

***Econo-Pac® 10 Deionization Columns
with AG® 501-X8(D) Resin
Catalog Number 732-2030***

BIO-RAD

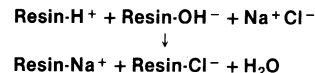
Econo-Pac 10 Deionization Columns with AG 501-X8(D) Resin

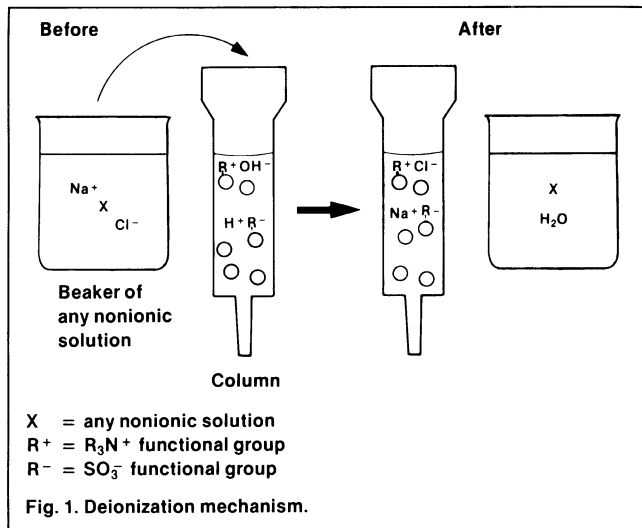
Introduction

Econo-Pac 10 deionization columns allow fast and economical deionization of a wide range of samples, such as urea, formamide, glyoxal, acrylamide, PEG, and almost any other nonionic solution. The columns are packed with 10 ml of AG 501-X8(D) mixed bed resin, which removes all cations and anions from a solution. The columns have a minimum capacity of 7 meq/column for both cations and anions. The resin contains a dye which will change from blue to gold, giving a visual indication of resin exhaustion. The columns reduce the conductivity of water to 10 megohm. The prepacked disposable columns process 40–50 ml of sample in less than 5 minutes (compared to 1–2 hours for batch techniques).

Technical Description

The AG 501-X8(D) resin within the Econo-Pac 10 deionization column consists of equivalent amounts of AG 50W-X8 strong cation exchanger, H^+ form, and AG 1-X8 strong anion exchanger, OH^- form. The cations in the solution are exchanged with H^+ cations on the resin, while the anions are exchanged with OH^- anions on the resin. The resulting neutralization yields water. The mechanism of deionization is shown in Figure 1.





A description of the Econo-Pac deionization column is given in Table 1.

Table 1. Description of Econo-Pac 10 Deionization Columns

| | |
|-----------------------------|------------------------------------|
| Resin type | Mixed bed |
| Chemical form | H ⁺ and OH ⁻ |
| Physical appearance | Blue and gold beads |
| Matrix | Styrene divinylbenzene |
| Mesh size | 20-50 mesh |
| Particle size | 300-1,180 μm |
| Bed volume | 10 ml |
| Total column volume | 30 ml |
| Minimum capacity | 7 meq/column |
| pH range | 1-14 |
| Column material | polypropylene |
| Frit material | polyethylene |
| Upper frit pore size | 90 μm |

Instructions for Use

1. Remove the upper cap, and snap off the bottom tip to start the column flowing. A Luer-lock stopcock may be used to adjust the flow rate.
2. Add 20 ml of distilled deionized water to the column. The column will not run dry. Flow will stop when the water reaches the top frit.
3. Pour the solution to be deionized into the reservoir above the column, then elute slowly through the column. The resin bed will not be disturbed due to the presence of the upper bed support. Discard the first 10 ml of the solution.
4. The quality of the deionized solution may be verified by measuring its conductivity against the conductivity of the starting solution.

The resin may be used to deionize solutions until the dye begins to fade from blue to gold, indicating capacity is exhausted. Generally the dye will change color starting from the top of the column, and deionization will continue until the color change occurs at the bottom of the column.

Regeneration

Regeneration is not recommended for Econo-Pac 10 deionization columns, due to the difficulty in separating the mixed anion and cation resins, the large volume of regenerants required for the anion resin, and the difficulty in accurately remixing chemically equivalent resins. Repacking the column is also not recommended.

Storage

Econo-Pac 10 deionization columns can be stored in their original packaging at room temperature. Mixed bed resins are stable for 2 years when stored at 21° C and protected from exposure to ultraviolet light. The shelf life may be extended by storing the columns at a lower temperature.

Table 2. Solvent Resistance

| | |
|-------------------------|---|
| Acetic acid, 2 N | S |
| Acrylamide | S |
| Alcohol | S |
| Chloroform (50%) | U |
| Ethidium bromide | S |
| Formamide | S |
| Glyoxal | S |
| Guanidine HCl, 6 M | S |
| HCl, 2 N | S |
| KOH, 2 N | S |
| Methylene chloride | U |
| NaOH, 2 N | S |
| PEG | S |
| Pyridine | L |
| SDS | S |
| Sodium thiocyanate, 3 M | S |
| Urea | S |

Stabilities are listed as stable to extended exposure (**S**); stable to limited exposure (**L**); and unstable (**U**). Since the columns are disposable, solvent conditions which may limit the lifetime of the column are termed (**L**) for limited exposure.

Applications

Econo-Pac 10 deionization columns may be used to prepare nonionic reagents for critical analytical applications. The following procedure describes the deionization of formamide, but can be used for any nonionic reagent such as acrylamide, urea, PEG, or water. Glyoxal deionization requires at least 2 ml of resin per 1 ml of glyoxal.

Deionization of Formamide

1. Remove the upper cap, and snap off the bottom tip to start the column flowing. A Luer-lock stopcock should be used to adjust the flow rate.
2. Add 20 ml of distilled deionized water to the column. The column will not run dry. Flow will stop when the water reaches the top frit.

3. Pour the formamide to be deionized into the reservoir above the column, then elute slowly through the column. The flow rate should be 0.5–1.0 ml/min. The resin bed will not be disturbed due to the presence of the upper bed support. Discard the first 10 ml of the formamide solution.
4. The quality of the deionized solution may be verified by placing a sample of the deionized formamide along with a nondeionized sample in the freezer at 0° C, or by testing the pH of the deionized sample. The pH of the deionized formamide should be 7.

Note: Formamide may interfere with the color change of the dye, but will not affect the deionization capacity of the resin.

Technical Information

If you need additional information or assistance in developing an application with Econo-Pac 10 deionization columns, contact your local Bio-Rad representative.

Product Information

| Catalog Number | Product Description |
|----------------|--|
| 732-2030 | Econo-Pac 10 Deionization Columns, 30 |
| 732-2032 | Econo-Pac 10 Ion Retardation Columns, 30 |
| 732-2034 | Econo-Pac 10 Adsorbent Columns, 30 |
| 732-2010 | Econo-Pac 10DG Desalting Columns, 30 |
| 732-2020 | Econo-Pac 10 Protein A Kit , contains 1 Econo-Pac 10 protein A column, 4 Econo-Pac 10DG desalting columns, top-off gel, and MAPS® binding, elution, and regeneration buffers |
| 732-2022 | Econo-Pac 10 Protein A Columns, 5 |
| 732-2027 | Econo-Pac 10 Serum IgG Purification Kit I , contains 5 Econo-Pac 10 serum IgG purification columns, 5 Econo-Pac 10DG desalting columns, and premixed buffers for human IgG purification |
| 732-2028 | Econo-Pac 10 Serum IgG Purification Kit II , contains 5 Econo-Pac 10 serum IgG purification columns, 5 Econo-Pac 10DG desalting columns, and premixed buffers for rabbit IgG purification |
| 732-2026 | Econo-Pac 10 Serum IgG Purification Columns, 5 |
| 732-2040 | Econo-Pac 10 Plasmid Columns, 5 |
| 732-2042 | Econo-Pac 10 Plasmid Columns, 30 |
| 732-1010 | Econo-Pac 10 Empty Columns, 50 |
| 732-1015 | Econo-Pac 10 Rack , 12 place acrylic rack |
| 732-8102 | Luer-Lock 2-Way Stopcock, 10 |