

**TSK-GEL® SP-NPR Products**

<b>Column:</b>	13076, 4.6mm ID x 3.5cm, 2.5µm	<b>Small Ion Capacity:</b> >0.15 meq/ml
		<b>Counter Ion:</b> Na <sup>+</sup>
<b>Accessories:</b>	03410, Pre-Column Filter with 0.5µm SS Frit 03411, Replacement 0.5 µm Frits, for 03410, pk 10 14594, Pre-Injector Membrane Filter Holder, SS 03409, 13mm Nylon Membrane Filter, 0.45 µm, for 14594, pk 100	

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

**A. OPERATING CONDITIONS**

1. Shipping Solvent: Distilled Water
2. Max. Flow Rate: 1.6 mL/min  
  
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: 1.0 - 1.5 mL/min
4. Max. Pressure: 200 kg/cm<sup>2</sup> = 3000 psi
5. pH Range: 2 - 12 (pH above 12 or below 2 can only be used for a short time)
6. Salt Conc.: ≤ 1 Molar
7. Organic Conc.: ≤ 20%
8. Temperature: 0 - 60°C
9. Cleaning Solvents: (1) 0.1 - 0.2M NaOH, or  
(2) 20 - 40% acetic acid aq., or  
(3) Aqueous buffer in 30% acetonitrile or methanol, or  
(4) Urea or non-ionic surfactant in buffer

**NOTE:** Clean the column regularly by injecting up to one column volume 0.1 - 0.2M NaOH in 250 µl - 2ml increments.

10. Storage: Store the column in the shipping solvent when it will not be used the next day. Avoid air to enter the column!
11. Column Protection: No guard column is available for the TSK-GEL SP-NPR column. Be sure to use a filter after the injector with 0.5 micron pores to avoid frequent plugging of the one micron pore size NPR column frit. We also recommend a pre-injector membrane filter to prevent particles from pump seal wear to reach the column.

**NOTE:** Use high quality reagents, water and solvents for preparing buffers. Fouling of the resin, leading to a loss in retention and/or efficiency, occurs faster due to the small surface area of non-porous resin particles.

**B. SPECIFICATION**

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

1. Resolution (Rs): ≥ 10.0  
  

$$Rs = 2(V_2 - V_1)/1.7(W_2 + W_1)$$
in which,  
 $V_1$  = elution volume trypsinogen  
 $V_2$  = elution volume  $\alpha$ -chymotrypsinogen  
 $W_1, W_2$  = widths of peaks 1 and 2 at half height

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