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OPERATING CONDITIONS and SPECIFICATIONS

TSK-GEL® Phenyl-5PW Products

Analytical / Semi-Prep:	18759	2.0 mm ID x 7.5 cm L		10 µm
	42155	Phenyl-5PW Guardcartridge for P/N 18759		10 µm
	07573	7.5 mm ID x 7.5 cm L		10 µm
	07652	Guardgel Kit for PN 07573		20 µm
	20023	7.8 mm ID x 5.0 cm L	Peek	10 µm
	13063	5.0 mm ID x 5.0 cm L	Glass	10 µm
	08804	8.0 mm ID x 7.5 cm L	Glass	10 µm
	08808	Guardgel Kit Glass for PN 08804 13063		20 µm
	07656	21.5 mm ID x 15.0 cm L		13 µm
	16095	Phenyl-5PW Prep Guardgel Kit for P/N 07656		
	02425	Prep Guardgel Kit for P/N 07656 07938		20 µm
	14018	20.0 mm ID x 15.0 cm L	Glass	13 µm
	14469	20.0 mm ID x 2.0 cm L	Guardcolumn for PN 14018	13 µm
	Preparative Columns:	07938	55.0 mm ID x 20.0 cm L	
07936		45.0 mm ID x 5.0 cm L	Guardcolumn	20 µm
07939		108.0 mm ID x 20.0 cm L		
07937		83.0 mm ID x 5.0 cm L	Guardcolumn	20 µm

This sheet contains the recommended operating conditions and the specifications for TSK-GEL Phenyl-5PW columns and guard 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:	0.12 ml/min	2.0 mm ID x 7.5 cm L	
	1.00 ml/min	5.0 mm ID x 5.0 cm L Glass	
	1.20 ml/min	7.5 mm ID x 7.5 cm L, 8.0 mm ID x 7.5 cm L Glass and 7.8 mm ID x 5.0 cm L Peek.	
	8.00 ml/min	21.5 mm ID x 15.0 cm L and 20.0 mm ID x 15.0 cm L Glass	
	50.0 and 150.0 ml/min	For 55.0 mm ID and 108.0 mm ID respectively	

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 50% of the maximum flow rate (20% for prep columns).

3. Standard Flow Rate:	0.05 - 0.1 ml/min	2.0 mm ID x 7.5 cm L	
	0.50 - 0.8 ml/min	5.0 mm ID x 5.0 cm L Glass	
	0.50 - 1.0 ml/min	7.5 mm ID x 7.5 cm L, 8.0 mm ID x 7.5 cm L Glass and 7.8 mm ID x 5.0 cm L Peek.	
	4.00 - 6.0 ml/min	21.5 mm ID x 15.0 cm L and 20.0 mm ID x 15.0 cm L Glass	
	20.0 - 40.0 ml/min and 70.0 - 120.0 ml/min	for 55.0 mm ID and 108.0 mm ID respectively.	
4. Max. Pressure	8 kg/cm ² = 120 psi	2.0 mm ID	
	20 kg/cm ² = 300 psi	analytical/semi-prep columns	
	4 kg/cm ² = 60 psi	prep columns	
5. pH Range	2.0 - 12.0		
6. Salt conc.	≤ 4 Molar		
7. Organic Conc.	≤ 50%	Avoid precipitating salt on the column	
8. Temperatur	10 - 50°C	Reduce flow rate when operating below 10°C.	

9. Cleaning Solvents: (1) 0.1 - 0.2 M NaOH, and, if not successful,
(2) 20 - 40% acetic acid aq.
Clean the column regularly by injecting up to one column volume 0.1 - 0.2 M NaOH in 250 µl increments. Use proportionately 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 for longer term storage. Rinse with distilled water before switching to organic to avoid salt precipitation. For overnight storage flush the column with the low salt concentration mobile phase at 10 - 20% of the max. 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. SPECIFICATIONS

The performance of TSK-GEL Phenyl-5PW 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):	≥ 600	5.0 mm ID x 5.0 cm L Glass
	≥ 1,000	2.0 mm ID, 7.5 mm ID and 8.0 mm ID x 7.5 cm L Glass
	≥ 1,500	55.0 mm ID x 20.0 cm L and 108.0 mm ID x 20.0 cm L
	≥ 3,000	21.5 mm ID x 15.0 cm L and 20.0 mm ID x 15.0 cm L Glass
Asymmetry Factor (AF):	0.8 - 1.6	21.5 mm ID x 15.0 cm L and 20.0 mm ID x 15.0 cm L Glass
	0.9 - 1.8	2.0 mm ID
	1.0 - 2.0	other columns; no spec for prep columns