TSKgel® SuperHZ4000 Products

Part Numbers:	19313, TSKgel SuperHZ4000 4.6mm ID x 15cm, 3μm	19314, Guard column, 4.6mm ID x 2.0cm, 4μm
	19306, TSKgel SuperHZ4000 6.0mm ID x 15cm, 3μm	19666, Guard column, 4.6mm ID x 3.5cm, 4μm

This sheet contains the recommended operating conditions and the specifications for TSKgel SuperHZ4000 columns and guard columns. TSKgel SuperHZ-type columns are used exclusively for Gel Permeation Chromatography and require a micro LC system. Installation instructions and column care information are described in a separate Instruction Manual.

A. OPERATING CONDITIONS

1.	Shipping Solvent:	Tetrahydrofuran (THF)
2.	Max./Standard Flow:	0.40mL/min / 0.15-0.35mL/min for 4.6mm ID columns 0.70mL/min / 0.25-0.60mL/min for 6.0mm ID columns
3.	Max. Pressure:	3.5MPa for 4.6mm ID columns 3.5MPa for 6.0mm ID columns
4.	Multiple Columns:	Columns of the same or different pore size are often connected in series to improve resolution and/or to expand the linear portion of the calibration curve. Connect the columns in order of decreasing pore size to avoid overloading from the high MW components. Connect analytical columns using short pieces of 1/16" x 0.01" ID stainless steel tubing.
5.	Solvents:	A list of solvents that are compatible with this TSKgel SuperHZ4000 column are listed at the end of the sheet. Most TSKgel H-type columns are supplied in THF because of its high dissolving power for polymers and oligomers.
6.	Temperature:	25 – 80°C
7.	Sample Size:	10μL (for 4.6mm ID columns), 20μL (for 6.0mm ID columns) Concentration 0.5 - 10g/L for samples with MW 1,000 -- 1,000,000
8.	Storage:	The column can be left overnight in solvent in the LC system. When it will not be used for longer periods of time, remove the column from the equipment, seal the ends with the provided protective screws, and store it at laboratory temperature. At all times, prevent air from entering the column!
9.	Column Protection:	The use of guard columns is recommended to prolong the life of the analytical column. Guard columns are not for analysis; they do not improve resolution when connected to the main column. They are also not a substitute for filtering the mobile phase and the sample. A guard column does reduce pump pulsation, and further protects the main column by collecting highly adsorptive components and insoluble substances. 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 TSKgel SuperHZ4000 columns are tested under the conditions described in the Data Sheet. All columns have passed the following quality control specifications:

1.	Number of Theoretical Plates (N):	> 16,000
2.	Asymmetry Factor (AF):	0.7-1.4

DS1198 Revised 14JULY2017

www.tosohbioscience.com

Tosoh Bioscience LLC
3604 Horizon Drive, Suite 100
King of Prussia, PA 19406
Phone: (484) 805-1219
Orders & Technical Service: (800) 366-4875
FAX: (610) 272-3028

Tosoh Bioscience GmbH
Im Leuschnerpark 4, 64347
Griesheim, Germany
Phone/ FAX: +49-6155-7043700

C. SOLVENT COMPATIBILITY for TSKgel SuperHZ COLUMNS

TSKgel SuperHZ-type columns are packed (and shipped) in tetrahydrofuran. The table below lists the solvents that may be used to replace the original shipping solvent.

Note: Only one solvent substitution can be made.

SOLVENT	CAN BE REPLACED BY
Tetrahydrofuran	benzene, chloroform, toluene, xylene, dichloromethane, dichloroethan
Acetone	carbon tetrachloride, o-chlorophenol/chloroform, m-cresol/chloroform, o-dichlorobenzene, dimethylformamide (DMF), dimethylsulfoxide (DMSO), dioxane, ethylacetate, FC-113, hexane, hexafluoroisopropanol/chloroform, methylethylketone, N-methylpyrrolidine, methanol/chloroform (up to 60% MeOH), pyridine, quinoline.
Chloroform	m-cresol/chloroform, hexafluoroisopropanol/chloroform, 0 to 20% methanol in chloroform.
Dimethylformamide	dimethylsulfoxide, dioxane, tetrahydrofuran, toluene,
o-dichlorobenzene	1-chloronaphthalene, trichlorobenzene

IMPORTANT:

1. Carbon tetrachloride can corrode stainless steel parts in an HPLC system and in the column.
2. Methanol cannot be used with SuperHZ-type columns.

How to Change Solvents:

i. Use a linear gradient at a rate of change of 2% per minute.
ii. Use a flow rate of ≤ 0.15mL/min for 4.6mm ID columns.
iii. Use a flow rate of ≤ 0.3mL/min for 6mm ID columns.

www.tosohbioscience.com

Tosoh Bioscience LLC
3604 Horizon Drive, Suite 100
King of Prussia, PA 19406
Phone: (484) 805-1219
Orders & Technical Service: (800) 366-4875
FAX: (610) 272-3028

Tosoh Bioscience GmbH
Im Leuschnerpark 4, 64347
Griesheim, Germany
Phone/ FAX: +49-6155-7043700