

## Carbohydrate and Organic Acid Analysis

- Excellent resolution and column-to-column reproducibility
- Easy, accurate quantitation from sharper peak shapes
- Longer column lifetimes and faster run time capability from lower backpressures
- Baseline separation of critical sample components due to higher efficiencies

Rezex HPLC columns achieve reproducible, accurate separations based on multiple modes of interaction. Available in 4% and 8% cross-linked sulfonated styrene-divinylbenzene (SDVB) and multiple ionic forms (calcium, sodium, hydrogen, potassium, lead, and silver) for a wide range of selectivities. USP L17, L19, L22, L34, and L58 packings available.

### Use Rezex for carbohydrate, oligosaccharide, and organic acid separations:

- Drug formulation and excipient analysis
- Food and beverage quality control testing
- Fermentation reaction monitoring and recovery testing for biofuels



Recommended alternative to Bio-Rad® Aminex®, Supelco® SUPELCOGEL™, and Waters® Sugar-Pak™ (see p. 329)

### Find the Column For Your Application

Phases Available	Description	Applications	Additional Notes
<b>RCM-Monosaccharide</b> (L19 packing)*	8% cross-linked resin <b>CALCIUM</b> ionic form	Monosaccharides and sugar alcohols from sweeteners and corn and cane sugars; Class separation of di-, tri-, and tetra-	– Our most commonly used column type – Easy regeneration with calcium nitrate solutions
<b>RHM-Monosaccharide</b> (L17 packing)*	8% cross-linked resin <b>HYDROGEN</b> ionic form	Monosaccharides in combination with organic acids, fatty acids, alcohols, ketones, neutral compounds, or inorganic salts	– Versatile column, generally run with a mobile phase of deionized water
<b>RAM-Carbohydrate</b>	8% cross-linked resin <b>SILVER</b> ionic form	Selectivity complementary to other Rezex column types	
<b>RSO-Oligosaccharide</b>	4% cross-linked resin <b>SILVER</b> ionic form	High resolution of oligosaccharides up to 18 degrees of polymerization (Dp)	– Guard column is recommended to protect the ionic integrity of the matrix
<b>RNO-Oligosaccharide</b>	4% cross-linked resin <b>SODIUM</b> ionic form	High resolution of oligosaccharides	
<b>RPM-Monosaccharide</b> (L34 packing)*	8% cross-linked resin <b>LEAD</b> ionic form	Monosaccharides and sugar alcohol analysis. Cellobiose, glucose, xylose, arabinose, mannose and other cellulose products	
<b>RNM-Carbohydrate</b> (L58 packing)*	8% cross-linked resin <b>SODIUM</b> ionic form	For matrices which contain high concentration of inorganic sodium, i.e. molasses	– Easily regenerated to the original ionic strength
<b>ROA-Organic Acid</b> (L22 packing)*	8% cross-linked resin <b>HYDROGEN</b> ionic form	Organic acids alone or in combination with carbohydrates, alcohols, fatty acids, or neutral compounds; Amino sugars; Ethanol, acetic acid, glycerol, and standard alcohol mixtures	– Selectivity can be altered by changing the pH as well as the type of dilute mineral acid used as the mobile phase
<b>RFQ-Fast Acid</b>	8% cross-linked resin <b>HYDROGEN</b> ionic form	Rapid screening of fruit quality; Ethanol, acetic acid, glycerol, and standard alcohol mixtures	– Analytes are routinely chromatographed under 5 minutes
<b>RKP-Potassium</b>	8% cross-linked resin <b>POTASSIUM</b> ionic form	Analysis of glyphosate	
<b>RCU-USP Sugar Alcohols</b> (L19 packing)*	8% cross-linked resin <b>CALCIUM</b> ionic form	For sugar analysis according to the USP procedures	– Sorbitol and mannitol can be resolved using simple isocratic conditions

\* United States Pharmacopeia (USP)



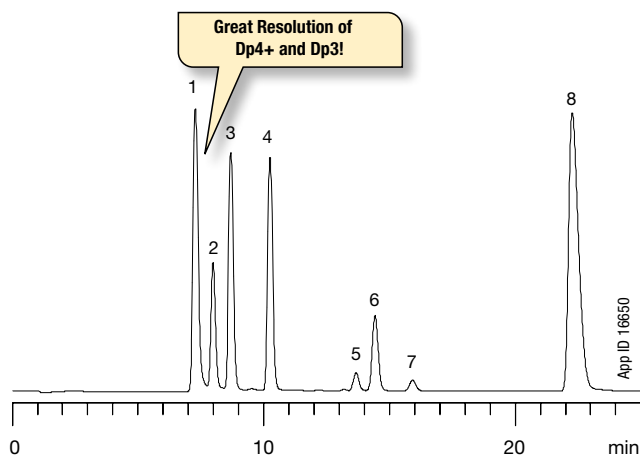


## Bioethanol Fermentation Monitoring

- Easy quantitation of ethanol fermentation broth components
- Monitor starches, sugars, organic acids, and ethanol in one run
- Reliable lactic acid and acetic acid monitoring
- Increase throughput by reducing run times 50% with 150 mm column length

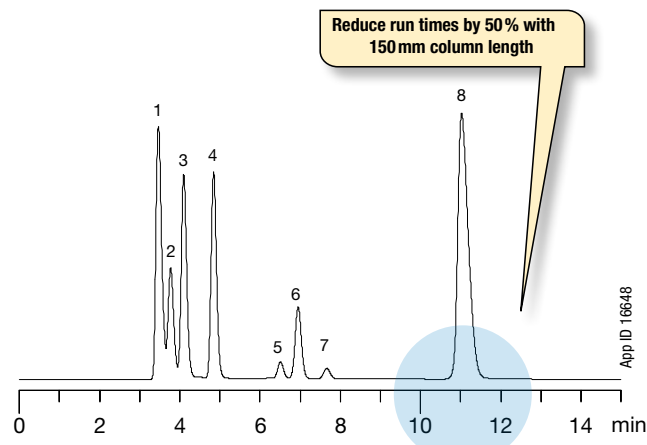
Monitoring the key reaction components throughout the fermentation process is crucial for maximizing ethanol recovery. Rezex ROA is uniquely suited for the separation and analysis of simple and complex sugars, organic acids, and ethanol within a fermentation broth sample. With results easily obtained through an isocratic run, Rezex ROA is instrumental in helping you to accurately determine what critical steps need to be taken to ensure the maximum yield is achieved during your fermentation run.

Rezex ROA has the ability to achieve excellent baseline separation between Dp3 and Dp4+, which have proven to be a challenge within the bioethanol industry. It is this great baseline separation that affords scientists the opportunity to utilize a shorter column dimension. By using the 150 x 7.8 mm Rezex ROA column, you are able to decrease the run time by 50% when compared to the average run time on a 300 x 7.8 mm column.



**Column:** Rezex ROA-Organic Acid  
**Dimensions:** 300 x 7.8 mm  
**Part No.:** [00H-0138-K0](#)  
**Guard Cartridge:** [AJ0-4490](#)  
**Guard Holder:** [KJ0-4282](#)  
**Mobile Phase:** 0.005 N Sulfuric Acid  
**Flow Rate:** 0.6 mL/min  
**Detection:** RI @ 40 °C  
**Vial:** [ARO-9925-13](#)  
**Filter:** [AF0-8103-52](#)  
**Temperature:** 60 °C  
**System:** Shimadzu® Prominence® LC-20A System  
**Sample:**

1. Dp4+	5. Lactic Acid
2. Dp3	6. Glycerol
3. Maltose	7. Acetic Acid
4. Glucose	8. Ethanol



**Column:** Rezex ROA-Organic Acid  
**Dimensions:** 150 x 7.8 mm  
**Part No.:** [00F-0138-K0](#)  
**Guard Cartridge:** [AJ0-4490](#)  
**Guard Holder:** [KJ0-4282](#)  
**Mobile Phase:** 0.005 N Sulfuric Acid  
**Flow Rate:** 0.6 mL/min  
**Detection:** RI @ 40 °C  
**Vial:** [ARO-9925-13](#)  
**Filter:** [AF0-8103-52](#)  
**Temperature:** 60 °C  
**System:** Shimadzu Prominence LC-20A System  
**Sample:**

1. Dp4+	5. Lactic Acid
2. Dp3	6. Glycerol
3. Maltose	7. Acetic Acid
4. Glucose	8. Ethanol

**Shorten GC Fuel Quality Testing**  
 Zebtron ZB-Bioethanol GC column can shorten your quality test down to 5 minutes! (See pp. 122-123).

**Extend Column Lifetime**  
 Protect the Rezex column from the intrusion of the metal ions by using Phenex™ Syringe Filters and SecurityGuard™. The filters and SecurityGuard guard cartridge system work by trapping metal ions, such as calcium, magnesium, and iron, which can damage the column and cause it to lose or change separation efficiency. (See pp. 8 and 330).

## Rezex vs. Bio-Rad® Aminex®

Phenomenex guarantees satisfaction when using Rezex HPLC columns. As illustrated below, Rezex offers advantages that enhance chromatographic results, increase throughput, and simplify quantitation.

### Easier, Accurate Quantitation

Due to improved peak shape

#### Saccharides

Conditions for both columns:

**Column:** Rezex RCM-Monosaccharide  
Aminex HPX-87C

**Dimensions:** 300 x 7.8 mm

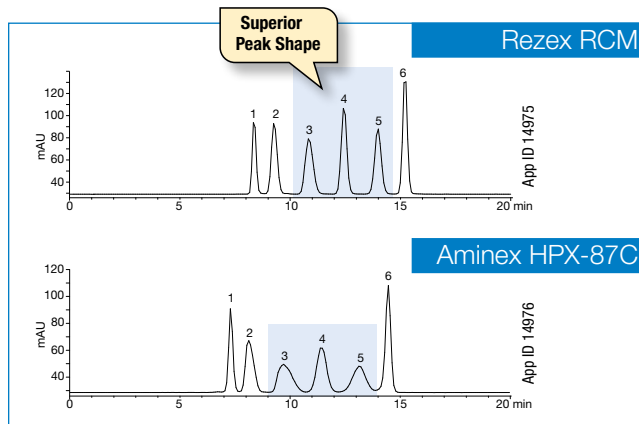
**Mobile Phase:** Water

**Flow Rate:** 0.6 mL/min

**Detection:** ELSD

**Temperature:** 80 °C

**Sample:** 1. Melezitose      4. Mannose  
2. Maltose            5. Fructose  
3. Glucose            6. Ribitol



Comparative separations may not be representative of all applications.

### Baseline Separation of Critical Sample Components

Due to improved resolution

#### Sugars

Conditions for both columns:

**Column:** Rezex RCM-Monosaccharide  
Aminex HPX-87C

**Dimensions:** 300 x 7.8 mm

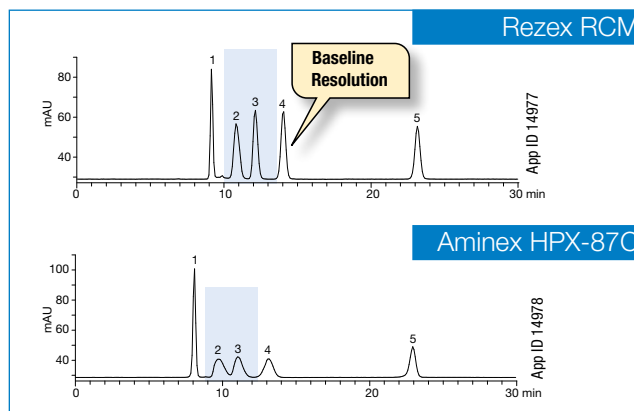
**Mobile Phase:** Water

**Flow Rate:** 0.6 mL/min

**Detection:** ELSD

**Temperature:** 80 °C

**Sample:** 1. Sucrose            4. Fructose  
2. Glucose            5. Sorbitol  
3. Galactose



## Applications

### Food Softeners

**Column:** Rezex RCM-Monosaccharide

**Dimensions:** 300 x 7.8 mm

**Part No.:** [0QH-0130-K0](#)

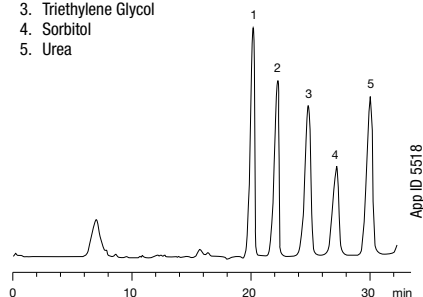
**Mobile Phase:** Water

**Flow Rate:** 0.5 mL/min

**Detection:** RI

**Temperature:** 60 °C

**Sample:** 1. Glycerol  
2. Methoxypolyethylene Glycol  
3. Triethylene Glycol  
4. Sorbitol  
5. Urea



### Amino Sugars

**Column:** Rezex ROA-Organic Acid

**Dimensions:** 300 x 7.8 mm

**Part No.:** [0QH-0138-K0](#)

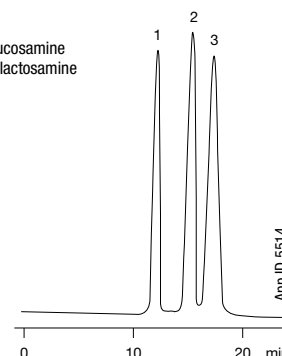
**Mobile Phase:** 1% Phosphoric Acid

**Flow Rate:** 0.6 mL/min

**Detection:** RI

**Temperature:** Ambient

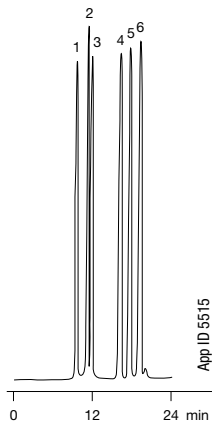
**Sample:** 1. Glucose  
2. N-Acetylglucosamine  
3. N-Acetylgalactosamine



# Rezex™ Organic Acid and Carbohydrate Columns

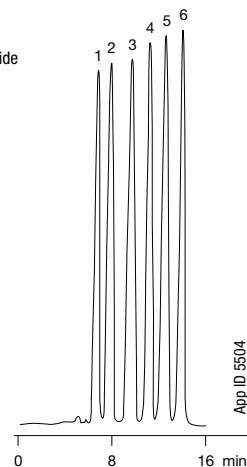
## Organic Acids

**Column:** Rezex ROA-Organic Acid  
**Dimensions:** 300 x 7.8 mm  
**Part No.:** [00H-0138-KO](#)  
**Guard Cartridge:** [AJ0-4490](#)  
**Guard Holder:** [KJ0-4282](#)  
**Mobile Phase:** 0.005 N Sulfuric Acid  
**Flow Rate:** 0.5 mL/min  
**Detection:** UV @ 210 nm  
**Vial:** [ARO-9925-13](#)  
**Filter:** [AF0-8103-52](#)  
**Temperature:** 55 °C  
**Sample:** 1. Oxalic  
 2. Citric  
 3. Tartaric  
 4. Succinic  
 5. Formic  
 6. Acetic



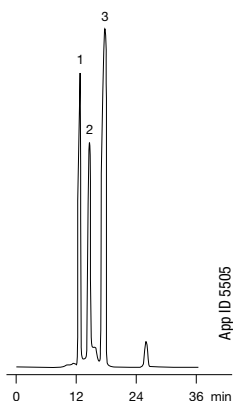
## Saccharides

**Column:** Rezex RCM-Monosaccharide  
**Dimensions:** 300 x 7.8 mm  
**Part No.:** [00H-0130-KO](#)  
**Guard Cartridge:** [AJ0-4493](#)  
**Guard Holder:** [KJ0-4282](#)  
**Mobile Phase:** Water  
**Flow Rate:** 0.6 mL/min  
**Detection:** RI  
**Vial:** [ARO-9925-13](#)  
**Filter:** [AF0-8103-52](#)  
**Temperature:** 85 °C  
**Sample:** 1. Melezitose  
 2. Maltose  
 3. Glucose  
 4. Mannose  
 5. Fructose  
 6. Ribitol



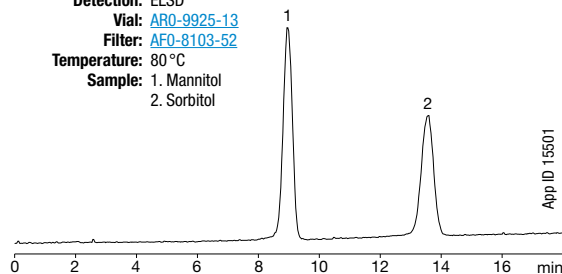
## Apple Juice

**Column:** Rezex RCM-Monosaccharide  
**Dimensions:** 300 x 7.8 mm  
**Part No.:** [00H-0130-KO](#)  
**Guard Cartridge:** [AJ0-4493](#)  
**Guard Holder:** [KJ0-4282](#)  
**Mobile Phase:** Water  
**Flow Rate:** 0.6 mL/min  
**Detection:** RI  
**Vial:** [ARO-9925-13](#)  
**Filter:** [AF0-8103-52](#)  
**Temperature:** 75 °C  
**Sample:** 1. Sucrose  
 2. Glucose  
 3. Fructose



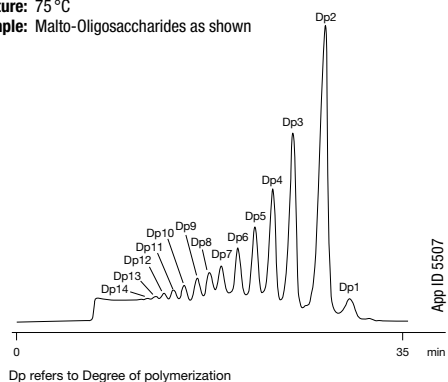
## Mannitol and Sorbitol

**Column:** Rezex RPM-Monosaccharide  
**Dimensions:** 100 x 7.8 mm  
**Part No.:** [00D-0135-KO](#)  
**Guard Cartridge:** [AJ0-4492](#)  
**Guard Holder:** [KJ0-4282](#)  
**Mobile Phase:** Water  
**Flow Rate:** 0.6 mL/min  
**Detection:** ELSD  
**Vial:** [ARO-9925-13](#)  
**Filter:** [AF0-8103-52](#)  
**Temperature:** 80 °C  
**Sample:** 1. Mannitol  
 2. Sorbitol



## Oligosaccharides

**Column:** Rezex RSO-Oligosaccharide  
**Dimensions:** 200 x 10 mm  
**Part No.:** [00P-0133-NO](#)  
**Mobile Phase:** Water  
**Flow Rate:** 0.3 mL/min  
**Detection:** RI  
**Vial:** [ARO-9925-13](#)  
**Filter:** [AF0-8103-52](#)  
**Temperature:** 75 °C  
**Sample:** Malto-Oligosaccharides as shown

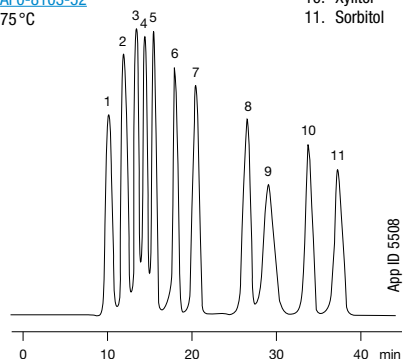


Dp refers to Degree of polymerization

## Saccharides

**Column:** Rezex RPM-Monosaccharide  
**Dimensions:** 300 x 7.8 mm  
**Part No.:** [00H-0135-KO](#)  
**Guard Cartridge:** [AJ0-4492](#)  
**Guard Holder:** [KJ0-4282](#)  
**Mobile Phase:** Water  
**Flow Rate:** 0.6 mL/min  
**Detection:** RI  
**Vial:** [ARO-9925-13](#)  
**Filter:** [AF0-8103-52](#)  
**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




# Rezex™ Organic Acid and Carbohydrate Columns

## Specifications and Operating Recommendations


	RCM-Monosaccharide	RSO-Oligosaccharide	RNO-Oligosaccharide	RNM-Carbohydrate	RAM-Carbohydrate
Part Number	<a href="#">00H-0130-K0</a>	<a href="#">00P-0133-N0</a>	<a href="#">00P-0137-N0</a>	<a href="#">00H-0136-K0</a>	<a href="#">00H-0131-K0</a>
Ionic Form	Calcium	Silver	Sodium	Sodium	Silver
Standard Dimensions	300 x 7.8 mm	200 x 10 mm	200 x 10 mm	300 x 7.8 mm	300 x 7.8 mm
Matrix	Sulfonated Styrene Divinyl Benzene				
Cross Linking	8%	4%	4%	8%	8%
Particle Size	8 µm	12 µm	12 µm	8 µm	8 µm
Min. Efficiency (p/m) based on last peak	35,000	N/A	N/A	30,000	35,000
Typical Pressure (psi @ Testing Flow Rate)	260	115	130	170	285
Max. Pressure (psi @ Max Flow Rate)	1,000	300	300	1,000	1,000
Max. Flow Rate (mL/min)	1.0 (see pressure)	0.3	0.3	1.0	1.0
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 Part No.	<a href="#">03B-0130-K0</a>	<a href="#">03R-0133-N0</a>	<a href="#">03R-0137-N0</a>	<a href="#">03B-0136-K0</a>	<a href="#">03B-0131-K0</a>

### Cleaning, Regeneration and Storage

Organic Modifiers (Max)	5% Methanol, IPA, EtOH				
Inorganic Modifiers	5% CaSO <sub>4</sub> , Ca(NO <sub>3</sub> ) <sub>2</sub> , CaCl <sub>2</sub>	5% Silver Nitrate	5% Sodium Salts	5% Sodium Salts	2% Silver Nitrate
Avoid 	Acids, Bases, Non-Calcium Salts/ Metal Ions, >30% Acetonitrile	Acids, Bases, Non-Silver Salts/ Metal Ions, >30% Acetonitrile	Acids, Bases, Non-Sodium Salts/ Metal Ions, >30% Acetonitrile	Acids, Bases, Non-Sodium Salts/ Metal Ions, >30% Acetonitrile	Acids, Bases, Non-Silver Salts/ Metal Ions, >30% Acetonitrile
Cleaning Solvent	100% Water	100% Water	100% Water	100% Water	100% Water
Flow Rate (mL/min)	0.4	0.1	0.1	0.4	0.4
Temperature (°C)	85	85	85	85	85
Duration (hrs)	12	12	12	12	12
Regeneration Solvent	0.1 M Ca(NO <sub>3</sub> ) <sub>2</sub>	0.1 M AgNO <sub>3</sub>	0.1 M NaNO <sub>3</sub>	0.1 M NaNO <sub>3</sub>	0.1 M AgNO <sub>3</sub>
Flow Rate (mL/min)	0.2	0.1	0.2	0.2	0.2
Duration (hrs)	4-16	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
Part Number	<a href="#">00H-0135-K0</a>	<a href="#">00H-0132-K0</a>	<a href="#">00H-0138-K0</a>	<a href="#">00D-0223-K0</a>	<a href="#">00G-0130-D0</a>
Ionic Form	Lead	Hydrogen	Hydrogen	Hydrogen	Calcium
Standard Dimensions	300 x 7.8 mm	300 x 7.8 mm	300 x 7.8 mm	100 x 7.8 mm	250 x 4.0 mm
Matrix	Sulfonated Styrene Divinyl Benzene				
Cross Linking	8%	8%	8%	8%	8%
Particle Size	8 µm	8 µm	8 µm	8 µm	8 µm
Min. Efficiency (p/m) based on last peak	35,000	35,000	50,000 (Acetic Acid)	30,000	12,000
Typical Pressure (psi @ Testing Flow Rate)	190	275	580	365	90
Max. Pressure (psi @ Max Flow Rate)	1,000	1,000	1,000	1,000	1,000
Max. Flow Rate (mL/min)	1.0	1.0	1.0	1.0	0.5
Max. Temperature (°C)	85	85	85	85	85
Typical Mobile Phase	Water	Water	0.005 N H <sub>2</sub> SO <sub>4</sub>	0.005 N H <sub>2</sub> SO <sub>4</sub>	Water
pH Range	Neutral	1-8	1-8	1-8	Neutral
Guard Column Part No.	<a href="#">03B-0135-K0</a>	<a href="#">03B-0132-K0</a>	<a href="#">03B-0138-K0</a>	<a href="#">03B-0223-K0</a>	<a href="#">03A-0130-D0</a>

### Cleaning, Regeneration and Storage

Organic Modifiers (Max)	5% Methanol, IPA, EtOH				
Inorganic Modifiers	5% Lead Nitrate	5% HNO <sub>3</sub> , H <sub>3</sub> PO <sub>4</sub>	5% HNO <sub>3</sub> , H <sub>3</sub> PO <sub>4</sub>	5% HNO <sub>3</sub> , H <sub>3</sub> PO <sub>4</sub>	5% CaSO <sub>4</sub> , Ca(NO <sub>3</sub> ) <sub>2</sub> , CaCl <sub>2</sub>
Avoid 	Acids, Bases, Non-Lead Salts/ Metal Ions, >30% Acetonitrile	Acids, Bases, Salts/ Metal Ions, >30% Acetonitrile	Acids, Bases, Salts, Metal Ions, pH > 3, >30% Acetonitrile	Acids, Bases, Salts, Metal Ions, pH > 3, >30% Acetonitrile	Acids, Bases, Non-Calcium Salts, or Metal Ions, >30% Acetonitrile
Cleaning Solvent	100% Water	100% Water	100% Water	100% Water	100% Water
Flow Rate (mL/min)	0.4	0.4	0.4	0.4	0.1
Temperature (°C)	85	85	85	85	85
Duration (hrs)	12	12	12	12	12
Regeneration Solvent	0.1 M Pb(NO <sub>3</sub> ) <sub>2</sub>	0.025 M H <sub>2</sub> SO <sub>4</sub>	0.025 M H <sub>2</sub> SO <sub>4</sub>	0.025 M H <sub>2</sub> SO <sub>4</sub>	0.1 M Ca(NO <sub>3</sub> ) <sub>2</sub>
Flow Rate (mL/min)	0.2	0.2	0.2	0.2	0.1
Duration (hrs)	4-16	4-16	4-16	4-16	4-16
Ship/Storage Solvent	Water	Water	0.005 N H <sub>2</sub> SO <sub>4</sub>	0.005 N H <sub>2</sub> SO <sub>4</sub>	Water

# Rezex™ Organic Acid and Carbohydrate Columns

## Retention Times for Some Carbohydrates and Sugar Alcohols

Counter Ion	Analyte	RAM Ag <sup>+</sup>	RCM Ca <sup>+2</sup>	RNM Na <sup>-</sup>	RHM H <sup>-</sup>	RPM Pb <sup>+2</sup>
	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
	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 7.8 mm  
**Mobile Phase:** Water (degassed)  
**Flow Rate:** 0.6 mL/min  
**Temperature:** 80 °C  
**Detection:** RI @ 40 °C

## Column Cross Reference Chart

Phenomenex Rezex™	Bio-Rad Aminex®	Supelco® SUPELCOGEL™	Waters® Sugar-Pak™	Transgenomic® CARBOSep™	Sepax® Carbomix®
RCM-Monosaccharide	HPX-87C <a href="#">125-0095</a>	SUPELCOGEL Ca	Sugar-Pak 1	CARBOSep CHO-820	Carbomix Ca
RHM-Monosaccharide	HPX-87H <a href="#">125-0140</a>	SUPELCOGEL C-610H & H	N/A	ICSep ION-300	Carbomix H
RPM-Monosaccharide	HPX-87P <a href="#">125-0098</a>	SUPELCOGEL Pb	N/A	CARBOSep COREGEL-87P	Carbomix Pb
RNM-Carbohydrate	HPX-87N <a href="#">125-0143</a>	N/A	N/A	N/A	Carbomix Na
RSO-Oligosaccharide	HPX-42A <a href="#">125-0097</a>	SUPELCOGEL Ag1 & Ag2	N/A	N/A	N/A
ROA-Organic Acid	HPX-87H <a href="#">125-0140</a>	SUPELCOGEL C-610H & H	N/A	N/A	N/A
RFQ-Fast Acid	Fast Acid <a href="#">125-0100</a>	N/A	N/A	N/A	N/A
RKP-Potassium	HPX-87K <a href="#">125-0142</a>	SUPELCOGEL K	N/A	CARBOSep COREGEL-87K	Carbomix K
RCU-USP Sugar Alcohols	Sugar Alcohols <a href="#">125-0094</a>	N/A	N/A	N/A	N/A
RNO-Oligosaccharide	N/A	N/A	N/A	CARBOSep COREGEL-87N	N/A

## Ordering Information

Columns					Guards		SecurityGuard™ Cartridges (mm)
Description	Part No.	Cross Linkage	Ionic Form	Size (mm)	Part No.	Size (mm)	4 x 3.0* /10pk
RCM-Monosaccharide	<a href="#">00F-0130-KO</a>	8%	Calcium	150 x 7.8	<a href="#">03B-0130-KO</a>	50 x 7.8	<a href="#">AJ0-4493</a>
RCM-Monosaccharide	<a href="#">00H-0130-KO</a>	8%	Calcium	300 x 7.8	<a href="#">03B-0130-KO</a>	50 x 7.8	<a href="#">AJ0-4493</a>
RHM-Monosaccharide	<a href="#">00H-0132-KO</a>	8%	Hydrogen	300 x 7.8	<a href="#">03B-0132-KO</a>	50 x 7.8	<a href="#">AJ0-4490</a>
RAM-Carbohydrate	<a href="#">00H-0131-KO</a>	8%	Silver	300 x 7.8	—	—	<a href="#">AJ0-4491</a>
RSO-Oligosaccharide	<a href="#">00P-0133-NO</a>	4%	Silver	200 x 10.0	<a href="#">03R-0133-NO</a>	60 x 10.0	—
RNO-Oligosaccharide	<a href="#">00P-0137-NO</a>	4%	Sodium	200 x 10.0	<a href="#">03R-0137-NO</a>	60 x 10.0	—
RPM-Monosaccharide	<a href="#">00H-0135-KO</a>	8%	Lead	300 x 7.8	<a href="#">03B-0135-KO</a>	50 x 7.8	<a href="#">AJ0-4492</a>
RPM-Monosaccharide	<a href="#">00D-0135-KO</a>	8%	Lead	100 x 7.8	<a href="#">03B-0135-KO</a>	50 x 7.8	<a href="#">AJ0-4492</a>
RNM-Carbohydrate	<a href="#">00H-0136-KO</a>	8%	Sodium	300 x 7.8	<a href="#">03B-0136-KO</a>	50 x 7.8	—
ROA-Organic Acid	<a href="#">00F-0138-EO</a>	8%	Hydrogen	150 x 4.6	—	—	<a href="#">AJ0-4490</a>
ROA-Organic Acid	<a href="#">00G-0138-EO</a>	8%	Hydrogen	250 x 4.6	—	—	<a href="#">AJ0-4490</a>
ROA-Organic Acid	<a href="#">00F-0138-KO</a>	8%	Hydrogen	150 x 7.8	<a href="#">03B-0138-KO</a>	50 x 7.8	<a href="#">AJ0-4490</a>
ROA-Organic Acid	<a href="#">00H-0138-KO</a>	8%	Hydrogen	300 x 7.8	<a href="#">03B-0138-KO</a>	50 x 7.8	<a href="#">AJ0-4490</a>
RKP-Potassium	<a href="#">00H-3252-KO</a>	8%	Potassium	300 x 7.8	—	—	—
RFQ-Fast Acid	<a href="#">00D-0223-KO</a>	8%	Hydrogen	100 x 7.8	<a href="#">03B-0223-KO</a>	50 x 7.8	<a href="#">AJ0-4490</a>
RCU-USP Sugar Alcohols	<a href="#">00G-0130-DO</a>	8%	Calcium	250 x 4.0	<a href="#">03A-0130-DO</a>	30 x 4.0	<a href="#">AJ0-4493</a>

for ID: 3.2-8.0 mm

\*SecurityGuard Analytical Cartridges require universal holder Part No.: [KJ0-4282](#)



For Column Heater, see p. 416



For our full line of Column Performance Check Standards, see pp. 424-425