Product Data Sheet

AMBERLITE™ FPA900UPS Cl Ion Exchange Resin

Food-grade, Uniform Particle Size, High Capacity, Styrenic, Macroporous, Strong Base Anion Exchange Resin for Cane Sugar Decolorization

Description

AMBERLITE™ FPA900UPS 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™ FPA900UPS Cl to successfully decolorize sucrose solutions.

AMBERLITE™ FPA900UPS Cl is a uniform particle size, styrenic, macroporous, high capacity, Type I strong base anion resin. It is an excellent choice for cane sugar decolorization, offering advantages such as:

- Ready for installation without pre-startup backwashing
- Less resin lift on backwashing, allowing faster flow for better backwash cleaning; this is well-suited for two-compartment designs with limited backwash allowance
- Maximum decolorization efficiency due to the macroporous structure
- Exceptional physical stability, excellent resistance to osmotic shock, and very good organic fouling resistance
- Uniform particle size distribution, which offers better approximation to plug-flow, facilitating potential OPEX savings from:
  - Enhancement of the regeneration process
  - Reduced rinsing requirements and waste generation
  - Reduced sweetwater and evaporation costs
  - Minimal losses during backwashing due to the absence of small beads

Styrenic AMBERLITE™ FPA900UPS Cl can be used as a single component or following acrylic AMBERLITE™ FPA98 Cl Ion Exchange Resin for highly-colored feed solutions.

Applications

- Cane sugar decolorization

Form No. 177-03572, Rev. 2
July 2019

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Strong base anion, Type I
Functional Group	Trimethylammonium
Physical Form	Off-white to light yellow, opaque, spherical beads
Chemical Properties	
Ionic Form as Shipped	Cl^-
Total Exchange Capacity	≥ 1.1 eq/L
Water Retention Capacity	56 – 66%
Particle Size [§]	
Particle Diameter	640 ± 50 µm
Uniformity Coefficient	≤ 1.1
Stability	
Whole Beads	≥ 95%
Swelling	$Cl^- \rightarrow OH^-$: 15%
Density	
Particle Density	1.06 g/mL
Shipping Weight	670 g/L

[§] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).

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 (or up to 8 BV/h)
Sweeten-off	Service flowrate for 1.5 – 2 BV
Backwash	See Figure 1
Regeneration	2 BV/h
Slow Rinse	2 BV/h
Sweeten-on	Service flowrate for 1 BV
Contact Time	
Regeneration	≥ 45 – 60 minutes
Displacement Rinse	≥ 60 minutes
Total Rinse Requirement	5 BV
Regenerant	NaCl + NaOH
Concentration	10% NaCl | 0.2% NaOH
Level, 100% basis	
Co-current	180 – 200 kg/m^3 (11.3 – 12.5 lb/ft^3)
Counter-current	150 kg/m^3 (9.4 lb/ft^3)
Temperature	25 – 70°C (77 – 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. 177-03556) for additional information.

Form No. 177-03572, Rev. 2
July 2019

Hydraulic Characteristics

Bed expansion of AMBERLITE™ FPA9000UPS Cl Ion Exchange Resin as a function of backwash flowrate at 25°C (77°F) is shown in Figure 1. The flowrate necessary to achieve a desired bed expansion for other water temperatures can be calculated with the provided equations.

Pressure drop data for AMBERLITE™ FPA9000UPS 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.

Figure 1: Backwash Expansion

Temperature = 25°C (77°F)

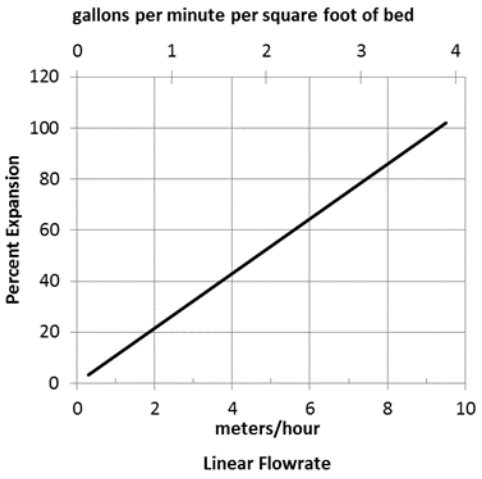
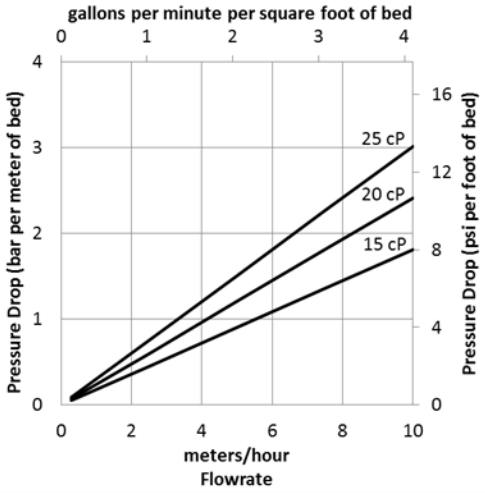


Figure 2: Pressure Drop

Viscosity = 15 – 25 cP



For other temperatures use:

$F_T = F_{25°C} [1 + 0.008 (1.8T_{°C} - 45)]$, where F ≡ m/h

$F_T = F_{77°F} [1 + 0.008 (T_{°F} - 77)]$, where F ≡ gpm/ft^2

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.

Have a question? Contact us at:

www.dupont.com/water/contact-us

Form No. 177-03572, Rev. 2
July 2019