



## Product Data Sheet

### **AmberLite™ FPC23 H Ion Exchange Resin**

Food-grade, High Capacity, Macroporous, Strong Acid Cation Exchange Resin

#### **Description**

AmberLite™ FPC23 H Ion Exchange Resin is a macroporous, high capacity, strong acid cation resin designed for the deashing of corn syrups and the softening of beet sugar syrups. It is recommended for use where severe conditions exist such as those present in the Quentin process to soften beet sugar juices.

The black color of AmberLite™ FPC23 H makes it easy to confirm a clean separation from AmberLite™ FPA91 OH Ion Exchange Resin when used in polishing mixed bed applications.

AmberLite™ FPC23 H has exhibited a very efficient and economical use of acid regeneration, as well.

#### **Applications**

- Corn and starch sweetener deashing
- Beet sugar softening
- Sweetener mixed bed polishing

#### **Typical Properties**

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##### **Physical Properties**

|                  |                                |
|------------------|--------------------------------|
| Copolymer        | Styrene-divinylbenzene         |
| Matrix           | Macroporous                    |
| Type             | Strong acid cation             |
| Functional Group | Sulfonate                      |
| Physical Form    | Black, opaque, spherical beads |

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##### **Chemical Properties**

|                          |                |
|--------------------------|----------------|
| Ionic Form as Shipped    | H <sup>+</sup> |
| Total Exchange Capacity  | ≥ 2.20 eq/L    |
| Water Retention Capacity | 44 – 53%       |

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##### **Particle Size** §

|                   |              |
|-------------------|--------------|
| Particle Diameter | 580 – 800 µm |
| < 425 µm          | ≤ 5.0%       |
| > 1180 µm         | ≤ 5.0%       |

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##### **Stability**

|          |  |
|----------|--|
| Swelling | Na <sup>+</sup> → H <sup>+</sup> : 10% |
|----------|--|

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##### **Density**

|                         |         |
|-------------------------|---------|
| Bulk Density as Shipped | 830 g/L |
|-------------------------|---------|

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§ 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  | 135°C (275°F)   |  |
| pH Range                       | 0 – 14  |  |
| Bed Depth, min.                | 700 mm (2.3 ft)   |  |
| Flowrates                      |   |  |
| Service                        | 5 – 20 BV*/h  |  |
| Regeneration                   |   |  |
| HCl                            | 2 – 4 BV/h  |  |
| H <sub>2</sub> SO <sub>4</sub> | 4 – 12 BV/h   |  |
| Backwash                       | See Figure 1  |  |
| Slow Rinse                     | Regeneration flowrate for 2 BV                                |  |
| Fast Rinse (if applicable)     | Service flowrate for 2 – 4 BV                                 |  |
| Contact Time                   |   |  |
| Regeneration                   | ≥ 30 – 45 minutes   |  |
| Displacement Rinse             | ≥ 30 – 45 minutes   |  |
| Total Rinse Requirement        | 2 – 5 BV  |  |
| Regenerant                     |   |  |
|                                | <b>HCl</b>  | <b>H<sub>2</sub>SO<sub>4</sub></b>                             |
| Concentration                  | 4 – 10%   | 1 – 5%   |
| Level, 100% basis              | 45 – 150 kg/m <sup>3</sup><br>(2.8 – 9.4 lb/ft <sup>3</sup> ) | 50 – 200 kg/m <sup>3</sup><br>(3.1 – 12.5 lb/ft <sup>3</sup> ) |
| Temperature, max.              | 93°C (200°F)  |  |

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

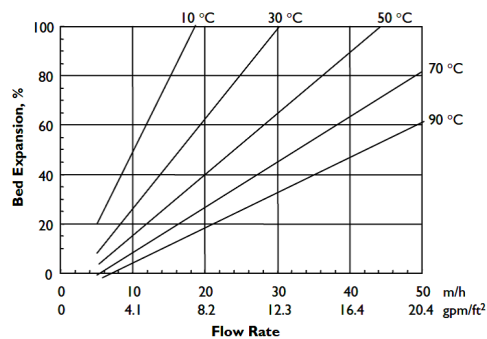
## Hydraulic Characteristics

Bed expansion of AmberLite™ FPC23 H Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Pressure drop data for AmberLite™ FPC23 H as a function of service flowrate and water temperature is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean water and a well-classified bed.

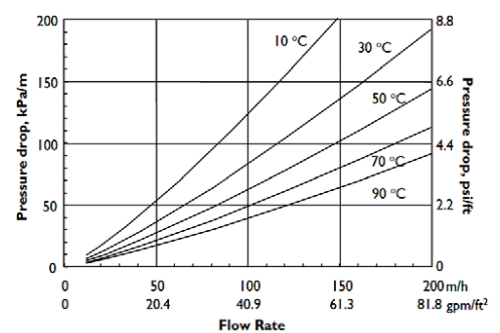
**Figure 1: Backwash Expansion**

Temperature = 10 – 90°C (50 – 194°F)



**Figure 2: Pressure Drop**

Temperature = 10 – 90°C (50 – 194°F)



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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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