



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

3604 Horizon Drive, Suite 100, King of Prussia, PA 19406, USA
 Tel: +1 800-366-4875 Fax: +1 610-272-3028
 E-Mail: info.sep.am@tosoh.com
 Web: www.tosohbioscience.com

OPERATING CONDITIONS and SPECIFICATIONS

TSK-GEL® G4000PW Products

Part Numbers:	05763	7.5 mm ID x 30.0 cm L	17 µm
	05107	7.5 mm ID x 60.0 cm L	17 µm
	05152	21.5 mm ID x 60.0 cm L	22 µm

This sheet contains the recommended operating conditions and the specifications for TSK-GEL G4000PW columns. Installation instructions and column care information are described in a separate Instruction Manual.

A. OPERATING CONDITIONS

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|----------------------|------------|------------|--|
| 1. Shipping Solvent: | Water | | |
| 2. Max.Flow Rate: | 1.2 ml/min | 7.5 mm ID | |
| | 8.0 ml/min | 21.5 mm ID | |

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.

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| 3. Standard Flow Rate: | 0.5 - 1.0 ml/min | 7.5 mm ID | |
| | 1.6 - 6.0 ml/min | 21.5 mm ID | |
| 4. Max. Pressure: | 10 kg/cm ² = 150 psi | 7.5 mm ID x 30.0 cm L and 21.5 mm ID x 60.0 cm L | |
| | 20 kg/cm ² = 300 psi | 7.5 mm ID x 60.0 cm L | |
| 5. pH Range: | 2.0 - 12.0 | | |
| 6. Salt Conc.: | ≤ 0.5 Molar | | |

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|-------------------|-----------|---|--|
| 7. Organic Conc.: | ≤ 20% | It is possible to use up to 50% organic when the solvent change is made very gradually using a shallow gradient at low flow rate. | |
| 8. Temperature: | 10 - 80°C | Reduce flow rate when operating below 10°C | |

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| 9. Cleaning Solvents: | (1) High salt concentration buffer (0.5 - 1.0 M), or
(2) pH 2 - 3 or pH 9 - 12 buffer, or
(3) Buffer with acetonitrile or methanol, or if nothing else is successful
(4) Buffer with urea or SDS | | |
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NOTE: Choose a cleaning solvent based on sample properties, e.g. use (1) to remove basic polymers, and (3) to remove hydrophobic proteins etc.

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| 10. Storage: | Store the column in a 0.05% NaN ₃ 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 a guard column (TSKgel PW Guard Column P/N 06762 for 7.5 m ID or P/N 06758 for 21.5 mm ID) 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 G4000PW 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):	≥ 3,000	7.5 mm ID x 30.0 cm L
	≥ 6,000	60.0 cm L columns
Asymmetry Factor (AF):	0.7 - 1.6	