



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® Amide-80 Products

<b>Part Numbers:</b>	20009	1.0 mm ID x 5.0 cm L	<b>5 µm</b>		
	20010	1.0 mm ID x 10.0 cm L	<b>5 µm</b>		
	21486	1.0 mm ID x 15.0 cm L	<b>5 µm</b>		
	21487	1.0 mm ID x 25.0 cm L	<b>5 µm</b>		
	21864	2.0 mm ID x 5.0 cm L	<b>3 µm</b>	21862	Guard Cartridge 2.0 mm ID x 1.0 cm L 3pcs <b>3 µm</b>
	21865	2.0 mm ID x 15.0 cm L	<b>3 µm</b>	19308	Guard Cartridge holder; for 2.0 mm ID columns
	19694	2.0 mm ID x 5.0 cm L	<b>5 µm</b>		
	19695	2.0 mm ID x 10.0 cm L	<b>5 µm</b>	21941	Guard column 2.0 mm ID x 1.0 cm L 3pcs <b>5 µm</b>
	19696	2.0 mm ID x 15.0 cm L	<b>5 µm</b>		
	19697	2.0 mm ID x 25.0 cm L	<b>5 µm</b>		
	21866	4.6 mm ID x 5.0 cm L	<b>3 µm</b>	21863	Guard Cartridge 3.2 mm ID x 1.5 cm L 3pcs <b>3 µm</b>
	21867	4.6 mm ID x 15.0 cm L	<b>3 µm</b>	19018	Guard Cartridge holder; for 3,2 mm ID columns
	19532	4.6 mm ID x 5.0 cm L	<b>5 µm</b>	19010	Guard Cartridge 3.2 mm ID x 1.5 cm L 3pcs <b>5 µm</b>
	19533	4.6 mm ID x 10.0 cm L	<b>5 µm</b>	19021	Guard column 4.6 mm ID x 1.0 cm L <b>5 µm</b>
	13071	4.6 mm ID x 25.0 cm L	<b>5 µm</b>		
	21982	4.6 mm ID x 25.0 cm L	<b>5 µm</b>	HR	High Resolution
	14459	7.8 mm ID x 30.0 cm L	<b>10 µm</b>		
	14460	21.5 mm ID x 30.0 cm L	<b>10 µm</b>	14461	Guard column 21.5 mm ID x 7.5 cm L <b>10 µm</b>

This sheet contains the recommended operating conditions and the specifications for TSK-GEL Amide-80 columns. Installation instructions and column care information are described in a separate Instruction Manual.

#### A. OPERATING CONDITIONS

- Shipping Solvent: 75 % Acetonitrile - 25 % Water
- Max. Pressure:
 

30 kg / cm <sup>2</sup>	=	427 psi	1.0 mm ID x 5.0 cm L
60 kg / cm <sup>2</sup>	=	853 psi	1.0 mm ID x 10.0 cm L
120 kg / cm <sup>2</sup>	=	1707 psi	1.0 mm ID x 25.0 cm L
90 kg / cm <sup>2</sup>	=	1280 psi	10.0 mm ID x 5.0 cm L
40 kg / cm <sup>2</sup>	=	569 psi	2.0 mm ID x 5.0 cm L
80 kg / cm <sup>2</sup>	=	1138 psi	2.0 mm ID x 10.0 cm L
100 kg / cm <sup>2</sup>	=	1422 psi	2.0 mm ID x 15.0 cm L
150 kg / cm <sup>2</sup>	=	2134 psi	2.0 mm ID x 25.0 cm L
150 kg / cm <sup>2</sup>	=	2134 psi	4.6 mm ID
70 kg / cm <sup>2</sup>	=	996 psi	7.8 mm ID
30 kg / cm <sup>2</sup>	=	427 psi	21.5 mm ID
250 kg / cm <sup>2</sup>	=	3556 psi	2.0 mm ID 5 µm
150 kg / cm <sup>2</sup>	=	2134 psi	4.6 mm ID 5 µm
70 kg / cm <sup>2</sup>	=	996 psi	7.8 mm ID 10 µm
30 kg / cm <sup>2</sup>	=	427 psi	21.5 mm ID 10 µm
200 kg / cm <sup>2</sup>	=	2845 psi	<b>For all 3 µm columns</b>
- pH Range: 2.0 - 7.5
- Organic Conc.:
 

0 - 100%	polar and nonpolar	switch to 100% acetonitrile before switching to 100% nonpolar solvents.
3 µm: 0 - 100%	polar and nonpolar	switch to 95% acetonitrile before switching to 100% nonpolar solvents.
- Temperature:
 

10°C - 80°C	5 µm and 10 µm columns;
10°C - 50°C	3 µm columns;

Note our technical hotline tel +49 711 13257-57 and e-mail, [techsupport.sep@tosoh.com](mailto:techsupport.sep@tosoh.com)

6. Cleaning Solvents:
- (1) Water
  - (2) 45% Acetonitrile or acetone
  - (3) 0.1% triethylamine in at least 75% acetonitrile
  - (4) 50 mM phosphate buffer pH 6.0 / Acetonitrile 50/50

**NOTE:** Choose cleaning solvent (1) to remove very polar solutes from the bonded phase, (2) to desorb hydrophobic compounds, (3) to get rid of adsorbed basic compounds, and (4) for ionic compounds.

7. Storage: Store the column in the shipping solvent when it will not be used the next day. For overnight storage flush the column with the mobile phase at 0.2 ml/min (4.6 mm ID) or 0.05 ml/min (2 mm ID) respectively.

8. 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 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 Amide-80 columns is tested under the conditions described in the Data Sheet. All columns have passed the following quality control specifications:

No. of Theoretical Plates (N)	≥ 300	1.0 mm ID x 5.0 cm L	5 μm	≥ 6,000	4.6 mm ID x 5.0 cm L	3 μm
	≥ 600	1.0 mm ID x 10.0 cm L	5 μm	≥ 18,500	4.6 mm ID x 15.0 cm L	3 μm
	≥ 4,000	1.0 mm ID x 15.0 cm L	5 μm	≥ 13,000	4.6 mm ID x 25.0 cm L	3 μm
	≥ 6,000	1.0 mm ID x 25.0 cm L	5 μm	≥ 2,500	4.6 mm ID x 5.0 cm L	5 μm
				≥ 4,000	4.6 mm ID x 10.0 cm L	5 μm
	≥ 1,000	2.0 mm ID x 5.0 cm L	5 μm	≥ 8,000	4.6 mm ID x 25.0 cm L	5 μm
	≥ 2,000	2.0 mm ID x 10.0 cm L	5 μm	≥ 18,000	4.6 mm ID x 25.0 cm L	5 μm <b>HR</b>
	≥ 4,000	2.0 mm ID x 15.0 cm L	5 μm			
	≥ 6,000	2.0 mm ID x 25.0 cm L	5 μm	≥ 5,000	7.8 mm ID x 30.0 cm L	10 μm
	≥ 3,500	2.0 mm ID x 5.0 cm L	3 μm			
	≥ 13,000	2.0 mm ID x 15.0 cm L	3 μm	≥ 8,000	21.5 mm ID x 30.0 cm L	10 μm

Please note, that there are not all theoretical plate specifications for 2 mm ID columns available.

Asymmetry Factor (AF)	1.00 - 2.0	1.0 mm ID x 5.0 cm L	5 μm	0.90 - 1.25	2.0 mm ID x 5.0 cm L	3 μm
	1.00 - 2.0	1.0 mm ID x 10.0 cm L	5 μm	0.90 - 1.25	2.0 mm ID x 15.0 cm L	3 μm
	0.70 - 1.8	1.0 mm ID x 15.0 cm L	5 μm	0.70 - 1.8	2.0 mm ID x 15.0 cm L	5 μm
	0.70 - 1.8	1.0 mm ID x 25.0 cm L	5 μm	0.70 - 1.8	2.0 mm ID x 25.0 cm L	5 μm
	0.75 - 1.4	4.6 mm ID x 5.0 cm L	5 μm	0.90 - 1.2	4.6 mm ID x 5.0 cm L	3 μm
	0.70 - 1.5	4.6 mm ID x 10.0 cm L	5 μm	0.90 - 1.2	4.6 mm ID x 10.0 cm L	3 μm
	0.70 - 1.6	4.6 mm ID x 25.0 cm L	5 μm	0.90 - 1.2	4.6 mm ID x 15.0 cm L	3 μm
				0.90 - 1.3	4.6 mm ID x 25.0 cm L	5 μm <b>HR</b>

Please note, that there are not all asymmetry specifications for 2 mm ID ( 5 μm ), 7.8 mm ID ( 10 μm ), and 21.5 mm ID columns available.