



Zettachring 6, 70567 Stuttgart, Germany
 Tel: +49-711-13257-0 Fax: +49-711-13257-89
 E-Mail: info.sep.eu@tosoh.com
 Web: www.tosohbioscience.com

156 Keystone Drive, Montgomeryville, PA 18936, USA
 Tel: +1-215-283-5000 Fax: +1-215-283-5035
 E-Mail: info.sep.am@tosoh.com
 Web: www.tosohbioscience.com

OPERATING CONDITIONS and SPECIFICATIONS

TSK-GEL® Ether-5PW Products

Analytical/Semi-Prep:	18760	2.0 mm ID x 7.5 cm L		10 µm
	08641	7.5 mm ID x 7.5 cm L		10 µm
	08643		Guardgel Kit for PN 08641	20 µm
	14013	5.0 mm ID x 5.0 cm L	Glass	10 µm
	14014	8.0 mm ID x 7.5 cm L	Glass	10 µm
	14025		Guardgel Kit Glass for 14013 & 14014	20 µm
	08642	21.5 mm ID x 15.0 cm L		13 µm
	02424		Prep Guardgel Kit for P/N 08642	
	16091		Ether-5PW Prep Guardgel Kit, for P/N 08642	20 µm
	14015	20.0 mm ID x 15.0 cm L	Glass	13 µm
14470	20.0 mm ID x 2.0 cm L	Guardcolumn Glass for 14015	13 µm	
Preparative Columns:	16255	55.0 mm ID x 20.0 cm L		20 µm
	16253	45.0 mm ID x 5.0 cm L	Guardcolumn for PN 16255,	20 µm

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

A. OPERATING CONDITIONS

- Shipping Solvent: Water
- 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 and 8.0 mm ID x 7.5 cm L, Glass
8.00 ml/min	21.5 mm ID x 15.0 cm L and 20.0 mm ID x 15.0 cm L, Glass
40.00 ml/min	55.0 mm ID x 20.0 cm L

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.

- Standard Flow Rate:

0.05 - 0.10 ml/min	2.0 mm ID x 7.5 cm L
0.50 - 0.80 ml/min	5.0 mm ID x 5.0 cm L, Glass
0.50 - 1.00 ml/min	7.5 mm ID x 7.5 cm L and 8.0 mm ID x 7.5 cm L, Glass
4.00 - 6.00 ml/min	21.5 mm ID x 15.0 cm L and 20.0 mm ID x 15.0 cm L, Glass
20.00 - 30.00 ml/min	55.0 mm ID x 20.0 cm L
- Max. Pressure:

6 kg/cm ² = 90 psi	2.0 mm ID x 7.5 cm L
20 kg/cm ² = 300 psi	analytical/semi-prep columns
5 kg/cm ² = 75 psi	55.0 mm ID x 20.0 cm L
- pH Range: 2.0 - 12.0
- Salt Conc.: ≤ 4 Molar
- Organic Conc.: ≤ 50%
- Temperature: 10 - 50°C Reduce flow rate when operating below 10°C.
- Cleaning Solvents:
 - 0.1 - 0.2 M NaOH, and, if not successful,
 - 20 - 40% acetic acid aq.

NOTE: 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 the column with DI water to remove salt before switching to organic to prevent 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!
1. 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 Ether-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	21.5 mm ID x 15.0 cm L and 20.0 mm ID x 15.0 cm L Glass
	≥ 3,000	2.0 mm ID, 7.5 mm ID, and 8.0 mm ID Glass)
	≥ 1,500	55.0 mm ID x 20.0 cm L
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
	0.8 - 1.8	2.0 mm ID x 15.0 cm L
	1.0 - 2.0	other columns; no spec for prep columns