Operation Manual
Shodex STANDARD S series

(Please read this manual carefully to achieve accurate and consistent molecular weight information for a long time)

Important Handling Instructions

Caution!

· Please consult the Safety Data Sheet (SDS) of reagents and solvents used with the column and understand their proper handling methods to prevent potential health hazards or death from occurring.

· Please wear appropriate personal protective equipment such as lab goggles and gloves when handling organic solvents and acid and alkaline reagents. Avoid any direct physical contact to prevent chemical injuries.

Before Using the Standard

(1) Please visually inspect the package and outside of the reagent bottles for any damage.

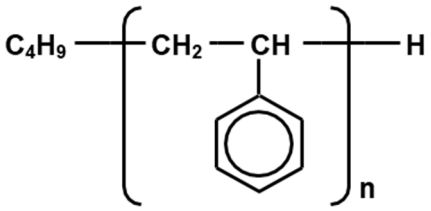
(2) Please check if product name and lot number written on the package, reagent bottle adhesive labels, and enclosed INSPECTION CERTIFICATE are matching and correct.

(3) Please download INSPECTION CERTIFICATE for the purchased product. INSPECTION CERTIFICATE can be downloaded from Shodex website (https://www.shodex.com/download/). You will be asked to enter the lot number.

1. Introduction

Thank you for purchasing the Shodex product. Shodex STANDARD S series is standard kits, each containing a set of polystyrene (PS) with different molecular weights. They dissolve easily in tetrahydrofuran (THF), chloroform, toluene, o-dichlorobenzene (ODCB), etc. They also have narrow molecular weight distributions and are less likely to adsorb to the column packing material. Therefore, the standards are suitable for preparing calibration curves required in relative molecular weight distribution analyses by aqueous size exclusion chromatography (SEC). Please select a kit with molecular weight ranges (see below) that meet the molecular weight range of your target samples.

2. Structural Formula



3. Product Lineup

Product Code	Product Name	Contents	Molecular Weight (Mp) Range
F8601105	**STANDARD SL-105**	0.5 g x 10 kinds	580 - 25,000
F8602105	**STANDARD SM-105**	0.5 g x 10 kinds	1,000 - 2,500,000
F8603075	**STANDARD SH-75**	0.5 g x 7 kinds	600,000 - 7,000,000

(Note) Molecular weights (Mp, Mw/Mn) of a standard kit may vary depending on production lot.

4. How to Use Standards

4.1 Sample Solution Preparation

(1) Viscosity of high molecular weight compound is largely influenced by its molecular weight and concentration. Samples with high viscosity cause peak broadening and elution delay, and this makes it difficult to obtain their accurate molecular weight distributions. In general, the larger the molecular weight of the compound, the higher its viscosity becomes. To suppress the influence from high viscosity, it is recommended to lower the sample concentration. Please use the below table as a reference when preparing samples for molecular weight distribution analyses.

Molecular Weight Range	Optimal Concentration (w/v)
≤ 5,000	≤ 1.0 %
5,000 - 25,000	≤ 0.5 %
25,000 - 200,000	≤ 0.25 %
200,000 - 2,000,000	≤ 0.1 %
≥ 2,000,000	≤ 0.05 %

(2) Add solvent to standards. Let them stand at room temperature to dissolve and homogenize the standard samples. The time required for swelling and dissolution depends on molecular weight of a standard. Lower-molecular-weight standards swell and dissolve in a few hours. However, higher-molecular-weight standards (1,000,000 or larger) require a longer time. Dissolve them with occasional gentle stirrings over a day.

(3) Filter the prepared sample solutions using disposable 0.45-μm filters.

(4) Sample solutions should be stored in a refrigerator (about 4 °C recommended) to prevent oxidative degradation.

(5) Use refrigerated sample solutions within 2 weeks.

Attention! · Ultra-sonication may cause shear degradation if used to dissolve standards, and thus not recommended.

4.2 Calibration Curve

Analyze standard samples under the same analysis conditions as target samples. Prepare a calibration curve for measuring molecular weight distribution using retention times of each standard sample and their peak top molecular weight (Mp) values stated on the INSPECTION CERTIFICATE.

5. Storage

Store undissolved standards in a 20 - 25 °C dark place.

Attention! · Avoid direct sunlight and extreme temperature changes.

6. Expiration Date

Expiration date of an unopened standard is 4 years from the inspection date.

Note · The inspection date is stated on the INSPECTION CERTIFICATE.

Please refer to the Shodex website (https://www.shodex.com/) for product details and their applications. For additional assistance, contact the distributor from whom you purchased the column or contact your regional Shodex support office (https://www.shodex.com/en/support_office/list).