TSK-GEL® Aminopak Products

Part Numbers:	13181, 12cm x 4.6mm ID
NOTE:	No guard column products are offered to protect TSK-GEL Aminopak columns. It is recommended to use a frit or screen fiter (<2 micron porosity) between the injector and the column. Samples and mobile phases are best filtered and degassed through a 0.45 micron membrane filter.

This sheet contains the recommended operating conditions and the specifications for TSK-GEL Aminopak columns. Aminopak columns contain spherical, porous, 5 micron particles that are functionalized with strong cation exchange groups balanced by sodium counter-ions. Installation instructions and column care information are described in a separate Instruction Manual.

A. OPERATING CONDITIONS

1.	Shipping Solvent:	Citric Acid Buffer (Buffer 2 for the Ninhydrin Method; see back page)
2.	Max. Flow Rate:	0.5 ml/min at 55°C When a buffer with high viscosity is used, the maximum flow rate may have to be reduced so as not to exceed the maximum pressure drop.
3.	Standard Flow Rate:	0.3 - 0.4 ml/min
4.	Max. Pressure:	80 kg/cm^2 = 1200 psi
5.	pH Range:	2.0 - 14.0
6.	Salt Conc.:	<1.5 Molar
7.	Organic Conc.:	<20%
8.	Temperature:	25 - 80°C, during normal operation of the column; 15-30°C, during column storage.
9.	Cleaning Solvents:	0.2M NaOH. We recommend to flush the column with 2ml of 0.2M NaOH after each amino acid analysis.
10.	Storage:	For overnight storage, flush the column with the starting gradient buffer at 0.1 ml/min. Store the column in the shipping solvent when it will not be used the next day. Prevent air from entering the column!
11.	Amino Acid Analysis:	Turn this page over for the recommended buffer compositions for separating free amino acids followed by post-column reaction with ninhydrin or o-phthalaldehyde (OPA) and UV-Vis and fluorescence detection.

B. SPECIFICATIONS

The performance of TSK-GEL Aminopak columns is tested under the conditions described in the Data Sheet. All columns have passed the following quality control specifications:

1.	Number of Theoretical Plates (N):	>1,250
2.	Asymmetry Factor (AF):	1.0 - 1.35

DS1068 Revised 29AUGUST2006

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Analyzing Free Amino Acids on TSKgel Aminopak

Ninhydrin Method

BUFFER 1	Sodium citrate ($C_6H_8O_7Na_3.2H_20$)	19.6	g/l
	citric acid ($C_6H_8O_7.H_20$)	28.0	g/l
	ethanol	80	ml/l
	β-thiodiglycol ($C_4H_{10}O_2S$)	5.0	ml/l
	30% Brij-35 (polyoxyethylene laurylether)	3.3	ml/l
	n-caprylic acid (octanoic acid)	0.1	ml/l
	Adjust the pH to 3.26 with HCl.		
BUFFER 2	Sodium citrate	19.6	g/l
	citric acid	14.0	g/l
	β-thiodiglycol	5.0	ml/l
	30% Brij-35	3.3	ml/l
	n-caprylic acid ($C_8H_{16}O_2$)	0.1	ml/l
	Adjust the pH to 4.30 with HCl.		
BUFFER 3	Sodium citrate	14.7	g/l
	Sodium borate ($Na_2B_4O_7.10H_20$)	9.5	g/l
	Sodium chloride	35.1	g/l
	30% Brij-35	3.3	ml/l
	n-caprylic acid	0.1	ml/l
	Adjust the pH to 9.40 with HCl.		
CLEANING	0.2M NaOH	8.0	g/l

SOLVENT EXCHANGE Buffer 1 from 0 to 11 min; buffer 2 to 22 min., buffer to 3 to 45 min., followed by 5 min clean-up solution and return to buffer 1 at 50 minutes.

OPA Method

BUFFER 1	Sodium citrate	19.6	g/l
	ethanol	80	ml/l
	n-caprylic acid	0.1	ml/l
	Adjust the pH to 3.26 with HCl.		
BUFFER 2	Sodium citrate	19.6	g/l
	n-caprylic acid	0.1	ml/l
	Adjust the pH to 4.30 with HCl.		
BUFFER 3	Sodium citrate	14.7	g/l
	Sodium borate	9.5	g/l
	Sodium chloride	35.1	g/l
	n-caprylic acid	0.1	ml/l
	Adjust the pH to 9.40 with HCl.		
CLEANING	0.2M NaOH	8.0	g/l
	n-caprylic acid	0.1	ml/l

SOLVENT EXCHANGE Buffer 1 from 0 to 11 min; buffer 2 to 22 min., buffer 3 to 44 min., followed by 11 min clean-up solution and return to buffer 1 at 55 minutes.