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OPERATING CONDITIONS and SPECIFICATIONS

TSKgel ® G3000-HHR Products

Part Numbers:				
	0017355	7.8 mm ID x 30.0 cm L	G3000-HHR	**5 µm**
	0017368	6.0 mm ID x 4.0 cm L	Guardcolumn HHR-L	**13 µm**

This sheet contains the recommended operating conditions and the specifications for **TSKgel** G3000HHR columns and guard columns. H-type columns are used exclusively for Gel Permeation Chromatography. Installation instructions and column care information are described in a separate Instruction Manual.

A. OPERATING CONDITIONS

1 Shipping Solvent: Tetrahydrofuran (THF)

2 Max.Flow Rate: 2.0 mL/min

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.

3. Standard Flow Rate: 0.5 - 1.0 mL/min

4. Max. Pressure: 5 MPa

5. 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.

6 Compatible Solvents.: benzene, chloroform, toluene, dichloromethane, carbon tetrachloride, o-chlorophenol/chloroform, m-cresol/chloroform, o-dichlorobenzene, dimethylformamide (DMF), dimethylsulfoxide (DMSO), dioxane, n-hexane, hexafluoroisopropanol/chloroform, methylethylketone, N-methylpyrrolidine, acetone, ethanol, 1-chloronaphthalene, trichlorobenzene, decahydronapthalene (Decalin), methanol, pyridine, quinoline

Important:

1. After the first solvent exchange, exchanges should be limited to similar polarities.
2. Carbon tetrachloride can corrode stainless steel parts in an HPLC system and in the column.
3. How to Change Solvents**:**
    1. Use a linear gradient at a rate of change of 2% per minute.
    2. Use a flow rate of $\leq$ 0.5 mL/min for 7.8 mm ID columns.

7. Temperature.: 25°C - 140°C

8 Sample Size: 0.001 - 0.5 mg

9 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!

10 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** G3000-H$_{HR}$ 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):	≥ 16,000
Asymmetry Factor (AF):	0.7 - 1.6