

#### **Product Data Sheet**

# AmberLite™ FPC88 Ion Exchange Resins

Macroporous, Strong Acid Cation Resin for Sweetener Applications

#### **Description**

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

**AmberLite™ FPC88 H Ion Exchange Resin** is shipped in the regenerated (H<sup>+</sup>) ionic form for deashing processes.

AmberLite<sup>™</sup> FPC88 Na Ion Exchange Resin is shipped in the Na<sup>+</sup> ionic form for softening/decalcification processes, or when the most stable ionic form is desired for long-duration shipments or inventory safety stock.

### **Applications**

- · Corn and starch sweetener deashing
- Beet sugar decalcification
- · Citric and lactic acid deashing
- · Fruit juice deashing
- · Beverage demineralization

## **Typical Properties**

Dhysical Dranartics		
Physical Properties		
Copolymer	Styrene-divinylbenzene	
Matrix	Macroporous	
Туре	Strong acid cation	
Functional Group	Sulfonic acid	
Physical Form	White to yellow, opaque, spherical beads	
Chemical Properties		
Ionic Form as Shipped	H <sup>+</sup>	Na <sup>⁺</sup>
Total Exchange Capacity	≥ 1.7 eq/L	≥ 1.8 eq/L
Water Retention Capacity	46 – 56%	42 – 48%
Particle Size §		
Particle Diameter	300 – 1200 μm	300 – 1200 μm
< 400 µm	≤ 5%	≤ 5%
> 1180 µm	≤ 5%	≤ 5%
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

<sup>§</sup> 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	3-6 BV
Regenerant	HCI
Concentration	7%
Level, 100% basis ‡	96 – 112 kg/m <sup>3</sup>
	$(6-7 \text{ lb/ft}^3)$
Temperature, max.	93°C (200°F)

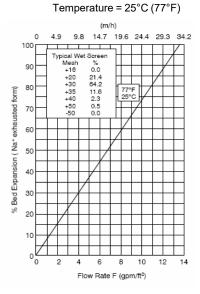
<sup>\* 1</sup> BV (Bed Volume) = 1 m<sup>3</sup> solution per m<sup>3</sup> resin or 7.5 gal per ft<sup>3</sup> resin

### Hydraulic Characteristics

Bed expansion of AmberLite™ FPC88 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 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

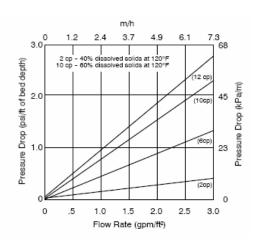


For other temperatures use:

 $F_T = F_{25^{\circ}C} [1 + 0.008 (1.8T_{^{\circ}C} - 45)], \text{ where } F \equiv \text{m/h}$   $F_T = F_{77^{\circ}F} [1 + 0.008 (T_{^{\circ}F} - 77)], \text{ where } F \equiv \text{gpm/ft}^2$ 

Figure 2: Pressure Drop

Viscosity = 2 - 12 cP



<sup>&</sup>lt;sup>‡</sup> Regeneration level may be lower for counter-current regeneration systems.

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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.

Have a question? Contact us at:

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