Care and Use Instructions

# YMC*GEL CN-HG, TMS-HG, Ph-HG Packing Material

## 1. Introduction

Thank you for purchasing YMC*GEL packing material.

YMC*GEL packing materials, which are 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 CN-HG | YMC*GEL TMS-HG | YMC*GEL Ph-HG |
|---|---|---|---|
| Base material | Silica gel | | |
| Functional group | Cyanopropyl | Methyl | Phenyl |
| Particle size (µm) | 10, 15, 20, 50 | | |
| Pore size (nm) | 12, 30 | 12 | |
| pH range | 2.0 – 7.5 | | |
| Bulk density (g/cm$^3$) | ca. 0.50 | | |

## 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

2-Propanol or methanol/water (85/15, v/v) is recommended as slurry and packing solvent. Add the solvent to obtain a slurry at a concentration of 30%*, and transfer the slurry to a DAC column. Packing pressure should depend on pressure rating of the DAC column used. Generally, 5 – 8 MPa is recommended for 10, 15 and 20 µm materials, and 2 – 3 MPa is recommended for 50 µm material.

*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. In the case where appropriate theoretical plate number (N) or peak shape is not obtained, please optimize the packing condition.

**Example conditions of column performance evaluation**

Column size : 250 X 50 mmI.D.
Eluent : Methanol/Water (85/15, v/v)
Flow rate : 50 mL/min *1
Detection : UV at 254 nm
Sample : Toluene (40 µL/mL) or Methyl benzoate (10 µL/mL)
Sample solvent : Eluent
Injection : 1 mL *1
Evaluation : Theoretical plate number (N) of toluene (or methyl benzoate)

**Expected theoretical plate number (N/m)*2**

| 10 µm | 15 µm | 20 µm | 50 µm |
|---|---|---|---|
| 20,000/m | 13,000/m | 10,000/m | 3,400/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.
- Continuous use at pH near the upper or lower limit will have a negative effect on lifetime of packing material.
  *The lifetime of packing material varies depending on conditions of use such as pH, mobile phase composition and loading. In general, higher loading, and/or higher concentration of buffer salts/additives might result in shorter lifetime. We recommend cleaning the packing material periodically to extend the lifetime. Cleaning procedures are described in section 5.
- Common solvents or buffers for reversed-phase chromatography can be used as mobile phase.
- To protect a column/packing material, a sample containing a lot of impurities should be filtered out before injection.

## 5. Column cleaning, regeneration and storage

**General cleaning procedure**

[After using mobile phase not containing buffer salts/additives]

- Flush the column with solution containing a higher ratio of organic solvent for washing out the compounds that have a great capacity for retention in the column.
- Usable concentration of organic solvent is up to 100%.

[After using mobile phase containing buffer salts/additives]

- First replace with a water/organic solution containing no buffer salts or additives (A ratio of water to organic solvent should be set at the same proportions as a mobile phase). Then flush the column in accordance with the method described above.

**Column storage**

- Clean the column in accordance with the method described above, and replace with organic solvents such as methanol or acetonitrile. Keep away from heat and moisture.
- Avoid storing the column with a mobile phase containing acids/buffer salts even if it is short period.

## 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.

[Storage in a dry form]

- Flush the column with organic solvents such as methanol or 2-propanol, and then remove the packing material. After drying the unpacked material at 50 °C or below, transfer it to an appropriate container. Keep away from heat and moisture.

[Storage in organic solvent]

- Flush the column with organic solvents such as methanol or 2-propanol, and then remove the packing material. Transfer the unpacked material to an appropriate container and store it in the same solvent. Please ensure that the container is tightly sealed.

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

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