



## AMBERLITE™ FPA55 Ion Exchange Resin

Food-grade, Gel, Acrylic, Weak Base Anion Exchange Resin

### Description

AMBERLITE™ FPA55 Ion Exchange Resin is an acrylic, gel, weakly basic, anion exchange resin for use in the nutrition and bioprocessing industries.

Compared to the AMBERLITE™ FPA53 Ion Exchange Resin, AMBERLITE™ FPA55 has been designed to have a short rinse. This improved rinse profile gives some cost benefits in process operations and provides a choice between AMBERLITE™ FPA55 and the more classic AMBERLITE™ FPA53, depending on the particular needs.

The extremely flexible acrylic polymer matrix provides outstanding physical stability and greater resistance to organic fouling than conventional polystyrene-based resins, leading to longer life in the application.

#### **Nutrition Applications**

AMBERLITE™ FPA55 Ion Exchange Resin has been particularly useful in dairy applications where the combination of stability and an improved rinse profile has been noted. It can also be used for deashing and deacidification of food streams, including starch-based sweeteners, and for the treatment of organic acids.

The gel structure of AMBERLITE™ FPA55 gives it higher capacity and longer run lengths than macroporous resins. AMBERLITE™ FPA55 has higher basicity than other weakly basic ion exchange resins, making it an excellent choice for the removal of weak organic acids.

#### **Bioprocessing Applications**

AMBERLITE™ FPA55 Ion Exchange Resin is an excellent resin for removing organic color bodies in many bioprocessing applications such as natural product extraction and recovery of antibiotics from fermentation broth.

### Applications

- Nutrition applications
  - Dairy processing
  - Sweetener deashing
  - Sweetener deacidification
  - Organic acid purification
- Bioprocessing applications
  - Decolorization

## Typical Properties

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### Physical Properties

|                  |                                     |
|------------------|-------------------------------------|
| Copolymer        | Crosslinked acrylic                 |
| Matrix           | Gel                                 |
| Type             | Weak base anion                     |
| Functional Group | Tertiary amine                      |
| Physical Form    | White, translucent, spherical beads |

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### Chemical Properties

|                          |                |
|--------------------------|----------------|
| Ionic Form as Shipped    | Free base (FB) |
| Total Exchange Capacity  | ≥ 1.6 eq/L     |
| Water Retention Capacity | 56 – 64%       |

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### Particle Size <sup>§</sup>

|                   |              |
|-------------------|--------------|
| Particle Diameter | 500 – 750 μm |
| < 300 μm          | ≤ 3.0%       |
| > 1180 μm         | ≤ 5.0%       |

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### Stability

|          |                |
|----------|----------------|
| Swelling | FB → HCl ≤ 30% |
|----------|----------------|

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### Density

|                 |         |
|-----------------|---------|
| Shipping Weight | 720 g/L |
|-----------------|---------|

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<sup>§</sup> 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 | 50°C (122°F)                   |
| Bed Depth, min.               | 700 mm (2.3 ft)                |
| Flowrates                     |                                |
| Service                       | 4 – 8 BV*/h                    |
| Backwash                      | See Figure 1                   |
| Regeneration                  | 2 – 8 BV/h                     |
| Slow Rinse                    | Regeneration flowrate for 2 BV |
| Fast Rinse (if applicable)    | 10 BV/h for 4 – 8 BV           |
| Contact Time                  |                                |
| Regeneration                  | ≥ 30 – 45 minutes              |
| Regenerant                    |                                |
| Concentration                 | NaOH<br>2 – 4%                 |
| Level                         | 130% of ionic load             |

\* 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

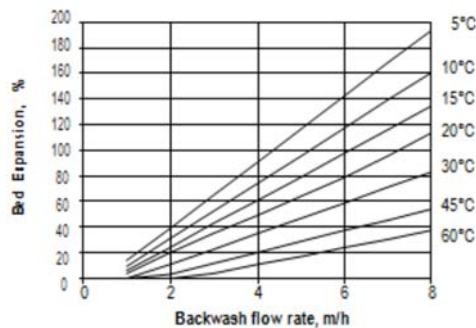
## Hydraulic Characteristics

Estimated bed expansion of AMBERLITE™ FPA55 Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AMBERLITE™ FPA55 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 and a well-classified bed.

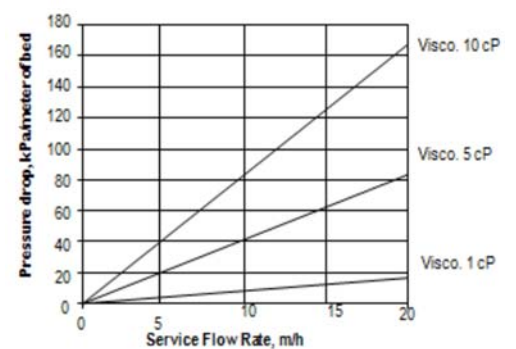
**Figure 1: Backwash Expansion**

Temperature = 5 – 60°C (41 – 140°F)



**Figure 2: Pressure Drop**

Viscosity = 1 – 10 cP



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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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