REZEX™

HPLC COLUMNS for Carbohydrate, Oligosaccharide, and Organic Acid Analysis



Guaranteed alternative to:

Bio-Rad Aminex®

Waters Sugar-Pak™

Supelco Supelcogel™

phenomenex®

...breaking with tradition℠

HPLC Columns for Carbohydrate, Oligosaccharide, and Organic Acid Analysis

- Ion-exclusion and ion-exchange materials with a small degree of reversed phase selectivity
- 4% and 8% cross-linked sulfonated styrene-divinylbenzene (SDVB)
- Calcium (Ca^{+2}), Sodium (Na^{+}), Hydrogen (H^{+}), Potassium (K^{+}), Lead (Pb^{+2}), and Silver (Ag^{+}) ionic forms for wide spectrum of selectivities
- Analyze samples from foods, beverages, fermentation broths, and other complex matrices
- USP* L19, L17, L34, L54, and L22 packings available



11 Phases to Perfectly Suit Your Application Needs






guarantee

If you are not completely satisfied with the performance of any Rezex column, as compared to a competing product of the same size and phase, simply return the Rezex column with your comparative data within 45 days for a FULL REFUND.

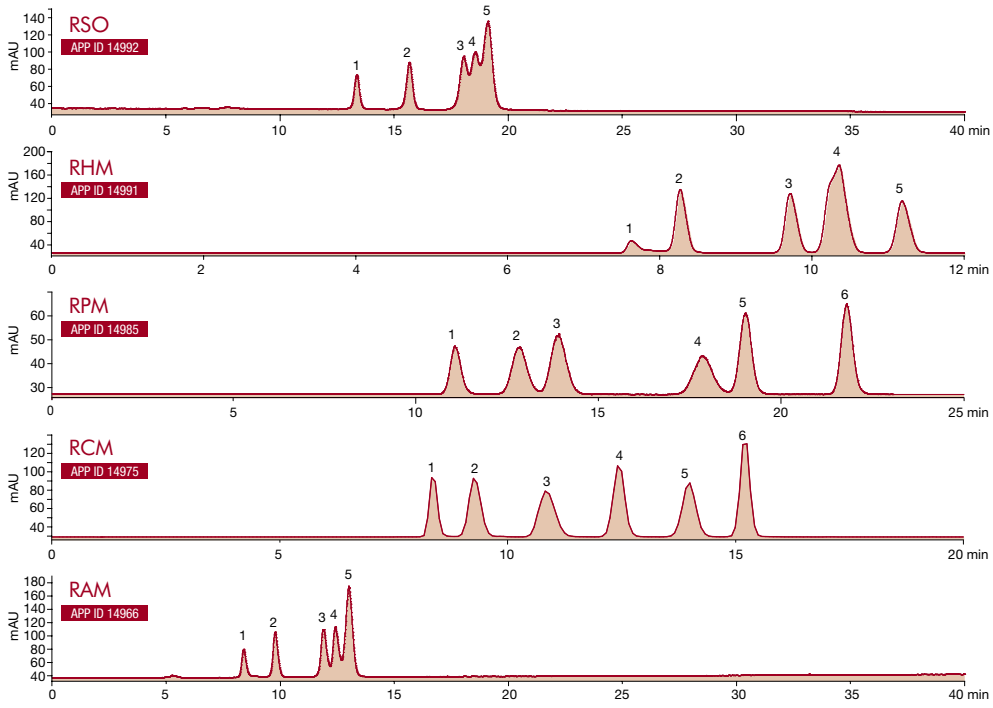
Phenomenex Phase Available	Description	Applications	Bio-Rad Aminex®	Supelco Supelcogel™	Waters Sugar-Pak™
RCM-Monosaccharide (L19 packing)*	8% cross-linked **CALCIUM**	– Monosaccharides and sugar alcohols, including sorbitol and mannitol from sweeteners and corn and cane sugars – Class separation of di-, tri-, and tetra- saccharides	HPX-87C 125-0095	Supelcogel Ca	Sugar-Pak 1
RHM-Monosaccharide (L17 packing)*	8% cross-linked **HYDROGEN**	– Monosaccharides in combination with organic acids, fatty acids, alcohols, ketones, neutral compounds, or inorganic salts	HPX-87H 125-0140	Supelcogel C-610H & H	N/A
RAM-Carbohydrate	8% cross-linked **SILVER**	– Unique selectivity complimentary to other Rezex column types	N/A	N/A	N/A
RSO-Oligosaccharide	4% cross-linked **SILVER**	– High resolution of oligosaccharides up to 18 degrees of polymerization (dp)	HPX-42A 125-0097	Supelcogel Ag1 & Ag2	N/A
RNO-Oligosaccharide	4% cross-linked **SODIUM**	– High resolution of oligosaccharides	N/A	N/A	N/A
RPM-Monosaccharide (L34 packing)*	8% cross-linked **LEAD**	– 100 x 7.8mm dimensions available for sugar alcohol analysis according to the USP procedure – Monosaccharides and sugar alcohol analysis. – Cellobiose, glucose, xylose, arabinose, and mannose and other cellulose products	HPX-87P 125-0098	Supelcogel Pb	N/A
RNM-Carbohydrate (L54 packing)*	8% cross-linked **SODIUM**	– Analysis of mono-, di-,and tri- saccharides – For matrices which contain high concentration of inorganic sodium (i.e.-molasses)	HPX-87N 125-0143	N/A	N/A
ROA-Organic Acid (L22 packing)*	8% cross-linked **HYDROGEN**	– Organic acids – Organic acids in combination with carbohydrates, alcohols, fatty acids, or neutral compounds – Amino sugars	HPX-87H 125-0140	Supelcogel C-610H & H	N/A
RFQ-Fast Acid	8% cross-linked **HYDROGEN**	– Rapid screening of fruit quality – Ethanol, acetic acid, glycerol, & standard alcohol mixtures	Fast Acid 125-0100	N/A	N/A
RKP-Potassium	8% cross-linked **POTASSIUM**	– Analysis of glyphosate	HPX-87K 125-0142	Supelcogel K	N/A
RCU-USP Sugar Alcohols (L19 packing)*	8% cross-linked **CALCIUM**	– Sugar analysis according to the USP procedures on a 250 x 4.0mm dimension	Sugar Alcohols 125-0094	N/A	N/A

** United States Pharmacopeia*

HPLC Columns for Carbohydrate, Oligosaccharide, and Organic Acid Analysis

VARIETY GIVES YOU THE POWER OF OPTIMIZATION

Compounds of interest can change from application to application. Shouldn't you have choices for an optimal separation? The example below illustrates that you can achieve varying results to suit your specific needs by selecting the appropriate phase.



Saccharides

Columns: Rezex RSO-Oligosaccharide
Rezex RHM-Monosaccharide
Rezex RPM-Monosaccharide
Rezex RCM-Monosaccharide
Rezex RAM-Carbohydrate
Dimensions: 200 x 10.0mm (RSO Only)
300 x 7.8mm
Order No.: 00P-0133-N0
00H-0132-K0
00H-0135-K0
00H-0130-K0
00H-0131-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 80°C
Sample: 1. Melezitose
2. Maltose
3. Glucose
4. Mannose
5. Fructose
6. Ribitol

RETENTION TIMES FOR SOME CARBOHYDRATES AND SUGAR ALCOHOLS

Still not sure what phase to choose? It is important to ensure that you get adequate resolution between your peaks of interest. The retention time chart below gives the retention times for common carbohydrates and sugar alcohols on the most popular Rezex phases.

Counter Ion Analyte	RAM Ag^{+}	RCM Ca^{+2}	RNM Na^{+}	RHM H^{+}	RPM Pb^{+2}
Adonitol (Ribitol)	11.54	14.93	11.10	11.11	20.15
D-Altrose	11.95	12.71	11.45	10.21	15.82
D-(-)-Arabinose	13.01	13.56	12.65	11.24	16.47
D-(+)-Cellobiose	8.86	8.60	8.49	8.02	11.00
D-(+)-Digitoxose	11.90	13.82	11.39	12.59	15.32
Dulcitol	11.64	21.61	11.10	10.71	33.25
Meso-Erythritol	12.31	15.49	11.78	12.14	19.82
D-(-)- Fructose	12.05	13.65	11.76	10.31	17.71
L-(-)-Fucose	12.75	13.19	12.30	11.65	16.19
D-(+)-Galactose	11.87	11.73	11.47	10.19	14.94
Gentiobiose	8.70	8.40	8.40	7.87	10.53
D-(+)-Glucose	11.04	10.37	10.71	9.62	12.92
Inositol	12.59	13.35	12.14	9.98	18.87
Isomaltose	9.11	8.74	8.76	8.02	11.28
Lactose	9.27	9.03	8.78	8.32	11.89
Lactulose	9.75	10.32	9.23	8.57	13.95
D- Lyxose	12.41	14.06	11.98	10.68	16.66
D- Maltose	9.16	8.81	8.75	8.18	11.59
Maltotriose	8.27	8.10	7.94	7.51	11.02
Maltulose	9.25	9.47	8.82	8.27	12.40

Counter Ion Analyte	RAM Ag^{+}	RCM Ca^{+2}	RNM Na^{+}	RHM H^{+}	RPM Pb^{+2}
D- Mannitol	11.36	17.82	10.80	10.59	24.90
D-(+)-Mannose	12.04	12.04	11.54	10.16	16.39
Melibiose	9.26	9.04	8.82	8.14	11.97
D-(+)-Melezitose	8.00	7.93	7.66	7.54*	9.94
D-(+)-Raffinose	8.10	8.16	7.76	7.88*	10.28
L-(+)-Rhamnose	11.50	12.18	11.00	10.90	14.47
D-(-)-Ribose	14.59	23.38	14.34	11.42	33.48
Salicin	18.51	18.58	17.36	14.98	26.81
D-Sorbitol	11.91	22.45	11.39	10.83	35.97
Stachyose	7.60	7.59	7.30	7.27	9.72
Sucrose	9.03	8.71	8.65	9.24*	11.00
Trehalose	8.91	8.72	8.49	8.32	11.01
Xylitol	12.69	22.01	12.16	11.78	32.38
D-(+)-Xylose	12.06	11.62	11.68	10.24	13.84

** Partial hydrolysis results.*

Conditions

Dimensions: 300 x 7.8mm
Mobile Phase: Water (degassed)
Flow Rate: 0.6 mL/min
Temperature: 80°C
Detection: RI @ 40°C

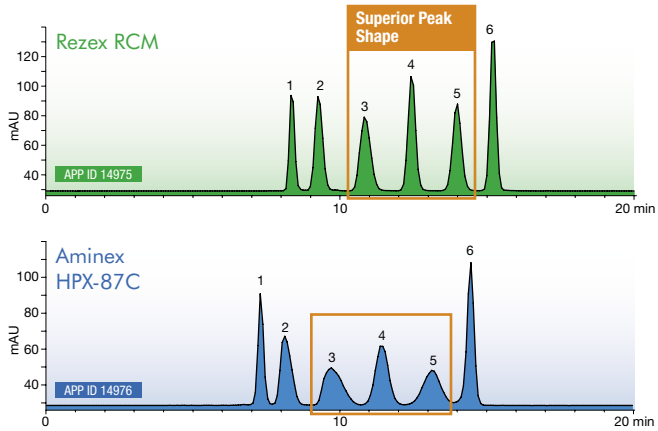
PHENOMENEX® Rezex™ *vs.* BIO-RAD® Aminex®

See The Difference!

EASIER, ACCURATE QUANTITATION

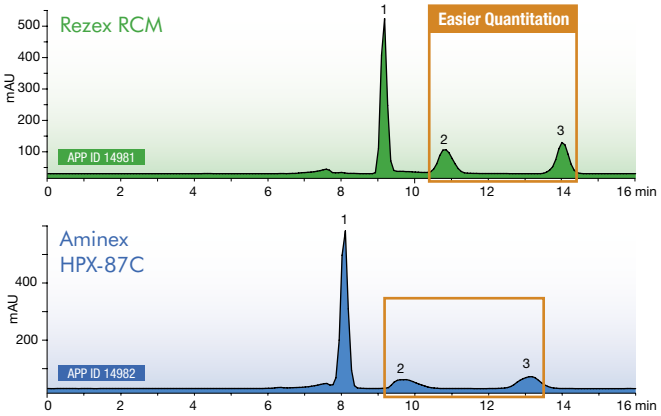
Due to improved peak shape

Saccharides



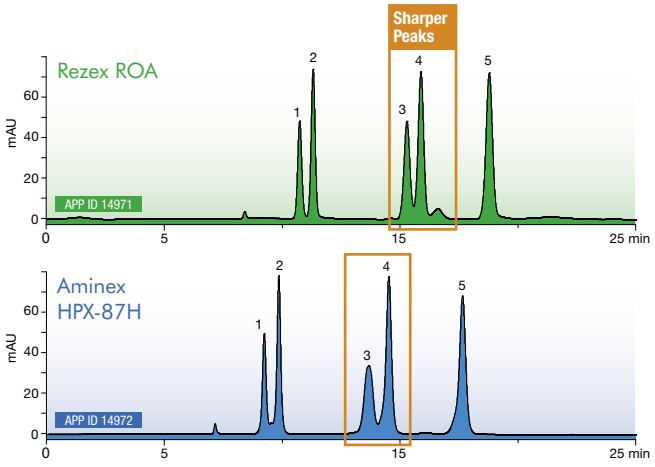
Columns: Rezex RCM-Monosaccharide
Aminex HPX-87C
Dimensions: 300 x 7.8mm
Order No.: 00H-0130-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 80°C
Sample: 1. Melezitose 4. Mannose
2. Maltose 5. Fructose
3. Glucose 6. Ribitol

Orange Juice



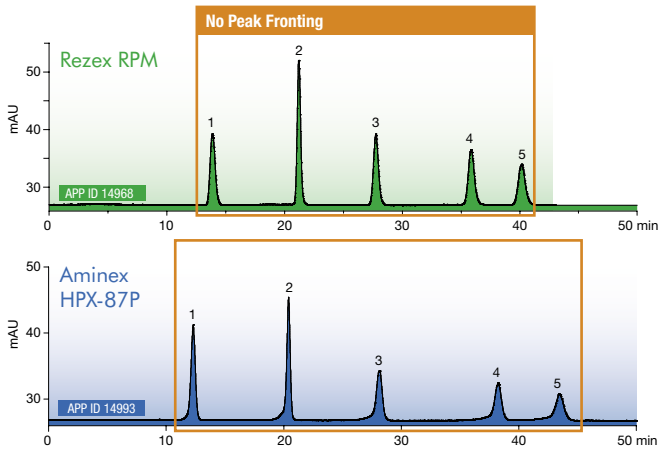
Columns: Rezex RCM-Monosaccharide
Aminex HPX-87C
Dimensions: 300 x 7.8mm
Order No.: 00H-0130-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 80°C
Sample: 1. Sucrose
2. Glucose
3. Fructose

Organic Acids in Wine



Columns: Rezex ROA-Organic Acid
Aminex HPX-87H
Dimensions: 300 x 7.8mm
Order No.: 00H-0138-K0
Mobile Phase: 0.005N H_2SO_4
Flow Rate: 0.5 mL/min
Detection: UV @ 210nm
Temperature: 40°C
Sample: 1. Citric acid 4. Lactic acid
2. Tartaric acid 5. Acetic acid
3. Succinic acid

Sugar Alcohols

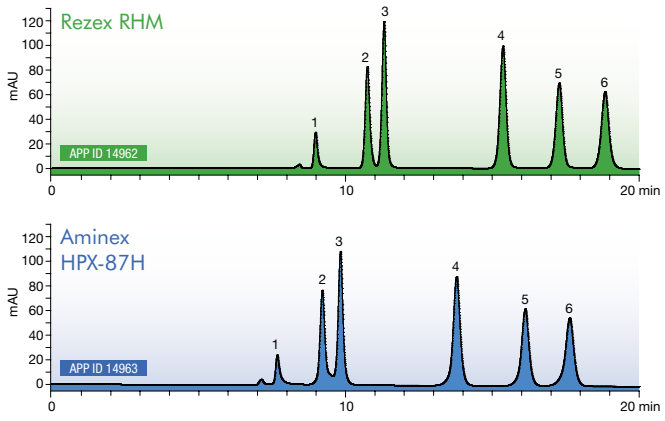


Columns: Rezex RPM-Monosaccharide
Aminex HPX-87P
Dimensions: 300 x 7.8mm
Order No.: 00H-0135-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 80°C
Sample: 1. Glucose 4. Xylitol
2. Mannitol 5. Erythritol
3. Sorbitol

LONGER COLUMN LIFETIME AND FASTER RUN TIMES

Due to lower backpressures

Aliphatic Acids



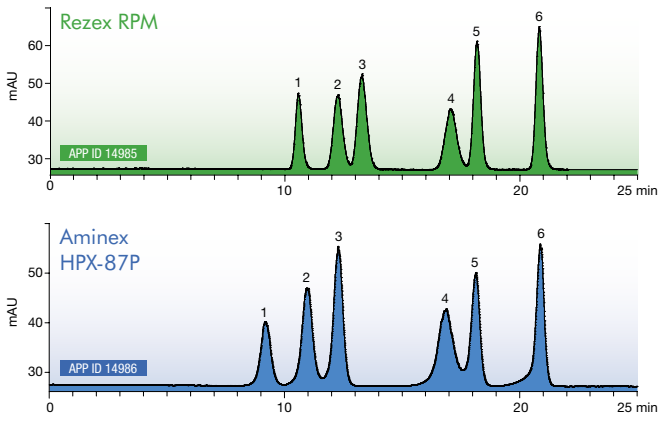
Columns: Rezex RHM-Monosaccharide
Aminex HPX-87H
Dimensions: 300 x 7.8mm
Order No.: 00H-0132-K0
Mobile Phase: 0.005N H_2SO_4
Flow Rate: 0.5 mL/min
Detection: UV @ 210nm
Temperature: 80°C
Sample: 1. Oxalic acid 4. Succinic acid
2. Citric acid 5. Formic acid
3. Tartaric acid 6. Acetic acid

Lower Backpressure

Rezex 32 Bars

Aminex 55 Bars

Saccharides



Columns: Rezex RPM-Monosaccharide
Aminex HPX-87P
Dimensions: 300 x 7.8mm
Order No.: 00H-0135-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 75°C
Sample: 1. Melezitose 4. Mannose
2. Maltose 5. Fructose
3. Glucose 6. Ribitol

Lower Backpressure

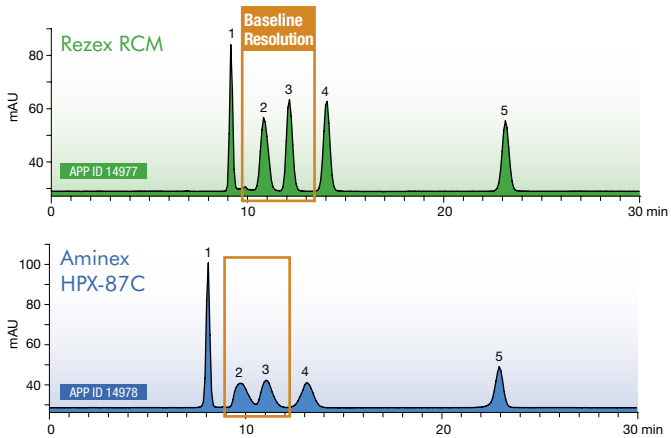
Rezex 17 Bars

Aminex 27 Bars

BASELINE SEPARATION OF CRITICAL SAMPLE COMPONENTS

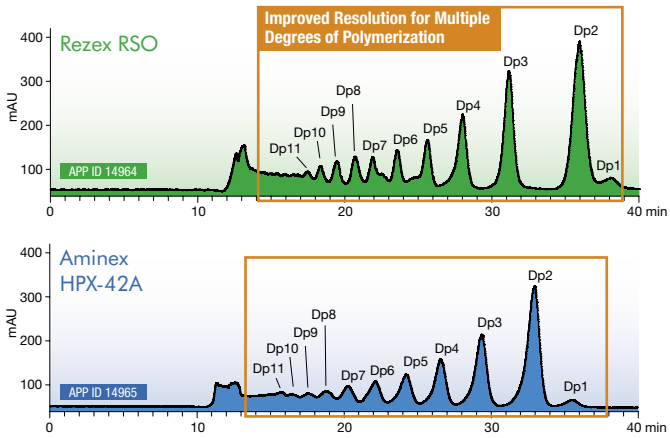
Due to improved resolution

Sugars



Columns: Rezex RCM-Monosaccharide
Aminex HPX-87C
Dimensions: 300 x 7.8mm
Order No.: 00H-0130-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 80°C
Sample: 1. Sucrose 4. Fructose
2. Glucose 5. Sorbitol
3. Galactose

Oligosaccharides

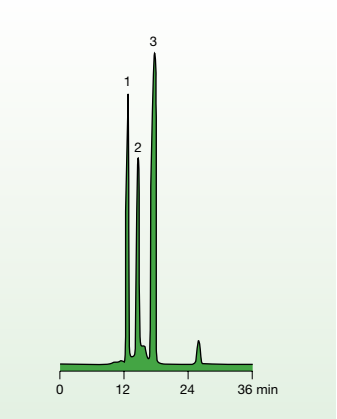


Columns: Rezex RSO-Oligosaccharide
Aminex HPX-42A
Dimensions: 200 x 10.0mm
Order No.: 00P-0133-N0
Mobile Phase: Water
Flow Rate: 0.3 mL/min
Detection: ELSD
Temperature: 80°C
Sample: 1. Malto-Oligosaccharides (Dp1-Dp14)
(Dp refers to degree of polymerization)

Applications on Rezex™ HPLC Columns

RCM-MONOSACCHARIDE Ca^{+2}

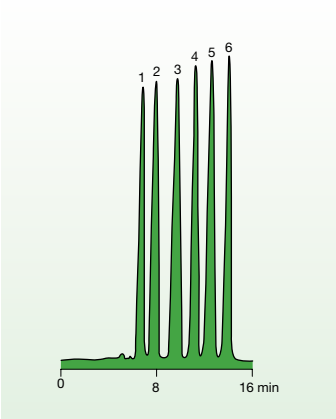
Apple Juice



APP ID 5505

Column: Rezex RCM-Monosaccharide
Dimensions: 300 x 7.8mm
Order No.: 00H-0130-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: RI
Temperature: 75°C
Sample: 1. Sucrose
2. Glucose
3. Fructose

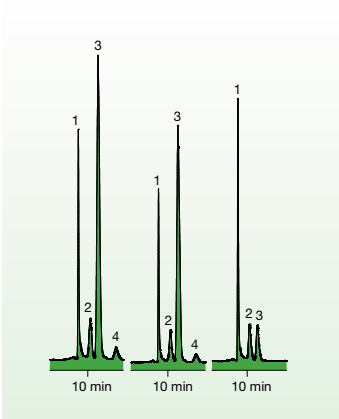
Saccharides



APP ID 5504

Column: Rezex RCM-Monosaccharide
Dimensions: 300 x 7.8mm
Order No.: 00H-0130-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: RI
Temperature: 85°C
Sample: 1. Melezitose
2. Maltose
3. Glucose
4. Mannose
5. Fructose
6. Ribitol

Fermentation Broth

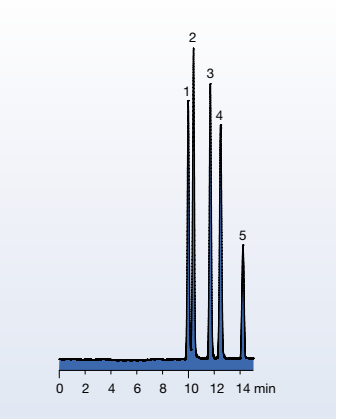


APP ID 14987 APP ID 14988 APP ID 14989

Column: Rezex RCM-Monosaccharide
Dimensions: 300 x 7.8mm
Order No.: 00H-0130-K0
Mobile Phase: Water
Flow Rate: 0.5 mL/min
Detection: ELSD
Temperature: 80°C
Sample: 1. Sucrose
2. Glucose
3. Galactose
4. Fructose

RHM-MONOSACCHARIDE H^+

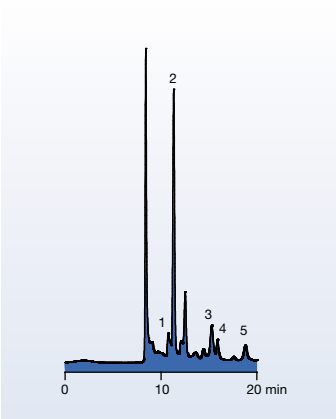
Monosaccharides with Organic Acids



APP ID 14969

Column: Rezex RHM-Monosaccharide
Dimensions: 300 x 7.8mm
Order No.: 00H-0132-K0
Mobile Phase: 0.1% formic acid
Flow Rate: 0.5 mL/min
Detection: ELSD
Temperature: 75°C
Sample: 1. Citric acid
2. Tartaric acid
3. Glucose
4. Fructose
5. Succinic acid

White Wine

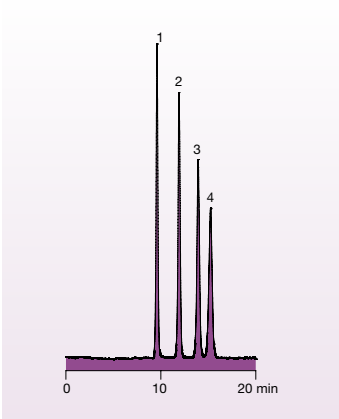


APP ID 14970

Column: Rezex RHM-Monosaccharide
Dimensions: 300 x 7.8mm
Order No.: 00H-0132-K0
Mobile Phase: 0.005N H_2SO_4
Flow Rate: 0.5 mL/min
Detection: UV @ 210nm
Temperature: 40°C
Sample: 1. Citric acid
2. Tartaric acid
3. Succinic acid
4. Lactic acid
5. Acetic acid

RAM-CARBOHYDRATE Ag^+

Carbohydrates



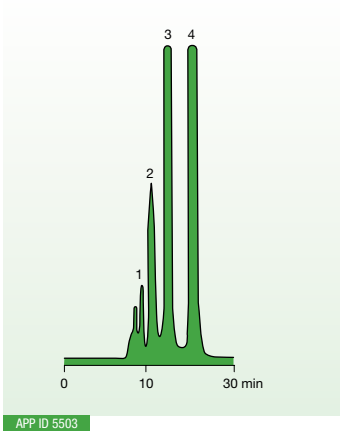
APP ID 14974

Column: Rezex RAM-Carbohydrate
Dimensions: 300 x 7.8mm
Order No.: 00H-0131-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 80°C
Sample: 1. Sucrose
2. Glucose
3. Arabinose
4. Ribose

Applications on Rezex™ HPLC Columns

RCU-USP SUGAR ALCOHOL Ca^{+2}

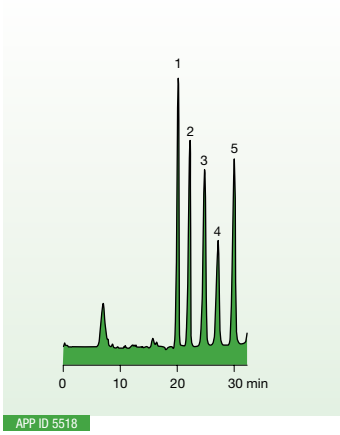
Honey



APP ID 5503

Column: Rezex RCM-Monosaccharide
Dimensions: 300 x 7.8mm
Order No.: 00H-0130-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: RI
Temperature: 75°C
Sample: 1. Dp 3
2. Dp 2
3. Glucose
4. Fructose

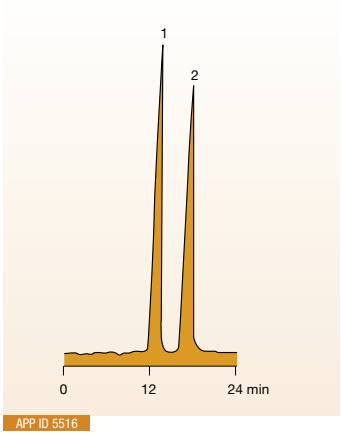
Food Softeners



APP ID 5518

Column: Rezex RCM-Monosaccharide
Dimensions: 300 x 7.8mm
Order No.: 00H-0130-K0
Mobile Phase: Water
Flow Rate: 0.5 mL/min
Detection: RI
Temperature: 60°C
Sample: 1. Glycerol
2. Methoxypolyethylene Glycol
3. Triethylene Glycol
4. Sorbitol
5. Urea

Carbohydrates

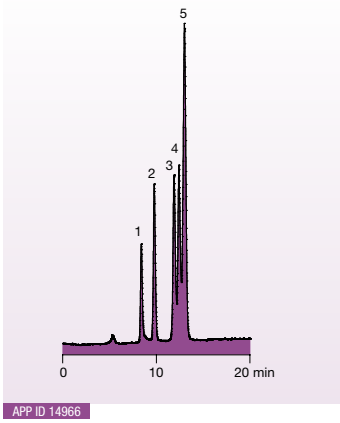


APP ID 5516

Column: Rezex RCU-USP Sugar Alcohols
Dimensions: 250 x 4.0mm
Order No.: 00G-0130-D0
Mobile Phase: Water
Flow Rate: 0.2 mL/min
Detection: RI
Temperature: 30°C
Sample: 1. Mannitol
2. Sorbitol

RPM-MONOSACCHARIDE Pb^{+2}

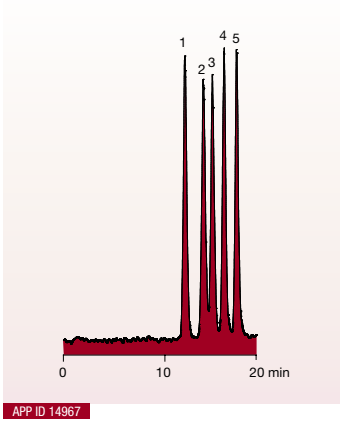
Saccharides



APP ID 14966

Column: Rezex RAM-Carbohydrate
Dimensions: 300 x 7.8mm
Order No.: 00H-0131-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 75°C
Sample: 1. Melezitose
2. Mannose
3. Maltose
4. Fructose
5. Glucose

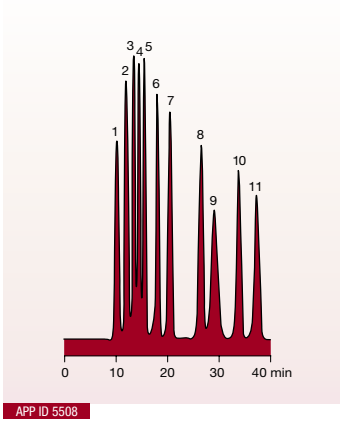
Wood Saccharides



APP ID 14967

Column: Rezex RPM-Monosaccharide
Dimensions: 300 x 7.8mm
Order No.: 00H-0135-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 85°C
Sample: 1. D-Cellobiose
2. α-D-glucose
3. D-(+)-Xylose
4. D-(+)-Galactose
5. D-(-)-Arabinose

Saccharides and Alcohols



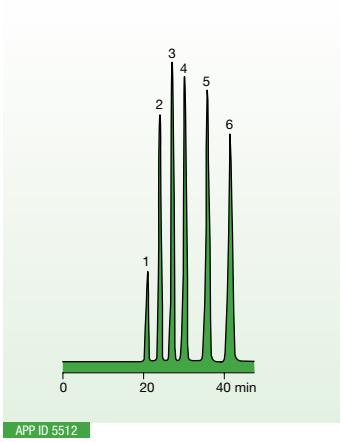
APP ID 5508

Column: Rezex RPM-Monosaccharide
Dimensions: 300 x 7.8mm
Order No.: 00H-0135-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: RI
Temperature: 75°C
Sample: 1. Stachyose
2. Maltose
3. Glucose
4. Xylose
5. Galactose
6. Fructose
7. meso-Erythritol
8. Mannitol
9. Salicin
10. Xylitol
11. Sorbitol

Applications on Rezex™ HPLC Columns

ROA-ORGANIC ACID H^+

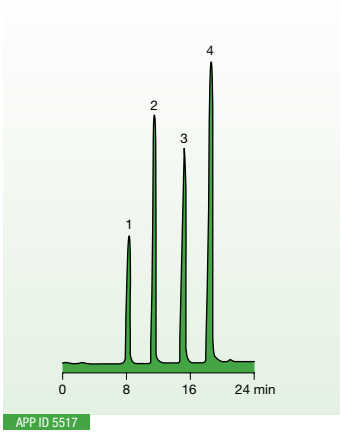
Alcohols



APP ID 5512

Column: Rezex ROA-Organic Acid
Dimensions: 300 x 7.8mm
Order No.: 00H-0138-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: RI
Temperature: 60°C
Sample:
1. Methanol
2. Ethanol
3. Isopropanol
4. *n*-Propanol
5. *sec*-Butanol
6. *n*-Butanol

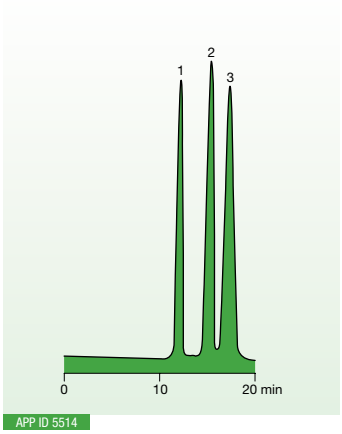
Carboxylic Acids



APP ID 5517

Column: Rezex ROA-Organic Acid
Dimensions: 300 x 7.8mm
Order No.: 00H-0138-K0
Mobile Phase: Water + 0.5% Trifluoroacetic Acid
Flow Rate: 1.0 mL/min
Detection: RI
Temperature: 40°C
Sample:
1. Acetylene Carboxylic Acid
2. Maleic Acid
3. Succinic Acid
4. Fumaric Acid

Amino Sugars

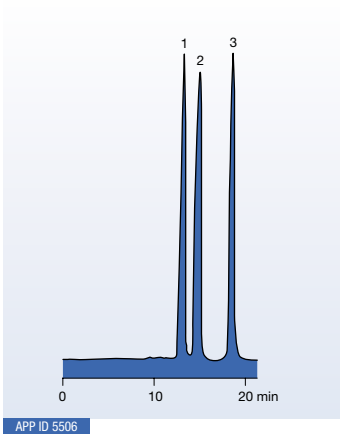


APP ID 5514

Column: Rezex ROA-Organic Acid
Dimensions: 300 x 7.8mm
Order No.: 00H-0138-K0
Mobile Phase: 1% Phosphoric Acid
Flow Rate: 0.6 mL/min
Detection: RI
Temperature: Ambient
Sample:
1. Glucose
2. N-Acetylglucose
3. N-Acetylgalactosamine

RKP-POTASSIUM K^+

Carbohydrates

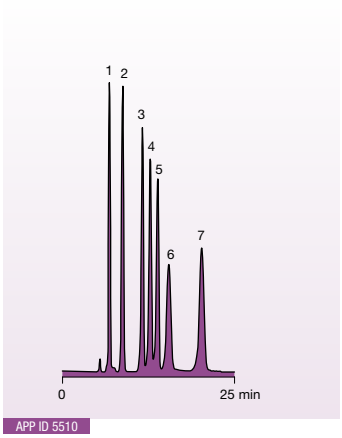


APP ID 5506

Column: Rezex RKP-Potassium
Dimensions: 300 x 7.8mm
Order No.: 00H-3252-K0
Mobile Phase: Water
Flow Rate: 0.4 mL/min
Detection: RI
Temperature: 85°C
Sample:
1. Maltotriose
2. Maltose
3. Glucose

RNM-CARBOHYDRATE Na^+

Carbohydrates

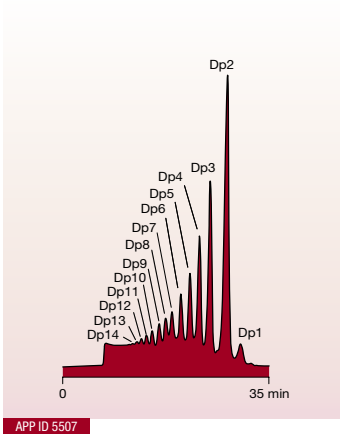


APP ID 5510

Column: Rezex RNM-Carbohydrate
Dimensions: 300 x 7.8mm
Order No.: 00H-0136-K0
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: RI
Temperature: 75°C
Sample:
1. Stachyose
2. Cellobiose
3. Glucose
4. Fructose
5. Arabinose
6. Ribose
7. Salicin (1% solution of each)

RSO-OLIGOSACCHARIDE Ag^+

Oligosaccharides



APP ID 5507

Column: Rezex RSO-Oligosaccharide
Dimensions: 200 x 10mm
Order No.: 00P-0133-N0
Mobile Phase: Water
Flow Rate: 0.3 mL/min
Detection: RI
Temperature: 75°C
Sample: Malto-Oligosaccharides as shown

REZEX™

Applications on Rezex™ HPLC Columns

This is only a partial list of applications.

Compound	Rezex phase	App ID No.
Acetic acid	ROA	5515
	RHM	14962
Acetylene carboxylic acid	ROA	5517
Arabinose	RNM	5510
	RAM	14974
Citric acid	ROA	5515
	RHM	14970
D-Cellobiose	RNM	5510
	RPM	14967
D-(+)-Galactose	RPM	14967
D-(+)-Xylose	RPM	14967
D-(-)-Arabinose	RPM	14967
Erythritol	RPM	14968
Ethanol	ROA	5512
Formic acid	ROA	5515
	RHM	14962
Fructose	RCM	5504, 5505, 14975, 14981, 14977,14987
	RPM	5508, 14985
	RNM	5510
	RAM	14966
Fumaric acid	ROA	5517
Galactose	RPM	5508
	RCM	14977, 14987
Glucose	RCM	5504, 5505, 14975, 14977, 14979, 14981, 14987, 14983
	RPM	5508, 14985
	RKP	5506
	ROA	5514
	RNM	5510
	RAM	14966, 14974
Glycerol	RCM	5518
Isopropanol	ROA	5512
Lactic acid	RHM	14970, 14971
Maleic acid	ROA	5517
Malto-Oligosaccharides	RSO	5507
Maltose	RCM	5504, 14975
	RPM	5508, 14985
	RKP	5506
	RAM	14966
Maltotriose	RKP	5506
Mannitol	RPM	5508, 14968
	RCU	5516

Compound	Rezex phase	App ID No.
Mannose	RCM	5504, 14975
	RPM	14985
	RAM	14966
Melezitose	RCM	5504, 14975
	RPM	14985
	RAM	14966
meso-Erythritol	RPM	5508
Methanol	ROA	5512
Methoxypolyethylene Glycol	RCM	5518
n-Butanol	ROA	5512
n-Propanol	ROA	5512
N-Acetylgalactosamine	ROA	5514
N-Acetylglucose	ROA	5514
Oxalic acid	ROA	5515
	RHM	14962
Ribose	RNM	5510
	RAM	14974
Ribitol	RCM	5504, 14975
	RAM	14966
	RHM	14991
	RPM	14985
Salicin	RPM	5508
	RNM	5510
sec-Butanol	ROA	5512
Sorbitol	RPM	5508, 14968
	RCM	5518, 14977
	RCU	5516
Stachyose	RPM	5508
	RNM	5510
Succinic acid	ROA	5515
	RHM	14962
Sucrose	RCM	5505, 14981, 14977, 14987
	RAM	14974
Tartaric acid	RCM	5504
	RHM	14970
Triethylene glycol	RCM	5518
Urea	RCM	5518
Xylitol	RPM	5508, 14968
Xylose	RPM	5508

** For applications not in this brochure, copies are available through Phenomenex or your local Phenomenex distributor.*

guarantee

If you are not completely satisfied with the performance of any Rezex column, as compared to a competing product of the same size and phase, simply return the Rezex column with your comparative data within 45 days for a FULL REFUND.

ORDERING INFORMATION

SecurityGuard™ Cartridges require universal holder Order No.: KJ0-4282

REZEX™ Columns						Guards			SecurityGuard™ Cartridges	
Description	Order No.	Cross Linkage	Ionic Form	Size (mm)	Price	Order No.	Size (mm)	Price	4 x 3.0mm /8pk	
RCM-Monosaccharide	00H-0130-K0	8%	Calcium	300 x 7.8		03B-0130-K0	50 x 7.8		AJ0-4493	
RHM-Monosaccharide	00H-0132-K0	8%	Hydrogen	300 x 7.8		03B-0132-K0	50 x 7.8		AJ0-4490	
RAM-Carbohydrate	00H-0131-K0	8%	Silver	300 x 7.8		—	—		AJ0-4491	
RSO-Oligosaccharide	00P-0133-N0	4%	Silver	200 x 10.0		03R-0133-N0	60 x 10.0		AJ0-4491	
RNO-Oligosaccharide	00P-0137-N0	4%	Sodium	200 x 10.0		03R-0137-N0	60 x 10.0		—	
RPM-Monosaccharide	00H-0135-K0	8%	Lead	300 x 7.8		03B-0135-K0	50 x 7.8		AJ0-4492	
(for USP procedure)	00D-0135-K0	8%	Lead	100 x 7.8		03B-0135-K0	50 x 7.8		AJ0-4492	
RNM-Carbohydrate	00H-0136-K0	8%	Sodium	300 x 7.8		03B-0136-K0	50 x 7.8		—	
ROA-Organic Acid	00H-0138-K0	8%	Hydrogen	300 x 7.8		03B-0138-K0	50 x 7.8		AJ0-4490	
RKP-Potassium	00H-3252-K0	8%	Potassium	300 x 7.8		—	—		—	
RFQ-Fast Acid	00D-0223-K0	8%	Hydrogen	100 x 7.8		03B-0223-K0	50 x 7.8		AJ0-4490	
RCU-USP Sugar Alcohols Column	00G-0130-D0	8%	Calcium	250 x 4.0		03A-0130-D0	30 x 4.0		AJ0-4493	
									for ID: 3.2-8.0mm	

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SPECIFICATIONS AND OPERATING RECOMMENDATIONS

	RCM Monosaccharide	RSO Oligosaccharide	RNO Oligosaccharide	RNM Carbohydrate	RAM Carbohydrate
Order No.	00H-0130-K0	00P-0133-N0	00P-0137-N0	00H-0136-K0	00H-0131-K0
Ionic Form	Calcium	Silver	Sodium	Sodium	Silver
Standard Dimensions	300 x 7.8mm	200 x 10mm	200 x 10mm	300 x 7.8mm	300 x 7.8mm
Matrix	Sulfonated Styrene Divinyl Benzene				
Cross Linking	8%	4%	4%	8%	8%
Particle Size	8µ	12µ	12µ	8µ	8µ
Min. Efficiency (p/m) based on last peak	35,000	N/A	N/A	30,000	35,000
Typical Pressure (psi @ Max Flow Rate)	350	200	200	350	350
Max. Pressure (psi @ Max Flow Rate)	600	300	300	600	600
Max. Flow Rate (mL/min)	0.6 (see pressure)	0.3	0.3	0.6	0.6
Max. Temperature (°C)	85	85	85	85	85
Typical Mobile Phase	Water	Water	Water	Water	Water
pH Range	Neutral	Neutral	Neutral	Neutral	Neutral
Guard Column Order No.	03B-0130-K0	03R-0133-N0	03R-0137-N0	03B-0136-K0	03B-0131-K0
Cleaning, Regeneration and Storage					
Organic Modifiers (Max)	10% Methanol, IPA, EtOH, Acetonitrile				
Inorganic Modifiers	5% $CaSO_4$, $Ca(NO_3)_2$, $CaCl_2$	5% Silver Nitrate	5% Sodium Salts	5% Sodium Salts	2% Silver Nitrate
Avoid	>10% Methanol, Acids, Bases, Non-Calcium Salts/ Metal Ions	>5% Methanol, Acids, Bases, Non-Silver Salts/ Metal Ions	>10% Methanol, Acids, Bases, Non-Sodium Salts/ Metal Ions	>10% Methanol, Acids, Bases, Non-Sodium Salts/ Metal Ions	>5% Methanol, Acids, Bases, Non-Silver Salts/ Metal Ions
Cleaning Solvent	100% Water	100% Water	100% Water	100% Water	100% Water
Flow Rate(mL/min)	0.6	0.2	0.2	0.4	0.4
Temperature (°C)	85	75	75	75	75
Duration (hrs)	12	12	12	12	12
Regeneration Solvent	0.1M $Ca(NO_3)_2$	0.1M $AgNO_3$	0.1M $NaNO_3$	0.1M $NaNO_3$	0.1M $AgNO_3$
Flow Rate (mL/min)	0.2	0.1	0.2	0.2	0.2
Temperature (°C)	85	-	85	85	85
Duration (hrs)	4-16	-	4-16	4-16	4-16
Ship/Storage Solvent	Water	Water	Water	Water	Water

	RPM Monosaccharide	RHM Monosaccharide	ROA Organic Acid	RFQ Fast Acid	RCU Sugar Alcohols
Order No.	00H-0135-K0	00H-0132-K0	00H-0138-K0	00D-0223-K0	00G-0130-D0
Ionic Form	Lead	Hydrogen	Hydrogen	Hydrogen	Calcium
Standard Dimensions	300 x 7.8mm	300 x 7.8mm	300 x 7.8mm	100 x 7.8mm	250 x 4.0mm
Matrix	Sulfonated Styrene Divinyl Benzene				
Cross Linking	8%	8%	8%	8%	8%
Particle Size	8µ	8µ	8µ	8µ	8µ
Min. Efficiency (p/m) based on last peak	35,000	35,000	50,000 (Acetic Acid)	30,000	12,000
Typical Pressure (psi @ Max Flow Rate)	350	350	350	350	350
Max. Pressure (psi @ Max Flow Rate)	600	600	600	600	600
Max. Flow Rate (mL/min)	0.6	0.6	0.6	1.0	0.4
Max. Temperature (°C)	85	85	85	85	85
Typical Mobile Phase	Water	Water	0.005N H_2SO_4	0.005N H_2SO_4	Water
pH Range	Neutral	Neutral	1-3	1-3	Neutral
Guard Column Order No.	03B-0135-K0	03B-0132-K0	03B-0138-K0	03B-0223-K0	03A-0130-D0
Cleaning, Regeneration and Storage					
Organic Modifiers (Max)	Up to 10% Methanol, IPA, EtOH, Acetonitrite				
Inorganic Modifiers	5% Lead Nitrate	5% HNO_3, H_3PO_4	5% HNO_3, H_3PO_4	5% HNO_3, H_3PO_4	5% $CaSO_4$, $Ca(NO_3)_2$, $CaCl_2$
Avoid	>10% Methanol, Acids, Bases, Non-Lead Salts/ Metal Ions	>10% Methanol, Acids, Bases, Salts, Metal Ions	>10% Methanol, Acids, Bases, Salts, Metal Ions, pH > 3	>10% Methanol, Acids, Bases, Salts, Metal Ions, pH > 3	>10% Methanol, Acids, Bases, Non-Calcium Salts or Metal Ions
Cleaning Solvent	100% Water	100% Water	100% Water	100% Water	100% Water
Flow Rate(mL/min)	0.6	0.6	0.5	0.6	0.2
Temperature (°C)	85	85	Ambient	85	85
Duration (hrs)	12	12	12	12	12
Regeneration Solvent	0.1M $Pb(NO_3)_2$	0.025M H_2SO_4	0.025M H_2SO_4	0.025M H_2SO_4	0.1M $Ca(NO_3)_2$
Flow Rate (mL/min)	0.2	0.2	0.2	0.2	0.2
Temperature (°C)	85	85	Ambient	85	85
Duration (hrs)	4-16	4-16	4-16	4-16	4-16
Ship/Storage Solvent	Water	Water	0.005N H2SO4	0.005N H2SO4	Water

REZEX™

To Improve Your Carbohydrate and Organic Acid Reproducibility



35% OFF*

(Any Single) TS-130
with your next Rezex™ column order

You Need Constant Temperature, Use A ThermaSphere™ TS-130 Column Heater!

BENEFITS

- **Improves chromatographic reproducibility**
- **Improves ruggedness of separation**
- **Improves peak efficiency and analyte quantification**
- **Improves baseline and overall detector performance**

ESSENTIAL FOR

- **Monosaccharides and sugar alcohol analysis**
- **Organic acid analysis**
- **Oligosaccharide analysis**
- **Rapid Fruit Sugar Analysis**

FEATURES

- **Compact and lightweight unit**
- **Transparent compartment cover**
- **Micro-fan provides rapid thermal equilibration**

Specifications
Column Size Accommodated: Fits up to one 30cm length column, or 25cm column with guard column. Multiple inlet and outlet slots allow the shortest length of tubing to be used with any length column.
Temperature Range: From 25 to 80°C in 0.1°C increments.
Temperature Stability: ±0.1°C Calibration two-point, electronic, factory set.
Accuracy: 0.5°C over the entire range.
Power: 12 volt DC universal power supply takes voltage inputs from 95 VAC to 265 VAC, 50/60 Hz. CE approved.
Over-temperature Alarm: Audible with automatic heater shutoff if column temperature exceeds 10°C of target temperature.
Auto-Off Timer: Count down timer with audible alarm turns off heater, settable to 30 days in days, hours, minutes and seconds.
Injection Counter: Trigger on external switch closure.

** Offer cannot be combined with any other discount or promotional item. Discount valid only at time of purchase and must be specified at time of order.*

ThermaSphere™ TS-130 Column Heater

Order No.	Description	Price
EH0-7057	ThermaSphere TS-130 HPLC Column Heater 25-80°C, 95 to 265 VAC, 50/60 Hz	
EH0-7058	Stand for ThermaSphere TS-130 HPLC Column Heater	

1. *The ThermaSphere™ TS-130 is warranted for one year parts and labor. Each unit is individually calibrated and comes with a Certificate of Performance. No adjustment or re-calibration is ever necessary. CE approved, UL and CSA approval pending.*
2. *Please specify Line Cord if other than U.S. (Australia, Germany, Italy and U.K. are available)*

guarantee

If you are not completely satisfied with the performance of your new TS-130 column heater, simply return the unit within 60 days of purchase for A FULL REFUND.

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