

# YMC-BioPro Ion Exchange Media

## Care and Use Instructions

### 1. Introduction

Thank you very much for purchasing YMC products for ion exchange media.

YMC-BioPro Ion Exchange media are based on newly developed hydrophilic polymer beads with a strong-anion exchanger (quaternary ammonium group) or a strong-cation exchanger (sulfobutyl group), and are most suitable for capture and intermediate purification.

YMC-BioPro Ion Exchange media are manufactured under highly controlled conditions, and must pass a series of stringent tests before being accepted for shipment (Please refer to the inspection report). In order to ensure optimal performance and durability of the media, please follow these instructions.

### 2. Specification

Item	Strong-anion exchanger YMC-BioPro Q	Strong-cation exchanger YMC-BioPro S
Matrix	Hydrophilic polymer beads	
Functional group	$-\text{CH}_2\text{N}^+(\text{CH}_3)_3$	$-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{SO}_3^-$
pH range	2~12	2~12
Temp. range (°C)	4~40	4~40
Shipping solvent	20% Ethanol solution	
Feature	Highly Efficient in intermediate purification from an early stage	

### 3. Packing Instructions

#### 3-1 Amount of media required

The amount of media required is 1.1 to 1.4 times of column volume. When packing the media by slurry techniques, adjust the quantity of the sedimented media to the column volume to be packed.

#### 3-2 Washing the media

Mount the media on a glass filter and wash with 0.2-0.5 M sodium sulfate or 0.5 M sodium chloride solutions. The recommended amount of solution is 3 times of the media. The media should be protected from drying.

#### 3-3 Preparing the packing slurry and packing procedure

0.2-0.5 M sodium sulfate or 0.5 M sodium chloride solutions are recommended for both for slurring and packing. Add the solvent to obtain 20-50% slurry concentration. Pack the column at a mild constant pressure (0.1 to 0.3 MPa) or a flow rate of about 2 times faster than the flow rate to be used.

### 4. Testing the packed column (Evaluation of column packing)

Once the column is packed, check the number of theoretical plates (N) and asymmetry factor (As). When the asymmetry factor is not between 0.7 and 1.4, the column needs to be re-packed\*. When the peak is tailing, pack the column at a faster rate. When the peak is leading, pack the column at a slower rate.

\*Please consider above evaluation criteria as a guide. The degree of ascertaining a successful packing is often application dependent. A packed column which is out of the criteria may perform to meet your expectations.

## 5. Equilibration and elution

- Equilibrate with about 5-10 column volumes of initial eluent before using column for chromatographic separations.
- Generally samples are adsorbed on the top of the column with 20 to 50 mM of buffer as first eluent, then eluted with a salt-concentration gradient method (sodium chloride concentration commonly adjusted in the range of 0 to 0.5 M) or pH gradient method. It is recommended to flush the column with buffer containing about 1 M of sodium chloride for each run in order to remove residual impurities from column with the final eluent.
- Water-soluble organic solvent (maximum of 30%), can be added in the eluent. Before adding such solvent, make sure salt in the buffer will not precipitate. Other additives such as urea ( $\leq 8$  M) or guanidine hydrochloride ( $\leq 6$  M) which are commonly used as protein denaturants, nonionic surface-active agents, cationic surface-active agents (limited to YMC-BioPro Q), or anionic surface-active agents (limited to YMC-BioPro S) can be used.
- Avoid solvents containing oxidant for eluent.  
Avoid anionic surface-active agents for YMC-BioPro Q, cationic surface-active agents for YMC-BioPro S.

## 6. Cleaning and regeneration

A change of retention time or peak shape and/or pressure increase may be caused by the adsorption of fat-soluble substances or precipitated impurities in sample. In such case, please follow these steps for column cleaning and regeneration. If these procedures will not solve the problem, we recommend you to use new media.

**Batch method:** Soak and agitate the media in washing solution about 3 to 5 times of the media volume. After leaving it stationary, remove the supernatant fluid by decantation. Repeat the process 2 to 3 times.

**Column method:** Flush the column with washing solution of about 3 to 5 times of media volume (Disconnecting the column from the detector is recommended). After the process, perform sufficient equilibration with the eluent. State of contamination or type of washing solutions (high viscosity, etc.) can cause pressure increase. In such case, reduce the flow rate for flushing.

For washing solution, high concentration of sodium chloride solution (For example, about 1 to 2 M concentration) is recommended in stead of flushing buffer process for each run. If performance does not recover, wash with sodium hydroxide (about 0.1 to 0.5 M) at first, then flush with sodium chloride (about 0.1 to 0.5 M) and replace with eluent.

## 7. Storage

Store the packed or bulk media in 20% ethanol in water solution. Store the bulk media in the original container at temperature of 4 to 35°C. Keep container tightly closed.

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