SHIMADZU
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ERAD-0001-9018A

High Performance Packed Column for SFC

Shim-pack

UC Series

INSTRUCTION MANUAL

■ Introduction

To maintain and maximize peak performance of Shim-pack UC series columns, and to ensure the long life and stability of columns, please read the following instructions before use.

■ Operating Precautions

Check if anything is missing or damaged. If there are any signs of damage, notify your local Shimadzu representative at once.
Each of the Shim-pack UC series columns is delivered with a Column Performance Report. The information supplied in the report include the lot number, column serial number, and chromatographic test conditions. Please keep the report for future reference.

■ Column Performance

Shim-pack UC series packing materials are subjected to a rigorous array of QC tests, with special emphasis on reagent purity, raw material traceability, consistency in raw materials, and quality of final products. A detailed analysis of all of the physical and chemical properties of these columns, combined with tests for chromatographic selectivity and column packing material efficiency, ensure that each lot of these columns are identical to all previous lots and column-to-column reproducibility is of the highest order. The bonded phase of each column is as follows.

Columns	Bonded Phase
Shim-pack UC-Sil*	-
Shim-pack UC-Sil II	-
Shim-pack UC-Diol*	Dihydroxypropyl Groups
Shim-pack UC-Diol II	Dihydroxypropyl Groups
Shim-pack UC-NH2*	Aminopropyl Groups
Shim-pack UC-CN*	Cyanopropyl Groups
Shim-pack UC-RP*	Octadecylsilyl Groups + polar functional group
Shim-pack UC-GIS II*	Octadecylsilyl Groups
Shim-pack UC-Phenyl*	Phenyl Groups
Shim-pack UC-Amide*	Carbamoyl Groups
Shim-pack UC-HyP	Hydroxyphenyl Groups
Shim-pack UC-Py	Pyridinyl Groups
Shim-pack UC-PBr	Pentabromobenzyl Groups
Shim-pack UC-Choles	Cholesteryl Groups
Shim-pack UC-PyE	Pyrenylethyl Groups
Shim-pack UC-Triazole	Triazolyl Groups

* The column size lineup is only 2.1 mm or 4.6 mm i.d..

Shim-pack UC series columns are shipped with the following solvent.

Columns	Shipping Solvent
Shim-pack UC-Sil	n-Hexane : Ethanol = 95/5
Shim-pack UC-Sil II	
Shim-pack UC-Diol	
Shim-pack UC-Diol II	n-Hexane : Ethanol = 90/10
Shim-pack UC-NH2	n-Hexane : Ethanol = 98/2
Shim-pack UC-CN	
Shim-pack UC-RP	Methanol = 100
Shim-pack UC-GIS II	
Shim-pack UC-Phenyl	
Shim-pack UC-Amide	
Shim-pack UC-HyP	n-Hexane : Ethanol = 90/10
Shim-pack UC-Py	
Shim-pack UC-Triazole	
Shim-pack UC-PBr	Methanol / Acetonitrile = 90/10
Shim-pack UC-Choles	
Shim-pack UC-PyE	

When switching between solvents with significantly different polarities, first purge the column with CO_2. Flush the column with the solvent five times more than the column volume (e.g. 10 mL for a 150 mm x 4.6 mm I.D. column).

NOTE When using Shim-pack UC series columns with mobile phase containing salts such as ammonium formate, it may take time to flush the salt in the pores of the packing.
If the flush has not been thoroughly completed, the elution order and retention time may vary significantly.

■ Column Handling Precautions

Do not drop or bump the columns, to avoid a deterioration of the column performance.
The flow direction of the column is shown on the column (→). When installing the column, ensure that the flow direction matches the mobile phase flow direction.
Use SUS tubing with an inner diameter of 0.1 - 0.3 mm and an outer diameter of 1.6 mm.
The column is connected with male nuts. Ensure that the fittings are connected properly to avoid creating dead volume between the tubing and the column interface. Male nuts can be ordered by referring to the part number below.

Item name	P/N
UHPLC fitting (1PC)	228-56867-41
UHPLC fitting (10PC)	228-56867-43

NOTE Stains or air in the flow line may deteriorate the column. Before connecting the column, be sure to flow the mobile phase to flush the flow line.

If peaks are tailing more on the early eluting compounds than later eluting compounds, there is a possibility that there is a dead volume. In such case, check that all column connections are properly connected.
Also, make sure to use appropriate internal diameter and length size of tubing at the injector and detector, especially when using semi-micro size columns, to avoid system dead volumes.
To maximize column life, use the columns within the pressure shown in the following table.

Description	Column size	Maximum Operating Pressure
3μm Columns	I.D.2.1~4.6 mm	50 MPa
5μm Columns	I.D.2.1~10 mm	30 MPa
5μm Columns	I.D.20~28 mm	23 MPa

Avoid rapid pressure fluctuation.
Column should be disconnected from the system after the pressure gauge indicates “0”.
Please note that operating the sample injection valve slowly or using an auto-sampler with slow valve switching speed will also generate a rapid pressure increase at the column inlet, which will cause premature column deterioration.
When storing the column for a long period, replace with 100% organic solvent such as methanol after washing the column thoroughly with a salt-free eluent.
Seal the column with the plugs provided and store it with a in a temperature stable place..
When washing the column, wash with a mobile phase with an organic solvent concentration higher than the analytical conditions.

■ Sample

Samples should be dissolved in an eluent or solvent weaker than the mobile phase, which helps avoid sample precipitation at column inlet/head and inconsistent retention values.

■ Clogging of column

The most common cause of the increase of column back pressure or split peaks is blockage of the inlet filter by sample particulates, or large quantities of lipophilic compounds adsorbing to the head of the column.

- Filtrate the mobile phase using a 0.45 μm membrane filter before using the column.
- Filtrate the sample using a syringe filter before injecting to the column.

■ Technical Support

Shim-pack UC series columns are manufactured, inspected, packaged and shipped under strict standards of quality control. Should you find any defect in performance, please contact your local Shimadzu representative, who will ensure your complete satisfaction.
We regret that we cannot guarantee the lifetime of columns, also that we cannot accept any claim when performance has deteriorated due to noncompliance with the operation procedures elucidated above, or as a result of normal aging.