



## Product Data Sheet

### **AmberLite™ FPA90 Cl Ion Exchange Resin**

Food- and Biopharmaceutical-grade, Styrenic, Macroporous, Strong Base Anion Exchange Resin for Cane Sugar Decolorization and Biopharmaceutical Processing

#### **Description**

AmberLite™ FPA90 Cl Ion Exchange Resin has been specially designed for the decolorization of liquid sugar syrups. Ion exchange based decolorization technology has been used more effectively and economically than carbon or bone char based technologies. Sugar refiners and soft drink bottlers around the world have installed AmberLite™ FPA90 Cl to successfully decolorize sucrose solutions.

AmberLite™ FPA90 Cl is a styrenic, macroporous, Type I strong base anion resin.

#### **Cane Sugar Decolorization**

AmberLite™ FPA90 Cl Resin is an excellent choice for cane sugar decolorization, offering advantages such as:

- A leading resin used in cane decolorization, with many years of successful service
- Exceptional physical stability, excellent resistance to osmotic shock, and very good organic fouling resistance

Styrenic AmberLite™ FPA90 Cl can be used as a single component or following acrylic AmberLite™ FPA98 Cl Ion Exchange Resin for highly-colored feed solutions.

#### **Biopharmaceutical Processing**

AmberLite™ FPA90 Cl Resin is an excellent resin of choice for decolorization of high molecular weight organic color bodies in many bioprocessing applications such as natural product extraction and recovery of antibiotics from fermentation broth. It is commonly used in aminoglycoside purification bioprocess as well as in macrolide antibiotics processes like erythromycin, and tylosin, the latter being primarily used in animal health. Derivatives of erythromycin, including clarithromycin and azithromycin, are particularly useful in treating respiratory infections.

A combination of AmberChrom™ CG Chromatography Resins and/or AmberLite™ FPC3500 Ion Exchange Resin with AmberLite™ FPA90 Cl allows a higher antibiotic purity level due to the decolorization capabilities of the latter either in the pre- or post-purification step (vancomycin broth decolorization).

#### **Applications**

- Cane sugar decolorization
- Antibiotic decolorization

## Typical Properties

|                            |                                          |
|----------------------------|------------------------------------------|
| <b>Physical Properties</b> |                                          |
| Copolymer                  | Styrene-divinylbenzene                   |
| Matrix                     | Macroporous                              |
| Type                       | Strong base anion, Type I                |
| Functional Group           | Quaternary ammonium                      |
| Physical Form              | Off-white, opaque, spherical beads       |
| <b>Chemical Properties</b> |                                          |
| Ionic Form as Shipped      | Cl <sup>-</sup>                          |
| Total Exchange Capacity    | ≥ 1.00 eq/L                              |
| Water Retention Capacity   | 58 – 64%                                 |
| <b>Particle Size</b> §     |                                          |
| Particle Diameter          | 650 – 820 µm                             |
| < 300 µm                   | ≤ 0.5%                                   |
| <b>Stability</b>           |                                          |
| Swelling                   | Cl <sup>-</sup> → OH <sup>-</sup> : ~25% |
| <b>Density</b>             |                                          |
| Particle Density           | 1.050 – 1.080 g/mL                       |
| Bulk Density as Shipped    | 700 g/L                                  |

§ For additional particle size information, please refer to the [Particle Size Distribution Cross Reference Chart](#) (Form No. 45-D00954-en).

## Suggested Operating Conditions

|                                                      |                                                           |
|------------------------------------------------------|-----------------------------------------------------------|
| Maximum Operating Temperature (Cl <sup>-</sup> form) | 80°C (176°F)                                              |
| Bed Depth, min.                                      | 1000 mm (3.3 ft)                                          |
| <b>Flowrates</b>                                     |                                                           |
| Service                                              | 2 – 4 BV*/h                                               |
| Backwash                                             | See Figure 1                                              |
| Regeneration                                         | 2 – 4 BV/h                                                |
| Slow Rinse                                           | Regeneration flowrate for 2 BV                            |
| Fast Rinse (if applicable)                           | Up to 12 BV/h for 4 – 8 BV                                |
| <b>Contact Time</b>                                  |                                                           |
| Regeneration                                         | ≥ 60 minutes                                              |
| <b>Regenerant</b>                                    |                                                           |
| Concentration                                        | 10% NaCl   0.2 – 0.5% NaOH                                |
| Level, 100% basis                                    | 160 – 240 kg/m <sup>3</sup> (10 – 15 lb/ft <sup>3</sup> ) |
| Temperature                                          | 50 – 70°C (122 – 158°F)                                   |

\* 1 BV (Bed Volume) = 1 m<sup>3</sup> solution per m<sup>3</sup> resin or 7.5 gal solution per ft<sup>3</sup> resin

Refer to the brochure [Ion Exchange Resins for Cane Sugar Decolorization](#) (Form No. 45-D02221-en) for additional information.

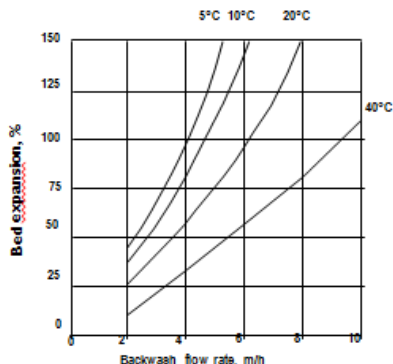
## Hydraulic Characteristics

Bed expansion of AmberLite™ FPA90 Cl Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Pressure drop data for AmberLite™ FPA90 Cl as a function of service flowrate and viscosity is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean feed and a well-classified bed.

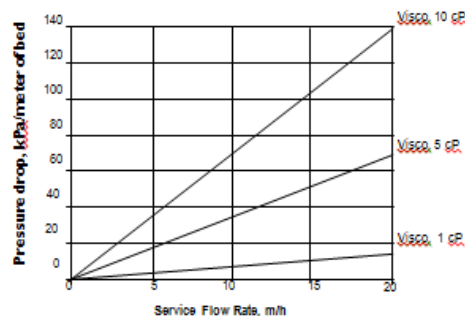
**Figure 1: Backwash Expansion**

Temperature = 5 – 40°C (41 – 104°F)



**Figure 2: Pressure Drop**

Viscosity = 1 – 10 cP



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Please be aware of the following:

- **WARNING:** Oxidizing agents such as nitric acid attack organic ion exchange resins under certain conditions. This could lead to anything from slight resin degradation to a violent exothermic reaction (explosion). Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

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