Care and Use Instructions

YMC*GEL SIL-HG Packing Material

1. Introduction

Thank you for purchasing YMC*GEL packing material.

YMC*GEL packing material, which is manufactured under highly controlled conditions, must pass a series of stringent tests before being accepted for shipment (Please refer to the inspection report). To ensure optimal performance and durability of the packing material, please follow these instructions before use.

2. Specifications

Item	YMC*GEL SIL-HG	
Base material	silica gel	
Particle size (μm)	10, 15, 20	50
Pore size (nm)	12, 20, 30	12
pH range	2.0 – 7.5	
Bulk density (g/cm^3)	ca. 0.45	

3. Packing instructions [for dynamic axial compression (DAC) column]

3-1 Amount of packing material required

Calculate the amount of packing material by using column volume and bulk density (see section 2).

3-2 Preparation of packing slurry and packing

n-hexane and ethyl acetate (1/1, v/v) is recommended as slurry and packing solvent.

Prepare slurry to be a concentration of 25%* for 10 - 20 μm and 35%* for 50 μm, and transfer the slurry into a DAC column. As soon as all slurry goes into the DAC, start packing by pushing up/down the piston. Recommended packing pressure is 5.0 – 8.0 MPa for 10 - 20 μm and 2.0 – 3.0 MPa for 50 μm. Pay attention to the pressure rising of a DAC column.

*slurry concentration (%, w/v) = amount of packing material (kg) / total volume of slurry (L) x 100

3-3 Testing the packed column (Evaluation of column performance)

Once packing is completed, check the theoretical plate number (N) and peak shape for the packed column. If appropriate theoretical plate number (N) or peak shape is not obtained, please optimize the packing parameters.

Example conditions of column performance evaluation

Column size :	250 x 50 mmI.D. *1	
Eluent :	*n*-hexane/ethanol (90/10, v/v)	
Flow rate :	50 mL/min *1	
Detection :	UV at 254 nm	
Sample :	[10,15, 20 μm]	1. Toluene (25 μL/mL) 2. Nitro benzene (0.5 μL/mL)
	[50 μm]	1. Nitro benzene (0.5 μL/mL)
Sample solvent :	*n*-hexane	
Injection :	2 mL *1	
Evaluation :	Theoretical plate number (N) of Nitro benzene	

Expected theoretical plate number (N/m)*2

10 μm	15 μm	20 μm	50 μm
24,000/m	16,000/m	12,000/m	4,000/m

*1 Adjust flow rate and injection volume based on the ratio of the cross-sectional areas of columns when inner diameter of a column is different from 50 mm I.D.

*2 Values might be influenced by column or LC system.

4. Precautions for use

- Operating pressure should not exceed the packing pressure.
- In general, alkane (*n*-hexane or *n*-heptane), alcohols (methanol, ethanol, 2-propanol), ethyl acetate, dichloromethane, chloroform, are recommended as mobile phase. Make sure of miscibility between the organic solvents.
- Continuous use at pH near the upper or lower limit will have a negative effect on lifetime of packing material.
- To protect a column/packing material, a sample containing a lot of impurities should be filtered out before injection. Or a guard column is recommended to be used.

5. Column cleaning, regeneration and storage

- Flush the column with a solution containing a higher ratio of the stronger solvent (for example, for alkane/alcohol mobile phase, concentration of alcohol should be increased) for washing out the compounds that have a great capacity for retention in the column. When further cleaning is required, flushing with 100% ethanol or 2-propanol is effective.
- Replace with the mixture of *n*-hexane and alcohol etc. for long term storage.

6. Packing material storage

Unused packing material: Store the packing material in the original container, and keep away from heat and moisture.

Used packing material: At first, clean the packing material in accordance with the method described in section 5.

- Flush the column with ethanol or 2-propanol etc., and then remove the packing material. Make sure of miscibility between the organic solvents. After drying the unpacked material at 90 °C or below, transfer it to an appropriate container. Keep away from heat and moisture.

NOTE - We do not warrant the used packing material, and cannot accept any return of it.

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