Product Data Sheet

DuPont™ AmberLite™ FPC23 UPS H Ion Exchange Resin

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

Description

DuPont™ AmberLite™ FPC23 UPS 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, AmberLite™ FPC88 UPS Ion Exchange Resin is recommended.)

Due to its optimal pore structure and high crosslinking level, AmberLite™ FPC23 UPS H exhibits high operating capacity and excellent stability to compressive and osmotic stress.

Applications

- Organic acid deashing
- Syrup deashing

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Black, opaque, spherical beads
Chemical Properties	
Ionic Form as Shipped	H^+
Total Exchange Capacity	≥ 2.2 eq/L
Water Retention Capacity	45 – 51%
Particle Size [§]	
Particle Diameter	530 ± 50 µm
Uniformity Coefficient	≤ 1.1
< 425 µm	≤ 3%
Stability	
Whole Uncracked Beads	≥ 95%
Swelling	$Na^+ \rightarrow H^+$: 10%
Density	
Shipping Weight	820 g/L

[§] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 45-D00954-en).

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Suggested Operating Conditions

Maximum Operating Temperature (H^+ form)	93°C (200°F)
pH Range	0 – 14
Bed Depth, min.	910 mm (3.0 ft)
Flowrates	
Service	1 – 3 BV*/h
Backwash	See Figure 1
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	HCl
Concentration	7%
Level, 100% basis	86 – 120 kg/m^3 (5.5 – 7.5 lb/ft^3)
Temperature, max.	93°C (200°F)

* 1 BV (Bed Volume) = 1 m^3 solution per m^3 resin or 7.5 gal solution per ft^3 resin

Hydraulic Characteristics

Bed expansion of DuPont™ AmberLite™ FPC23 UPS 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 AmberLite™ FPC23 UPS H as a function of service flowrate and viscosity is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean feed.

Figure 1: Backwash Expansion

Temperature = 25°C (77°F)

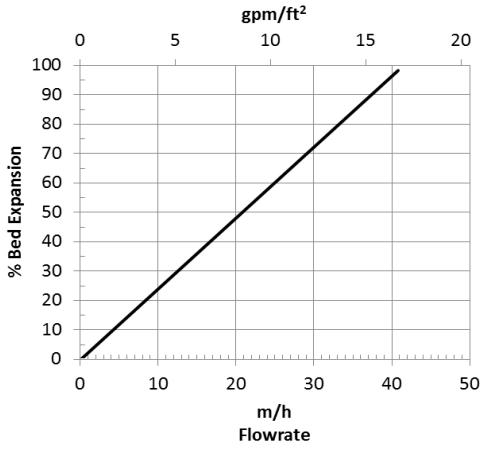
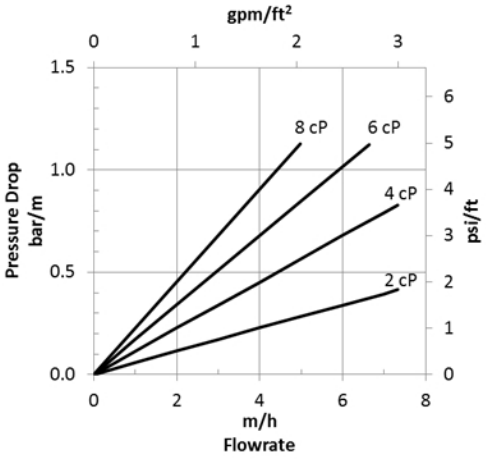


Figure 2: Pressure Drop

Viscosity = 2 – 8 cP



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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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.

Product Stewardship

DuPont has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with DuPont products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

DuPont strongly encourages its customers to review both their manufacturing processes and their applications of DuPont products from the standpoint of human health and environmental quality to ensure that DuPont products are not used in ways for which they are not intended or tested. DuPont personnel are available to answer your questions and to provide reasonable technical support. DuPont product literature, including safety data sheets, should be consulted prior to use of DuPont products. Current safety data sheets are available from DuPont.

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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