

OPERATING CONDITIONS and SPECIFICATIONS

# TSK-GEL® SP-5PW Products

<b>Part Numbers:</b>	18758, 2.0mm ID x 7.5cm, 10 $\mu$ m 07161, 7.5mm ID x 7.5cm, 10 $\mu$ m 07575, 21.5mm ID x 15cm, 13 $\mu$ m 07934, 55mm ID x 20cm, 20 $\mu$ m 13062, 5.0mm ID Glass x 5cm, 10 $\mu$ m 08803, 8.0mm ID Glass x 7.5cm, 10 $\mu$ m 14017, 20.0mm ID Glass x 15cm, 13 $\mu$ m	42153, Guard Cartridge for 2mm ID column, 2mm ID x 1cm 19308, Guard Cartridge holder, for 2mm ID cartridges 07211, Guardgel Kit for P/N 07161 16093, Guardgel Kit for P/N 07575 07932, Guard Column, 45mm ID x 5cm, for P/N 07934 08807, Guardgel Kit, Glass, for P/N 13062 & 08803
<b>Small Ion Capacity:</b>	> 0.1 meq/ml	<b>Counter Ion:</b> Na <sup>+</sup>

This sheet contains the recommended operating conditions and the specifications for TSK-GEL SP-5PW columns and guard columns. Installation instructions and column care information are described in a separate Instruction Manual.

<b>A. OPERATING CONDITIONS</b>	
1. Shipping Solvent:	Distilled and Deionized Water
2. Max. Flow Rate:	0.12mL/min (2.0mm ID x 7.5cm) 1.0mL/min (5.0mm ID Glass x 5.0cm) 1.2mL/min (7.5mm ID x 7.5cm and 8.0mm ID Glass x 7.5cm) 8.0mL/min (21.5mm ID x 15cm and 20mm ID Glass x 15cm) 50mL/min (55mm ID x 20cm)  When changing solvents, use a flow rate equal to 50% of the maximum flow rate (20% for prep columns).
3. Standard Flow Rate:	0.05 - 0.10mL/min (2.0mm ID x 7.5cm) 0.5 - 0.8mL/min (5.0mm ID Glass x 5.0cm) 0.5 - 1.0mL/min (7.5mm ID x 7.5cm and 8.0mm ID Glass x 7.5cm) 4.0 - 6.0mL/min (21.5mm ID x 15cm and 20mm ID Glass x 15cm) 20 - 40mL/min (55mm ID x 20cm)
4. Max. Pressure:	1MPa (8.0mm ID Glass x 7.5cm and 2.0mm ID x 7.5cm) 1.5MPa (7.5mm ID x 7.5cm, 5.0mm ID Glass x 5.0cm and 20.0mm ID Glass x 15cm) 2.5MPa (21.5mm ID x 15cm) 0.4MPa (55mm ID x 20cm)
5. pH Range:	2.0 - 12.0
6. Salt Conc.:	< 1.0 Molar
7. Organic Conc.:	≤ 20%
8. Temperature:	10 - 45 °C Reduce flow rate when operating below 10 °C.
9. Cleaning Solvents:	(1) 0.1 - 0.2M NaOH. If not successful, (2) 20 - 40% acetic acid aqueous, or (3) Aqueous buffer in organic solvent, or (4) Urea or nonionic surfactant in buffer.
<b>NOTE:</b>	Clean the column regularly by injecting up to one column volume of 0.1 - 0.2N NaOH in 250 $\mu$ l increments. Use proportionally larger volumes for (semi-) prep columns.
10. Storage:	Store the column in DI water when it will not be used the next day or 20% ethanol or methanol in DI water for longer term storage. For overnight storage flush the column with the low salt concentration mobile phase at low flow rate. 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 when the peaks become excessively wide, or when the peaks show splitting.
<b>B. SPECIFICATIONS</b>	
The performance of TSK-GEL SP-5PW 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):	≥ 700 (5mm ID Glass) ≥ 1,300 (7.5mm ID, 8.0mm ID Glass and 2.0mm ID) ≥ 3,000 (21.5mm ID and 20.0mm ID Glass) ≥ 1,500 (55mm ID)
2. Asymmetry Factor (AF):	0.8 - 1.6 (for all analytical/semi-prep columns; no spec for prep columns)

DS1034 Revised 18AUGUST2009

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