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OPERATING CONDITIONS and SPECIFICATIONS

TSKgel ® G4000SW Products

Part Numbers:				
	0005790	7.5 mm ID x 30.0 cm L		**13 µm**
	0005104	7.5 mm ID x 60.0 cm L		**13 µm**
	0006729	21.5 mm ID x 30.0 cm L		**17 µm**
	0005148	21.5 mm ID x 60.0 cm L		**17 µm**
	0008801	8.0 mm ID x 30.0 cm L	Glass	**13 µm**

This sheet contains the recommended operating conditions and the specifications for **TSKgel** G4000SW columns.
Installation instructions and column care information are described in a separate Instruction Manual.

A. OPERATING CONDITIONS

1.	Shipping Solvent:	0.05% NaN_3 and 0.1 M Na_2SO_4 in 0.1 M phosphate buffer, pH 6.7		
2.	Max.Flow Rate:	0.8	mL/min	8.0 mm ID Glass
		1.2	mL/min	7.5 mm ID
		8.0	mL/min	21.5 mm ID and 20.0 mm ID Glass
	NOTE:			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. When changing solvents, use a flow rate equal to 25% of the maximum flow rate.
3.	Standard Flow Rate:	0.4 - 0.8	mL/min	8.0 mm ID Glass
		0.5 - 1.0	mL/min	7.5 mm ID
		3.0 - 6.0	mL/min	21.5 mm ID and 20.0 mm ID Glass
4.	Max. Pressure:	1.0	MPa	21.5 mm ID x 30.0 cm L
		1.5	MPa	7.5 mm ID x 30.0 cm L
		2.0	MPa	21.5 mm ID x 60.0 cm L and 8.0 mm ID Glass
		3.0	MPa	7.5 mm ID x 60.0 cm L
5.	pH Range:	2.5 - 7.5		
6.	Salt Conc.:	< 0.5 Molar		
7.	Organic Conc.:	0 - 100%		for aqueous soluble organic solvents. Make gradual solvent changes using a shallow gradient at low flow rate.
8.	Temperature:	10 - 30°C		Reduce flow rate when operating below 10°C.
9.	Cleaning Solvents:			(1) conc. salt solution at low pH; e.g. 0.5 M Na_2SO_4; pH 2.7 (2) methanol or acetonitrile in low conc. aqueous buffer (3) buffered solution of urea or guanidine (only if (1) and (2) failed before)
	NOTE:			Choose a cleaning solvent based on sample properties, e.g. use (1) to remove basic proteins, and (2) to remove hydrophobic proteins. Chaotrophic agents can solvate strongly adsorbed proteins, e.g. via hydrogen bonding.
10.	Storage:			Store the column in mobile phase containing 0.05 % NaN_3 or 20 % ethanol when it will not be used the next day. For overnight storage flush the column with mobile phase at low flow rate. Prevent air from entering the column!

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11.	Column Protection:	The use of guard columns (**TSKgel** SW Guard Column P/N 05371 for 7,5 mm ID, P/N 05758 for 21.5 mm ID or P/N 08805 for 8.0 mm ID Glass) is recommended to prolong the life of the analytical column. Guard column life depends greatly on sample cleanliness. As a general rule, guard columns should be replaced after every 30-40 sample injections, when the peaks become excessively wide, or when the peaks show splitting.
12.	Top-Off:	Occasionally, due to accident, sample, mobile phase or operational variables, a depression can develop at the column or guard column inlet. Use SW Top-Off (P/N 06819) for filling in such voids

B. SPECIFICATIONS

The performance of **TSKgel** G4000SW columns is tested under the conditions described in the Data Sheet. All columns have passed the following quality control specifications

Number of Theoretical Plates (N):	≥	8,000	30.0 cm L columns
	≥	16,000	60.0 cm L columns
Asymmetry Factor (AF):		0.7 - 1.6	

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