



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 ⁺ Form
Total Exchange Capacity	≥ 2.2 eq/L
Water Retention Capacity	45 – 51%
Particle Size	
Particle Diameter ^b	530 ± 50 µm
Uniformity Coefficient	≤ 1.1
< 425 µm	≤ 3%
Whole Uncracked Beads	≥ 95%
Bulk Density, as Shipped ^c	820 g/L

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

^c 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 ³ (5.5 – 7.5 lb/ft ³)
Temperature, max.	93°C (200°F)

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

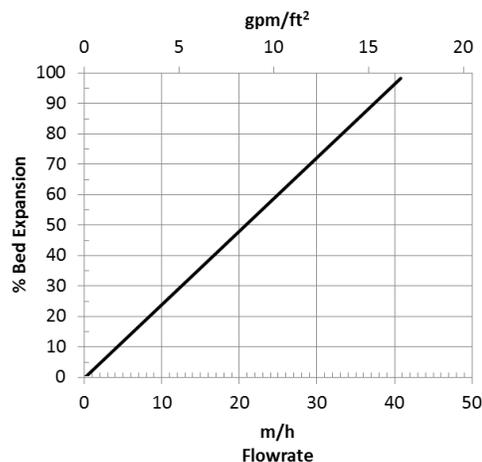
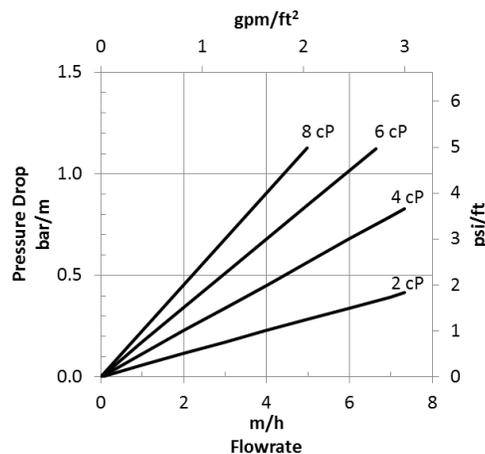


Figure 2: Pressure Drop

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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