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OPERATING CONDITIONS and SPECIFICATIONS

TSKgel ® UP-SW3000 Products

Part Numbers:	0023449	4.6 mm ID x 15.0 cm L	**TSKgel** UP-SW3000	**2.0 µm**
	0023448	4.6 mm ID x 30.0 cm L	**TSKgel** UP-SW3000	**2.0 µm**
Guardcolumn:	0023451	4.6 mm ID x 2.0 cm L	For **TSKgel** Guard Column DC*	**2.0 µm**
	0023450	4.6 mm ID x 2.0 cm L	For **TSKgel** Guard Column	**2.0 µm**

Both guard columns can be connected to either analytical column

*The DC guard column can be directly connected to the analytical column without tubing between the two columns. A male-type outlet endfitting on the guard column enables the direct connection to the screw-type endfitting of the analytical column.

This sheet contains the recommended operating conditions and the specifications for **TSKgel** UP-SW3000 columns and guard 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 mol/L Na_2SO_4 in 0.1 mol/L phosphate buffer, pH 6.7
2.	Standard Flow Rate:	0.10 - 0.35	mL/min
3.	Max.Flow Rate:	0.50	mL/min 15 cm Length
		0.35	mL/min 30 cm Length
4.	Max. Pressure:	25	MPa 15 cm Length
		34	MPa 30 cm Length
5.	Temperature:	10 – 30 °C	Reduce flow rate when operating below 10 °C
6.	pH Range:	2.5 – 7.5	
7.	Organic Conc.:		0 - 30% for aqueous soluble organic solvents. Make gradual solvent changes using a shallow gradient at low flow rate.
8.	Cleaning Solvents:		1. To remove basic substances (Ionic adsorption): a. Increase the salt concentration of the mobile phase to an appropriate ionic strength (normally around 0.5 mol/L) and pass this through the column to clean. b. Clean the column by passing through an acidic aqueous solution (phosphate buffer solution pH 2.5). 2. To remove adsorbed hydrophobic substances (Hydrophobic adsorption): Add an aqueous organic solvent (around 10 to 20%) such as methanol or acetonitrile, etc., to the mobile phase, and pass this through the column to clean (exercise caution regarding buffer solution and salt precipitation). 3. Using an eluent containing added urea or surfactant (To remove poorly soluble proteins such as membrane proteins, etc.): Use 6 to 8 mol/L urea or 0.2 to 0.3% neutral surfactant (such as Triton, Tween, Brij, etc.) in the mobile phase, and pass this through the column to clean (residual urea and surfactant can remain in the column). **Note:** Use the solvent replacement flow rate (< 0,17mL/min) during cleaning and when replacing with the shipping solvent. Clean the columns with 5 to 10 column volume of cleaning solvents.
9.	Storage:		Clean the columns with 5 to 10 column volume of cleaning solvents 1. Procedure: a. After disconnecting the column from the instrument, wash the instrument tubing with distilled water or ion exchange water. b. Replace the column contents with the shipping solvent, disconnect the column from the instrument, seal both ends with the end plugs, and store. **Note:** Use the solvent replacement flow rate (< 0,17mL/min) during cleaning and when replacing with the shipping solvent. 2. Storage temperature: 15 to 30°C

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10. Column Protection:

The use of guard columns is recommended to prolong the life of the analytical column. Guard column life depends greatly on various factors, including sample properties, sample loading, solvents, etc. As a general rule, guard columns should be replaced when there is an increase in pressure to some extent, when the peaks become excessively wide or when the peaks show splitting.

B. SPECIFICATIONS

The performance of **TSKgel UP-SW3000** 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):	≥ 25,000	4.6 mm ID x 15.0 cm L
	≥ 45,000	4.6 mm ID x 30.0 cm L
Asymmetry Factor (AF):	0.90 – 1.40	4.6 mm ID x 15.0 cm L
	0.90 – 1.40	4.6 mm ID x 30.0 cm L