Product Data Sheet

# AmberLite™ FPC16 UPS Na Ion Exchange Resin

Uniform Particle Size, High Capacity Strong Acid Cation Exchange Resin

## Description

AmberLite™ FPC16 UPS Na Ion Exchange Resin is a uniform particle size resin designed for beet sugar thin juice softening and can also be used in other specialty applications such as demineralization in dairy applications (after conversion to the $H^+$ form) or amino acid recovery and purification. The small uniform beads exhibit faster kinetics than conventionally sized resins. The improved kinetics can result in improved regeneration efficiency, higher operating capacity, reduced regenerant usage and less wastewater. AmberLite™ FPC16 UPS Na resin also shows outstanding stability to compressive and osmotic stress.

## Applications

- Beet sugar thin juice softening
  - Gryllus process
- Quentin process for sugar recovery
- Dairy demineralization
- Amino acid recovery and purification (i.e., L-lysine, etc.)

## Typical Properties

| | |
|---|---|
| **Physical Properties** | |
| Copolymer | Styrene-divinylbenzene |
| Matrix | Gel |
| Type | Strong acid cation |
| Functional Group | Sulfonic acid |
| Physical Form | Amber, translucent, spherical beads |
| **Chemical Properties** | |
| Ionic Form as Shipped | $Na^+$ |
| Total Exchange Capacity | ≥ 2.0 eq/L |
| Water Retention Capacity | 42 – 48% |
| **Particle Size** [§] | |
| Particle Diameter | 600 ± 50 µm |
| Uniformity Coefficient | ≤ 1.1 |
| **Stability** | |
| Whole Uncracked Beads | ≥ 95% |
| Swelling | $Na^+ \rightarrow H^+$: 8% |
| Friability: | |
| Average | ≥ 350 g/bead |
| > 200 g/bead | ≥ 95% |
| **Density** | |
| Particle Density | 1.28 g/mL |
| Shipping Weight | 820 g/L |

[§] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).



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## Suggested Operating Conditions

| | | |
|---|---|---|
| Maximum Operating Temperature ($H^+$ form) | 93°C (200°F) | |
| pH Range | 0 – 14 | |
| Bed Depth, min. | 1000 mm (3.3 ft) | |
| Flowrates | | |
| Service | 2 – 8 BV*/h | |
| Backwash | See Figure 1 | |
| Fast Rinse | 2 – 8 BV/h | |
| Contact Time | | |
| Regeneration | 30 – 45 minutes | |
| Displacement Rinse | 30 – 45 minutes | |
| Total Rinse Requirement | 2 – 5 BV | |
| Regenerant | NaCl | HCl |
| Concentration | 10% | 7% |
| Level | 90 – 240 kg/m$^3$ (5.6 – 15 lb/ft$^3$) | 80 – 96 kg/m$^3$ (5 – 6 lb/ft$^3$) |
| Temperature, max. | 93°C (200°F) | 93°C (200°F) |

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

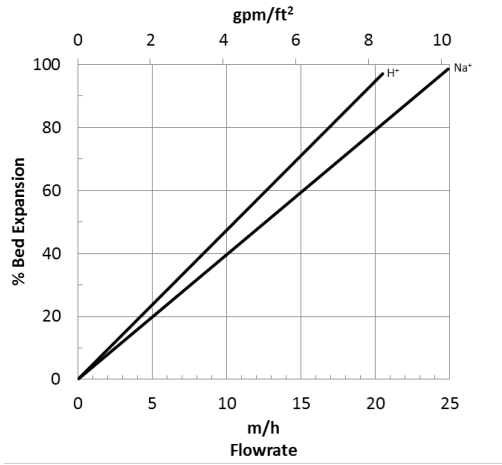
## Hydraulic Characteristics

Bed expansion of AmberLite™ FPC16 UPS Na 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 for AmberLite™ FPC16 UPS Na as a function of service flowrate at 20°C (68°F) is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean water.

**Figure 1: Backwash Expansion**

Temperature = 25°C (77°F)



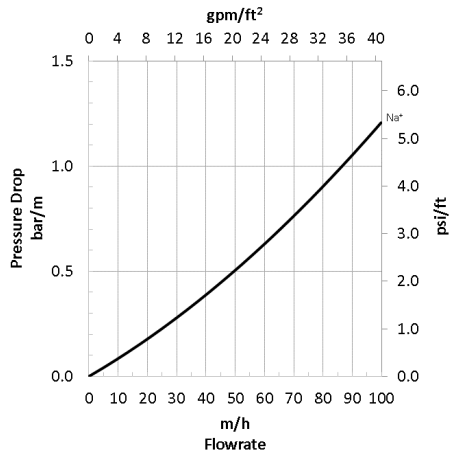

**For other temperatures use:**

$P_T = P_{20°C} / (0.026T_{°C} + 0.48)]$, where P ≡ bar/m

$P_T = P_{68°F} / (0.014T_{°F} + 0.05)]$, where P ≡ psi/ft

**Figure 2: Pressure Drop**

Temperature = 20°C (68°F)




**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$^2$



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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:**

www.dupont.com/water/contact-us





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