SHIMADZU

Shimadzu Packed Column for HPLC

Shim-pack

XR-SIL

Instruction Manual

■ Introduction

Shim-pack XR-SIL is a high performance normal-phase column for HPLC designed for rapid separation. The packing material is composed of 2.2 μm of totally porous, high purity spherical silica particles.

■ Specifications

Item	Contents
Silica particles	Spherical, porous, high purity silica particles
Particle size	2.2 μm
Pore size	12 nm
Type	Stainless steel packed column
Storage solvent	Please see the Column performance report
Operating temperature	80 °C
Dimension	(228-59905-91) 2.0 mm *i.d.* × 50 mm (228-59905-92) 2.0 mm *i.d.* × 75 mm (228-59905-93) 2.0 mm *i.d.* × 100 mm (228-59906-91) 3.0 mm *i.d.* × 50 mm (228-59906-92) 3.0 mm *i.d.* × 75 mm (228-59906-93) 3.0 mm *i.d.* × 100 mm

■ Certificate of Compliance

This column comes with a quality assurance certificate that refers to the physical properties and column performance of Shim-pack XR-SIL. These items are Shown "■ Description Items of the Certificate".

■ Description Items of the Certificate

● Physical Properties

Item	Contents
Particle Size	The particle size (μm) indicated is that of the halfway point of the particle size distribution.
Pore Size	The average pore size (nm) is determined by the nitrogen adsorption method.
Pore Volume	The pore volume (mL/g) is determined by the nitrogen adsorption method.
Specific Surface Area	The specific surface area (m^2/g) is determined by the nitrogen adsorption method.
Trace Metal Contents	The total and individual trace metal content (ppm) of the silica is determined for six different metals.
Carbon Loading	The carbon loading (%) of the octadecyl and methyl groups in the packing determined by CHN measurement.

■ Column Installation

● The flow direction of the column is shown on the column tag. When installing the column, ensure that the flow direction arrow matches the mobile phase flow direction.

● The column is connected with SUS male nuts and SUS ferrules. Ensure that the fittings are connected properly to avoid creating dead volume between the tubing and the column interface. The product name and the part numbers of the SUS male nut and the PEEK ferrule are as follows.

Item Name	P/N	Comment
Male Nut SUS	228-45717-01	2/pkg
Double Ended Ferrule PEEK	228-45717-02	10/pkg

● Tubing connections to the column must be stainless steel, 0.1 - 0.2 mm *i.d.* and 1.6 mm *o.d.* Use the shortest possible tubing connection from the injector to the column to minimize peak broadening.

> *NOTE:* The presence of air in the flow line may damage the column. Before connecting the column, be sure the flow line is completely filled with mobile phase.

■ Mobile Phase Solvent

The column is employed in normal phase separation. n-Hexane, chloroform, etc. are commonly used as mobile phase solvents. To speed up elution, add an increased proportion of isopropanol or ethanol to the mobile phase.

■ Column Handling Precautions

● Do not overtighten the male nuts to the column during installation. This may damage the fittings.

● To stable use for long time, please refer to the conditions described in the Specifications. As a rough guide about 20 MPa of the column pressure, and do not use extreme over it. The steep pressure change over the column may cause deterioration.

● Set the flow rate not to exceed the maximum operating pressure. The optimum flow rate range is as follows. Even though the pressure is less than the maximum pressure, the very high flow rate has the possibility of making the column deterioration.

Column *i.d.*	Optimum Flow Rate
2.0 mm	0.4 - 0.5 mL/min
3.0 mm	0.9 - 1.2 mL/min
4.6 mm	2.0 - 2.5 mL/min

● Filter the mobile phase and sample solutions through a 0.22 μm membrane filter, or an equivalent, before use. Suspended particles will lead to column clogging, which will increase the system pressure.

- To remove the column from the system, wait until the column temperature equals the room temperature and the pressure of the column becomes zero.
- Do not shock the column by banging it or dropping it.

■ Flushing the Column

If you notice that the peaks are unstable retention time or bad peak shapes, connect the column in reverse flow direction and flush the column with isopropanol for removing adsorbed polar matter from the column top. After flushing, reconnect the column in the normal flow direction.

> ✎ **NOTE:** The column cannot be regenerated if it is heavily contaminated.

■ Column Storage

When removing the column from the system, cap both ends of the column so that the solvent cannot evaporate. For long-term storage, first flush the column, replace the mobile phase with described in the Column performance report, then cap both ends of the column before storage.

■ Technical Support

It is the customer's responsibility to develop and validate analytical conditions for a particular application. However, Shimadzu offers technical support by e-mail and phone for customers who need help.
Write specific questions to analytic@group.shimadzu.co.jp or call your local representative.

∗ The contents of this instruction sheet are subject to change without notice.