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

Form No. 45-D01183-en, Rev. 4
February 2023

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Strong base anion, Type I
Functional Group	Quaternary ammonium
Physical Form	Off-white, opaque, spherical beads
Chemical Properties	
Ionic Form as Shipped	Cl^-
Total Exchange Capacity	≥ 1.00 eq/L
Water Retention Capacity	58 – 64%
Particle Size [§]	
Particle Diameter	650 – 820 µm
< 300 µm	≤ 0.5%
Stability	
Swelling	$Cl^- \rightarrow OH^-$: ~25%
Density	
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^- form)	80°C (176°F)
Bed Depth, min.	1000 mm (3.3 ft)
Flowrates	
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
Contact Time	
Regeneration	≥ 60 minutes
Regenerant	NaCl + NaOH
Concentration	10% NaCl | 0.2 – 0.5% NaOH
Level, 100% basis	160 – 240 kg/m^3 (10 – 15 lb/ft^3)
Temperature	50 – 70°C (122 – 158°F)

* 1 BV (Bed Volume) = 1 m^3 solution per m^3 resin or 7.5 gal solution per ft^3 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)

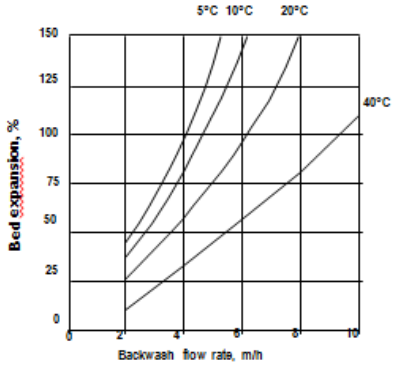
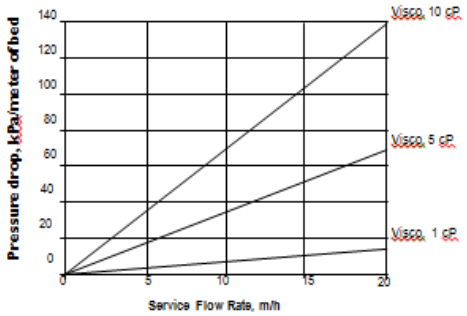


Figure 2: Pressure Drop

Viscosity = 1 – 10 cP



Product Stewardship

DuPont has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with DuPont products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

DuPont strongly encourages its customers to review both their manufacturing processes and their applications of DuPont products from the standpoint of human health and environmental quality to ensure that DuPont products are not used in ways for which they are not intended or tested. DuPont personnel are available to answer your questions and to provide reasonable technical support. DuPont product literature, including safety data sheets, should be consulted prior to use of DuPont products. Current safety data sheets are available from DuPont.

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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Have a question? Contact us at:

www.dupont.com/water/contact-us

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