

## AmberLite™ FPA22 Ion Exchange Resins

Macroporous, Type II Strong Base Anion Resin for Mixed Bed Sweetener Applications

### Description

AmberLite™ FPA22 Ion Exchange Resins are macroporous, Type II, strong base anion resins for use in mixed bed polishing in sweetener applications to produce syrup products with maximum shelf stability. The macroporous matrix provides excellent mechanical strength and good operating capacity.

**AmberLite™ FPA22 OH Ion Exchange Resin** is shipped in the regenerated (OH<sup>-</sup>) ionic form.

**AmberLite™ FPA22 Cl Ion Exchange Resin** is shipped in the most stable (Cl<sup>-</sup>) ionic form for long-duration shipments or inventory safety stock.

Anionic AmberLite™ FPA22 OH resin can best be used in a mixed bed polisher together with cationic AmberLite™ FPC88MB H Ion Exchange Resin. Or, for a pair of resins, each in their most stable form, AmberLite™ FPA22 Cl is commonly purchased with AmberLite™ FPC88MB Na Ion Exchange Resin, which is in the Na<sup>+</sup> form.

### Applications

- Sweetener mixed bed polishing

### Typical Properties

Physical Properties		
Copolymer	Styrene-divinylbenzene	
Matrix	Macroporous	
Type	Strong base anion, Type II	
Functional Group	Dimethylethanolamine	
Physical Form	White to yellow, opaque, spherical beads	
Chemical Properties		
Ionic Form as Shipped	<b>OH<sup>-</sup></b>	<b>Cl<sup>-</sup></b>
Total Exchange Capacity	≥ 1.2 eq/L (Cl <sup>-</sup> form)	≥ 1.2 eq/L
Water Retention Capacity	46 – 56% (Cl <sup>-</sup> form)	48 – 56%
Particle Size §		
< 300 μm	≤ 2%	≤ 1%
> 1180 μm	≤ 5%	≤ 2%
Stability		
Whole Beads	≥ 95%	≥ 95%
Swelling	Cl <sup>-</sup> → OH <sup>-</sup> : 12%	Cl <sup>-</sup> → OH <sup>-</sup> : 12%
Density		
Particle Density	1.1 g/mL	
Shipping Weight	800 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 (OH <sup>-</sup> form)	46°C (115°F)	
pH Range	0 – 14	
Bed Depth, min.	910 mm (3.0 ft)	
Flowrates		
Service	3 – 5 BV*/h	
Backwash	See Figure 1	
Fast Rinse (if applicable)	2 – 10 BV/h	
Contact Time		
Regeneration	≥ 30 – 45 minutes	
Displacement Rinse	≥ 30 – 45 minutes	
Total Rinse Requirement	3 – 6 BV	
Regenerant	NaOH <sup>†</sup>	Na <sub>2</sub> CO <sub>3</sub>
Concentration	4%	7%
Level, 100% basis	64 – 80 kg/m <sup>3</sup> (4 – 5 lb/ft <sup>3</sup> )	80 – 96 kg/m <sup>3</sup> (5 – 6 lb/ft <sup>3</sup> )
Temperature, max.	46°C (115°F)	46°C (115°F)

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

† NaOH is recommended.

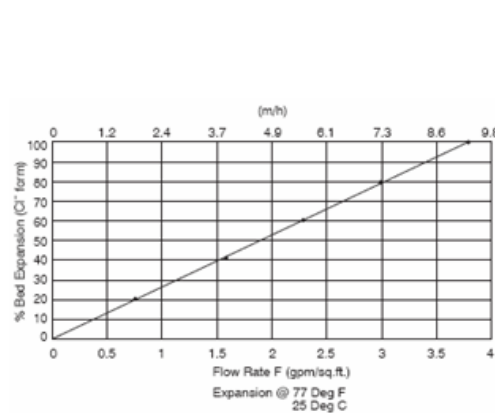
## Hydraulic Characteristics

Bed expansion of AmberLite™ FPA22 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™ FPA22 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.

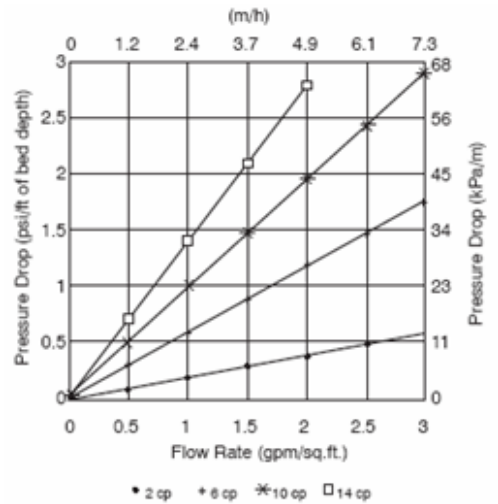
**Figure 1: Backwash Expansion**

Temperature = 25°C (77°F)



**Figure 2: Pressure Drop**

Viscosity = 2 – 14 cP



**For other temperatures use:**

$$F_T = F_{25^\circ\text{C}} [1 + 0.008 (1.8T_c - 45)], \text{ where } F \equiv \text{m/h}$$

$$F_T = F_{77^\circ\text{F}} [1 + 0.008 (T_F - 77)], \text{ where } F \equiv \text{gpm/ft}^2$$

## 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

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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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