Product Data Sheet

AMBERLITE™ FPA54 Ion Exchange Resin

Food-grade, Highly Porous, Weak Base Anion Exchange Resin

Description

AMBERLITE™ FPA54 Ion Exchange Resin is a unique, highly porous, weak base, anion exchange resin, based on a crosslinked phenol-formaldehyde matrix. The low-swelling characteristics of AMBERLITE™ FPA54 give it excellent osmotic and physical stability resulting in less product loss and longer product life than conventional styrenic resins in food processing and bioprocessing applications.

The hydrophilic phenolic, porous matrix of AMBERLITE™ FPA54 permits the reversible adsorption of high molecular weight, organic, color bodies frequently found in solutions of natural product and fermentation products.

AMBERLITE™ FPA54 exhibits a high selectivity for sulfates and phosphates and, therefore, makes it ideal for the treatment of both citric and lactic acids derived from fermentation where it has a long history of use, particularly due to its excellent osmotic stability.

Applications

- Removal of high molecular weight, organic, color bodies
- Purification of citric and lactic acids from fermentation

Typical Properties

Physical Properties	
Copolymer	Crosslinked phenol-formaldehyde polycondensate
Matrix	Highly porous
Type	Weak base anion
Functional Group	Tertiary amine
Physical Form	Gray, opaque, granules
Chemical Properties	
Ionic Form as Shipped	Free base (FB)
Total Exchange Capacity	≥ 1.8 eq/L
Water Retention Capacity	60 – 65%
Particle Size [§]	
Particle Diameter	470 – 740 µm
< 300 µm	≤ 2.0%
> 1180 µm	≤ 1.0%
Density	
Shipping Weight	650 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	50°C (122°F)		
Bed Depth, min.	700 mm (2.3 ft)		
Flowrates			
Service	≤ 15 BV*/h		
Backwash	See Figure 1		
Regeneration			
NaOH	2 – 8 BV/h		
Na_2CO_3	2 – 8 BV/h		
NH_3	2 – 8 BV/h		
Slow Rinse	Regeneration flowrate for 4 BV		
Fast Rinse (if applicable)	10 BV/h for 8 – 12 BV		
Contact Time			
Regeneration	≥ 30 – 45 minutes		
Regenerant	NaOH	Na_2CO_3	NH_3
Concentration	2 – 6%	5 – 8%	1 – 4%
Level	40 – 80 kg/m^3	65 – 110 kg/m^3	20 – 40 kg/m^3
	(2.5 – 5 lb/ft^3)	(4.1 – 6.9 lb/ft^3)	(1.3 – 2.5 lb/ft^3)

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

Hydraulic Characteristics

Estimated bed expansion of AMBERLITE™ FPA54 Ion Exchange Resin as a function of backwash flowrate at 20°C (68°F) is shown in Figure 1.

Estimated pressure drop for AMBERLITE™ FPA54 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 and a well-classified bed.

Figure 1: Backwash Expansion

Temperature = 20°C (68°F)

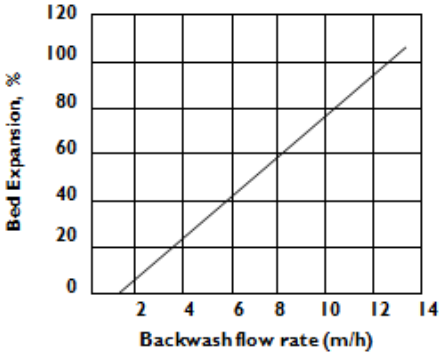
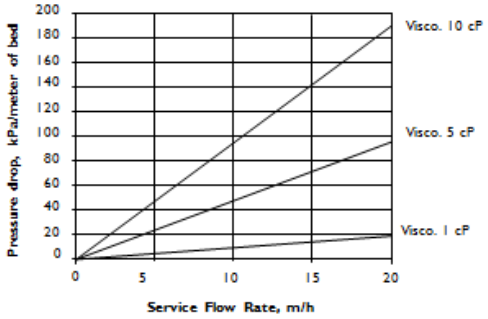


Figure 2: Pressure Drop

Viscosity = 1 – 10 cP



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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.

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