



## Product Data Sheet

### **DOWEX™ FPC23UPS H Ion Exchange Resin**

Uniform Particle Size, High Capacity, Strong Acid Cation Exchange Resin

#### **Description**

DOWEX™ FPC23UPS H Ion Exchange Resin is a macroporous, uniform particle size, high capacity, strong acid cation resin designed for the deashing of organic acid and syrups in counter-current regeneration systems. (For co-flow regeneration systems, DOWEX MONOSPHERE™ 88 Ion Exchange Resin is recommended.)

Due to its optimal pore structure and high crosslinking level, DOWEX FPC23UPS H exhibits high operating capacity and excellent stability to compressive and osmotic stress.

#### **Applications**

- Organic acid deashing
- Syrup deashing

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

Matrix	Styrene-divinylbenzene, macroporous
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Opaque, spherical beads
Ionic Form as Shipped	H <sup>+</sup> Form
Total Exchange Capacity	≥ 2.2 eq/L
Water Retention Capacity	45 – 51%
Particle Size	
Particle Diameter <sup>b</sup>	530 ± 50 µm
Uniformity Coefficient	≤ 1.1
< 425 µm	≤ 3%
Whole Uncracked Beads	≥ 95%
Bulk Density, as Shipped <sup>c</sup>	820 g/L

<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.	91 cm (3.0 ft)
Flowrates	
Service	1 – 3 BV*/h
Backwash	See Figure 1
Fast Rinse	2 – 4 BV at service flowrate
Contact Time	
Regeneration	30 – 45 minutes
Displacement Rinse	30 – 45 minutes
Total Rinse Requirement	2 – 5 BV
Regenerant	
Concentration	7%
Level	86 – 120 kg/m <sup>3</sup> (5.5 – 7.5 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 per ft<sup>3</sup> resin

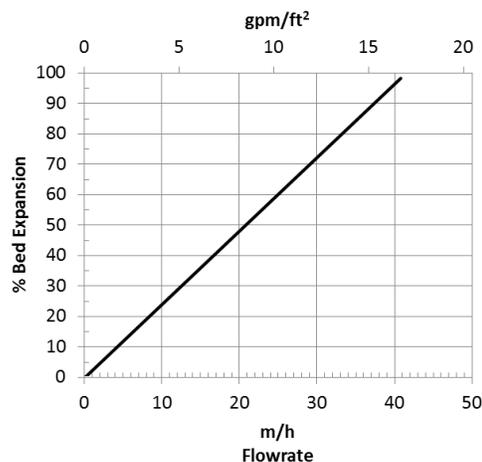
## Hydraulic Characteristics

Bed expansion of DOWEX™ FPC23UPS H 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 DOWEX FPC23UPS H as a function of service flowrate and viscosity is shown in Figure 2.

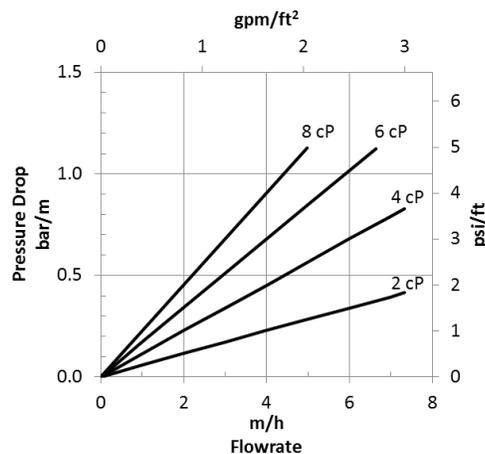
**Figure 1: Backwash Expansion**

Temperature = 25°C (77°F)



**Figure 2: Pressure Drop**

Using syrup @ 2 cP, 4 cP, 6 cP, 8 cP



For other temperatures use:

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

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

## Start-up

All that is required at the time of commissioning is to perform a full regeneration cycle followed by a rinse with at least 20 bed volumes of water. This is valid only if the resin is stored at a temperature of less than 25°C and protected from UV radiation and if the storage time between the production date (printed on the packaging) and use does not exceed 24 months.

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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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