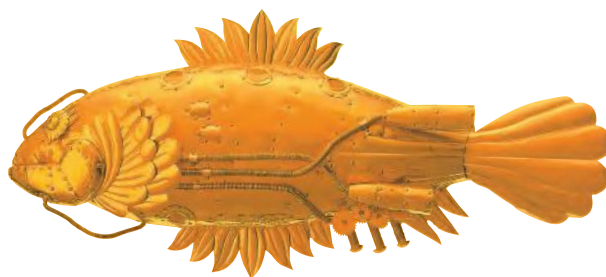


# Shodex™



## HPLC Columns

### MANUAL

### STANDARD M-75

**SHOWA**  
**DENKO**  
EUROPE

Columns manufactured by Showa Denko K.K Japan  
Made in Japan

**Shodex HPLC Columns**  
Europe, Middle East, Africa, Russia

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# Operation Manual

## Shodex™ STANDARD M-75

(Please read this manual carefully before using the column to ensure performance and life.)

### 1. Introduction

Chromatographic determinations of the molecular weight (MW) properties of polymers, either in organic or aqueous phase, rely on calibration with Standards of highly characterized MWs for accurate results. Expressed simply, Size Exclusion (or Gel Permeation) Chromatography enables polymer molecules of different sizes in solution to be separated from one another, such that the large molecules elute first and small molecules elute last. Since the molecular size in solution (hydrodynamic volume) is related to MW, a picture of the entire MW Distribution (MWD) may be obtained quickly and simply. This is in great contrast to the “absolute” techniques of MW determination which frequently could take half a day per sample to define a single average MW. Polymer Standards are thus an integral part of any quantitative Size Exclusion Chromatography. These Standards need to be highly characterized by as many absolute and chromatographic techniques as possible to define the MW averages and MWD.

The Shodex STANDARD M-75 is Polymethylmethacrylate for SEC, and it is suitable for SEC using hexafluoroisopropanol (HFIP) solvent.

### 2. Preparation of solutions

It is recommended as a general principle that the polymer concentration in solution and the injection volume both be kept as low as possible concurrent with the sensitivity of the system to reduce as much as possible deleterious effects such as column broadening and viscous trapping. This becomes even more critical when very high molecular weights are involved. Solutions should be made up at room temperature only. Typical values for concentration and injection are suggested below:

M.W. Range	Concentration	Injection Volume
500 – 700,000	0.05% w/v	20 – 200 µL
1,000,000 and above	0.02% w/v below	20 – 200 µL

### **3. Storage**

Polymethylmethacrylate Standards are stable materials themselves but these are degraded by air, sunlight and heat. So that Polymethylmethacrylate Standards should be stored at room temperature of 20 to 25°C, and in the dark place. They should not be stores in direct sunlight or in wide temperature change.