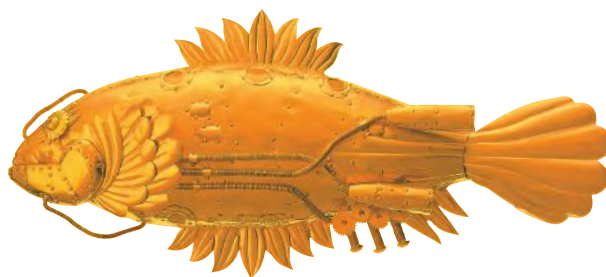


# Shodex™



## HPLC Columns

### MANUAL

### PROTEIN KW 404-4F

**SHOWA**  
**DENKO**  
EUROPE

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

For technical support please use  
contact details shown below:

**SHOWA DENKO EUROPE GmbH**  
Shodex Business  
Konrad-Zuse-Platz 3  
81829 Munich, Germany

E-mail: [support@shodex.de](mailto:support@shodex.de)  
Phone: +49 (0)89 93 99 62 37  
[www.shodex.de](http://www.shodex.de)



# Operational Manual

## Shodex™ PROTEIN KW404-4F

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

### 1. Introduction

Shodex KW404-4F is a size exclusion chromatography column developed for separation of hydrophilic substances with low molecular weight, such as small proteins and peptides.

### 2. Instructions in handling <Important>

**Caution!** \* Take notice of keeping instructions about the solvents and the reagents used with the column not to occur problems related to losing your health or leaking.

**Attention!** \* Use the column within the regular range of flow rate, pressure and temperature. There is a danger of deteriorating the performance when it is handled beyond the permissible range even for a short time. See the clause "Usable conditions" about the permissible range.

### 3. Specifications

Column size:	4.6 mm I.D. X 300 mm L
Column material (inside):	SUS 316
Packing material:	Porous silica particle (5 $\mu$ m) bound with hydrophilic polymer
In-column solvent (initial):	Water
Exclusion limit M.W. :	400,000 (Pullulan)

### 4. Usable conditions

Flow rate:	$\leq$ 0.5 ml/min, normally used under 0.35ml/min. *It should be 0.15 ml/min or less for replacing the in column solvent.
Pressure:	<10 MPa per column.
Temperature:	5~45°C.
pH:	3.0~7.5.
Eluent:	An aqueous solution of salt or a buffer solution is usually used.

<Representative salts> sodium chloride, sodium nitrate, sodium sulfate, potassium sulfate, ammonium sulfate.

Acceptable concentration of total salts is 0.1M~0.3M.

<Representative buffers> phosphate buffer, tris buffer, acetate buffer.

\*Methanol or acetonitrile can be added up to 100 vol%.

**Attention!**

- 1) Do not remove the end fittings of the column under any circumstances.
- 2) Do not make a strong impact on the column: such as hitting or dropping on the floor.
- 3) Replace the solvent in the chromatograph with the eluent to be used before connecting the column.
- 4) Connect the column so that the flow direction corresponds to the arrow mark on the tag.
- 5) When the column is not used for a month or more, replace the in column solvent with water, close each end with a stopper, and store it at room temperature.
- 6) Adjust total salt concentration of eluent to not more than 0.5M.
- 7) Filtrate the sample with a disposable filter (0.45  $\mu\text{m}$ ) to prevent deterioration by adsorbing insoluble matters.
- 8) When methanol or acetonitrile is added to an aqueous solution of salt or a buffer solution, pay attention not to separate any salt after mixing.