

## For High Performance Liquid Chromatography

# COSMOSIL<sup>®</sup> Sugar-D, NH<sub>2</sub>-MS PACKED COLUMN

### 1. INTRODUCTION

Thank you for purchasing our COSMOSIL Packed Column. The products are made of stainless steel and packed with totally porous spherical silica-based materials. Please read this manual carefully to ensure maximum separation efficiency and long lifetime of the columns.

### 2. CARE AND USE

1. Avoid mechanical shocks to the column.
2. Connect the column according to the flow direction indicated on the label.
3. Keep pressure under 20 MPa (under 15MPa for 10mm I.D. or wider columns).
4. Elute the column with 20-30 ml mobile phase before connecting to the detector.
5. Use scrupulously degassed mobile phase. Air bubbles generate detection noise and accelerate column deterioration.
6. Use only HPLC grade solvents.
7. In general, acetonitrile/water is used as mobile phase. Retention time increases as water content in the mobile phase is decreased.
8. Methanol/water mobile phases result in shorter retention time than acetonitrile/water.
9. Avoid precipitation of buffers in the column. Check the solvent constitution on the enclosed inspection record.
10. Keep the pH of the mobile phase within the range of 2 to 7.5. Buffer concentration is usually sufficient within the range of 0.005-0.02 mol/l. Filter the mobile phase using a membrane filter with 0.45µm or smaller pore size prior to use.
11. After analysis, wash the column with solvents that do not contain acid or buffer, and then replace the solvent with approx. 90/10 acetonitrile/water. Store the column tightly plugged at room temperature.
12. After using a mobile phase containing buffer or acid, avoid using the column without them. The result of analysis will change after use of buffer or acid.
13. Filter the sample before injection. Check solvent compatibility to avoid precipitation at injection.
14. Removal of the end filters or change of the end-fittings will result in low performance of the column.
15. Do not tighten nuts more firmly than necessary.
16. Optimize chromatographic conditions by experimenting with an analytical column of the same packing material before employing a preparative column. Pay attention to impurities without UV absorption or with longer retention time than your sample.
17. In order to maximize the column performance, minimize the dead volume in the equipment by shortening and/or narrowing the width of tubing.
18. Maintain constant column and tubing temperature.
19. Avoid injecting air, changing flow rate rapidly and changing mobile phase at high flow rate.
20. Insoluble matters from the pumping system, mobile phase, or samples trapped in the filter at the inlet of the column may increase the pressure.
21. Use guard columns to protect both analytical and preparative columns from irreversible adsorption on the packing material. Guard columns extend the lifetime of your valuable analytical and preparative columns.
22. We recommend keeping the chromatography conditions constant, since frequent change of mobile phases will shorten column lifetime.

### 3. TROUBLESHOOTING

Trouble	Cause	Solution
Increase of pressure	Clogging of the end filter Clogging of the packing material Precipitation in the column	(1) (1) (2)
Poor resolution	Contamination of packing material Disruption of packing bed	(3) Not regenerable
Split peak	Void in the column	Not regenerable
Unstable baseline	Contamination of packing material Contamination of mobile phase	(3) (4)

- (1) Disconnect column from the detector. Wash with mobile phase through the column in reverse direction at half flow rate for 30 minutes.
- (2) Wash the column with a solvent capable of dissolving the samples.
- (3) Wash the column with acetonitrile/water = 50/50 for 30min.
- (4) Use the new deionized water or HPLC grade solvents.

#### 4. WARRANTY

Nacalai Tesque will change defective columns reported within 2 weeks of receipt. Nacalai Tesque approves return in case of:

- (1) Damage during the transportation caused by our incomplete packing.
- (2) Theoretical plate number measured according to the test method specified in the Inspection Report is significantly lower than guaranteed.  
(Please note that the plate number decreases when using an apparatus with large dead volume or injecting a large volume of sample.)

We cannot accept claims for deterioration of column performance caused by taking off the end filters or end-fittings, or those related to column lifetime. Return shipment is unacceptable unless we have given prior permission and shipping instructions.