nacalai tesque
The quality for certainty.

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C016-1202-1

For High Performance Liquid Chromatography

COSMOSIL® CNT PACKED COLUMNS

1. INTRODUCTION

Thank you for purchasing our COSMOSIL Packed Column. Ensuring maximum efficiency and long column life, we ask you to read this manual carefully.
COSMOSIL Packed Columns are made of stainless steel and packed with specially bonded high purity spherical porous silica. The COSMOSIL CNT packed columns are for size-exclusion chromatography (SEC) of carbon nanotube.

2. TYPES OF STATIONARY PHASES AND THEIR CHARACTERISTICS

Product name	Particle size	Pore size	Column size	Flow rate
COSMOSIL CNT-300	5μm	300 Å	7.5mmI.D.-50mm 7.5mmI.D.-300mm	0.5-1.0 ml/min
COSMOSIL CNT-1000		1000 Å		
COSMOSIL CNT-2000		2000 Å		

3. 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 15MPa.
4. Let through the column 20-30ml mobile phase before connecting to the detector.
5. Keep the pH of the mobile phase within the range of 2-7.5.
6. Use the buffer concentration less than 0.5mol/l.
7. Use the salt concentration less than 0.5mol/l.
8. If you use water-soluble organic solvents, be careful not causing salt precipitation.
9. Pass mobile phase through membrane filter (less than 0.45μm in pore size) before use.
10. Filter the sample before injection. Avoid precipitation at injection.
11. Insoluble matters from the pumping system, mobile phase, or samples trapped in the filter(2μm) at the inlet of the column may increase the pressure.
12. We recommended using guard column to protect from irreversible adsorption on the packing material, clog of the end filter by insoluble matters, or rapid pressure increase.
13. Avoid injecting air, changing flow rate rapidly. Change mobile phase at less than 0.5ml/min flow rate.
14. We recommended using 1.0ml/min flow rate.
15. In order to maximize the column performance, minimize the dead volume in the equipment by shortening and/or narrowing the width of tubing.
16. Maintain constant column and tubing temperature.
17. After analysis, wash the column with deionized water. Then store it tightly plugged. If you don't use beyond a month, replace methanol/water=30/70.
18. We recommended keeping the chromatography conditions constant, since frequent changes of mobile phase shorten column life.

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4. TROUBLESHOOTING

Trouble	Cause	Solution
Increase of pressure	Clogging of the end filter Clogging of the packing material Precipitation in the column	(1)(2) (1) (3)
Poor resolution	Contamination of packing material Disorder of packing material	(3)(4)(5)(6) Unregenerable
Split peak	Void in the column	Unregenerable
Unstable baseline	Contamination of packing material Contamination of mobile phase	(3)(4)(5)(6) (7)

(1) Disconnect column from the detector. Let mobile phase through the column in reverse direction at 0.5ml/min flow rate for 30 min.
(2) Wash the end filter or replace it with a new one.
(3) When precipitation of salt in mobile phase, wash the column with deionized water.
(4) Wash the column with high salt concentration solution or buffer (pH3) at 0.5ml/min flow rate for 30 min.
(5) Wash the column with 6mol/l urea solution or 6mol/l guanidine hydrochloride at 0.3ml/min flow rate for an hour.
(6) Wash the column with 20% organic solvents (methanol, acetonitrile, or 2-propanol) at 0.5ml/min flow rate for 30 min.
(7) Use the deionized water or HPLC grade solvents.

5. 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 big amount of sample.)

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

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