Product Data Sheet

AmberLite™ FPC88 UPS Ion Exchange Resins

Uniform Particle Size, Macroporous, Strong Acid Cation Resin for Sweetener Applications

Description

AmberLite™ FPC88 UPS Ion Exchange Resins are uniform particle size, macroporous, strong acid cation resins for use in deashing sweeteners to produce low-conductivity syrups, purifying organic acids, or deashing/demineralizing fruit juices, other beverages, and food additives. The macroporous matrix provides excellent mechanical strength and good operating capacity.

Premium-grade AmberLite™ FPA/FPC UPS Resins help decrease operating costs, and help improve plant capacity. These premium resins extend syrup run times up to 25%, reducing downtime and the chemicals spent on regeneration. A simple change to premium AmberLite™ FPA/FPC UPS resins can postpone or eliminate the need for capital expansion. The uniformity of the beads also reduces sweetwater production and rinse requirements after regeneration, possibly reducing wastewater treatment costs.

AmberLite™ FPC88 UPS H Ion Exchange Resin is shipped in the regenerated (H^+) ionic form for deashing processes or to be paired with AmberLite™ FPA22 UPS OH Ion Exchange Resin for mixed bed polishing of corn and starch sweeteners.

AmberLite™ FPC88 UPS Ion Exchange Resin is shipped in the most stable (Na^+) ionic form for long-duration shipments or inventory safety stock.

Applications

- Corn and starch sweetener deashing
- Citric and lactic acid deashing
- Whey, gelatin, and glycerin deashing
- Fruit juice deashing
- Beverage demineralization

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Typical Properties

Physical Properties		
Copolymer	Styrene-divinylbenzene	
Matrix	Macroporous	
Type	Strong acid cation	
Functional Group	Sulfonic acid	
Physical Form	White to yellow, opaque, spherical beads	
Chemical Properties		
Ionic Form as Shipped	**H^+**	**Na^+**
Total Exchange Capacity	≥ 1.7 eq/L	≥ 1.8 eq/L
Water Retention Capacity	46 – 56%	42 – 50%
Particle Size [§]		
Particle Diameter	550 ± 50 µm	550 ± 50 µm
400 – 720 µm	≥ 95%	≥ 95%
Stability		
Whole Uncracked Beads	≥ 95%	≥ 95%
Swelling	$Na^+ \rightarrow H^+$: 5%	$Na^+ \rightarrow H^+$: 5%
Density		
Particle Density	1.2 g/mL	1.2 g/mL
Shipping Weight	770 g/L	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 (H^+ form)	93°C (200°F)
pH Range	0 – 14
Bed Depth, min.	910 mm (3.0 ft)
Flowrates	
Service	2 – 4 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	2 – 5 BV
Regenerant	HCl
Concentration	7%
Level, 100% basis [‡]	80 – 96 kg/m^3 (5 – 6 lb/ft^3)
Temperature, max.	93°C (200°F)

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

[‡] Regeneration level may be lower for counter-current regeneration systems.

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Hydraulic Characteristics

Bed expansion of AmberLite™ FPC88 UPS 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™ FPC88 UPS 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)

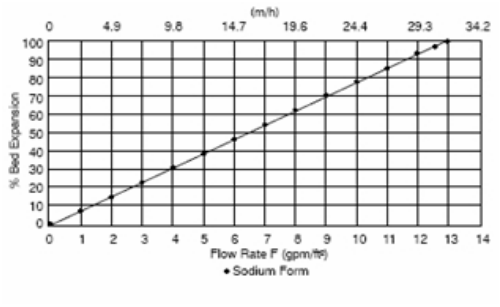
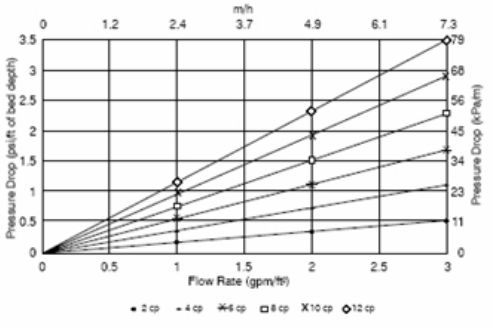


Figure 2: Pressure Drop

Viscosity = 2 – 12 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.

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Have a question? Contact us at:

www.dupont.com/water/contact-us

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