

Column Care and Use Instructions

Alcyon SFC Triart C18, Triart Diol, Triart PFP, CN, SIL

Supercritical Fluid Chromatography Column

1. Introduction

Thank you for purchasing an Alcyon SFC Column for Supercritical Fluid Chromatography (SFC).

Alcyon SFC Columns, which are manufactured under highly controlled conditions, must pass a series of strict tests before being accepted for shipment (Please refer to the column inspection report). To ensure optimal performance and durability of the column, please read these instructions carefully before using this column.

2. Specifications

Packing material	Particle size (µm)	Pore size (nm)	Functional group	End capped	Usable temperature range	
					Regular use (recommended)	Upper limit
Triart C18	5	12	C18	Yes	20 – 40 °C	50 °C
Triart Diol			Dihydroxypropyl	No		
Triart PFP			Pentafluorophenyl			
CN			Cyanopropyl	Yes		
SIL			—	—		

3. Precautions for use

- The column endfitting is Waters style connection.
- Tubing must have flat ends and must bottom out in the column endfitting. Tubing must be connected to the column correctly to avoid creating a void between the column frit and tubing, which can cause a leak and result in poor column performance (e.g. peak tailing, loss of theoretical plate number).
- The correct direction of the solvent flow is indicated by an arrow on the column identification label.
- Do not disconnect a column from the SFC system before the pressure drops to zero.
- The column pressure limit and recommended flow rate are the following.

Particle size	Pressure limit	Column I.D. and recommended flow rate
5 µm	Column length of 150 mm : 20 MPa Column length of 250 mm : 25 MPa Inner diameter of 10 mm and larger : 10 MPa	2.1 mm I.D. : 0.2 – 0.6 mL/min (Max. flow rate : 1.0 mL/min) 4.6 mm I.D. : 1.0 – 3.0 mL/min (Max. flow rate : 5.0 mL/min) 10 mm I.D. : 5 – 15 mL/min (Max. flow rate : 25 mL/min) 20 mm I.D. : 20 – 60 mL/min (Max. flow rate : 100 mL/min)

- Avoid using a column repeatedly near the pressure limit or abrupt change in pressure to prevent shortening of the column life.
- Recommendations of temperature for column use are shown in the specifications table in section 2.
- In general, usage at higher temperatures, higher concentrations of additives can shorten the column lifetime.

4. Shipping solvent

100% 2-propanol. Replace with this solvent for storage.

5. Mobile phase and sample solvent

- When a target compound is ionic, addition of additives listed below can improve peak shape and/or separation reproducibility. High concentrations of additives can result in reducing column lifetime. Add/reduce the additives according to the notes in the table. Additive concentration below is concentration for the entire mobile phase.
- When possible, the sample should be dissolved in the same modifier as the mobile phase. Using a stronger solvent than mobile phase for sample dissolution might result in distorted peak symmetry and degraded resolution.
- In order to avoid blockage which can cause pressure increase, the sample solution should be filtered through a membrane filter (0.2 μm or smaller porosity).

【Recommended solvents】

	Acidic compounds	Basic compounds	Non-Ionic compounds
Modifiers	alcohols (methanol, ethanol, 2-propanol), acetonitrile, ethyl acetate, tetrahydrofuran (THF), dichloromethane, chloroform, methyl <i>tert</i> -butyl ether (MTBE), etc		
Additives	0.1% (Upper limit 0.5%) trifluoroacetic acid (TFA), acetic acid, formic acid, etc	0.1% (Upper limit 0.5%) diethylamine (DEA), butylamine, ethanolamine, etc	None
Composition ratio	CO ₂ /modifiers (99/1 – 40/60)		

6. Column cleaning (general method)

- Flush the column with solution containing a higher ratio of modifiers (for example, for CO₂/methanol mobile phase, concentration of methanol should be increased) for washing out the compounds that have a great capacity for retention in the column. When further cleaning is required, flush with 100% ethanol is effective.
- When a mobile phase containing acid or amine is used, replace with CO₂/modifiers containing neither of them (at the same ratio as the mobile phase), then wash as above procedure. Storing a column with a mobile phase containing additive is not recommended even for a short period of time.
- The column needs to be replaced when these cleaning methods do not regenerate the column performance. To extend the column lifetime, especially for samples containing large amount of impurities, we recommend a sample pretreatment conducted carefully prior to introducing the sample to the column.