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## OPERATING CONDITIONS and SPECIFICATIONS

### TSK-GEL® Alpha-M Products

<b>Part Numbers:</b>	18344	7.8 mm ID x 30.0 cm L	Alpha-M	<b>13 µm</b>
	18345	6.0 mm ID x 4.0 cm L	Alpha Guard column	<b>13 µm</b>

This sheet contains the recommended operating conditions and the specifications for TSK-GEL Alpha-M columns. Installation instructions and column care information are described in a separate Instruction Manual.

#### A. OPERATING CONDITIONS

1. Shipping Solvent: Water

2. Max.Flow Rate: 1.0 ml/min

**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: 0.3 - 0.6 ml/min

4. Max. Pressure: 20 kg/cm<sup>2</sup> = 300 psi

5. pH Range: 2.0 - 12.0

6. Salt Conc.: ≤ 0.5 Molar

7. Organic Conc.: Up to 100% The solvent change should be made very gradually using a shallow gradient at low flow rate.

8. Temperature: 10 - 80°C Reduce flow rate when operating below 10°C.

9. Cleaning Solvents: Clean the column in reverse at half the standard flow rate (monitor pressure) with 3 to 5 column volumes(CV) of:  
(1) High neutral salt concentration buffer (0.5 - 1.0 M), or  
(2) pH 2 - 3 or pH 9 - 12 buffer, or  
(3) up to 100% organic  
(4) Buffer with 6 M urea or 0.1% SDS

**NOTE:** Rinse with 3 to 5 CV of DI water between the cleaning solutions. Choose a cleaning solvent based on sample properties, e.g. use (1) to remove basic polymers, (3) to remove hydrophobic proteins etc.

10. Storage: Store the column in a 0.05% NaN<sub>3</sub> solution or 20% ethanol in DI water when it will not be used the next day. For overnight storage flush the column at low flow rate with the mobile phase. Prevent air from entering the column!

11. Column Protection: The use of guard columns 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.

#### B. SPECIFICATIONS

The performance of TSK-GEL Alpha-M 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): ≥ 7,000

Asymmetry Factor (AF): 0.7 - 1.6