Column Care and Use Instructions
YMC-Actus Series

1. Introduction

Thank you for purchasing a YMC-Actus series column. YMC-Actus series is designed for preparative HPLC with excellent durability even under ballistic gradient conditions causing large pressure fluctuation.

YMC-Actus series, which are manufactured under highly controlled conditions, must pass a series of stringent 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

series	Packing material	Particle size (µm)	Pore size (nm)	C%	Usable pH range	Max. Temp.(°C)
Triart	Triart C18	5	12	20	1.0 – 12.0	pH1 – 7: 70 pH7 – 12: 50
	Triart C8	5	12	17	1.0 – 12.0	50
	Triart Phenyl	5	12	17	1.0 – 10.0	50
	Triart PFP	5	12	15	1.0 – 8.0	50
Pro	*Pro* C18	5	12	16	2.0 – 8.0	50
	Hydrosphere C18	5	12	12		
	Pro C18 RS	5	8	22	1.0 – 10.0	
	Pro C8	5	12	10	2.0 – 7.5	
YMC-Pack	ODS-A	5	12	17	2.0 – 7.5	50
	ODS-AQ	5	12	14		

3. Shipping solvent

Indicated in the COLUMN INSPECTION REPORT. Replace with this solvent for storage.

4. Mobile phase

- The correct direction of the solvent flow is indicated by an arrow on the column identification label.
- Aqueous or non-aqueous solvent can be used as a mobile phase. Repetitive replacement among solvents with large difference in polarities might degrade the column performance. In general, acetonitrile, methanol and tetrahydrofuran (THF) are recommended for regular use. When using THF as a mobile phase, be mindful of the solvent resistance of your system or tubing (PEEK parts are especially unsuitable for use with THF).
- Recommendations of pH for column use are shown in the specifications table in section 2. When using the column at pH near the upper or lower limit, a mobile phase containing 10% concentration of organic solvent should be used. The column lifetime will shorten under certain conditions by temperature and mobile phase composition.
- When using *Pro* C18 RS column, its extreamly high hydrophobicity might cause difficulties of replacement or equilibration with mobile phase containing low concentration organic solvent. Concerning organic solvent ratio, more than 10% for methanol and more than 5% for lower polar organic solvent should be used. When replacing methanol aqueous solution with acetonitrile aqueous soluiton, mobile phase containing less than 20% of acetonitrile may result in irregularities in retention time or peak shapes. In these cases, first replace with 60% acetonitrile aqueous solution, and then replace with the mobile phase.

5. Column cleaning (general method)

- Flush the column with solution containing a higher ratio of organic solvent for washing out the compounds that have a great capacity for retention in the column after using mobile phases not containing buffer salts/additives. Usable concentration of organic solvent is up to 100%. A cleaning solution containing THF might be effective when removing highly hydrihobic (lipid-soluble) substances that are adsorbed onto the gel.
- When using mobile phase containing buffer salts/additives, first replace with a water/organic solution containing no buffer salts/additives (A ratio of water to organic solvent should be set at the same proportions as a mobile phase). Then flush the column in accordance with the method described above. Mobile phase containing about 50 mM or less in buffer salts/additives can be replaced directly with 60% acetonitrile aqueous solution.
- Flushing with 100% water after using the column around the pH limit might shorten the column lifetime. Flush the column with water/organic solution as described above, such as 60% acetonitrile aqueous solution.
- Once macromolecules such as proteins or polysaccharides are adsorbed onto the gel, they are hardly removed, even if solvents with high eluting capability are used. To avoid contamination of the column by them, conduct sample pretreatment carefully before introduction into the column.

6. Other environments

- The upper limit of column pressure is about 30 MPa (4350 psi).
- Avoid using a column repeatedly near the pressure limit or abrupt change in pressure to prevent shortening of the column life.
- Adjust the flow rate appropriately because the pressure changes depending on the column length, temperature, types of organic solvent etc.
- The upper limit of column temperature is shown in the specifications table in section 2. However, we recommend using the column between 20 – 40 °C, because some conditions of usage such as pH of the mobile phase, might shorten the column lifetime in particular at the upper temperature limit of the column. When using the column long term under alkaline conditions, we recommend using a low concentration (about 1 – 10 mM) of organic buffer solution with mobile phase (methanol is recommended) at lower temperature (less than about 30 °C).
- When using the semi-preparative columns above ambient, irregularities in peak shapes such as peak broadenings and peak splits might happen, because temperature in the column is not kept uniformly. To avoid those phenomenons, we recommend preheating the mobile phase.

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