

**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**

<b>Physical Properties</b>	
Copolymer	Crosslinked phenol-formaldehyde polycondensate
Matrix	Highly porous
Type	Weak base anion
Functional Group	Tertiary amine
Physical Form	Gray, opaque, granules
<b>Chemical Properties</b>	
Ionic Form as Shipped	Free base (FB)
Total Exchange Capacity	≥ 1.8 eq/L
Water Retention Capacity	60 – 65%
<b>Particle Size</b> §	
Particle Diameter	470 – 740 µm
< 300 µm	≤ 2.0%
> 1180 µm	≤ 1.0%
<b>Density</b>	
Shipping Weight	650 g/L

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

## 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 <sub>2</sub> CO <sub>3</sub>	2 – 8 BV/h		
NH <sub>3</sub>	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			
Concentration	NaOH	Na <sub>2</sub> CO <sub>3</sub>	NH <sub>3</sub>
Level	2 – 6%	5 – 8%	1 – 4%
	40 – 80 kg/m <sup>3</sup>	65 – 110 kg/m <sup>3</sup>	20 – 40 kg/m <sup>3</sup>
	(2.5 – 5 lb/ft <sup>3</sup> )	(4.1 – 6.9 lb/ft <sup>3</sup> )	(1.3 – 2.5 lb/ft <sup>3</sup> )

\* 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

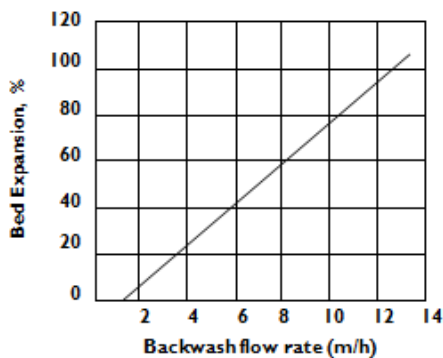
## Hydraulic Characteristics

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.

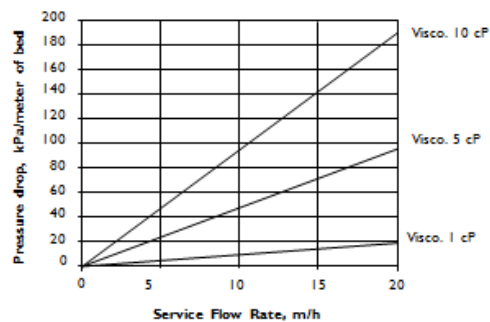
**Figure 1: Backwash Expansion**

Temperature = 20°C (68°F)



**Figure 2: Pressure Drop**

Viscosity = 1 – 10 cP



## Product Stewardship

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## Customer Notice

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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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