

## TSKgel® SuperHZ2000 Products

|                      |  |  |
|----------------------|--|--|
| <b>Part Numbers:</b> | 19310, TSKgel SuperHZ2000 4.6mm ID x 15cm, 3 $\mu$ m | 19314, Guard column, 4.6mm ID x 2.0cm, 4 $\mu$ m |
|                      | 19303, TSKgel SuperHZ2000 6.0mm ID x 15cm, 3 $\mu$ m | 19666, Guard column, 4.6mm ID x 3.5cm, 4 $\mu$ m |

This sheet contains the recommended operating conditions and the specifications for TSKgel SuperHZ2000 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

- Shipping Solvent: Tetrahydrofuran (THF)
- 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
- Max. Pressure: 5.0MPa for 4.6mm ID columns  
5.0MPa for 6.0mm ID columns
- 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.
- Solvents: A list of solvents that are compatible with this TSKgel SuperHZ2000 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.
- Temperature: 25 – 60°C
- Sample Size: 10 $\mu$ L (for 4.6mm ID columns), 20 $\mu$ L (for 6.0mm ID columns)  
Concentration 0.5 - 10g/L for samples with MW 1,000 -- 1,000,000
- 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!
- 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 SuperHZ2000 columns are tested under the conditions described in the Data Sheet. All columns have passed the following quality control specifications:

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

**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.**

| <u>SOLVENT</u>           | <u>CAN BE REPLACED BY</u>   |
|--------------------------|---|
| <i>Tetrahydrofuran</i>   | benzene, chloroform, toluene, xylene, dichloromethane, dichloroethan  |
| <i>Acetone</i>           | 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. |
| <i>Chloroform</i>        | m-cresol/chloroform, hexafluoroisopropanol/chloroform, 0 to 20% methanol in chloroform.   |
| <i>Dimethylformamide</i> | dimethylsulfoxide, dioxane, tetrahydrofuran, toluene,   |
| <i>o-dichlorobenzene</i> | 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.

| <b>How to Change Solvents:</b> |   |
|--------------------------------|---|
| i.                             | Use a linear gradient at a rate of change of 2% per minute. |
| ii.                            | Use a flow rate of $\leq 0.15$ mL/min for 4.6mm ID columns. |
| iii.                           | Use a flow rate of $\leq 0.3$ mL/min for 6mm ID columns.    |

DS1195 Revised 24JULY2017

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**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