



## Product Data Sheet

### **DOWEX™ FPC16UPS Na Ion Exchange Resin**

Uniform Particle Size, High Capacity Strong Acid Cation Exchange Resin

#### **Description**

DOWEX™ FPC16UPS Na Strong Acid Cation 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<sup>+</sup> form). 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. DOWEX FPC16UPS Na resin also shows outstanding stability to compressive and osmotic stress.

#### **Applications**

- Beet sugar thin juice softening
- Dairy demineralization

#### **Typical Physical and Chemical Properties**

Matrix	Styrene-divinylbenzene, gel
Type	Strong acid cation
Functional Groups	Sulfonic acid
Ionic Form as Shipped	Na <sup>+</sup>
Total Exchange Capacity <sup>a</sup>	≥ 2.1 eq/L
Water Retention Capacity <sup>a</sup>	41 – 46%
Particle Size	
Particle Diameter <sup>a,b</sup>	600 ± 50 µm
Uniformity Coefficient <sup>a</sup>	≤ 1.1
Whole Uncracked Beads	≥ 95%
Friability/Crush Strength	
Average <sup>a</sup>	≥ 350 g/beat
> 200 g/beat <sup>a</sup>	≥ 95%
Swelling	Na <sup>+</sup> → H <sup>+</sup> : 8%
Particle Density	1.28 g/mL
Bulk Density, as Shipped <sup>c</sup>	820 g/L (51 lb/ft <sup>3</sup> )

<sup>a</sup> Contractual value.

<sup>b</sup> For additional particle size information, please refer to the [Particle Size Distribution Cross Reference Chart](#) (Form No. 177-01775).

<sup>c</sup> As per the backwashed and settled density of the resin, determined by ASTM D-2187.

## Suggested Operating Conditions

Maximum Operating Temperature	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 <sup>3</sup> (5.6 – 15 lb/ft <sup>3</sup> )	80 – 96 kg/m <sup>3</sup> (5 – 6 lb/ft <sup>3</sup> )
Temperature, max.	93°C (200°F)	93°C (200°F)

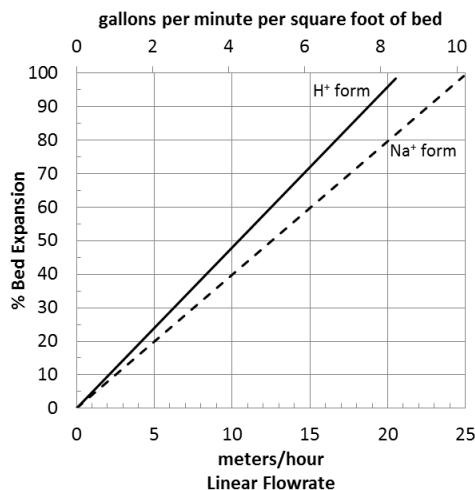
\* 1 BV (Bed Volume) = 1 m<sup>3</sup> solution per m<sup>3</sup> resin or 7.5 gal solution per ft<sup>3</sup> resin

## Hydraulic Characteristics

Bed expansion of DOWEX™ FPC16UPS 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.

**Figure 1: Backwash Expansion**

Temperature = 25°C (77°F)



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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**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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