

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^+) ionic form for deashing processes.

AmberLite™ FPC88 Na Ion Exchange Resin is shipped in the Na^+ 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

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 – 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 ⁺ → H ⁺ : 5%	Na ⁺ → 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	3 – 6 BV
Regenerant	
Concentration	7%
Level, 100% basis [‡]	96 – 112 kg/m ³ (6 – 7 lb/ft ³)
Temperature, max.	93°C (200°F)

* 1 BV (Bed Volume) = 1 m³ solution per m³ resin or 7.5 gal per ft³ resin

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

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

Temperature = 25°C (77°F)

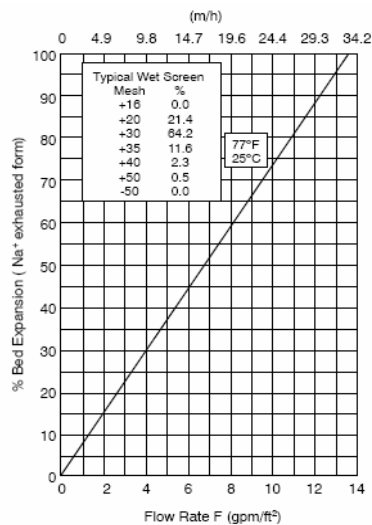
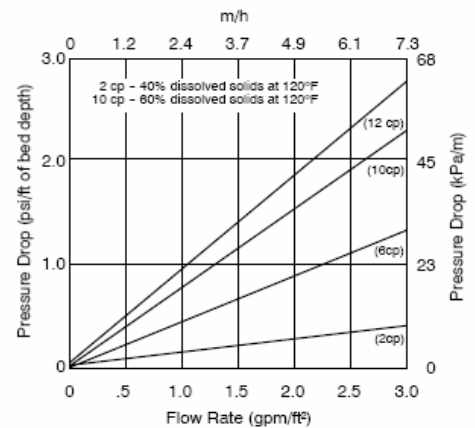


Figure 2: Pressure Drop

Viscosity = 2 – 12 cP



For other temperatures use:

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

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

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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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