

**Supplemental Information related to TSKgel H Type columns**  
**INSTRUCTION MANUAL for TSKgel SuperMultipore®HZ columns and TSKgel® SuperHZ columns**

To help protect you and/or your property from potential damage and ensure personal safety, please read the "Precautions" which are printed in the beginning of the "TSKgel H Type columns" INSTRUCTION MANUAL thoroughly before using the above TSKgel SuperMultiporeHZ columns and TSKgel SuperHZ columns. For this TSKgel SuperMultiporeHZ columns and TSKgel SuperHZ columns, please read section 1, section 6, section 7 (Table 5), section 8, section 11 (Table 7) and section 13 (Table 8) on this supplemental information sheet instead of the corresponding sections you find on the "TSKgel H type" INSTRUCTION MANUAL.

Precautions: Shipping Solvents : Tetrahydrofuran (THF)

1. Introduction

These TSKgel SuperMultiporeHZ columns and TSKgel SuperHZ columns are suitable for measuring high molecular weight distribution of polymers.

In this supplemental information sheet, only those instructions different from the other TSKgel H type columns are included.

Please refer to the "TSKgel H Type columns" INSTRUCTION MANUAL regarding instructions which are not mentioned in this document.

[Description]

Part No.	Grade	Column Size mm(ID) × cm(L)	Particle Size (μm)
0021815	TSKgel SuperMultiporeHZ-N	4.6 × 15	3
0021488	TSKgel SuperMultiporeHZ-M		4
0021885	TSKgel SuperMultiporeHZ-H		6
0019309	TSKgel SuperHZ1000		3
0019310	TSKgel SuperHZ2000		
0019311	TSKgel SuperHZ2500		
0019312	TSKgel SuperHZ3000		
0019313	TSKgel SuperHZ4000		
0019660	TSKgel SuperHZM-N		
0019662	TSKgel SuperHZM-M	3 & 5	
0019664	TSKgel SuperHZM-H	10	
0019302	TSKgel SuperHZ1000	6.0 × 15	3
0019303	TSKgel SuperHZ2000		
0019304	TSKgel SuperHZ2500		
0019305	TSKgel SuperHZ3000		
0019306	TSKgel SuperHZ4000		
0019661	TSKgel SuperHZM-N		
0019663	TSKgel SuperHZM-M		3 & 5
0019665	TSKgel SuperHZM-H		10

6. Solvents  
6-3 Solvent Compatibility

Grade	Mobile Phase
TSKgel SuperMultiporeHZ-N TSKgel SuperMultiporeHZ-M TSKgel SuperMultiporeHZ-H	Tetrahydrofuran (THF) only
TSKgel SuperHZ1000	benzene, chloroform, toluene, xylene
TSKgel SuperHZ2000 TSKgel SuperHZ2500 TSKgel SuperHZ3000 TSKgel SuperHZ4000 TSKgel SuperHZM-N TSKgel SuperHZM-M TSKgel SuperHZM-H	benzene, chloroform, toluene, xylene, dichloromethane, dichloroethane

7. Flow Rate  
7-2 Suitable Flow Rate

Table 5 Flow Rate

Grade	Column Size mm(ID) × cm(L)	Suitable Flow Rate (mL/min)	Max. Flow Rate (mL/min)	Max. Pressure Drop /Column (MPa)			
TSKgel SuperMultiporeHZ-N	4.6 × 15	0.15 ~ 0.35	0.4	4.0			
TSKgel SuperMultiporeHZ-M				2.4			
TSKgel SuperMultiporeHZ-H				1.5			
TSKgel SuperHZ1000				5.5			
TSKgel SuperHZ2000				5.0			
TSKgel SuperHZ2500				4.0			
TSKgel SuperHZ3000				3.0			
TSKgel SuperHZ4000				3.5			
TSKgel SuperHZM-N				2.0			
TSKgel SuperHZM-M				1.0			
TSKgel SuperHZM-H				1.0			
TSKgel SuperHZ1000				6.0 × 15	0.25 ~ 0.60	0.7	5.5
TSKgel SuperHZ2000							5.0
TSKgel SuperHZ2500	4.0						
TSKgel SuperHZ3000	3.0						
TSKgel SuperHZ4000	3.5						
TSKgel SuperHZM-N	2.0						
TSKgel SuperHZM-M	2.0						
TSKgel SuperHZM-H	1.0						

8. Temperature

8-1 Temperature Range

It is recommended to use TSKgel SuperMultiporeHZ columns and TSKgel SuperHZ columns within the temperature range indicated below.

Grade	Temperature Range
TSKgel SuperMultiporeHZ-N TSKgel SuperMultiporeHZ-M TSKgel SuperMultiporeHZ-H TSKgel SuperHZ1000 TSKgel SuperHZ2000 TSKgel SuperHZ2500 TSKgel SuperHZ3000	25 ~ 60 °C
TSKgel SuperHZ4000 TSKgel SuperHZM-N TSKgel SuperHZM-M TSKgel SuperHZM-H	25 ~ 80 °C

11. Guard Column

11-2 Kinds and Selection of Guard Column

Table 7 Kinds and Applications of Guard Column

Part No.	Grade	Column Size mm(ID) × cm(L)	Applied Column
0021816	TSKgel guardcolumn SuperMP(HZ)-N	4.6 × 2	TSKgel SuperMultiporeHZ-N
0021489	TSKgel guardcolumn SuperMP(HZ)-M		TSKgel SuperMultiporeHZ-M
0021886	TSKgel guardcolumn SuperMP(HZ)-H		TSKgel SuperMultiporeHZ-H
0019314	TSKgel guardcolumn SuperHZ-L		TSKgel SuperHZ1000
			TSKgel SuperHZ2000
			TSKgel SuperHZ2500
			TSKgel SuperHZ3000
			TSKgel SuperHZ4000
			TSKgel SuperHZM-N
0019668	TSKgel guardcolumn SuperHZ-H		TSKgel SuperHZM-M
		TSKgel SuperHZM-H	
0019666	TSKgel guardcolumn SuperHZ-L	4.6 × 3.5	TSKgel SuperHZ1000
			TSKgel SuperHZ2000
			TSKgel SuperHZ2500
			TSKgel SuperHZ3000
			TSKgel SuperHZ4000
			TSKgel SuperHZM-N
			TSKgel SuperHZM-M
0019667	TSKgel guardcolumn SuperHZ-H	TSKgel SuperHZM-H	

13. Specifications and Warranty

13-2 Quality Specifications

Table 8 Guaranteed Specifications

Part No.	Grade	Column Size mm(ID) × cm(L)	Number of Theoretical Plates (TP/column)	Asymmetry Factor
0021815	TSKgel SuperMultiporeHZ-N	4.6 × 15	≥ 20,000	0.7 ~ 1.4
0021488	TSKgel SuperMultiporeHZ-M		≥ 16,000	
0021885	TSKgel SuperMultiporeHZ-H		≥ 11,000	
0019309	TSKgel SuperHZ1000		≥ 16000	
0019310	TSKgel SuperHZ2000			
0019311	TSKgel SuperHZ2500			
0019312	TSKgel SuperHZ3000			
0019313	TSKgel SuperHZ4000			
0019660	TSKgel SuperHZM-N			
0019662	TSKgel SuperHZM-M		≥ 9000	
0019664	TSKgel SuperHZM-H			
0019302	TSKgel SuperHZ1000	6.0 × 15	≥ 16000	
0019303	TSKgel SuperHZ2000			
0019304	TSKgel SuperHZ2500			
0019305	TSKgel SuperHZ3000			
0019306	TSKgel SuperHZ4000			
0019661	TSKgel SuperHZM-N			
0019663	TSKgel SuperHZM-M			
0019665	TSKgel SuperHZM-H			≥ 9000

**TOSOH CORPORATION**  
BIOSCIENCE DIVISION