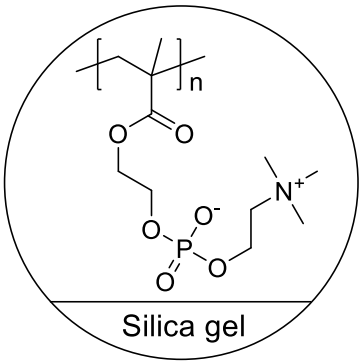
INSTRUCTION MANUAL FOR DCpak® PMPC

Please read these instructions completely before using this column

Column Description

DCpak® PMPC

Poly(2-Methacryloyloxyethyl phosphorylcholine)
immobilized on **5µm and 3µm silica**



Shipping solvent: **Acetonitrile/Water = 90/10 (v/v)**

Every column has been examined and quality control tested before shipping. Please refer to the Column Performance Report and test parameters for results.

Operating Conditions

	50 x 2.1 mm i.d. **100 x 2.1 mm i.d.** **150 x 2.1 mm i.d.** **250 x 2.1 mm i.d.** Analytical columns	**50 x 3.0 mm i.d.** **100 x 3.0 mm i.d.** **150 x 3.0 mm i.d.** Analytical columns	**50 x 4.6 mm i.d.** **100 x 4.6 mm i.d.** **150 x 4.6 mm i.d.** **250 x 4.6 mm i.d.** Analytical columns	**250 x 10 mm i.d.** **250 x 20 mm i.d.** **250 x 30 mm i.d.** **250 x 50 mm i.d.** Semi-prep/prep columns
Column Fittings	Waters			
Flow Rate Direction	As indicated on the column label			
Pressure Limitations①	30MPa (~ 305 kgf/cm^2 or ~ 4350 psi)			
Temperature②	5 to 70 °C			
pH Range②	Between pH 2.0 and pH 8.0			

① Pressure means the pressure generated across the column, excluding system pressure.
② When this column is used at pH > 7, the temperature should be maintained between 5ºC and 25ºC, and the use of a guard cartridge is essential to avoid deterioration of the column performance.

Important Notice

- **This column is not for chiral separations.**
- **Do not attempt to disassemble the column.**
- **This instruction sheet for DCpak® PMPC is not applicable to any other Daicel column.**
- **This column can be used in both SFC and HPLC mode.**

Please contact your local Chiral Technologies office for further assistance before trying any solvents not mentioned below.

A – HPLC Mobile Phases

- Generally any mobile phase compatible with silica gel-based HPLC columns can be used.
- When switching between solvents with vastly different polarities, first flush with a mutually miscible solvent such as 2-propanol at a reduced flow rate (approximately 50% lower than the normal flow rate).
- DCpak PMPC can be used with pure polar organic solvents like acetonitrile and methanol, and any other polar organic solvent that is miscible with water.
- The elution strength of polar organic solvents is in descending order of methanol > acetonitrile.

B – SFC Mobile Phases

- Methanol is typically used as a co-solvent. Ethanol, 2-propanol, ethyl acetate, THF, and dichloromethane can also be used.
- The eluotropic strength of the alcoholic co-solvents are methanol>ethanol>2-propanol if the same volume percentage is applied. This tendency becomes remarkable for a polar analyte.
- A higher co-solvent content results in a shorter retention time.
- A mixed co-solvent of the above organic solvents can also be applied. When an aprotic co-solvent is employed, the addition of alcohol in a small amount may improve peak shape.
- An increase of the co-solvent content increases the column head pressure. Pressure should not exceed 30 MPa.

C – Additives

- Initial method development can be performed without the addition of any additives. If needed, the recommended additives as illustrated in the table may help sharpen the peak shape.
- Typical concentration is 0.1 vol% of the total mobile phase. (e.g. use co-solvent containing 0.5% of additive if CO2/ co-solvent ratio is 80/20 v/v).

Basic Samples require Basic additives	Acidic Samples require Acidic additives
Diethylamine (DEA) Ammonium formate Ammonium acetate	Trifluoroacetic acid (TFA) Acetic acid Formic acid
< 0.5% Typically 0.1%	< 0.5% Typically 0.1%

- Ammonium formate or ammonium acetate are generally acceptable additives for aqueous mobile phases.
- It is critical to confirm the additive does not precipitate in the mobile phase.
- Formic acid, acetic acid, or ammonium hydroxide can be used for pH control.
- After a basic or acidic additive has been used, wash the column with more than 10 column volumes of mobile phase without additive, and then flush the column with the shipping solvent.

Sample Preparation

- The sample should be dissolved in the mobile phase (or starting gradient composition in gradient mode) to help avoid sample precipitation at the column inlet.
- The sample should be filtered through a membrane filter of approximately 0.5 µm porosity.

Column Care and Maintenance

- The use of a guard column is highly recommended to avoid deterioration of the column performance.
- After performing analyses which contain additives, it is good practice to flush the column with mobile phase which does not contain any additives. If removing the column from the system, flush with shipping solvent and then remove the column following the notes below (for SFC use).
- Remove the column from the instrument ONLY after the inner pressure is completely released. Removing the column under a high inner pressure may cause hazards by rapid releasing CO_2, and can cause a deterioration of the column seal. Be sure to slowly loosen the connection to avoid possible release of CO_2.
- The column can be stored long term at ambient temperature.

☞ ***Column cleaning procedure***

- When using a wide variety of mobile phase conditions, there may be a change in retention reproducibility. In order to ensure consistent performance, a regeneration method may be implemented to eliminate any change in retention ability due to the history of the column (mobile phases, additives…)

Flush with the solvent that can dissolve the sample (e.g. methanol) at 1.0 mL/min. (*) for 3 hours.
(*) ***Recommended flow rate for analytical columns (4.6mm ID).***

Operating this column in accordance with the guidelines outlined here will result in a long column life.

Conversion Table

- Column I.D. vs Flow Rate

Column I.D. (mm)	2.1	3.0	4.6	10	20	30
Flow Rate (ml/min)	0.21	0.43	1.0	4.7	19	43

- Pressure

MPa	bar	kg/cm^2	psi
1	10	10.197	145.038
0.1	1	1.020	14.504
9.807×10^{-2}	0.981	1	14.223
6.895×10^{-3}	6.895×10^{-2}	7.031×10^{-2}	1

⇨ If you have any questions about the use of this column, or encounter a problem, contact:

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