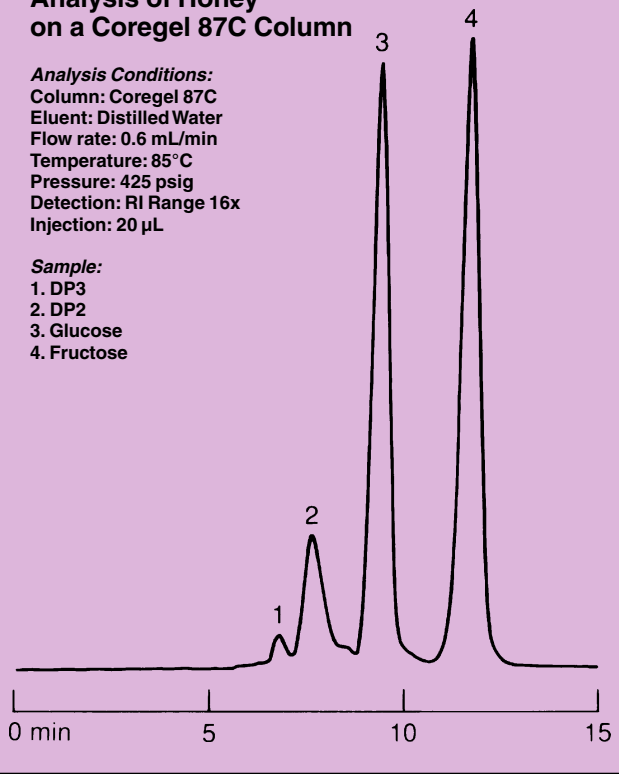
Sample:
1. Raffinose
2. Sucrose
3. Lactulose
4. Glucose
5. Galactose
6. Fructose
7. Ribitol
8. Mannitol
9. Sorbitol



Analysis of Honey on a Coregel 87C Column

Analysis Conditions:
Column: Coregel 87C
Eluent: Distilled Water
Flow rate: 0.6 mL/min
Temperature: 85°C
Pressure: 425 psig
Detection: RI Range 16x
Injection: 20 µL

Sample:
1. DP3
2. DP2
3. Glucose
4. Fructose

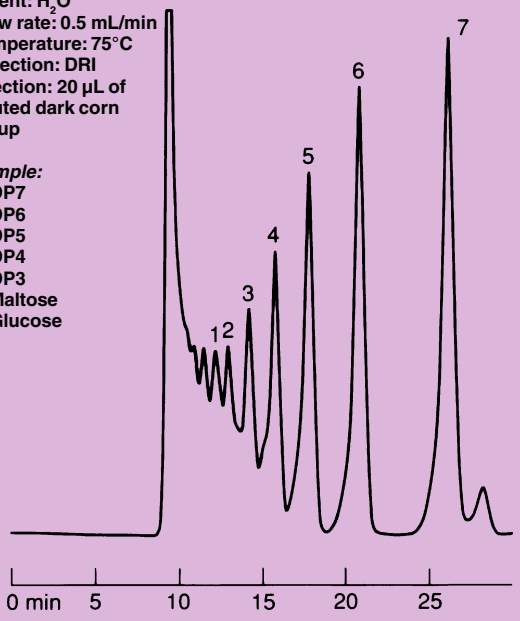


Carbohydrate Analysis Columns

Corn Syrup

Analysis Conditions:
Column: CHO-411
Eluent: H_2O
Flow rate: 0.5 mL/min
Temperature: 75°C
Detection: DRI
Injection: 20 µL of diluted dark corn syrup

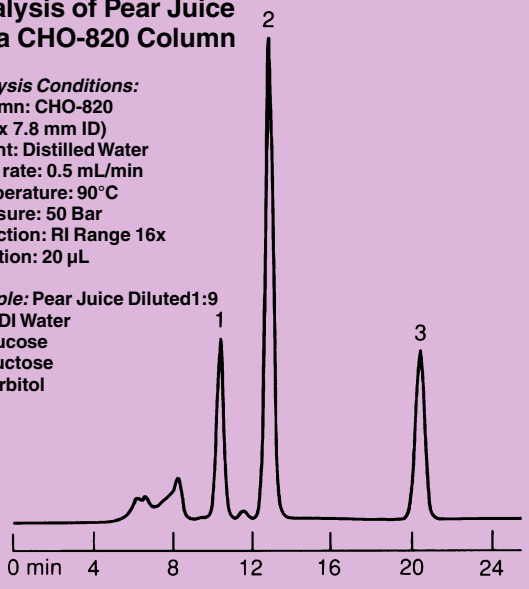
Sample:
1. DP7
2. DP6
3. DP5
4. DP4
5. DP3
6. Maltose
7. Glucose



Analysis of Pear Juice on a CHO-820 Column

Analysis Conditions:
Column: CHO-820
(300 x 7.8 mm ID)
Eluent: Distilled Water
Flow rate: 0.5 mL/min
Temperature: 90°C
Pressure: 50 Bar
Detection: RI Range 16x
Injection: 20 µL

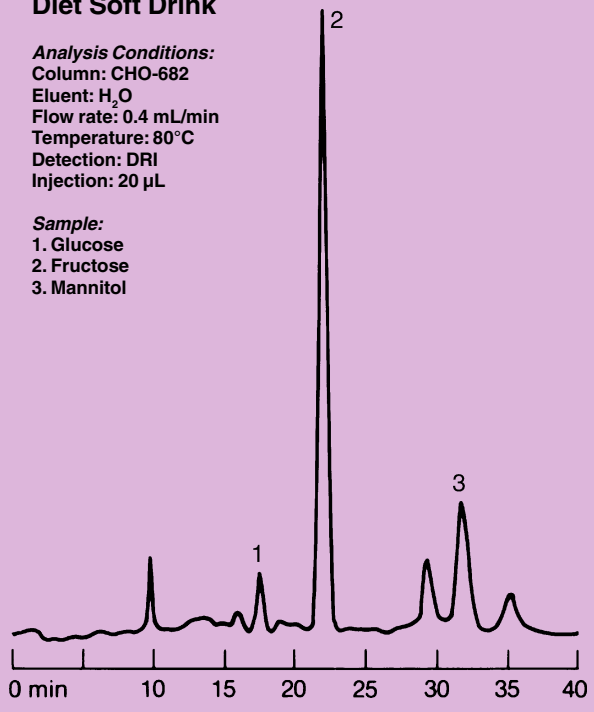
Sample: **Pear Juice Diluted1:9 with DI Water**
1. Glucose
2. Fructose
3. Sorbitol



Diet Soft Drink

Analysis Conditions:
Column: CHO-682
Eluent: H_2O
Flow rate: 0.4 mL/min
Temperature: 80°C
Detection: DRI
Injection: 20 µL

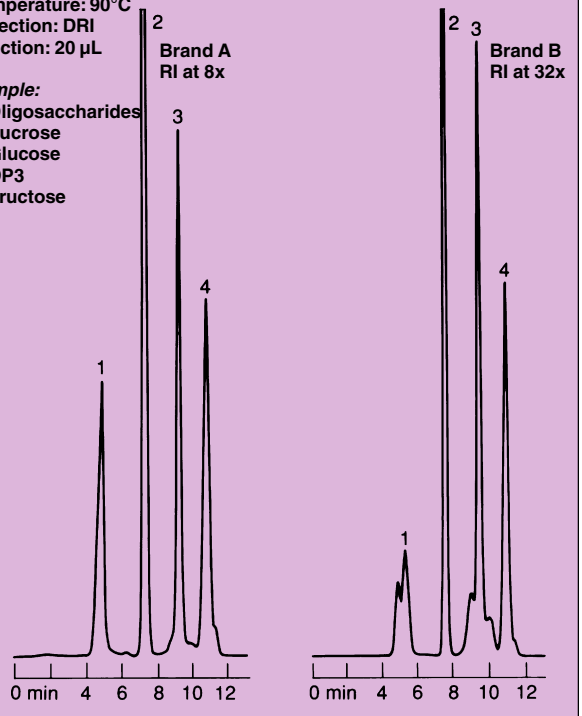
Sample:
1. Glucose
2. Fructose
3. Mannitol



Orange Juice

Analysis Conditions:
Column: CHO-620
Eluent: H_2O
Flow rate: 0.5 mL/min
Temperature: 90°C
Detection: DRI
Injection: 20 µL

Sample:
1. Oligosaccharides
2. Sucrose
3. Glucose
4. DP3
5. Fructose

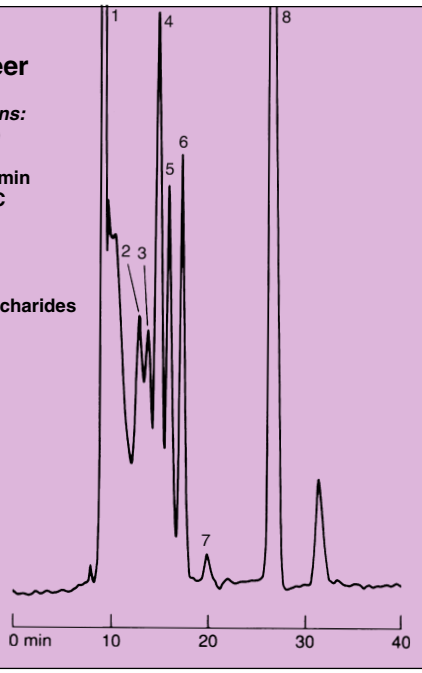


Carbohydrate Analysis Columns

Domestic Beer

Analysis Conditions:
Column: CHO-680
Eluent: H_2O
Flow rate: 0.4 mL/min
Temperature: 80°C
Detection: DRI
Injection: 20 µL

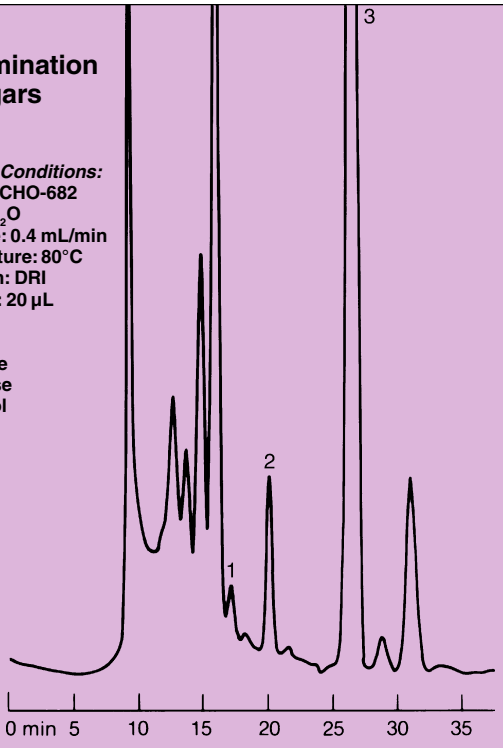
Sample:
1. Higher oligosaccharides
2. DP6
3. DP5
4. DP3
5. DP4
6. Maltose
7. Glucose
8. Ethanol



Determination of Sugars in Ale

Analysis Conditions:
Column: CHO-682
Eluent: H_2O
Flow rate: 0.4 mL/min
Temperature: 80°C
Detection: DRI
Injection: 20 µL

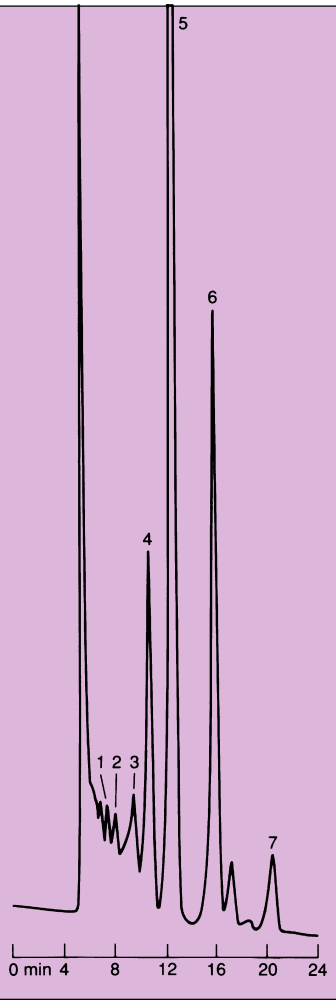
Sample:
1. Maltose
2. Glucose
3. Ethanol



Non-alcoholic Malt Liquor

Analysis Conditions:
Column: CHO-411
Eluent: H_2O
Flow rate: 0.5 mL/min
Temperature: 75°C
Detection: DRI
Injection: 20 µL

Sample:
1. DP6
2. DP5
3. DP4
4. DP3
5. Maltose
6. Glucose
7. Ethanol



Malted Milk Candy

Analysis Conditions:
Column: CHO-411
Eluent: H_2O
Flow rate: 0.5 mL/min
Temperature: 75°C
Detection: DRI
Injection: 20 µL of pretreated sample with POLYSorb™ ACT-1

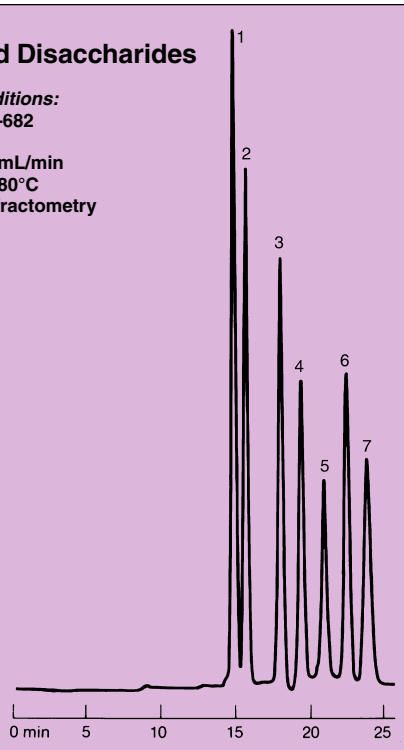
Sample:
1. DP7
2. DP6
3. DP5
4. DP4
5. DP3
6. Maltose
7. Glucose

Carbohydrate Analysis Columns

Mono- and Disaccharides

Analysis Conditions:
Column: CHO-682
Eluent: H_2O
Flow rate: 0.4 mL/min
Temperature: 80°C
Detection: Refractometry

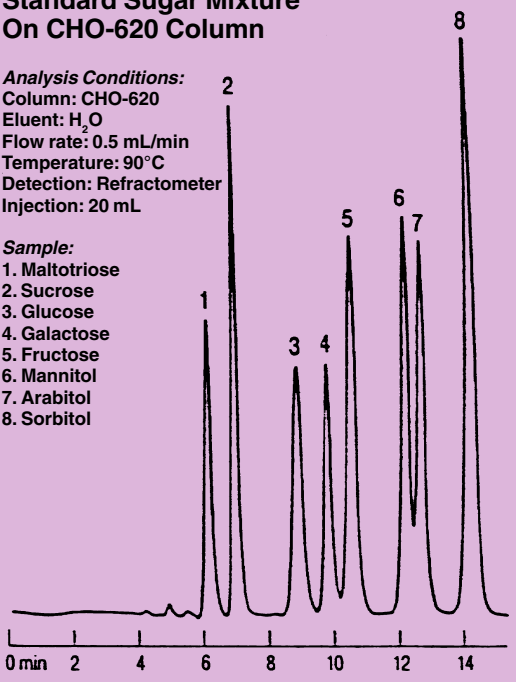
Sample:
1. Sucrose
2. Maltose
3. Glucose
4. Xylose
5. Galactose
6. Arabinose
7. Mannose



Standard Sugar Mixture On CHO-620 Column

Analysis Conditions:
Column: CHO-620
Eluent: H_2O
Flow rate: 0.5 mL/min
Temperature: 90°C
Detection: Refractometer
Injection: 20 mL

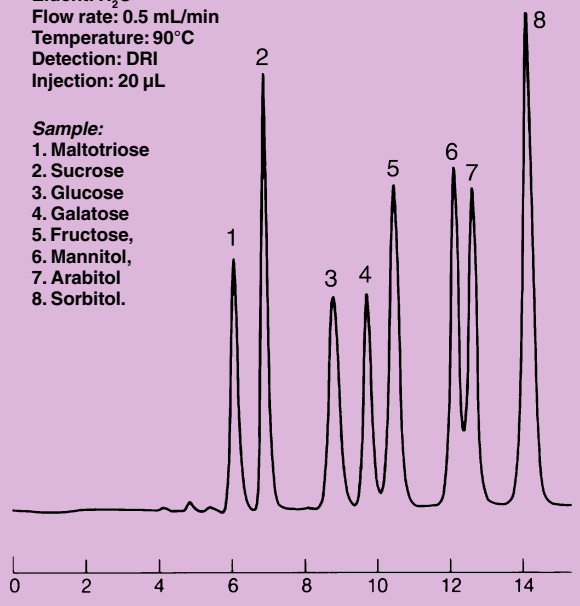
Sample:
1. Maltotriose
2. Sucrose
3. Glucose
4. Galactose
5. Fructose
6. Mannitol
7. Arabitol
8. Sorbitol



Simultaneous Determination of Monosaccharides and Sugar Alcohols

Analysis Conditions:
Column: CHO-620
Eluent: H_2O
Flow rate: 0.5 mL/min
Temperature: 90°C
Detection: DRI
Injection: 20 µL

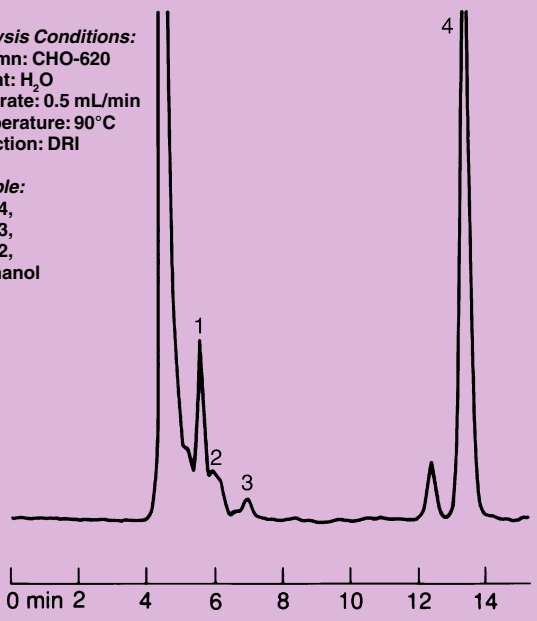
Sample:
1. Maltotriose
2. Sucrose
3. Glucose
4. Galatose
5. Fructose,
6. Mannitol,
7. Arabitol
8. Sorbitol.



Determination of Sugars and Alcohols in Fermentation Products

Analysis Conditions:
Column: CHO-620
Eluent: H_2O
Flow rate: 0.5 mL/min
Temperature: 90°C
Detection: DRI

Sample:
1. DP4,
2. DP3,
3. DP2,
4. Ethanol

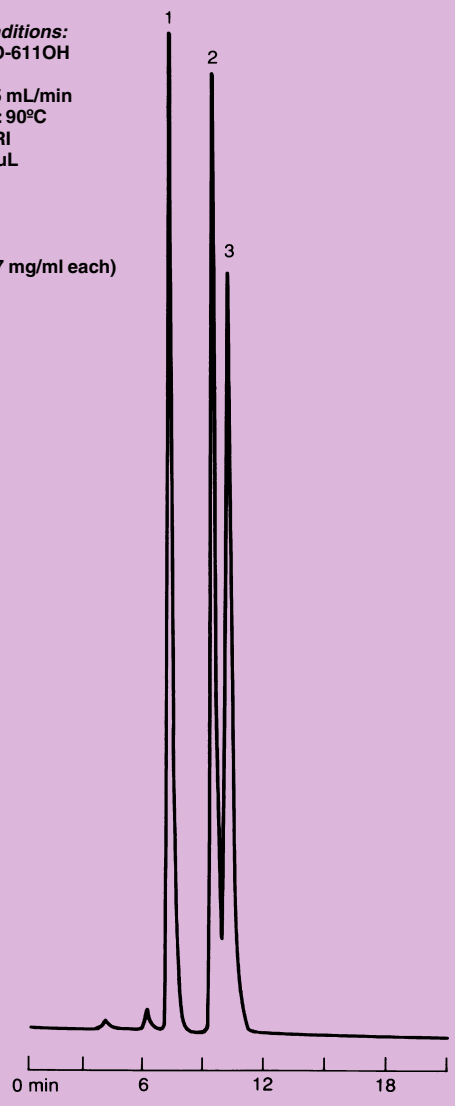


Carbohydrate Analysis Columns

Standards

Analysis Conditions:
Column: CHO-611OH
Eluent: H_2O
Flow rate: 0.5 mL/min
Temperature: 90ºC
Detection: DRI
Injection: 20 µL

Sample:
1. Maltose
2. Glucose
3. Fructose (7 mg/ml each)

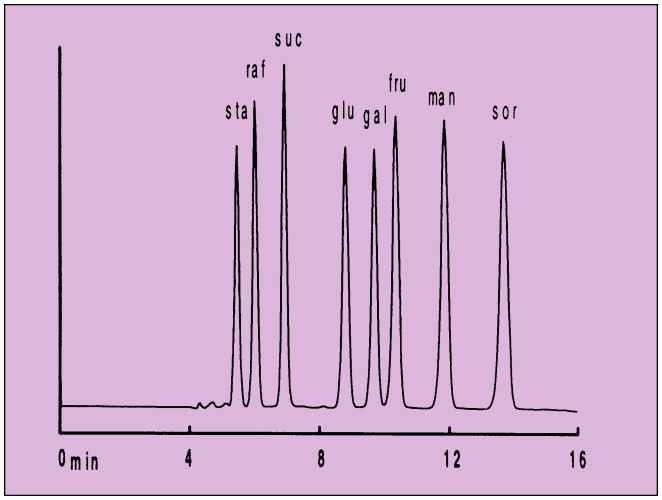


CARBOSep CHO-620

- Calcium form ligand-exchange column
- Ideal for the separation of monosaccharides and sugar alcohols
- Very reproducible

(6.5 x 300mm)
P/N CHO-99-9753

CARBOSep CHO-620 Guard Kit
P/N CHO-99-2353



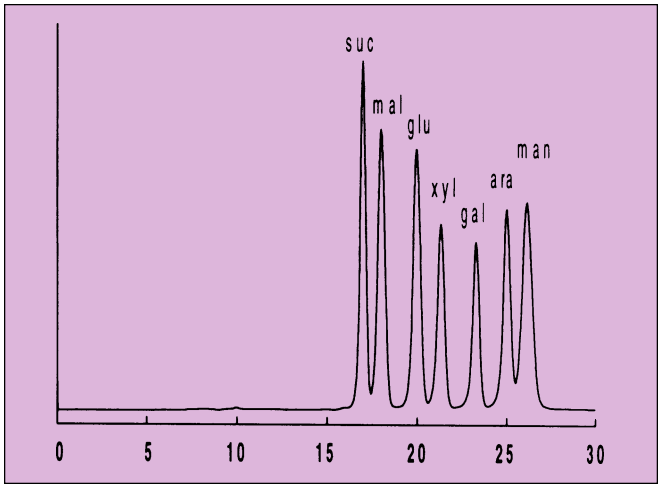
CARBOSep CHO-682 Lead

- Lead form ligand-exchange column
- Ideal for the separation of mono and disaccharides as well as alcohols
- High capacity

(7.8 x 200mm)
P/N CHO-99-8854

(7.8 x 300mm)
P/N CHO-99-9854

CARBOSep CHO-682 Guard Kit
P/N CHO-99-2354



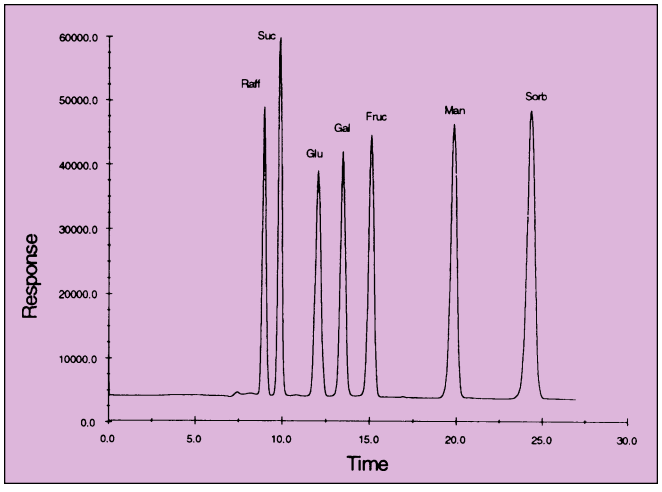
CARBOSep CHO-820 Calcium

- Calcium form ligand-exchange column
- Designed with balance of resolution and ruggedness
- Easily cleaned

(7.8 x 200mm)
P/N CHO-99-8855

(7.8 x 300mm)
P/N CHO-99-9855

CARBOSep CHO-820 Guard Kit
P/N CHO-99-2355



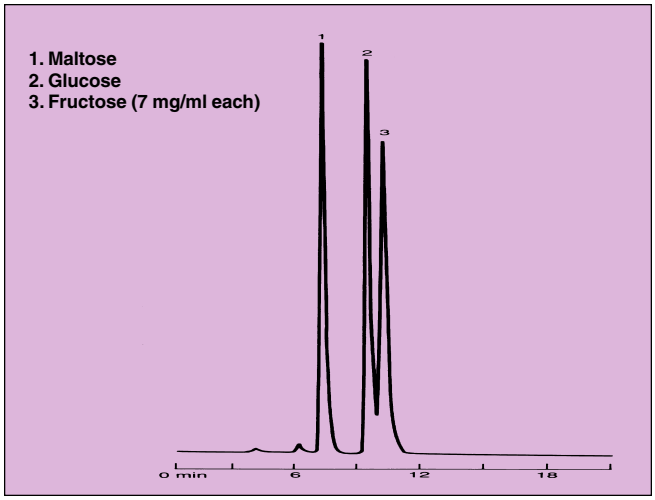
Carbohydrate Analysis Columns

CARBOSep CHO-611 OH

- Sodium form ligand-exchange column
- Designed for use with Sodium Hydroxide eluant
- Compatible with amperometric detection

(6.5 x 150mm)
P/N CHO-99-7752

CARBOSep CHO-611 OH Guard Kit
P/N CHO-99-2352

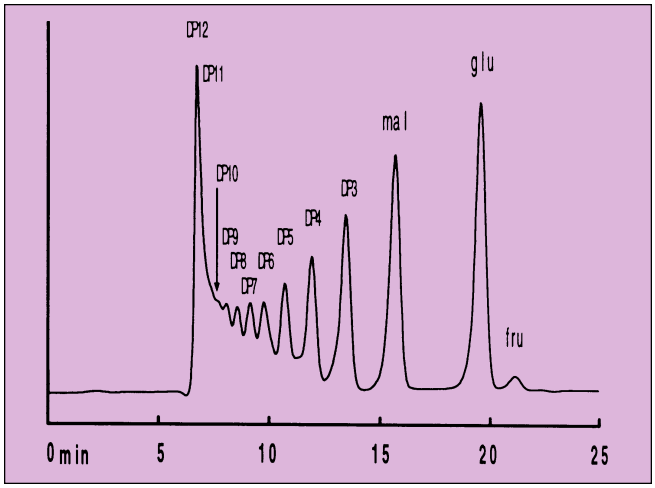


CARBOSep CHO-411

- Sodium form mixed-mode column
- Separates by both ligand exchange and size exclusion
- Designed for the separation of oligosaccharides up to DP10
- Reproducible separation of corn syrup

(7.8 x 300mm)
P/N CHO-99-9850

CARBOSep CHO-611 Guard Kit
P/N CHO-99-2351

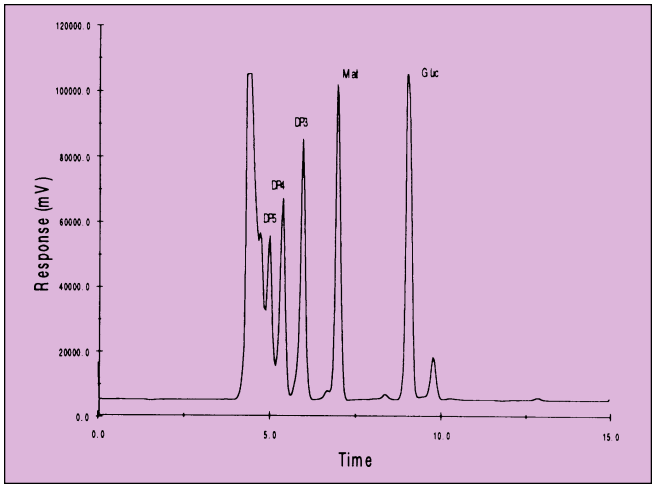


CARBOSep CHO-611

- Sodium form mixed-mode column
- Separates by both ligand exchange and size exclusion
- Designed for the separation of oligosaccharides up to DP5
- Reproducible separation of corn syrup

(6.5 x 300mm)
P/N CHO-99-9751

CARBOSep CHO-611 Guard Kit
P/N CHO-99-2351

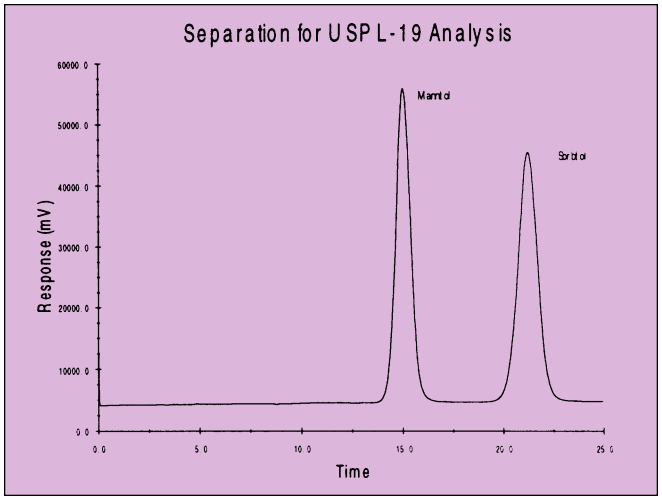


CARBOSep USP L19 CA-FORM

- Calcium form ligand-exchange column
- Complies with USP L-19 specifications for the separation of sorbitol and mannitol
- Can also separate a wide number of other carbohydrates

(4.1 x 250mm)
P/N CHO-99-8453

CARBOSep CHO-820 Guard Kit
P/N CHO-99-2355

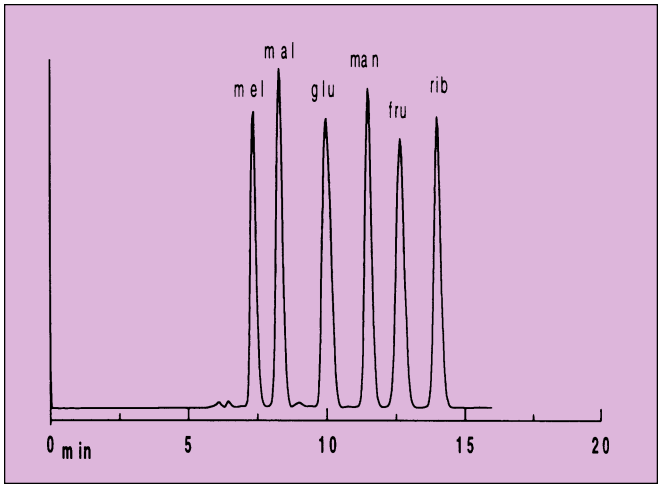


CARBOSep COREGEL-87C

- Calcium form 9µm ligand exchange resin with 8% cross-linking
- Compatible replacement for the Bio-Rad Aminex HPX 87C
- Designed for the analysis of sugars and sugar alcohols

(7.8 x 300)
P/N CHO-99-9860

CARBOSep COREGEL-87C Guard Kit
P/N CHO-99-2360

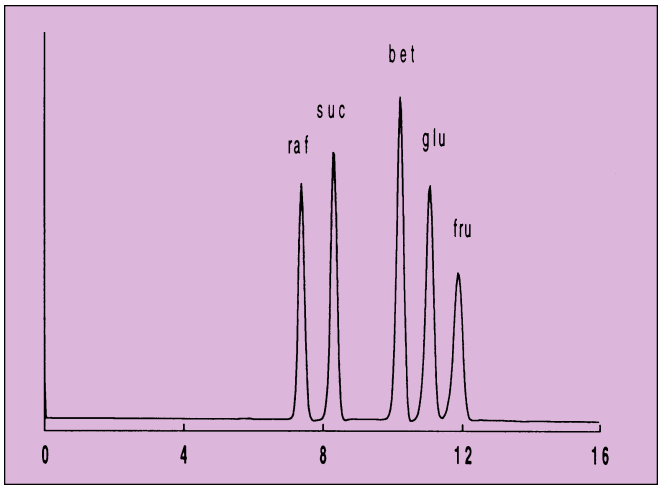


CARBOSep COREGEL-87K

- Potassium form 8µm ligand exchange resin with 8% cross-linking
- Compatible replacement for the Bio-Rad Aminex HPX 87K
- Target application corn syrup and molasses

(7.8 x 300)
P/N CHO-99-9862

CARBOSep COREGEL-87K Guard Cartridge 2 /PK
P/N CHO-99-1362



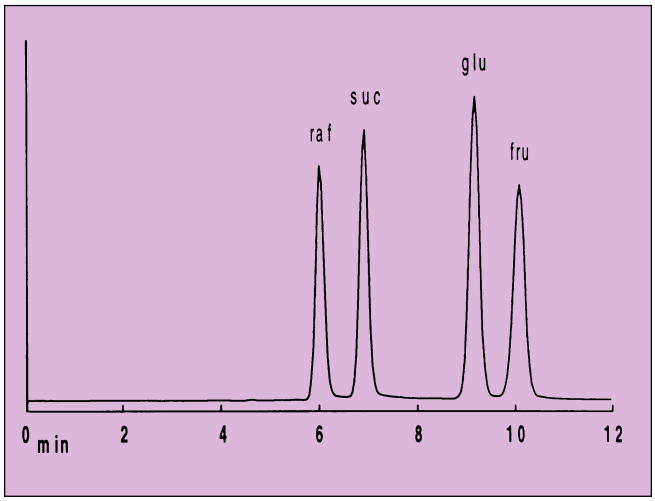
Carbohydrate Analysis Columns

CARBOSep COREGEL-87N

- Sodium form 8µm ligand exchange resin with 8% cross-linking
- Compatible replacement for the Bio-Rad Aminex HPX 87N
- Designed for the fast separation of monosaccharides and sugar alcohols

(7.8 x 300)
P/N CHO-99-9863

CARBOSep COREGEL-87N
Guard Cartridge 2 /PK
P/N CHO-99-1363

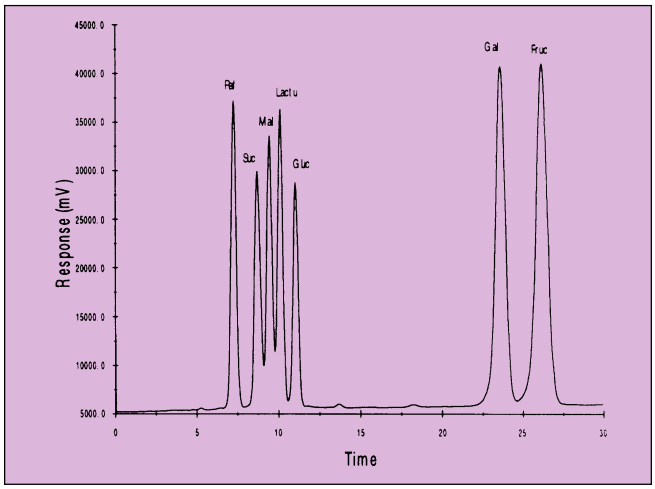


CARBOSep COREGEL 87P

- Lead form 8µm ligand exchange resin with 8% cross-linking
- Compatible replacement for the Bio-Rad Aminex HPX 87P
- Optimized for the analysis of cellulose hydrolysates

(7.8 x 300)
P/N CHO-99-9864

CARBOSep COREGEL-87P
Guard Cartridge 2 /PK
P/N CHO-99-1364



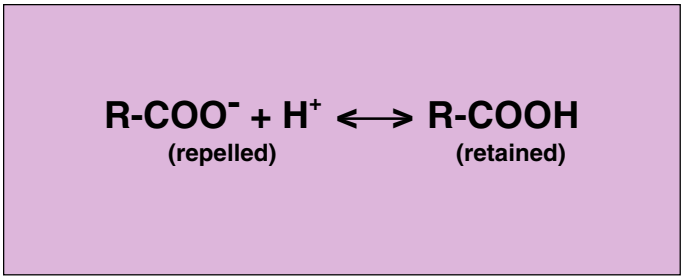
Transgenomic®
Advancing Personalized Medicine

Organic Acid Analysis

ICSep Columns for Organic Acid Analysis

Ion exclusion is the preferred method for the separation of weakly ionizable species such as organic acids and alcohols. Transgenomic provides a broad range of columns that provide varying efficiencies and selectivities for the separation of weak acids by ion exclusion.

The packings employed with ion exclusion are totally sulfonated polystyrene divinylbenze (PS/DVB) copolymers. By totally sulfonating the polymer, the bead behaves as though it were a negatively charged sphere. This charged sphere is referred to as a Donnan membrane. Species that have a negative charge are repelled from the negatively charged membrane, while uncharged species are allowed to enter the sphere and adsorb onto the beads. The mobile phases employed with ion exclusion are low concentration acids, such as 5mM sulfuric acid.



This equilibrium is regulated by the acidic dissociation constant (pKa) of the organic acid or alcohol. Therefore, species are analyzed by ion exclusion and elute according to their pKa.

The key features of the ICSep ion exclusion columns are:

- Polymeric Substrate
- High efficiency
- High resolution
- Separates organic acids, carbohydrates, and alcohols on the same column
- Very Rugged Design which provides long life

Since ICSep columns are based on a polymeric substrate consisting of polystyrene/divinylbenzene copolymers they are stable in the pH range of 0 to 14, temperature stable, and very rugged. The ICSep organic acid columns have been shown to last for thousands of runs without cleaning. They show very good lot-to-lot and column-to column reproducibility with retention times varying by less than 1%.

Transgenomic offers ICSep organic acid columns to meet your analytical needs. ICSep columns are available that focus on speed or efficiency and there are ICSep ion exclusion columns that focus on ruggedness and the ability to handle dirty samples. There are even ICSep columns for aromatic organic acids. Transgenomic is sure to have an ion exclusion column to meet your needs.

Selectivity Chart for Ion Exclusion Columns

ICSep Column Type			
Component	ION-300	ORH-801	COREGEL 87H
Maltotriose	10.28	4.23	7.18
Maltose	11.52	4.74	7.78
Lactose	11.86	4.88	8.13
Glucuronic Acid	11.99	4.87	8.10
Lactulose	12.41	5.10	NA
Galacturonic Acid	13.23	5.44	NA
Glucose	14.18	5.83	10.11
Galactose	15.32	6.31	10.85
Fructose	15.71	6.46	10.39
Mannitol	15.85	6.52	NA
Sorbitol	16.17	6.65	8.32
Arabinose	17.02	6.99	11.23
Fucose	17.89	7.35	12.05
Oxalic Acid	9.30	3.89	6.25
Maleic Acid	10.92	4.49	7.21
Citric Acid	12.21	5.02	8.03
IsoCitric Acid	12.48	5.13	8.25
Tartaric Acid	12.91	5.31	8.55
Malonic Acid	14.32	5.89	9.46
Malic Acid	15.21	6.25	10.04
Succinic Acid	19.85	8.16	13.11
Lactic Acid	20.43	8.41	13.51
Fumaric Acid	22.21	9.13	14.68
Formic Acid	22.32	9.18	14.74
Acetic Acid	25.05	10.30	16.54
Adipic Acid	28.85	11.86	19.05
Propionic Acid	29.77	12.24	19.67
Butyric Acid	37.09	15.25	24.51
Glycerol	21.45	8.82	14.22
Ethylene Glycol	25.85	10.63	17.08
Diethylene Glycol	26.46	10.88	17.48
Methanol	30.06	12.43	20.01
Ethanol	33.85	13.92	22.37
Isopropanol	36.80	15.13	24.31
Propanol	42.81	17.61	28.29
Azide	38.43	15.80	25.38

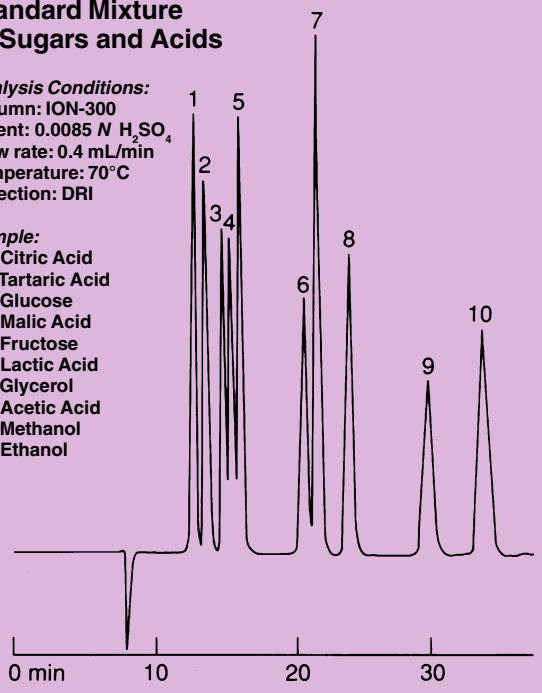
NA = Not Analyzed

Conditions
ICSep ION-300: 5mM Sulfuric Acid, flow 0.4mL/min, Temp 70°C
ICSep ORH-801: 2.5mM Sulfuric Acid, flow 0.6mL/min, Ambient Temp
ICSep COREGEL 87H: 8mM Sulfuric Acid, flow 0.6mL/min, Ambient Temp

Standard Mixture of Sugars and Acids

Analysis Conditions:
Column: ION-300
Eluent: 0.0085 *N* H_2SO_4
Flow rate: 0.4 mL/min
Temperature: 70°C
Detection: DRI

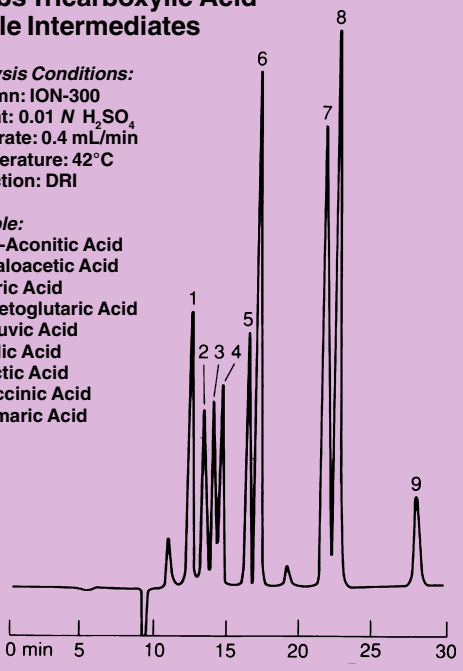
Sample:
1. Citric Acid
2. Tartaric Acid
3. Glucose
4. Malic Acid
5. Fructose
6. Lactic Acid
7. Glycerol
8. Acetic Acid
9. Methanol
10. Ethanol



Krebs Tricarboxylic Acid Cycle Intermediates

Analysis Conditions:
Column: ION-300
Eluent: 0.01 *N* H_2SO_4
Flow rate: 0.4 mL/min
Temperature: 42°C
Detection: DRI

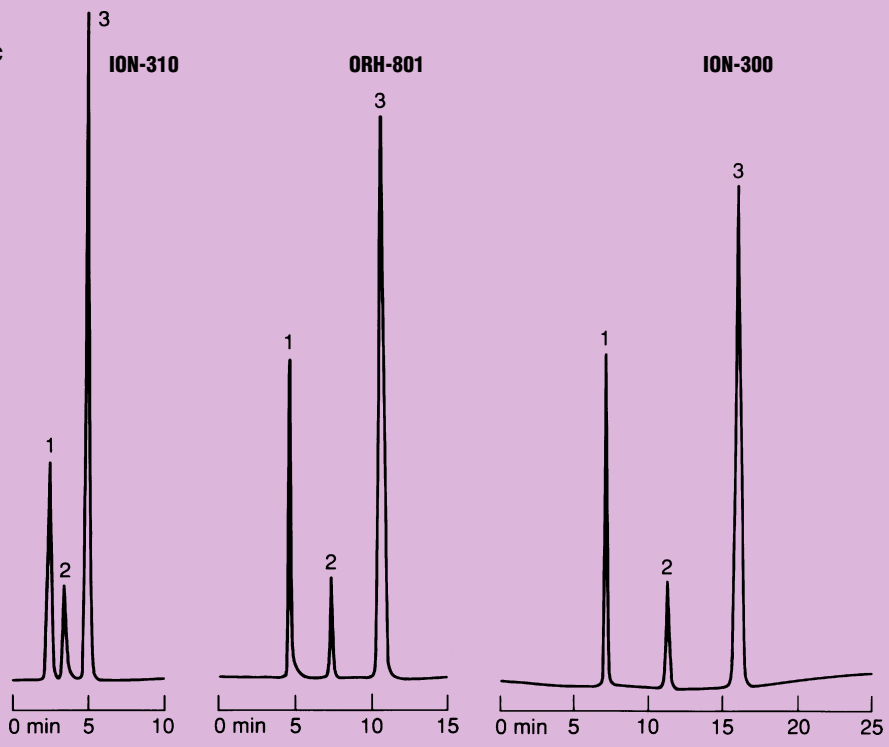
Sample:
1. *Cis*-Aconitic Acid
2. Oxaloacetic Acid
3. Citric Acid
4. α-ketoglutaric Acid
5. Pyruvic Acid
6. Malic Acid
7. Lactic Acid
8. Succinic Acid
9. Fumaric Acid



Comparison of Organic Acids Retention on Ion-exclusion Columns

Analysis Conditions:
Column: ION-310 (150 x 6.5 mm), ORH-801 (300 x 6.5 mm), ION-300 (300 x 7.8 mm)
Eluent: 0.002 *N* H_2SO_4
Flow rate: 0.5 mL/min
Temperature: 35°C
Detection: UV at 210 nm
Injection: 20 µL

Sample:
1. Maleic Acid (2 ppm)
2. Malic Acid (100 ppm)
3. Fumaric Acid (5 ppm)

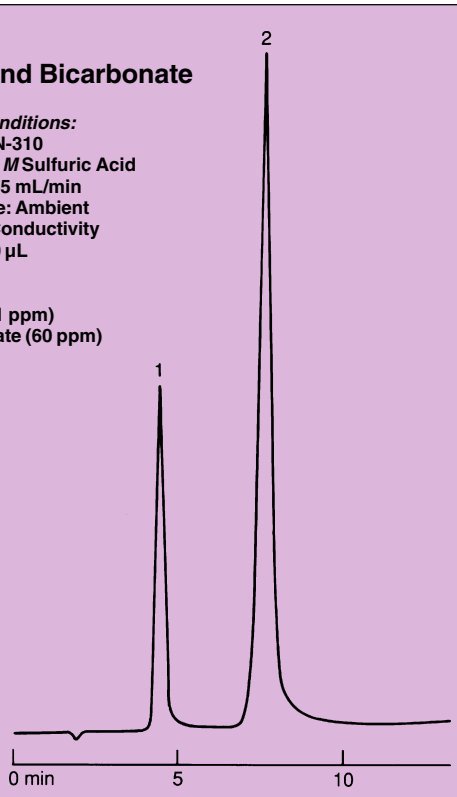


Organic Acid Analysis

Borate and Bicarbonate

Analysis Conditions:
Column: ION-310
Eluent: 0.05 *M* Sulfuric Acid
Flow rate: 0.5 mL/min
Temperature: Ambient
Detection: Conductivity
Injection: 20 µL

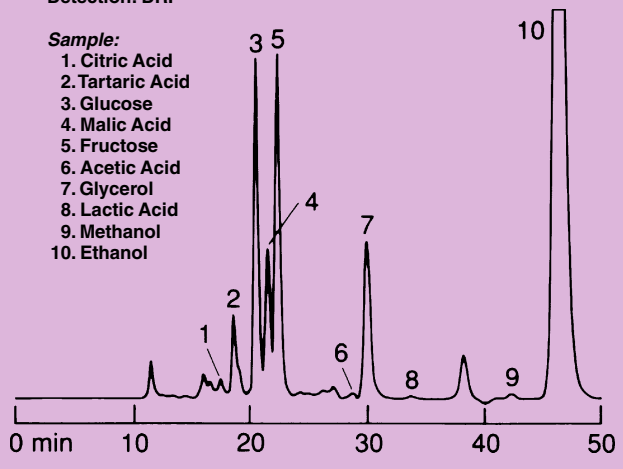
Sample:
1. Borate (11 ppm)
2. Bicarbonate (60 ppm)



Wine Analysis by High Resolution Ion Exclusion

Analysis Conditions:
Column: ION-300
Eluent: 0.005 *N* H_2SO_4
Flow rate: 0.3 mL/min
Temperature: 60°C
Detection: DRI

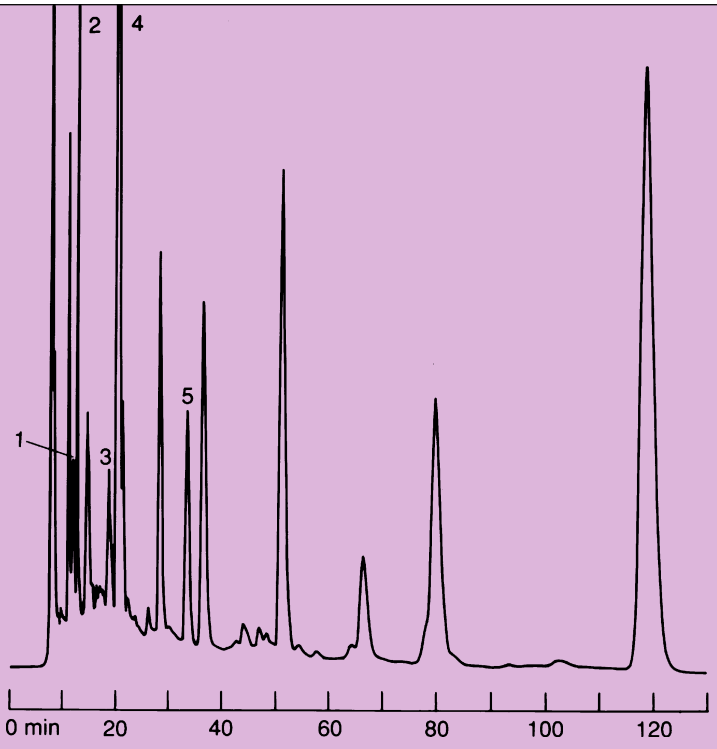
Sample:
1. Citric Acid
2. Tartaric Acid
3. Glucose
4. Malic Acid
5. Fructose
6. Acetic Acid
7. Glycerol
8. Lactic Acid
9. Methanol
10. Ethanol



Analysis of Corn Mash Fermentation Sample

Analysis Conditions:
Column: ION-300
Eluent: 0.005 *N* H_2SO_4
Flow rate: 0.4 mL/min
Temperature: 60°C
Detection: UV at 210
Injection: 20 µL filtered corn mash fermentation broth

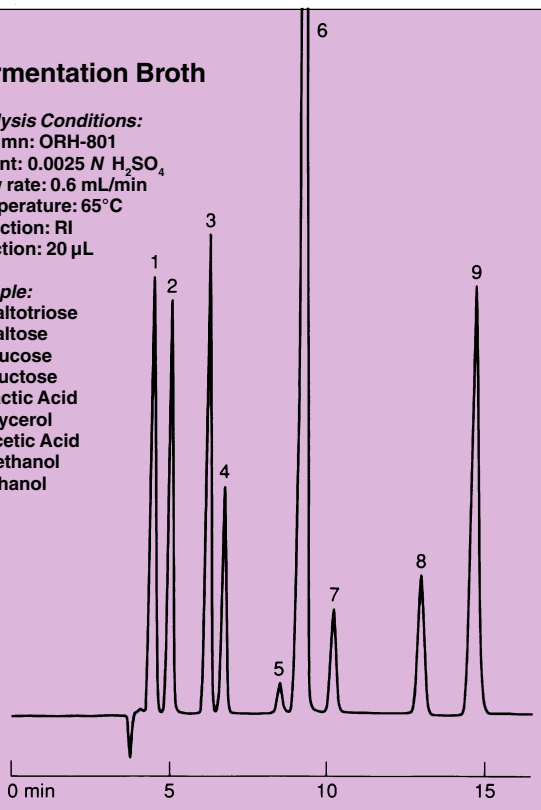
Sample:
1. Citric, Isocitric
2. Pyruvic
3. Succinic
4. Fumaric
5. Ethanol



Fermentation Broth

Analysis Conditions:
Column: ORH-801
Eluent: 0.0025 *N* H_2SO_4
Flow rate: 0.6 mL/min
Temperature: 65°C
Detection: RI
Injection: 20 µL

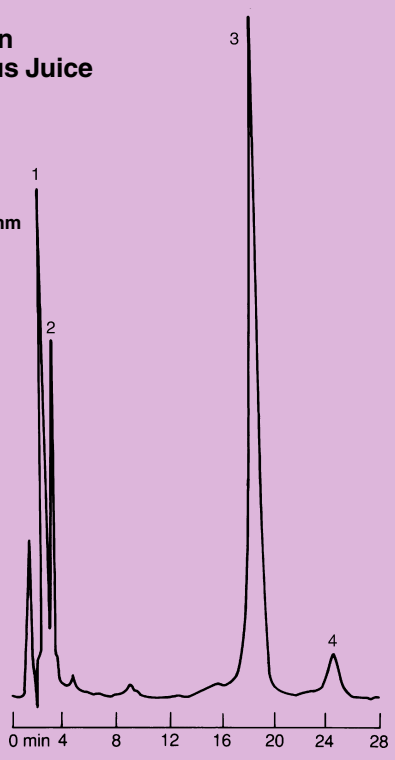
Sample:
1. Maltotriose
2. Maltose
3. Glucose
4. Fructose
5. Lactic Acid
6. Glycerol
7. Acetic Acid
8. Methanol
9. Ethanol



Preservatives in Container Citrus Juice

Analysis Conditions:
Column: ARH-601
Eluent: 0.01 *N* H_2SO_4
Flow rate: 0.6 mL/min
Temperature: 45°C
Detection: UV at 228 nm

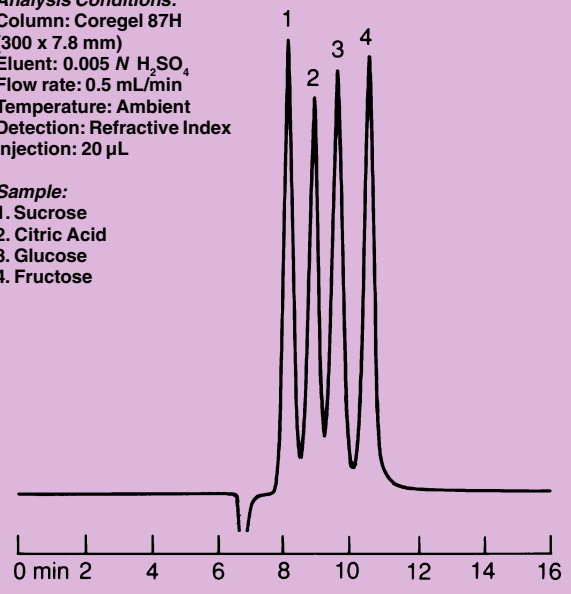
Sample:
1. Citric Acid
2. Ascorbic Acid
3. Sorbic Acid
4. Benzoic Acid



Citric Acid and Sugars Standards on Coregel 87H

Analysis Conditions:
Column: Coregel 87H
(300 x 7.8 mm)
Eluent: 0.005 *N* H_2SO_4
Flow rate: 0.5 mL/min
Temperature: Ambient
Detection: Refractive Index
Injection: 20 µL

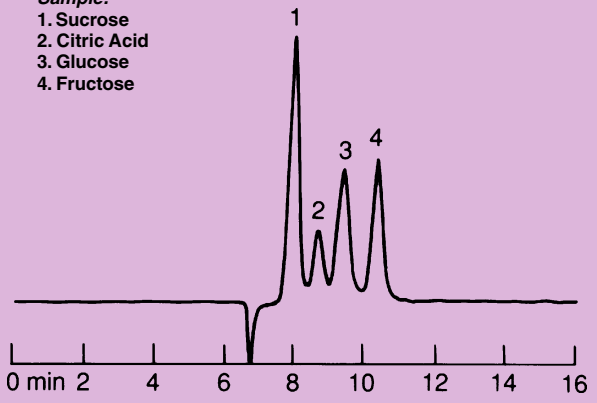
Sample:
1. Sucrose
2. Citric Acid
3. Glucose
4. Fructose



Analysis of Texas Grapefruit Juice on Coregel 87H

Analysis Conditions:
Column: Coregel 87H
(300 x 7.8 mm)
Eluent: 0.005 *N* H_2SO_4
Flow rate: 0.5 mL/min
Temperature: Ambient
Detection: Refractive Index
Injection: 20 µL

Sample:
1. Sucrose
2. Citric Acid
3. Glucose
4. Fructose

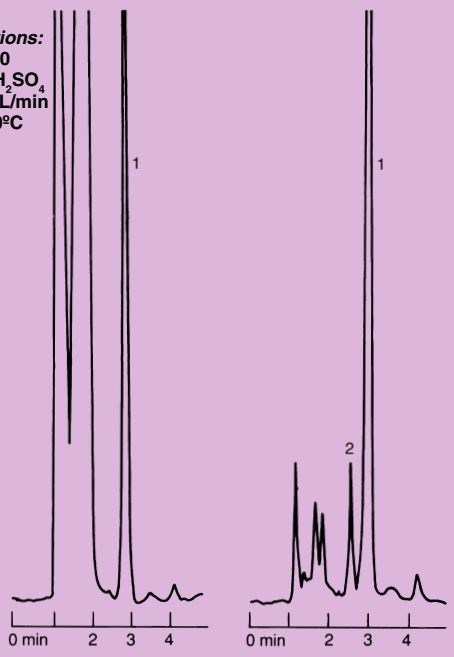


Organic Acid Analysis

Fast Acid Analysis

Analysis Conditions:
Column: ION-310
Eluent: 0.01 *N* H_2SO_4
Flow rate: 1.0 mL/min
Temperature: 50ºC
Detection: DRI

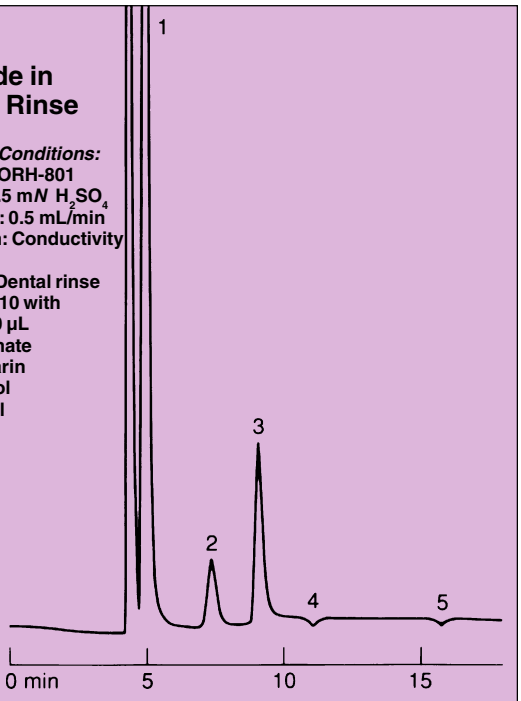
Sample:
1. Acetic Acid
2. Glycerol



Fluoride in Dental Rinse

Analysis Conditions:
Column: ORH-801
Eluent: 1.5 m*N* H_2SO_4
Flow rate: 0.5 mL/min
Detection: Conductivity

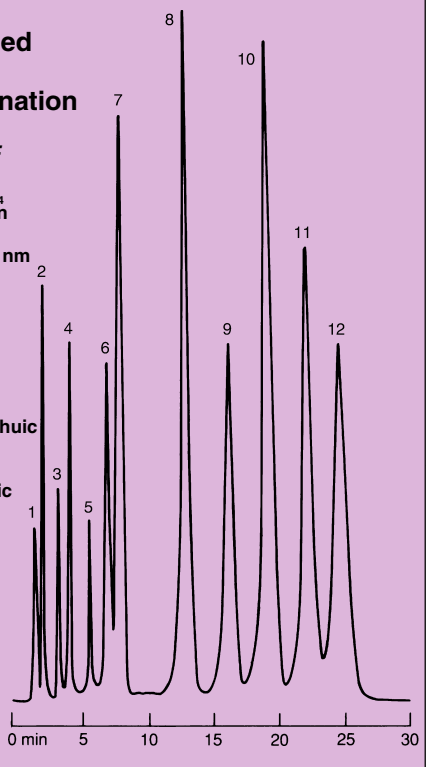
Sample: **Dental rinse diluted 1/10 with eluent, 20 µL**
1. Phosphate
2. Saccharin
3. Glycerol
5. Ethanol



Straight Chained and Aromatic Acids Determination

Analysis Conditions:
Column: ARH-601
Eluent: 0.01 *N* H_2SO_4
Flow rate: 0.6 mL/min
Temperature: 45°C
Detection: UV at 210 nm

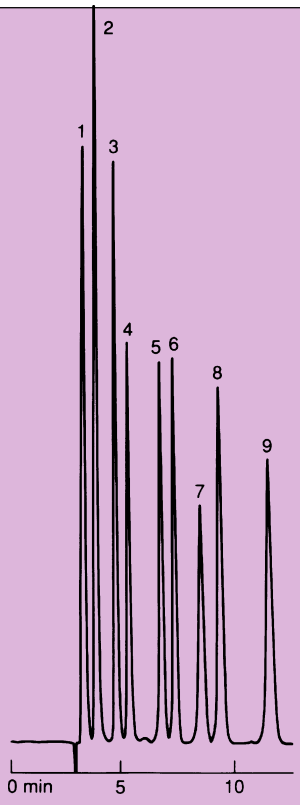
Sample:
1. Oxalic Acid
2. Citric Acid
3. Shikimic Acid
4. Fumaric Acid
5. Butyric Acid
6. Homoprotocatechuic
7. Galic Acid
8. Gentisic Acid
9. p-Hydroxybenzoic
10. Benzoic Acid
11. Salicylic Acid



Separation of Organic Acids

Analysis Conditions:
Column: ORH-801
Eluent: 0.01 *N* H_2SO_4
Flow rate: 0.8 mL/min
Temperature: 35°C
Detection: DRI
Injection: 20 µL

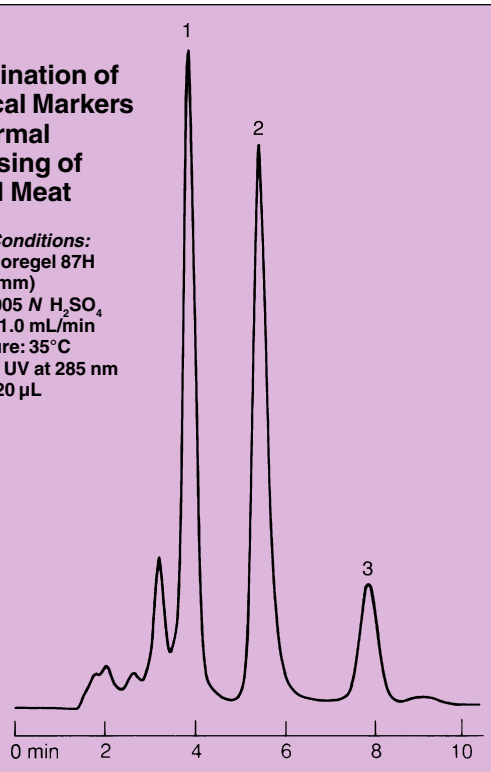
Sample:
1. Oxalic
2. *cis*-aconitic
3. Tartaric
4. Malic
5. Lactic
6. Formic
7. Fumaric
8. Propionic
9. Butyric



Determination of Chemical Markers for Thermal Processing of Ground Meat

Analysis Conditions:
Column: Coregel 87H (100 x 7.8 mm)
Eluent: 0.005 *N* H_2SO_4
Flow rate: 1.0 mL/min
Temperature: 35°C
Detection: UV at 285 nm
Injection: 20 µL

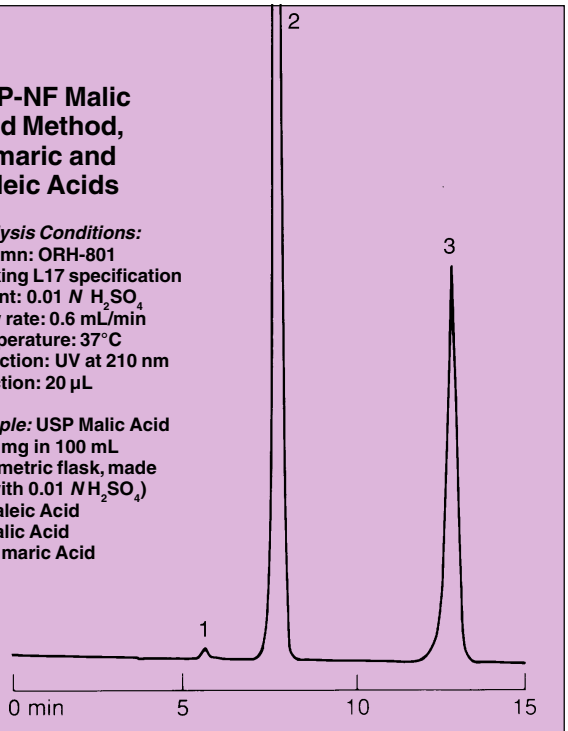
Sample:
1. M1
2. M2
3. M3



USP-NF Malic Acid Method, Fumaric and Maleic Acids

Analysis Conditions:
Column: ORH-801 packing L17 specification
Eluent: 0.01 *N* H_2SO_4
Flow rate: 0.6 mL/min
Temperature: 37°C
Detection: UV at 210 nm
Injection: 20 µL

Sample: **USP Malic Acid (100 mg in 100 mL volumetric flask, made up with 0.01 *N* H_2SO_4)**
1. Maleic Acid
2. Malic Acid
3. Fumaric Acid



Organic Acid Analysis

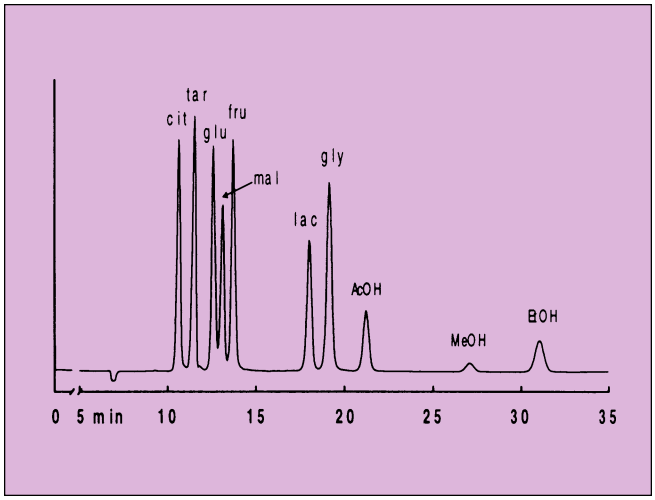
ICSep ION-300

·•Select when high resolution is the primary concern

- Separates Organic Acids, Alcohols and Carbohydrates all on the same column

(7.8 x 300mm)
P/N ICE-99-9850

ICSep GC-801 Guard Kit
P/N ICE-99-2354

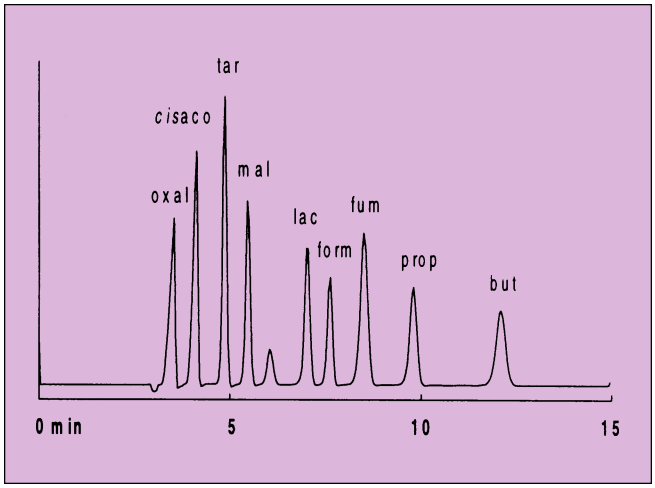


ICSep ORH-801

- Provides good balance of high efficiency and ruggedness
- Versatile column for Organic Acids, Alcohols and Carbohydrates

(6.5 x 300mm)
P/N ICE-99-9754

ICSep GC-801 Guard Kit
P/N ICE-99-2354



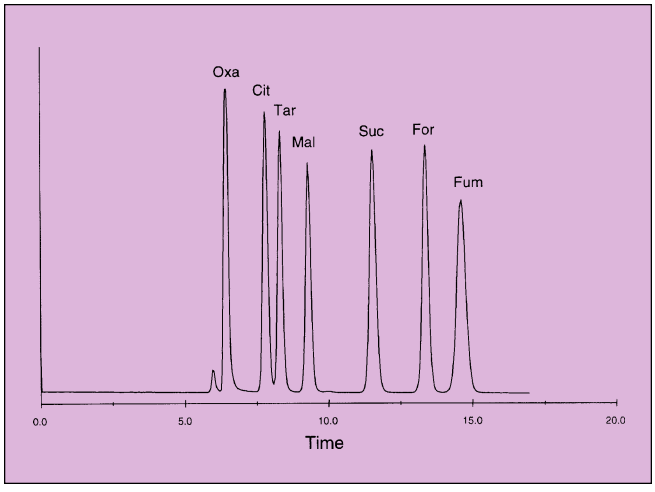
ICSep COREGEL-87H

- Allows faster flow rates for shorter analysis times
- Very durable column for tough matrices

COREGEL-87H1 (7.8 x 100mm)
P/N ICE-99-5861

COREGEL-87H3 (7.8 x 300mm)
P/N ICE-99-9861

ICSep COREGEL 87H Guard Kit
P/N ICE-99-2361

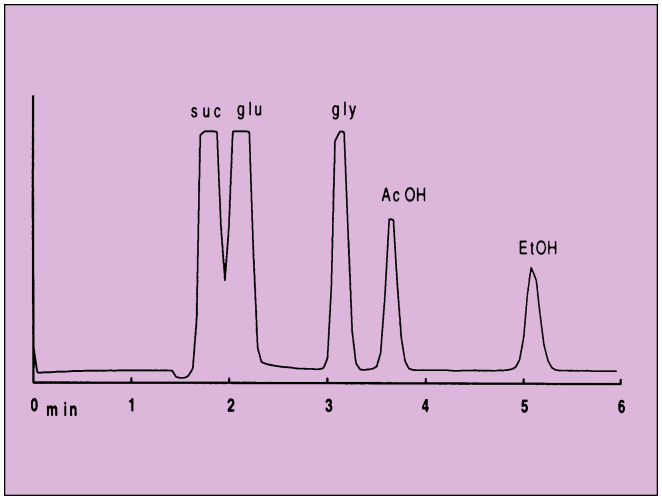


ICSep ION-310

- Designed for fast analysis of organic acids and alcohols
- Ideal for the analysis of borate and bicarbonate

(6.5 x 150mm)
P/N ICE-99-7752

ICSep GC-801 Guard Kit
P/N ICE-99-2354

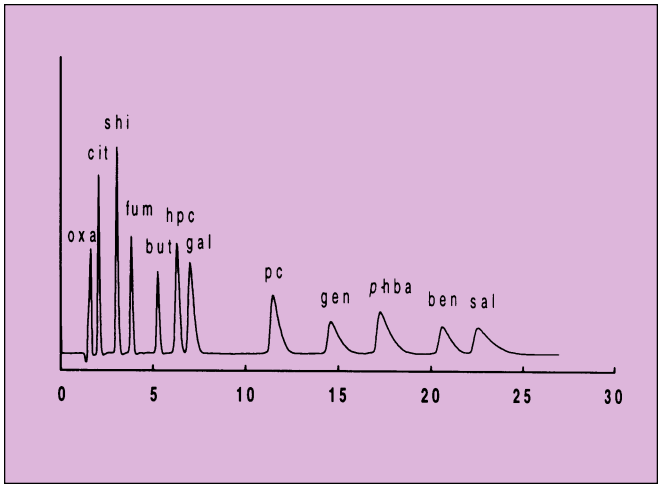


ICSep ION-601

- Designed for the separation of Aromatic organic acids
- Uses aqueous mobile phases

(6.5 x 100mm)
P/N ICE-99-5753

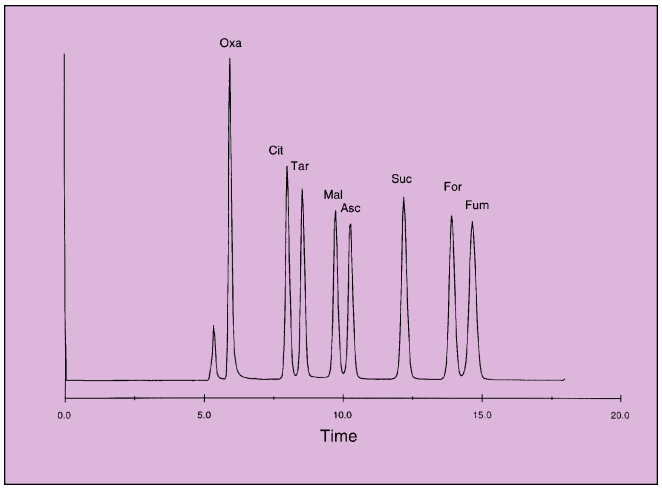
ICSep GC-601 Guard Kit
P/N ICE-99-2353



ICSep COREGEL-64H

(7.8 x 300mm)
P/N ICE-99-9860

ICSep COREGEL 64H Guard Kit
P/N ICE-99-2360

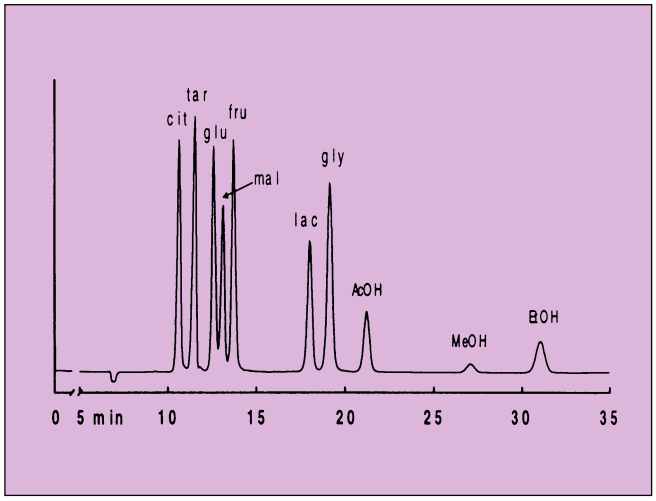


Organic Acid Analysis

ICSep WA-1 Wine Analysis Column
(7.8 x 300mm)
P/N ICE-99-9810

- Unique Selectivity for Wine Analysis
- Tested with Wine Standards

ICSep GC-801 Guard Kit
P/N ICE-99-2354



Nucleic Acid Analysis

OLIGOSep Columns

Features

Reversed phase ion pairing is the preferred method for the separation and purification of single stranded oligonucleotides.

Reversed phase ion pairing offers superior advantages for the analysis of oligonucleotides because:

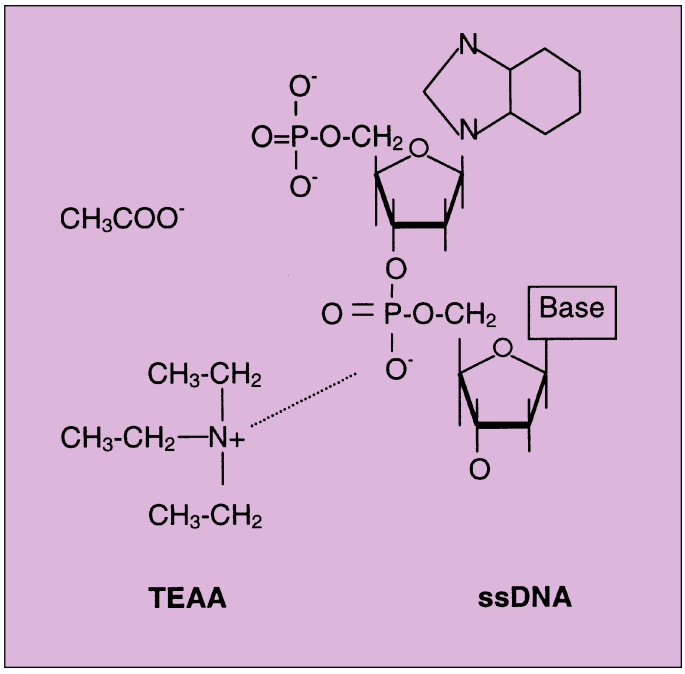
- the separations are simple using only water, acetonitrile and an ion pairing agent
- elution of the nucleotide is based mostly on size
- column is very rugged with no pH limitations
- analyses are rapid and very reproducible

Reversed phase ion pairing is superior for purification of oligonucleotides because:

- the mobile phase used is volatile and can be easily removed
- purification can be accomplished in a single step
- can do DMT-ON cleavage on the same column
- can scale from micro-gram to full production scales
- can employ either high pressure or low pressure separations

Separation Mechanism

The mechanism of separation is ion-pairing followed adsorption chromatography. The mobile phase contains an ion pairing reagent. The typical ion-pairing reagents employed are triethylammonium acetate (TEAA), tetramethylammonium acetate (TMAA) or tetrabutyl ammonium acetate (TBAA). These ion pairing reagents are positively charged molecules with polar tails. The positive charge on the ion pairing reagent is attracted to the negative charges contributed by the phosphate groups on the DNA molecule. Once attached, the DNA molecule becomes non-charged and adsorbs onto the surface of the OLIGOSep resin.



The separation then occurs by reversed phase partition chromatography. The DNA molecule is eluted by just increasing the acetonitrile concentration so that the hydrophobicity of the mobile phase is preferred over the stationary phase. This will cause the DNA molecule to partition into the mobile phase and elute. Longer oligo-nucleotide strands will retain longer than shorter strands and will require more acetonitrile.

OLIGOSep-1 Column

- Non-alkylated, Porous PS/DVB Polymer
- Optimized for the separation of single-stranded DNA
- Works in entire pH range and at elevated temperatures

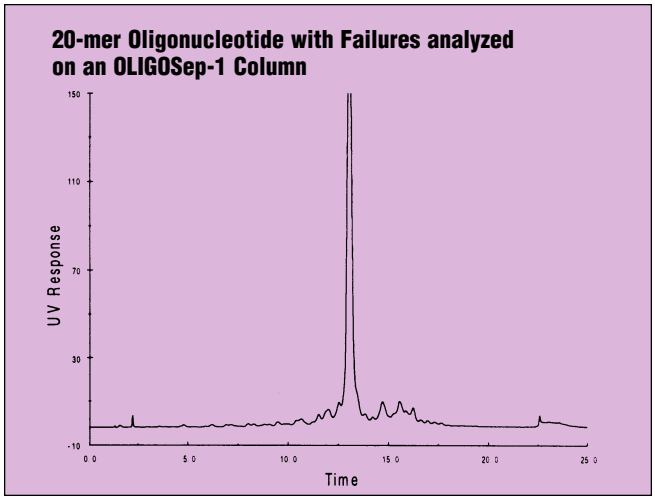
(4.6 x 150mm)
P/N NUC-99-7510

(10 x 250mm)
P/N NUC-99-7810

(21 x 250mm)
P/N NUC-99-8810

OLIGOSep-1 Guard Kit
P/N NUC-99-2310

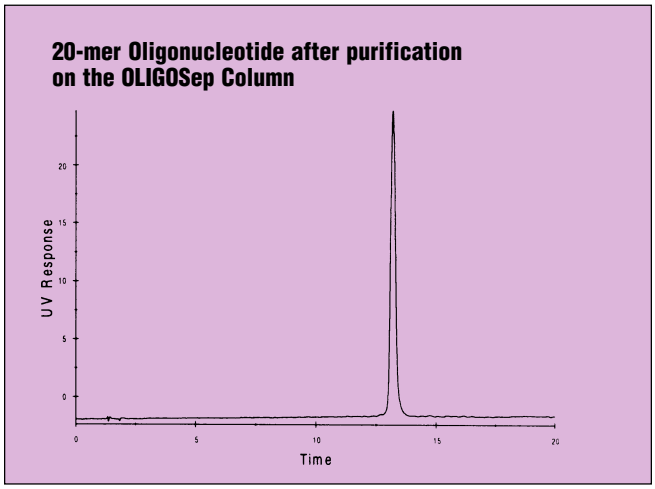
OLIGOSep-1 Guard Cartdige 2/PK
P/N NUC-99-1310



OLIGOSorb Resin

- Porous PS/DVB Polymer
- Available in prepackaged tubes or bulk
- Can be run either low pressure or high pressure
- Ideally suited for doing on-step DMT-ON oligonucleotide purification
- Much less expensive than competitive alternatives

OLIGOSorb Cartridges, 100mg 100/box
P/N NUC-99-0108

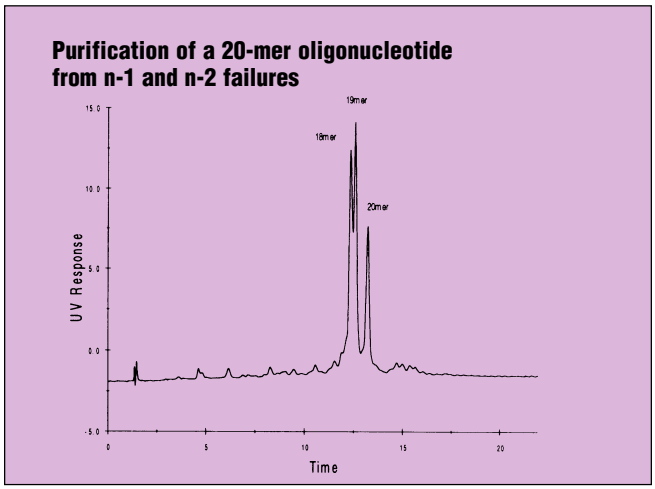


OLIGOSorb Resin
45 micron particle size

100gm
P/N POL-99-1307

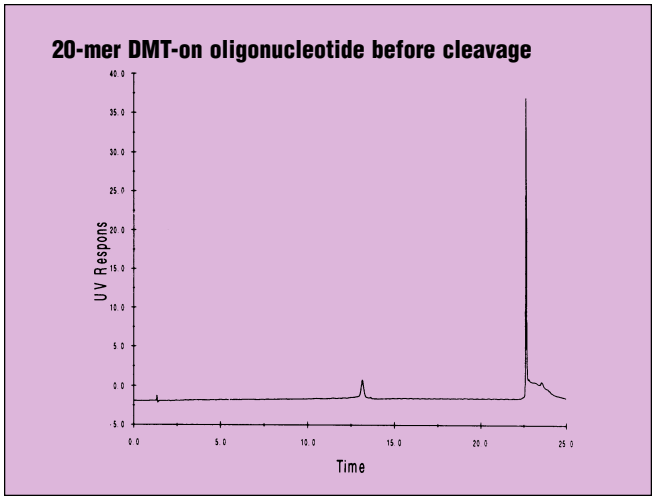
500gm
P/N POL-99-5307

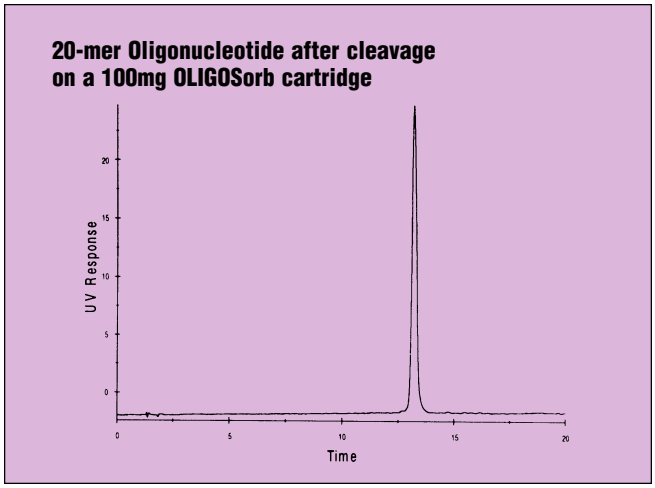
1Kg
P/N POL-99-0507



Cleavage and Purification Protocol for DMT-on oligonucleotide with OLIGOSorb cartridges

1. Condition the cartridge: flush with 2 mL acetonitrile, then flush cartridge with 2mL TEAA
2. Load DMT-ON oligonucleotide: (capacity ~1mg/mg resin)
3. Wash with 0.5mL TEAA
4. Cleave the DMT group: flush with 2mL 5% TFA
5. Wash with 3mL DI Water
6. Elute the DMT-off oligonucleotide with 1mL 50% acetonitrile





Nucleic Acid Analysis

Transgenomic®
Advancing Personalized Medicine

Polymeric Reversed Phase

RPSep Columns

Reversed phase is commonly referred to as adsorption chromatography. Reversed phase works by taking advantage of the hydrophobic interactions between molecules and a hydrophobic stationary phase.

In reversed phase, molecules are adsorbed onto a hydrophobic stationary phase. Then, the molecules are desorbed by changing the hydrophobic character of the mobile phase such that the molecules will selectively partition into the mobile phase and elute from the column.

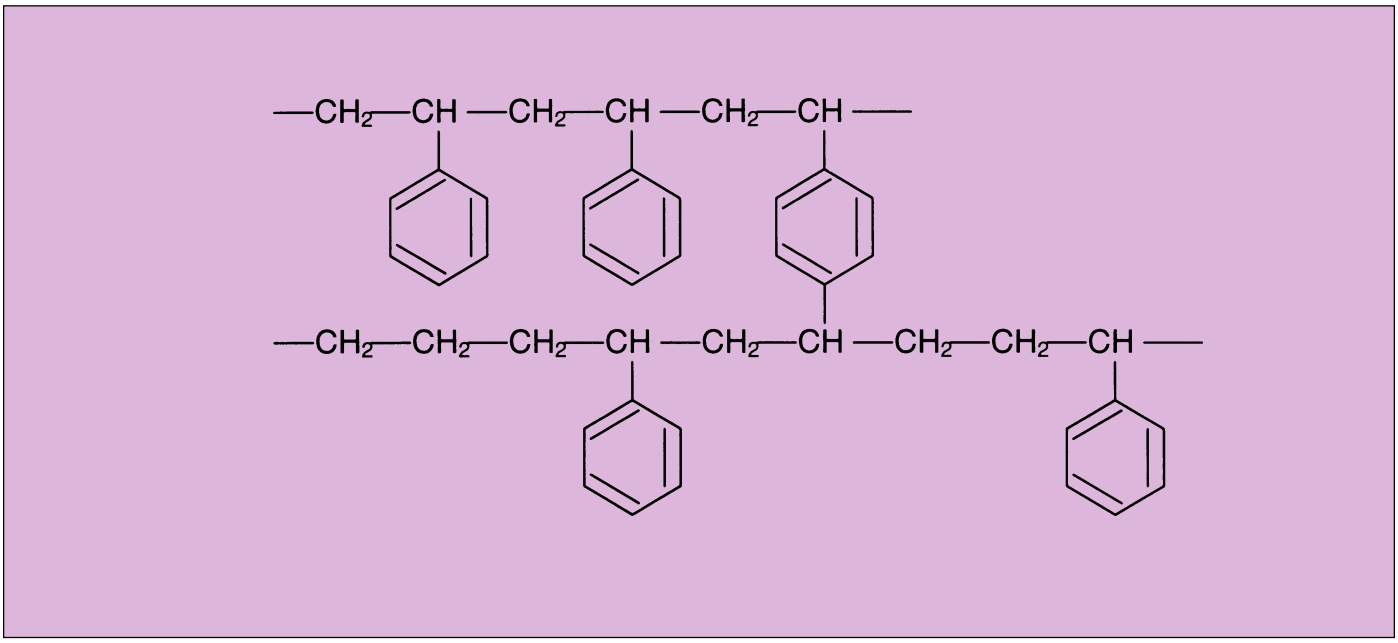
Traditionally, silica-based packings have been the most commonly used sorbants. However, as samples become more challenging, as with biological samples, supports are required that have broader pH ranges, are more rugged, and can be cleaned. Transgenomic provides a family of products all based on polystyrene-divinylbenzene sorbants that utilize our patented alkylation technology.

Features

The key features of RPSep polymeric reversed phase columns are:

- pH stable from 0 - 14
- temperature stable
- very rugged, long lasting materials
- very tight particle size range (± 0.5µm) for high efficiency
- very high efficiency for polymeric resins
- both alkylated and non alkylated PS/DVB avalable
- materials avalable in both analytical and bulk for scalability

And, as with all Transgenomic Chromatography products, RPSep columns provide excellent column-to-column and lot-to-lot reproducibility.

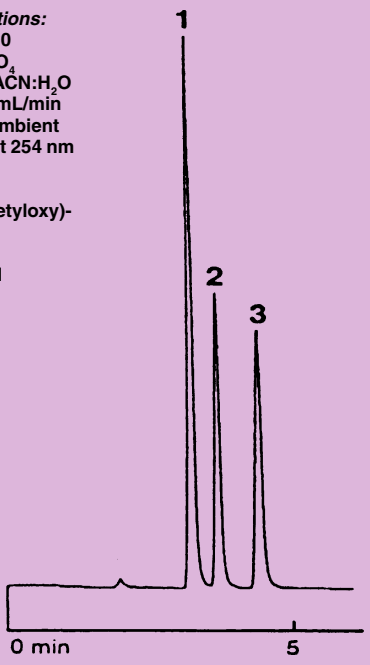


Polymeric Reversed Phase

Aspirin and Salicylic Acid on Poly-RP C0

Analysis Conditions:
Column: Poly-C0
Eluent: 1% H_3PO_4 (28%) in 50:50 ACN:H_2O
Flow rate: 0.75 mL/min
Temperature: Ambient
Detection: UV at 254 nm

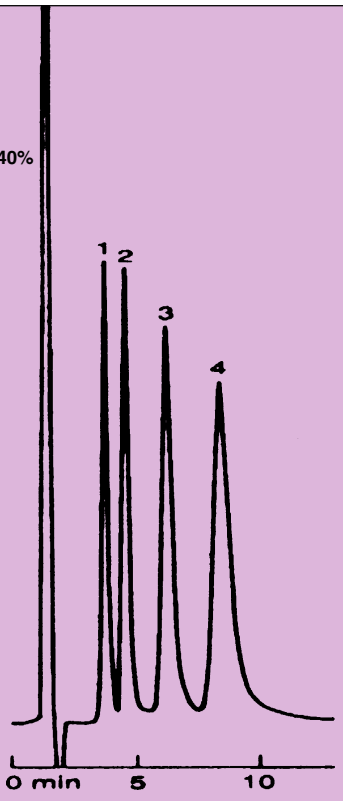
Sample:
1. Asprin (2-(acetyloxy)-benzoic acid)
2. Benzoic Acid
3. Salicylic Acid



Antihistamines

Analysis Conditions:
Column: ACT-1
Eluent: 60:39:1 ACN:H_2O:40% DMA in H_2O
Flow rate: 1.0 mL/min
Temperature: Ambient
Detection: UV at 230 nm
Injection: 20 µL

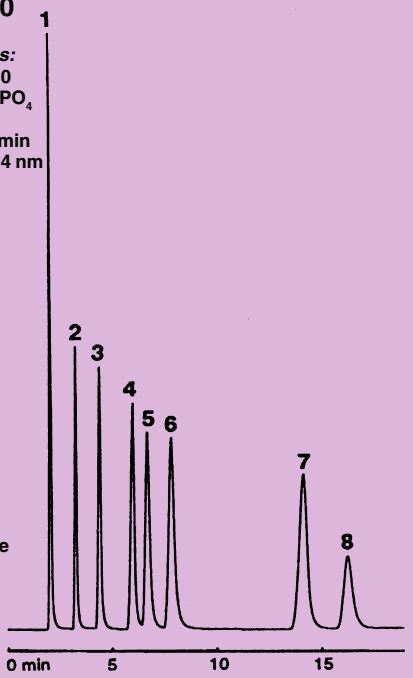
Sample:
1. Pheniramine
2. Carbinoxamine
3. Bromopheniramine
4. Triprolidine



Separation of Sulfonamides on Poly-RP C0

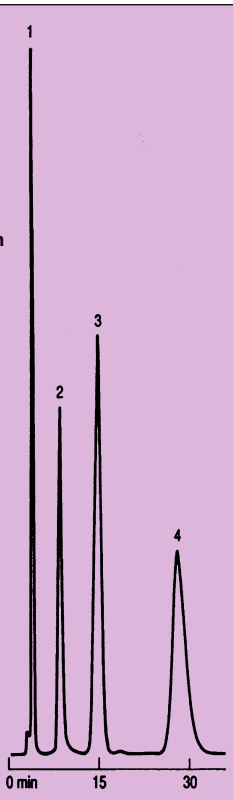
Analysis Conditions:
Column: Poly-RP C0
Eluent: 0.01 *M* KH_2PO_4 in 25:75 ACN:H_2O
Flow rate: 0.75 mL/min
Detection: UV at 254 nm
Injection: 10 µL

Sample:
1. Sulfanilic Acid (10 µg/mL)
2. Sulfanilamide (10 µg/mL)
3. Sulfathiazole (20 µg/mL)
4. Sulfamethizole (20 µg/mL)
5. Sulfamerizine (30 µg/mL)
6. Sulfamethazine (30 µg/mL)
7. Sulfisoxazole (30 µg/mL)
8. Sulfamethoxazole (30 µg/mL)



Separation of Cephalosporins by IP-RPC

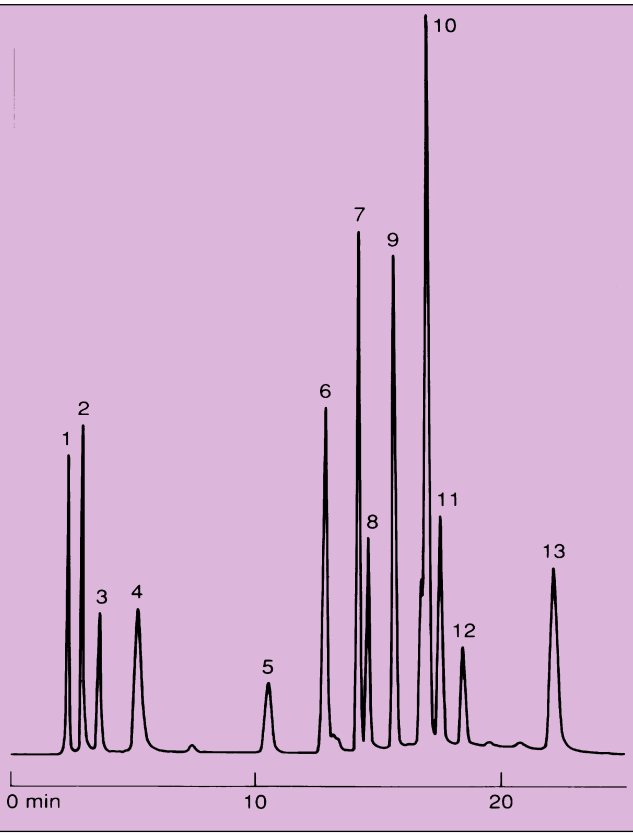
Analysis Conditions:
Column: ACT-1
Eluent: 25:55 ACN:H2O (0.1% tetrabutylammonium bromide)
Flow rate: 0.5 mL/min
Detection: UV at 254 nm
Injection: 20 µL



Separation of PGRs and Herbicides

Analysis Conditions:
Column: Poly-RP C0
Eluent: 30:70 ACB:1% acetic acid, B: 100% ACN
Gradient: 100% A for 4 min, 100% A to 50% A in 8 min, hold for 4 min
Flow rate: 0.6 mL/min
Temperature: Ambient
Detection: UV at 280 nm
Injection: 20 µL

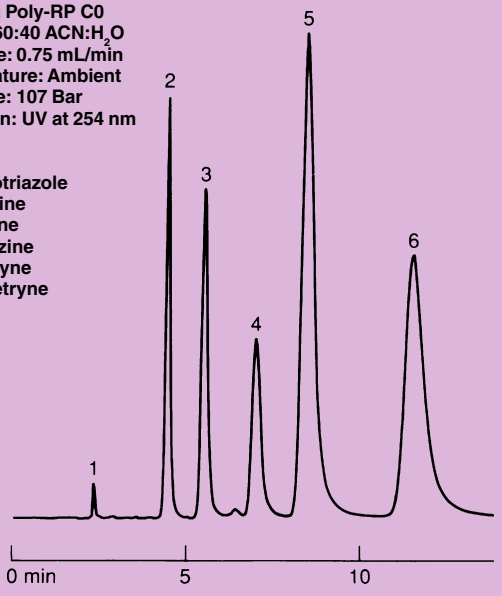
Sample:
1. Maleic Acid Hydrazide
2. Kinetin
3. 6-benzylaminopurine riboside
4. Colchicine
5. Indole-3-Acetic-Acid
6. α-naphtlaleneactamide
7. Indole-3-Propanoic Acid
8. *p*-Chlorophenoxy-Acetic Acid
9. Indole-3-Butyric Acid
10. α-Naphthaleneacetic Acid
11. ß-naphthalene-Acetic Acid
12. Indole-3-Acetic Ethyl Ester



Separation of Triazine Herbicides on Poly-RP-C0

Analysis Conditions:
Column: Poly-RP C0
Eluent: 60:40 ACN:H_2O
Flow rate: 0.75 mL/min
Temperature: Ambient
Pressure: 107 Bar
Detection: UV at 254 nm

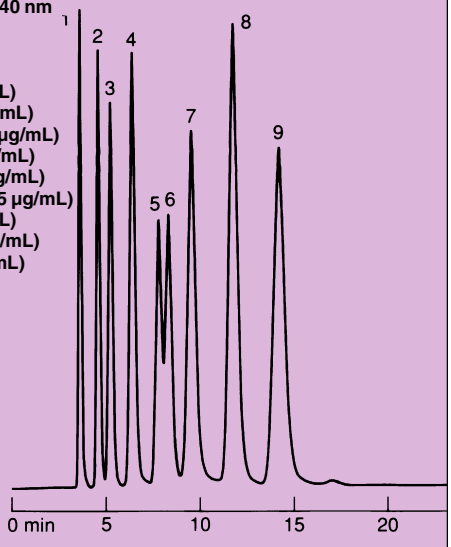
Sample:
1. Aminotriazole
2. Simazine
3. Atrazine
4. Propazine
5. Ametryne
6. Prometryne



Carbamates

Analysis Conditions:
Column: ACT-1
Eluent: 70:30 ACN:H_2O
Flow rate: 0.5 mL/min
Temperature: Ambient
Detection: UV at 240 nm
Injection: 20 µL

Sample:
1. Oxamyl (5 µg/mL)
2. Aldicarb (30 µg/mL)
3. Carbofuran (30 µg/mL)
4. Carbaryl (30 µg/mL)
5. Propham (2.5 µg/mL)
6. Methiocarb (12.5 µg/mL)
7. Ferbam (9 µg/mL)
8. ChloroIPC (9 µg/mL)
9. EPTC (87.5 µg/mL)

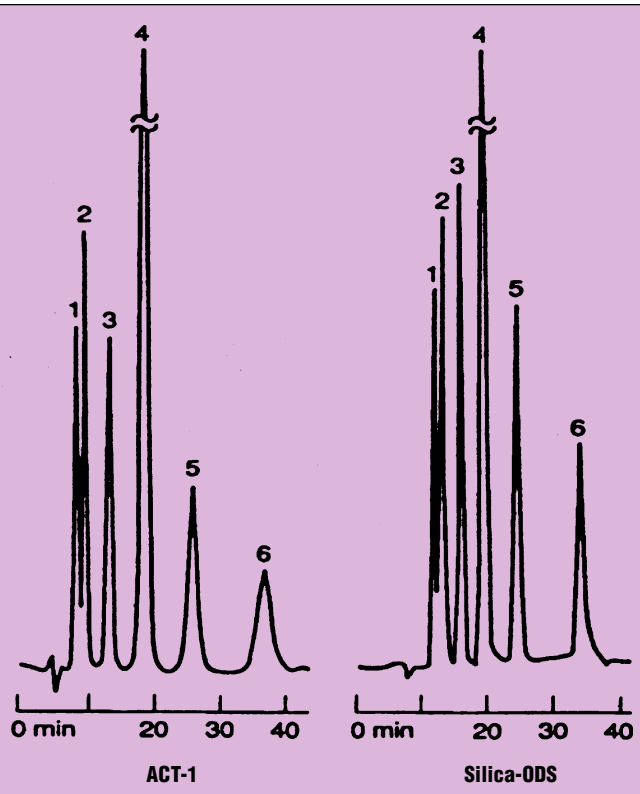


Polymeric Reversed Phase

Separation of polar and Non-polar Compounds

Analysis Conditions:
Column: ACT-1
Eluent: 60:40 ACN:H_2O
Flow rate: 0.3 mL/min
Temperature: Ambient
Detection: UV at 254 nm

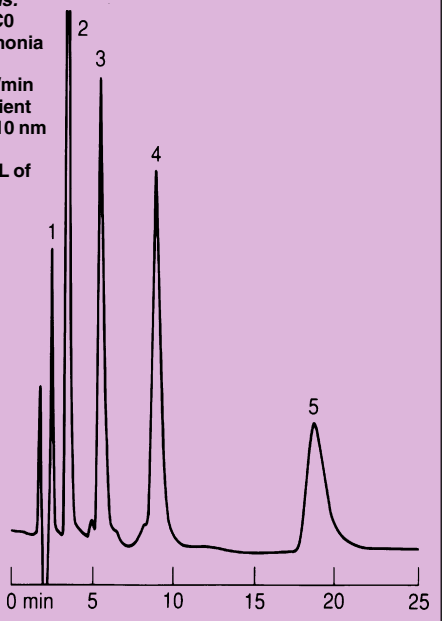
Sample:
1. Unknown
2. Phenol
3. Aniline
4. Acetophenone
5. Nitrobenzene
6.Toluene



Tertiary Amines on Poly-RP C0

Analysis Conditions:
Column: Poly-RP C0
Eluent: 0.1 *M* Ammonia in 80:20 ACN:H_2O
Flow rate: 0.75 mL/min
Temperature: Ambient
Detection: UV at 210 nm

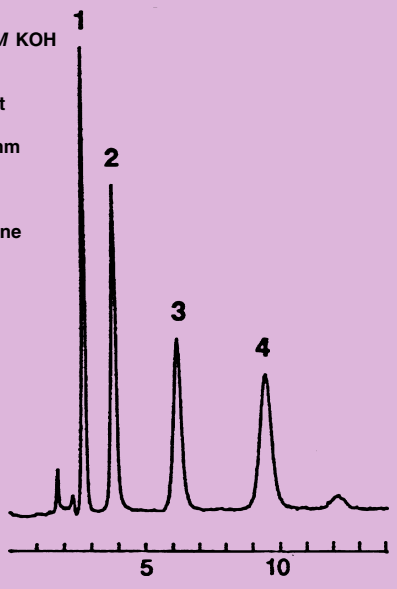
Sample: **0.05 µL/mL of**
1.Trimethylamine
2.Triethylamine
3. Diisopropylethy-lamine
4.Tripropylamine
5.Tribitylamine



Separation of 4 Amines with Simple Eluent

Analysis Conditions:
Column: ACT-1
Eluent: A:ACN, B:0.1 *M* KOH in 35:65 ACN:H_2O
Flow rate: 1.0 mL/min
Temperature: Ambient
Pressure: 600 psi
Detection: UV at 257 nm
Injection: 20 µL

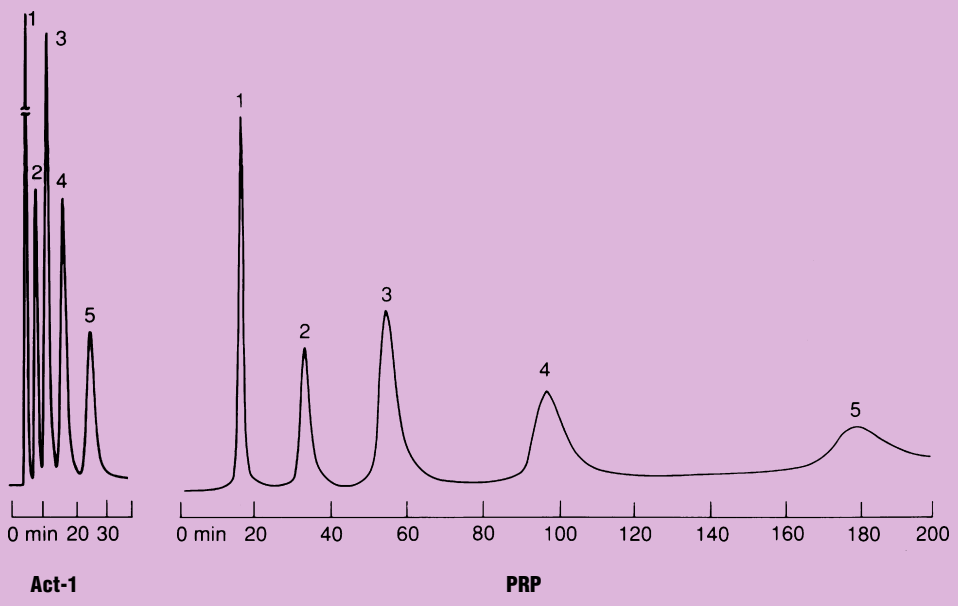
Sample:
1. Phenylpropanolamine
2. Ephedrine
3. Amphetamine
4. Methamphetamine



Comparison of ACT-1 with PRP-type Column

Analysis Conditions:
Column: ACT-1
Eluent: 80:20 Methanol:Water
Flow rate: 4.2 cm/min
Temperature: Ambient
Detection: UV at 254 nm

Sample:
1. Methylphenone
2. Ethylphenone
3. propylphenone
4. Butylphenone
5. pentylphenone

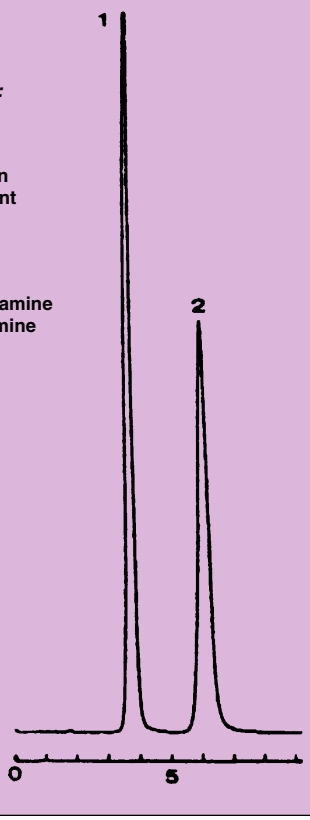


Act-1 **PRP**

Tryptamines

Analysis Conditions:
Column: Act-1
Eluent: 0.1 *M* MA in 55:45 ACN:H_2O
Flow rate: 1.0 mL/min
Temperature: Ambient
Detection: 278 nm
Injection: 20 µL

Sample:
1. N, N-dimethyltryptamine
2. N, N-diethyltryptamine



Polymeric Reversed Phase

RPSep PRX-1 Column

- Porous PS/DVB Polymer
- Ideal for the separation of peptides and small molecules
- Works in entire pH range

(2.1 x 50mm)
P/N RPC-99-3014

(4.6 x 150mm PEEK)
P/N RPC-99-7524

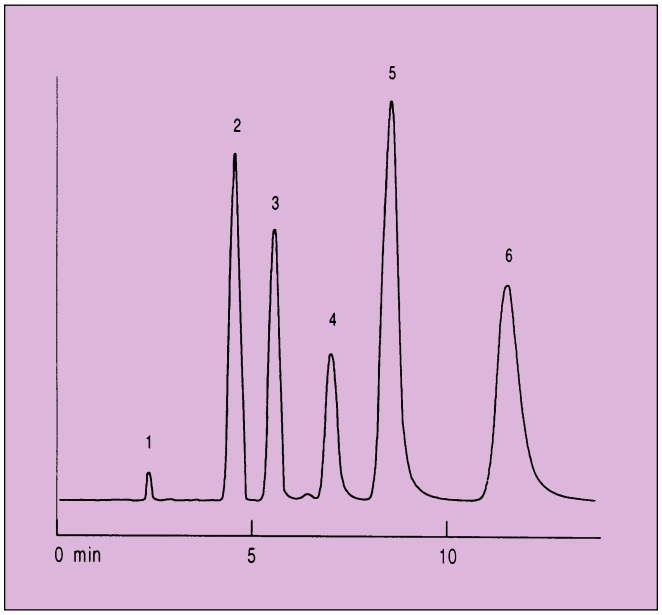
(4.6 x 75mm)
P/N RPC-99-4514

(4.6 x 250mm)
P/N RPC-99-8514

(4.6 x 150mm)
P/N RPC-99-7514

(11 x 250mm)
P/N RPC-99-8914

RPSep PRX-1 Guard Kit
P/N RPC-99-2324



RPSep ACT-1 C18 Column

- Employs proprietary alkylation technology
- Very stable, highly efficient C18 adsorbant
- Can be used in pH range of 2-14

(2.1 x 50mm)
P/N RPC-99-3150

(4.6 x 150mm PEEK)
P/N RPC-99-7560

(2.1 x 150mm)
P/N RPC-99-7150

(4.6 x 150mm)
P/N RPC–99-7550

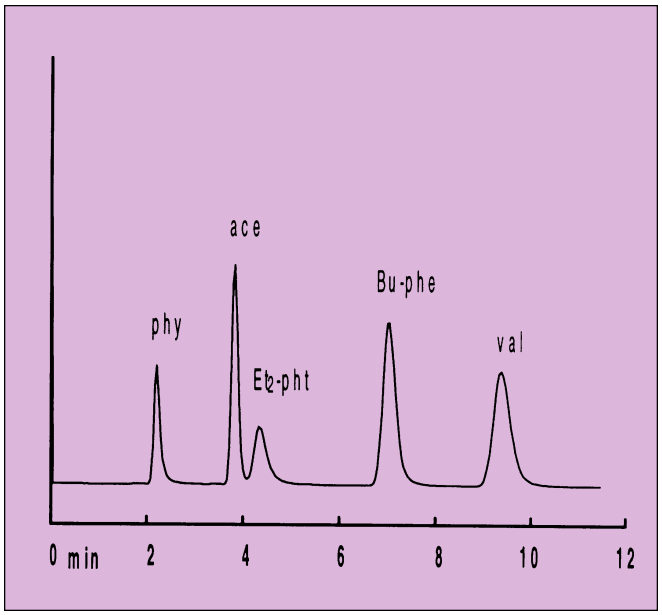
(4.6 x 50mm)
P/N RPC-99-3550

(4.6 x 250mm PEEK)
P/N RPC-99-8560

(4.6 x 75mm)
P/N RPC-99-4550

RPSep ACT-1 Prep-Scale Columns
Prep-Scale Version Available
Call for Information

RPSep ACT-1 C18 Guard Kit
P/N RPC-99-2350



RPSep Poly-RP C0

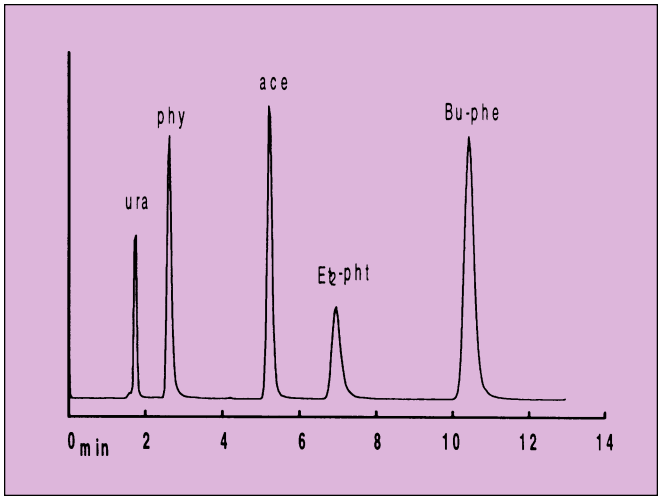
- Non-alkylated PS/DVB sorbant
- 4 micron particle size for highest efficiency

(4.6 x 75mm)
P/N RPC-99-4551

(4.6 x 150mm)
P/N RPC-99-7551

RPSep Poly-RP C0 Prep-Scale Columns
Prep-Scale Version Available
Call for Information

RPSep Poly-RP C0 Guard Kit
P/N RPC-99-2351



Polymeric Reversed Phase

Transgenomic®
Advancing Personalized Medicine

Ion Chromatography

Columns for Ion Chromatography

Ion Chromatography (IC) is the separation of inorganic and organic ionic species by ion exchange chromatography followed by suppressed conductivity detection. This is a technique that was pioneered by Dow Chemical company in 1974 and has grown in popularity since.

The species analyzed by Ion Chromatography include both anions and cations. The separation of anions is accomplished via anion exchange chromatography. The separation of cations is by cation exchange chromatography. Transgenomic provides a broad range of columns for the separation of both anions and cations.

The resins used for anion and cation exchange chromatography for IC both employ a macroporous polystyrene/divinyl benzene copolymer substrate. This rugged core is then functionalized based on the separation mechanism desired. Quaternary alkyl or alkynol ammonium groups employing hydroxide or carbonate-based eluants are used for anion exchange IC. Sulfonic acid or carboxylic acid groups employing either strong or organic acid eluants are used for cation IC.

The key features of the Ion Chromatography columns are:

- Polymeric Substrate
- Solvent Compatibility
- High efficiency
- Reproducibility lot-to-lot and column-to-column
- Rugged
- Employs Guard Disc Technology
- Available in plug-compatible selectivities including for E.P.A. method 300

Ruggedness

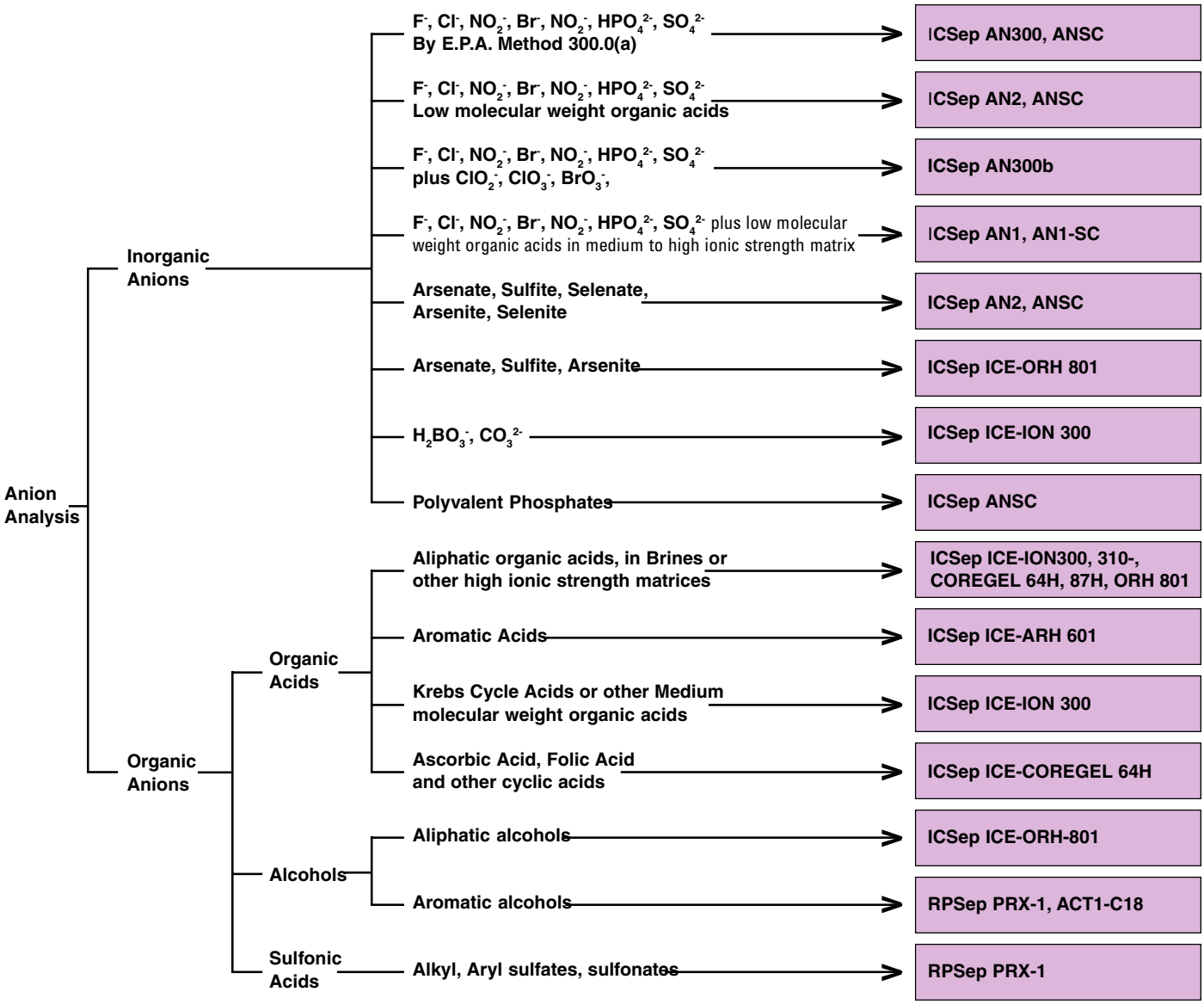
Since these columns are based on a polymeric substrate consisting of polystyrene and divinylbenzene copolymers, they are stable in the pH range of 0 to 14, they are temperature stable, and very rugged. Transgenomic IC columns have been shown to last for thousands of runs without cleaning, and they show very good lot-to-lot and column-to column reproducibility with retention times varying by less than 1%. Many of the IC columns are also solvent compatible so that if they do get contaminated they can easily be cleaned with common organic modifiers. Use of Transgenomic Guard Disk technology can add protection against fouling

Compatability

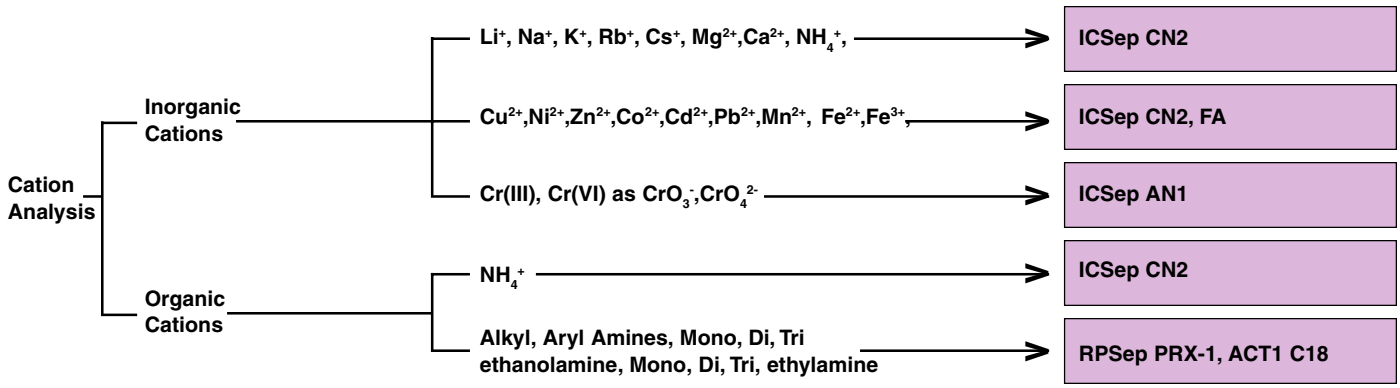
Transgenomic IC columns have been designed to run on your system. They are tested to be compatible with Ion Chromatographs from a variety of vendors including; Metrohm, Dionex, Latchett and Alltech. The selectivities have been optimized to be compatible with many of the common IC columns currently available at a much lower cost. We have even developed columns that are 100% compatible with the requirements of E.P.A. methods 300 parts A and B and E.P.A. method 300.1.

Ion Chromatography

IC Column Selection Guide



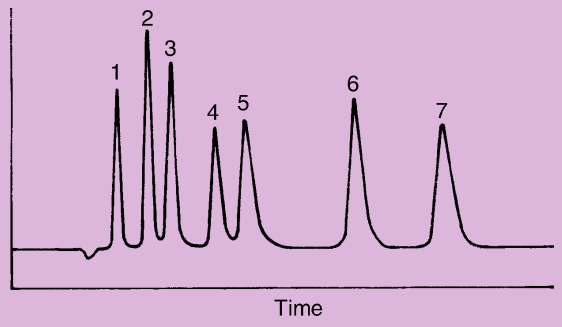
Cation and Metal Analysis



Anions by E.P.A. Method 300.0(a)

Analysis Conditions:
Eluent: 1.7 mM Sodium Carnonate,
1.8 mM Sodium Bicarbonate
Flow rate: 2.0 mL/min
Detection: Suppressed Conductivity

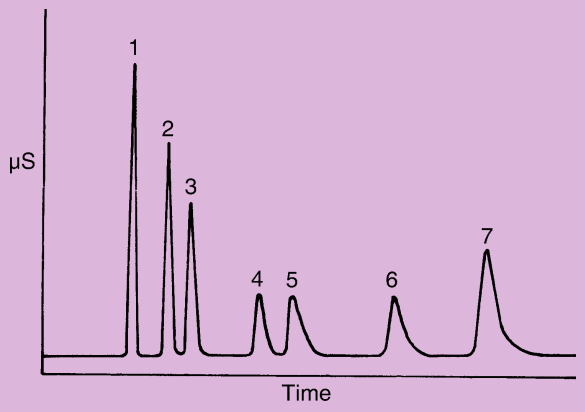
Sample:
1. Fluoride
2. Chloride
3. Nitrate
4. Bromide
5. Nitrate
6. Phosphate
7. Sulfate



Determination of Inorganic Anions

Analysis Conditions:
Column: Cetac ICSep ANSC
(Kit P/N ANX-99-8532)
Eluent: 1.8 nM Sodium Carbonate,
1.7 mM Sodium Bicarbonate
Flow rate: 1.2 mL/min
Detection: 10 µS
Time of Analysis: <15 min

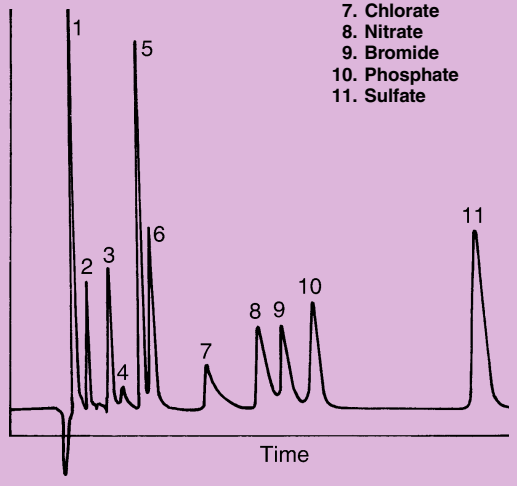
Sample:
1. Fluoride
2. Chloride
3. Nitrite
4. Bromide
5. Nitrate
6. Phosphate
7. Sulfate



Determination of Inorganic Anions by E.P.A. Method 300.1

Analysis Conditions:
Column: Cetac ICSep AN300B
(Kit P/N ANX-99-8536)
Eluent: 3.5 mM Sodium Carbonate
Flow rate: 1.0 mL/min
Detection: 10 µS Full Scale
Analysis Time: 30 min

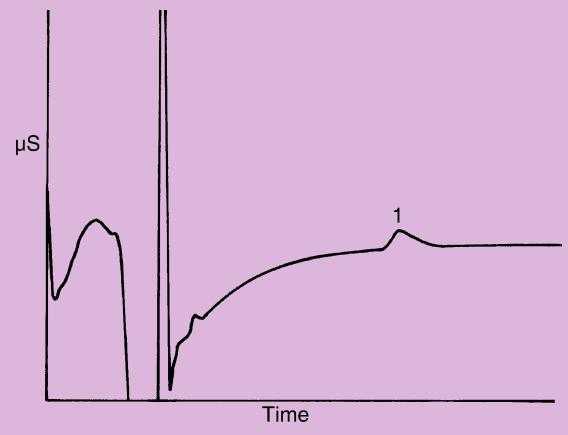
Sample:
1. Fluoride
2. Chlorite
3. Bromate
4. Dichloracetate
5. Chloride
6. Nitrite
7. Chlorate
8. Nitrate
9. Bromide
10. Phosphate
11. Sulfate



Determination of Perchlorate

Analysis Conditions:
Column: Cetac ICSep ANSC with Guard
Eluent: 30 mM Sodium Hydroxide,
10 mM Cynaophenol
Flow rate: 1.2 mL/min
Detection: 1 µS Full Scale
Analysis time: 18 min

Sample:
1. ClO_4 4ppb



Ion Chromatography

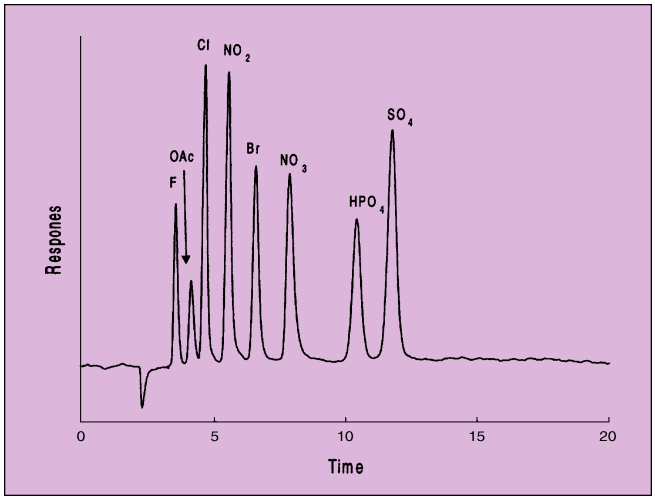
ICSep AN2

(4.6 x 250 mm)
P/N ANX-99-8515

- Designed to be compatible replacement for systems using a Dionex AS14 column
- Very high capacity and *Solvent Compatible* for complex samples
- Able to separate both inorganic and organic species in a single analysis

ICSep AN2 Guard Column
(4.6 x 50 mm)
P/N ANX-99-3515

ICSep AN2 Guard Cartridges 3/pk
(3.0 x 10mm)
P/N ANX-99-0015



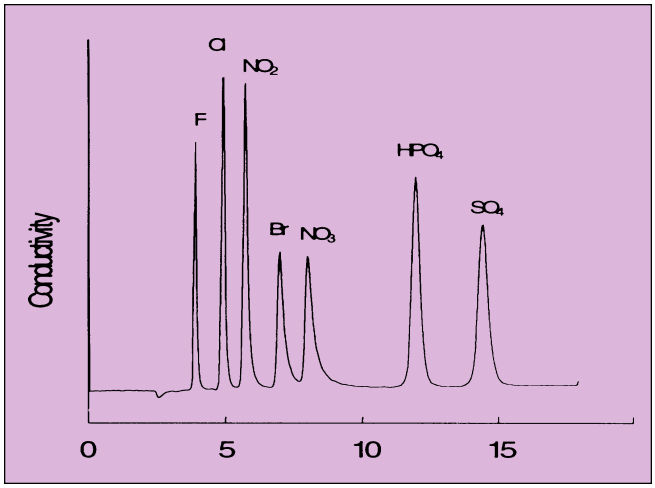
ICSep AN1

(4.6 x 250 mm)
P/N ANX-99-8511

- General purpose, high resolution IC column for anion analysis
- Resolves Fluoride
- Runs E.P.A. Method 300.0
- Designed for ruggedness

ICSep AN Guard Column
(4.6 x 50 mm)
P/N ANX-99-3510

ICSep AN Guard Cartridges 3/pk
(3.0 x 10mm)
P/N ANX-99-0010



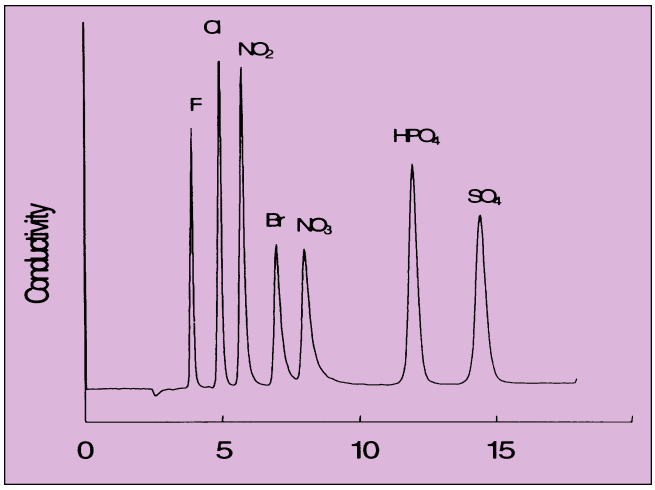
ICSep AN1-SC

(4.6 x 250 mm)
P/N ANX-99-8514

- *Solvent Compatible* high resolution IC column
- Resolves Fluoride
- Runs E.P.A. Method 300.0
- Same features as ICSep AN1

ICSep AN1-SC Guard Column
(4.6 x 50 mm)
P/N ANX-99-3514

ICSep AN1-SC Guard Cartridges 3/pk
(3.0 x 10mm)
P/N ANX-99-0014



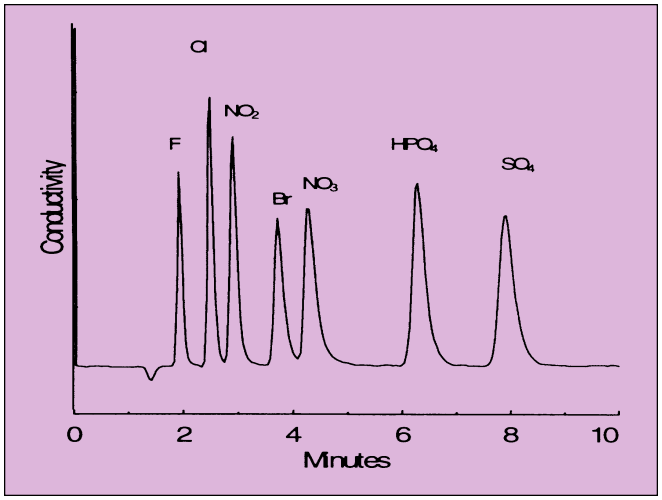
ICSep AN300

(5.5 x 150 mm) (4.6 x 200 mm)
P/N ANX-99-7613 P/N ANX-99-8513

- Designed for E.P.A. Method 300.0(a) or 300.1 analysis
- Resolves Fluoride
- 8 minute run times
- Long Column Life

ICSep AN Guard Column
(4.6 x 50 mm)
P/N ANX-99-3510

ICSep AN Guard Cartridges 3/pk
(3.0 x 10mm)
P/N ANX-99-0010



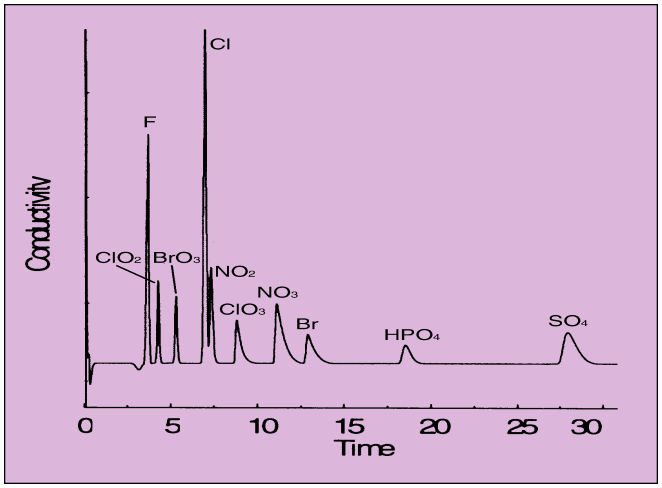
ICSep AN300B

(4.6 x 250 mm)
P/N ANX-99-7616

- Designed for E.P.A. Method 300.0(b) or 300.1 analysis
- Very high capacity, along with *Solvent Compatability* for ruggedness
- Baseline separation of Oxyhalides
- Long Column Life

ICSep AN300B Guard Column
(4.6 x 50 mm)
P/N ANX-99-3516

ICSep AN300B Guard Cartridges 3/pk
(3.0 x 10mm)
P/N ANX-99-0016



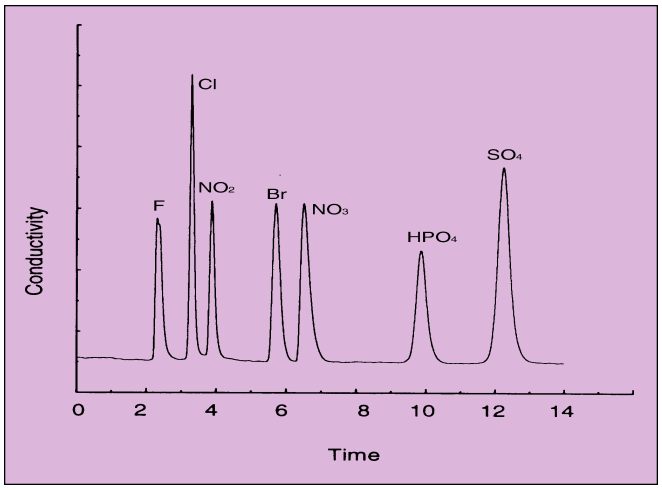
ICSep ANSC

(4.6 x 250 mm)
P/N ANX-99-8512

- *Solvent Compatible*
- Low Cost, Long Life IC Column
- Compatible with applications employing Dionex AS-4ASC columns

ICSep ANSC Guard Column
(4.6 x 50 mm)
P/N ANX-99-3512

ICSep ANSC Guard Cartridges 3/pk
(3.0 x 10mm)
P/N ANX-99-0012

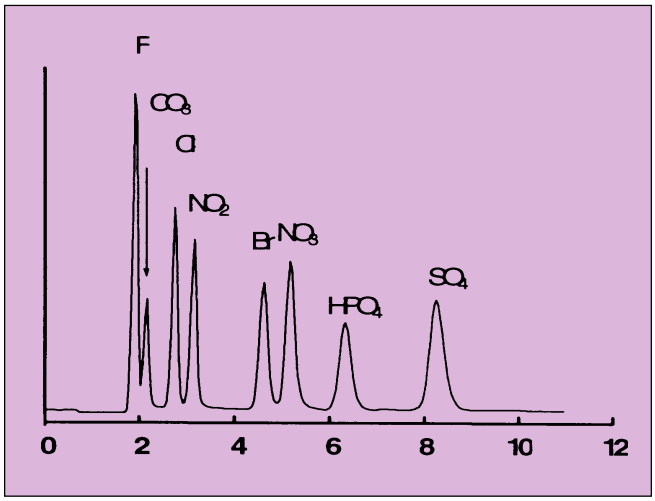


Ion Chromatography

ICSep ION-120
(4.6 x 120 mm)
P/N ANX-99-6550

ICSep ION-120 Guard Kit
(4.0 x 24 mm)
P/N ANX-99-2350

ICSep ION-120 Guard Cartridges 3/pk
(4.0 x 24mm)
P/N ANX-99-0090



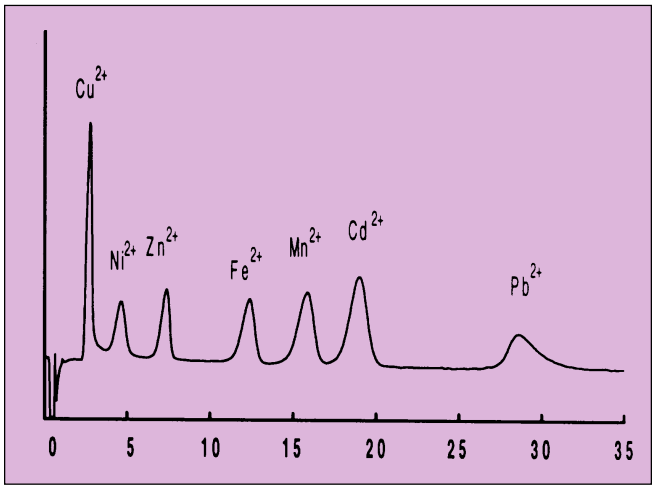
ICSep CN2
(3.2 x 100 mm)
P/N CTX-99-5250

- Ideal for the separation of metals or ammonium species
- Can be run in single column or suppressed modes

ICSep CN2 FA Column
(4.6 x 50 mm)
P/N CTX-99-3550

ICSep CN2 Guard Kit
(4.0 x 24mm)
P/N CTX-99-2050

ICSep CN2 Guard Cartridges 2/pk
(4.0 x 20mm)
P/N CTX-99-1350



Transgenomic®
Advancing Personalized Medicine

Guard-Disc® Protection System

Guard-Disc® System

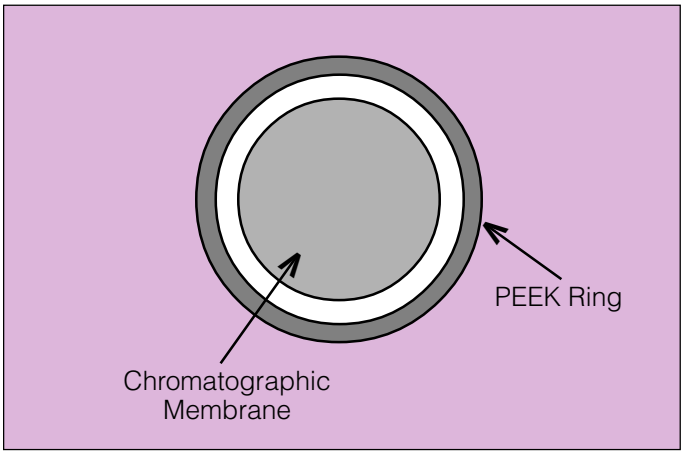
The Guard-Disc® System is a patented column protection system that is designed to provide the protection capabilities of a guard column without adding any extra volume that might interfere with chromato-graphic separation.

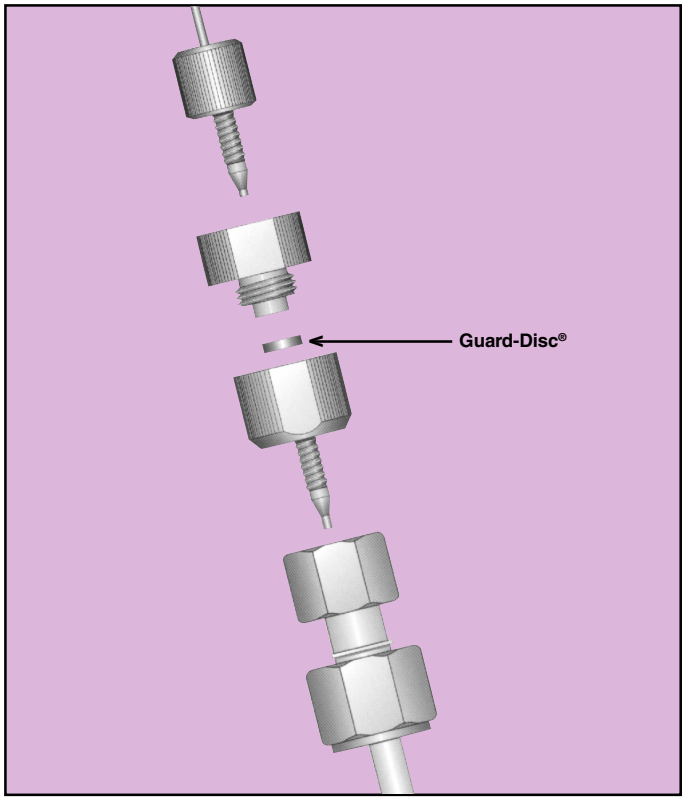
The Guard-Disc® System is comprised of a disc, which is available in a variety of functionalities, and a disc holder that couples directly to the column.

The disc is a PEEK ring that contains a functionalized chromatographic membrane. This chromatographic membrane is available in a variety of stationary phases for both HPLC and Ion Chromatography applications. The stationary phases that Guard-Discs® Systems are available in include:

- C18
- C8
- Styrene/DVB
- Anion Exchange
- Cation Exchange

It is these functional groups that bind the contaminants that would otherwise be trapped on your separator column.





Double Protection

Guard-Disc® Systems are porous as well. Not only do they bind species that may contaminant your separator column, they also filter out particulates that would otherwise be trapped on your separator column. The Guard-Disc® System provides double protection for your chromatographic column.

Guard-Disc® Protection System

Guard-Disc® System Characteristics

Membrane Functionality	Application	Porosity (µm)	Solvent Compatibility	pH Range
C18-A	Reversed Phase	0.2	All	2-8
C18-B	Reversed Phase	0.8	Acetonitrile, Methanol	2-8
C8	Reversed Phase	0.2	All	2-8
S/DVB	Reversed Phase	0.2	All	1-13
AN	Anion Exchange	0.2	All	1-13
ANEX	Anion Exchange	0.2	All	1-13
CATEX	Cation Exchange	0.2	All	1-13

Cetac Guard-Discs®

Ion Exchangers

AN Column Guard-Disc®
(5/pk)
P/N GRD-99-0703

ANEX Guard-Disc®
(10/pk)
P/N GRD-99-0704

CATEX Guard-Disc®
(10/pk)
P/N GRD-99-0705

Adsorbants

C18A Guard-Disc®
(10/pk)
P/N GRD-99-0701

C18B Guard-Disc®
(10/pk)
P/N GRD-99-0731

C8 Guard-Disc®
(10/pk)
P/N GRD-99-0702

SDVB Guard-Disc®
(10/pk)
P/N GRD-99-0706

Cetac Guard-Disc® Holders

Guard-Disc®Direct Holder 1
(Parker Type)
P/N AXC-99-0002

Guard-Disc®Direct Holder 2
(Waters Type)
P/N AXC-99-0003

Guard-Disc®Universal Holder 1N
(Universal)
P/N AXC-99-0004

Transgenomic®
Advancing Personalized Medicine

Solid Phase Extraction

Transgenomic POLYSorb™ Products for Solid Phase Extraction

Solid Phase Extraction (SPE) is a sample preparation technique that is employed to clean up or concentrate samples prior to analysis. SPE can be used to clean-up samples by removing interferences that would otherwise compromise analysis. It can be used to concentrate by allowing a large volume of sample to be reduced into a small elution volume. Compared to other sample preparation techniques, such as liquid-liquid extraction, SPE provides cleaner extracts with high recoveries. SPE is also faster and uses less solvent which saves money.

SPE tubes can be used in two modes:

1. First, the flow-through mode. In this mode the sample can be passed through the tube. While passing through the tube, the contaminants present are retained while the analyte of interest is allowed to pass through. The steps for this mode are 1) Load the sample into the tube 2) wash to elute the analyte of interest.
2. Second, the selective elution mode. The sample is passed through the tube. But in this mode, the analyte of interest is retained while many contaminants pass through. After the sample is loaded onto the column, the analyte of interest is selectively eluted by choosing elution conditions that will elute the analyte from the column while retaining interferring components. The steps used with this mode are 1) load the sample onto the column 2) wash through weakly retained or unretained contaminants 3) elute the analyte of interst

The most common SPE packing are polar adsorbants. These adsorbants are used to remove organic interferences from samples. Also, commonly used are ion exchangers to remove charged species as interferrences. Transgenomic offers products for both adsorption and ion exchange.

Key Features of Transgenomic SPE products

As with all of Transgenomic's chromatography products, the SPE products are all based on polymeric resins. Polymer-based resins are used because of the broad pH range available and the chemical and physical stability of the materials. These cartridges are ideally suited for cleaning up samples in tough matrices.

Transgenomic POLYSorb cartridges provide very high loading capacities to accommodate for concentrated samples. POLYSorb cartridges also provide excellent selectivity even for trace level analysis.

POLYSorb Cartridges in the format you need

Transgenomic POLYSorb cartridges are provided in four stationary phase formats:

- Unmodified Poly-[styrene/divinylbenze] (PS/DVB)
- Alkylated (C18) PS/DVB
- Vinlypyridine
- Sulfonated PS/DVB

Transgenomic offers each of these cartridges in either 100mg or 400mg tubes. Or, we can even custom pack in sizes to meet specific needs.

POLYSorb tubes are compatible with off-the-shelf SPE vacuum manifolds, automated workstations or other commonly used accessories.

Solid Phase Extraction

Extraction of Organic Acids from Burgundy Wine with MP-1

Sample Preparation:
Dilute wine 1:10 with distilled water

Conditioning Step:
Wet tube with 1 mL of methonal followed by 1 mL of 10:90 methonal:water

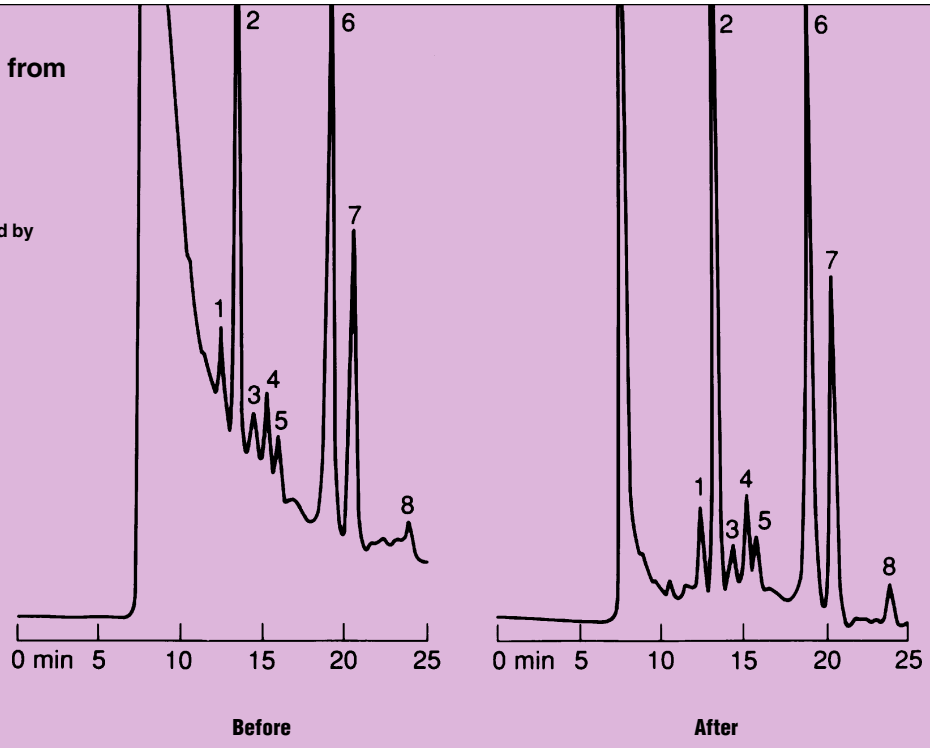
Sample Addition:
Load 500 µL of dilute wine

Wash Step:
1.0 mL of water

Elution Step:
1.0 mL of 0.05 *N* H_2SO_4

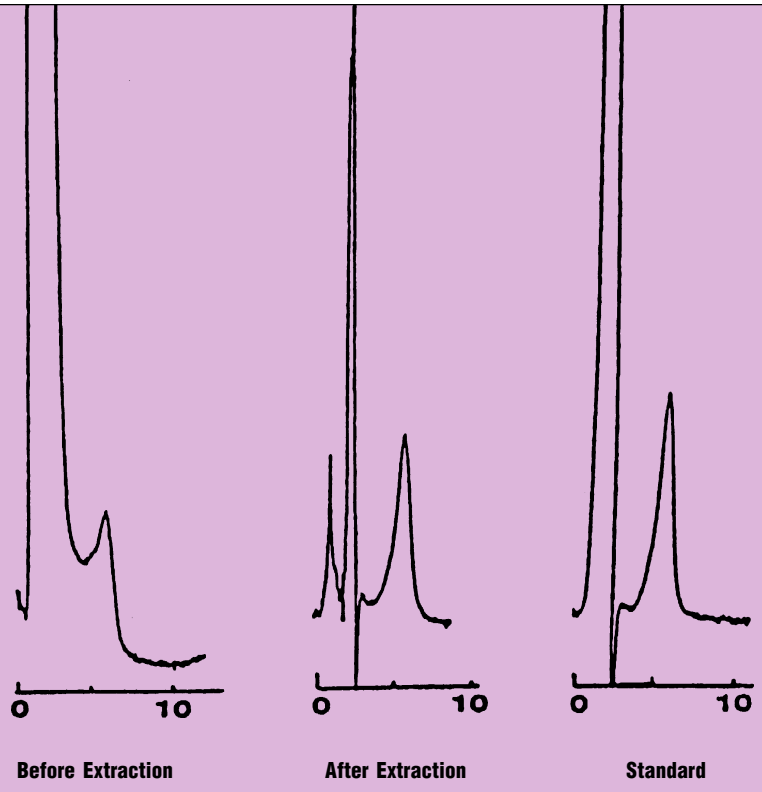
Analysis Conditions:
Column: ION-300
Eluent: 0.01 *N* H_2SO_4
Flow rate: 0.5 mL/min
Temperature: 60°C
Detection: UV at 214 nm
Injection: 20 µL

Sample:
1. Citric Acid
2. Tartaric Acid
3. Glucose
4. Malic Acid
5. Fructose
6. Glycerol
7. Succinic Acid
8. Acetic Acid



Extraction of Amphetamine from Urine

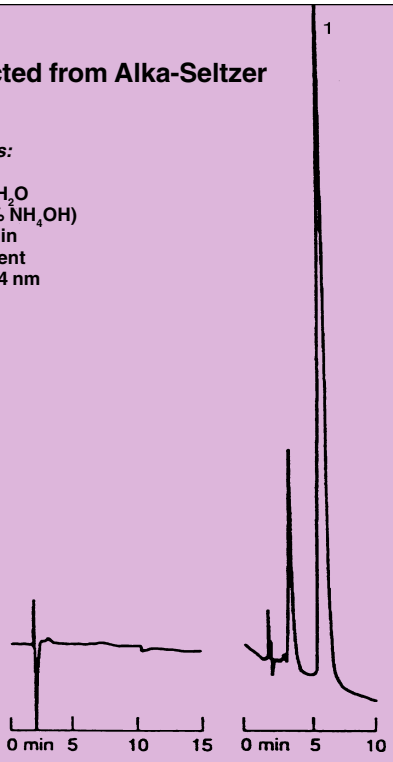
Analysis Conditions:
Column: ACT-1
Eluent: 55:43:2 ACN:H_2O:30% NH_4OH
Flow rate: 1.0 mL/min
Temperature: Ambient
Detection: UV at 220 nm
Injection: 20 µL



Asprin Extracted from Alka-Seltzer using MP-2

Analysis Conditions:
Column: ACT-1
Eluent: 30:70 ACN:H_2O
(0.65% TBAH, 0.65% NH_4OH)
Flow rate: 0.5 mL/min
Temperature: Ambient
Detection: UV at 254 nm
Injection: 20 µL

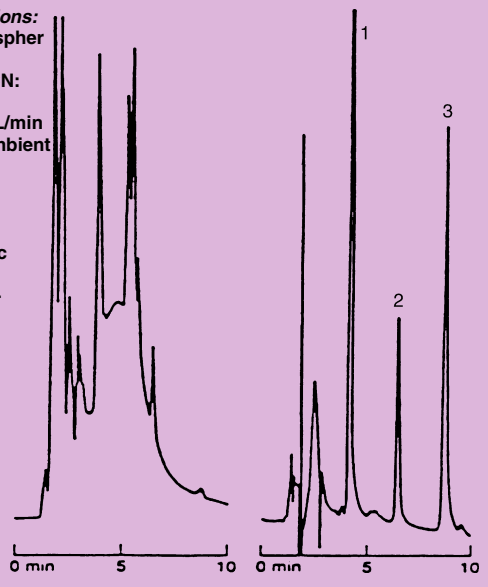
Sample:
1. Asprin



Plant Growth Regulators from Spinach

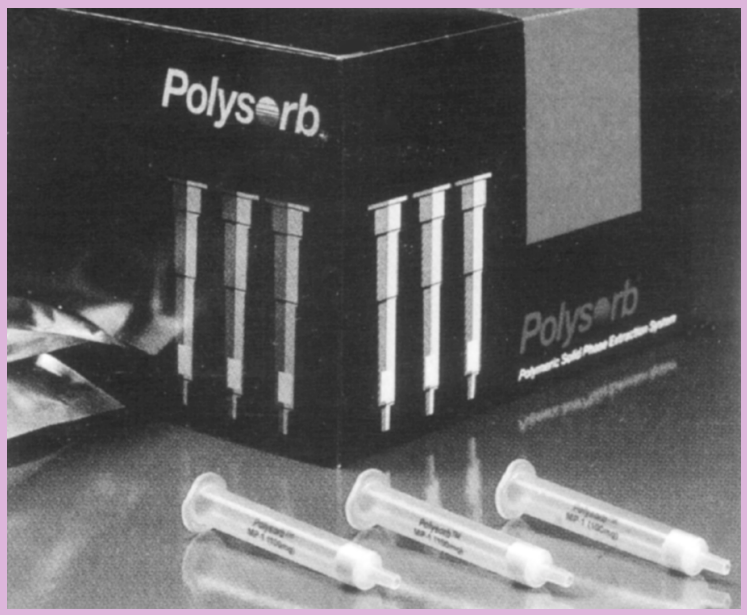
Analysis Conditions:
Column: LiChrospher RP18
Eluent: 40:60 ACN: 1% Acetic Acid
Flow rate: 1.0 mL/min
Temperature: Ambient
Detection: UV at 280 nm

Sample:
1. Indole-3-Acetic Acid
2. p-Chlorophen-oxyacetic Acid
3. α-Naphtha-leneacetic Acid



Polysorb™

All Polysorb sample preparation tubes are constructed of serological grade polypropylene with a tapered body for easy stacking. The frits are 20 µm porus polymeric materials that have been extensively washed prior to packing to remove any residual plasticizers or low molecular weight oligomers. Each tube contains 100 mg of polymer that has a particle size range of 20-60 µm. The tubes are compatible with all currently available vacuum manifolds and multiple sample preparation systems.



Solid Phase Extraction

POLYSorb ACT-1, C18, 100mg
(100/box)
P/N SPE-99-0100

POLYSorb ACT-1, C18, 400mg
(50/box)
P/N SPE-99-0101

- Patented, Octadecyl-Alklyated PS/DVB
- Ideal for removal of polar compounds
- Stable over pH 0-14, very rugged

POLYSorb, MP-2, Vinylpyridine, 100mg
(100/box)
P/N SPE-99-0102

POLYSorb, MP-2, Vinylpyridine, 400mg
(50/box)
P/N SPE-99-0103

- Offers unique selectivity
- Elutes by changing pH

POLYSorb, MP-3, Highly Sulfonate, 100mg
(100/box)
P/N SPE-99-0104

POLYSorb, MP-3, Highly Sulfonated, 400mg
(50/box)
P/N SPE-99-0105

- pH stable cation exchange resin
- Ideal for removing amines
- Remove cations from ICP analysis

POLYSorb, MP-DVB, PS/DVB 100mg
(100/box)
P/N SPE-99-0108

POLYSorb, MP-DVB,PS/DVB 400mg
(50/box)
P/N SPE-99-0109

- Non-functionalized styrene-divinylbenzene
- Ideal for removing polar compounds
- pH stable from 0-14
- Also available in bulk

Solid Phase Extraction

Transgenomic®
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Bulk Polymeric Resin

Introduction

Transgenomic has scale-up in mind every time we develop a new resin. The resin in any column discussed in this catalogue is also available in bulk. This allows you to pack your own analytical columns, then quickly and easily scale your analytical application to semi-prep and preparative scales without redevelopment.

We have also developed resins for combinatorial applications. With the advent of high throughput synthesizers, combinatorial chemistry is becoming very popular. For this reason, we have solutions for solid phase synthesis.

Bulk Resins for Analytical Development and Purification

All of the resins for the applications discussed in this catalogue are also available in bulk. The resins are available both in analytical particle sizes, 3 to 10mm, as well as particle sizes for preparative application, 15 to 40mm.

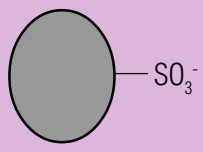
The resins all are created using our standard backbone, a macroporous copolymer of crosslinked poly [styrene/divinylbenzene]. To this backbone is then added the functional groups for the various chemistries. The chemistries include; cation exchange, anion exchange, reversed phase, and ligand exchange functionalalities. The final product is cleaned and sized to meet the most demanding standards. All resins are shipped dry to ensure quality.

The key to performance is size distribution

At Transgenomic we are aware that size and shape of resins affect the flow properties of the resin. By optimizing flow characteristics, you will receive optimum efficiencies. For this reason, all of the bulk resins are

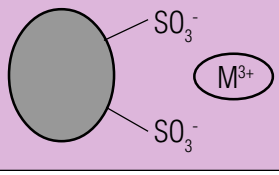
Functional Chemistries Available

Cation Exchange/Amino Acid Resin



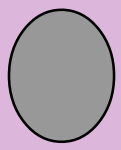
Sulfonated
(HS)

Ligand Exchange/Carbohydrate Resin

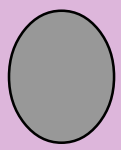


Ligand-Exchange
M=Na^+, Ca^{+2},
Pb^{+2}, K^+

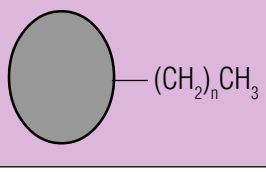
Reversed Phase/Hydrophobic Interaction



non-functionalized
NPR PS/DVB

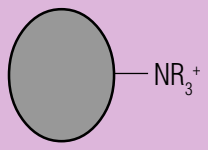


Non-functionalized
Porous PS/DVB



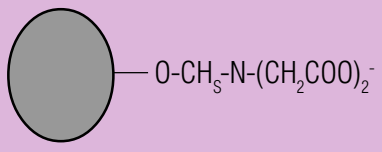
Alkylated
PS/DVB
N=7, 17

Anion Exchange Resin



Quaternary
Ammonium (Q)

IDA (Chelaor) Resin



Iminodiacetate
(IDA)

Bulk Polymeric Resin

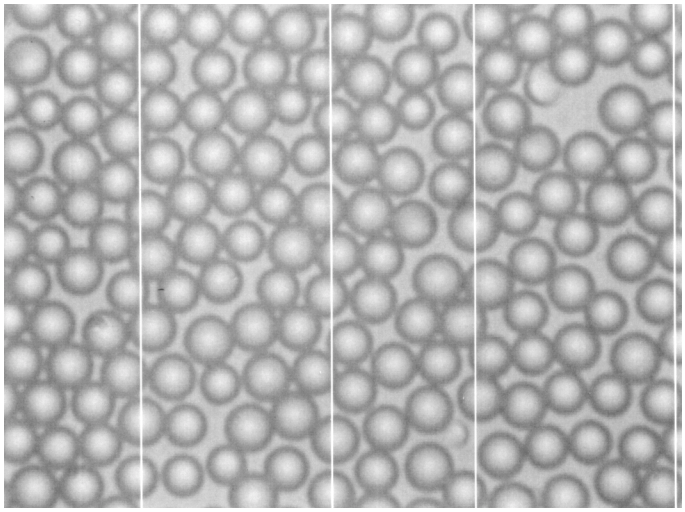
spherical and sized to very tight specifications. With our sizing capabilities we are able to provide bulk resins for analytical use with a size distribution of ±1µm and for larger particles (i.e. >15µm) ±5µm. With a tight control on the shape and size-distribution you are guaranteed a high quality product that provides excellent lot-to-lot reproducibility for your application.

Available in sizes to meet your needs

Because each application has different requirements, we offer Transgenomic resins by the gram or kilogram. If you require larger quantities, call for pricing.

Custom Resins Available

If we do not have the resin or particle size that you need, simply call. We have over 20 years experience in the development of polymer materials for analytical and preparative chromatography applications; allow us to put our expertise to work for you.



Resins for Combinatorial Chemistry

The most widely used resin for combinatorial chemistry is 1% poly-[styrene/divinylbenzene] (PS/DVB). This support is widely used because of it's shrink/swell properties when used with the organic solvents commonly used with combinatorial chemistries.

This substrate is then functionalized with starting groups for synthesis. The resins offered by Transgenomic are Merrifield (chloromethyl functionalized PS/DVB) and non-functionalized 1% PS/DVB.

Bulk Polymeric Resin

Ion Exclusion Resins for Organic Acid, Alcohol and Carbohydrate Analysis

Ion Exclusion, ORH-801 9µm
(1gm)
P/N POL-99-0381

Ion Exclusion, ORH-801 >15mµm
(1gm)
P/N POL-99-0382

Ion Exclusion, ARH-601 6.5mµm
(1gm)
P/N POL-99-0383

Ion Exclusion, ARH-601 >15µm
(1gm)
P/N POL-99-0384

Ion Exclusion, ION-300 9µm
(1gm)
P/N POL-99-0385

Ion Exclusion, ION-300 >15µm
(1gm)
P/N POL-99-0386

Ion Exclusion, ION-310 8µm
(1gm)
P/N POL-99-0387

Ion Exclusion, ION-310 >15µm
(1gm)
P/N POL-99-0388

Ion Exclusion COREGEL-87H 9µm
(1gm)
P/N POL-99-0389

Anion Exchange Resin

Anion Exchange ANEX-Q S 6.5µm
(1Kg)
P/N POL-99-0361

Cation Exchange Resins for Amino Acid Analysis and Protein Separations

Lithium Cation Exchange IC1011-3 3µm
(1gm)
P/N POL-99-0369

Sodium Cation Exchange IC1011-6 5µm
(1gm)
P/N POL-99-0370

Sodium Cation Exchange IC1011-6 >10µm
(1gm)
P/N POL-99-0371

Sodium Cation Exchange IC8011-9 9µm
(1gm)
P/N POL-99-9000

Bulk Polymeric Resin

Polymeric Reversed Phase Resins

PS/DVB, 80 Å, Extra Clean 12µm
(1Kg)
P/N POL-99-0360

PRX-1, 80Å, 5µm
(1gm)
P/N POL-99-0305

MP-DVB-100, 4µm
(1gm)
P/N POL-99-0304

MP-DVB-100, 9µm
(1gm)
P/N POL-99-0318

MP-DVB-100, 35µm
(1gm)
P/N POL-99-0319

ACT-1, C18 alkylated, 9µm
(1gm)
P/N POL-99-0313

ACT-1, C18 alkylated, >12µm
(1gm)
P/N POL-99-0314

Ligand Exchange Resins for Carbohydrate Analysis and Purification

COREGEL 87N 9µm, Sodium Form
(1gm)
P/N POL-99-0391

COREGEL 87C 9µm, Calcium Form
(1gm)
P/N POL-99-0392

COREGEL 87P 8µm, Lead Form
(1gm)
P/N POL-99-0393

CHO-611 10µm, Sodium Form
(1gm)
P/N POL-99-0394

CHO-611 >15µm, Sodium Form
(1gm)
P/N POL-99-0395

CHO-620 10µm, Calcium Form
(1gm)
P/N POL-99-0396

CHO-611 >15µm, Calcium Form
(1gm)
P/N POL-99-0397

CHO-682 7µm, Lead Form
(1gm)
P/N POL-99-0398

CHO-682 >15µm, Lead Form
(1gm)
P/N POL-99-0399

CHO-411 20µm, Sodium Form
(1gm)
P/N POL-99-0311

CHO-411 >22µm, Sodium Form
(1gm)
P/N POL-99-0312

Transgenomic®
Advancing Personalized Medicine

Column Index

Amino Acid Columns

Transgenomic Na^+ 6, 7, 8
Transgenomic Li^+ 6, 7, 8
Transgneomic Na^+ Column for System Gold 8
AMINOSep AA-911 10
AMINOSep AA-511 10

Carbohydrate Analysis Columns

CARBOSep CHO-620 ..... 15, 17, 19
CARBOSep CHO-682 ..... 13, 16, 17, 19
CARBOSep CHO-820 ..... 14, 15, 19
CARBOSep CHO-611 ..... 13, 18, 20
CARBOSep CHO-411 ..... 15, 16, 20
CARBOSep USP-L19 ..... 13, 21
CARBOSep COREGEL-87C 14, 21
CARBOSep COREGEL-87K 21
CARBOSep COREGEL-87N 22
CARBOSep COREGEL-87P 22

Organic Acid Analysis Columns

ICSep ION-300 ..... 25, 26, 30
ICSep ION-310 ..... 25, 26, 28, 31
ICSep ORH-801 ..... 27, 28, 29, 30
ICSep COREGEL-87H 27, 29, 30
ICSep ARH-601 ..... 27, 28, 31
ICSep COREGEL-64H 31

Oligonucleotide Analysis Columns

OLIGOSep-1 ..... 34, 35

Polymeric Reversed Phase Columns

RPSep POLYRP C0 ..... 39, 40, 41, 43
RPSep ACT-1 ..... 39, 40, 41, 42
RPSep PRX-1 42

Ion Analysis Columns

ICSep AN1 48
ICSep AN1S 48
ICSep AN2 48
ICSep ANSC 47, 49
ICSep AN300 ..... 47, 49
ICSep AN300B 47, 49
ICSep ION-120 50
ICSep CN2 50

Notes

Notes

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Notes

Notes