DuPont™ AmberLite™ resin

Product Data Sheet | Ion Exchange Resin

DuPont™ AmberLite™ ESR-1 Resin

Enzyme Carrier for the Food & Beverage Industry

Description

DuPont™ AmberLite™ ESR-1 ion exchange resin is a macroporous, anionic resin which is effective for immobilizing enzymes for heterogeneous catalysis. This resin is designed with a broad distribution of large pores to accommodate a variety of enzymes, including high molecular weight enzymes such as glucose isomerase. The pore structure promotes enzyme loading, high activity, and enhanced enzyme stability.

Key Applications

- Enzyme immobilization
- Sweetener processing involving Glucose, Isomerase, or Allulose Epimerase immobilization

Typical Properties

Physical Properties	
Copolymer	Crosslinked polystyrene
Matrix	Macroporous
Type	Anion
Functional Group	Amines
Physical Form	White to yellow, opaque, spherical beads

Chemical Properties	
Ionic Form as Shipped	Free Base (FB)
Water Retention Capacity	54 – 62%
Average Pore Diameter	300 – 500 Å

Particle Size §	
Particle Diameter	550 ± 50 µm
Uniformity Coefficient	≤ 1.1
< 300 µm	≤ 0.2%
> 850 µm	≤ 1.0%

Stability	
Whole Beads	≥ 95%
Swelling	FB ⟶ HCl: 20%

Density	
Particle Density	1.05 g/mL
Shipping Weight	640 g/L

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

Suggested Operating Conditions

pH Range	
Maximum Operating Temperature (FB)	60°C (140°F)
pH Range	Stable at 0 – 14
Flowrates	
Service	1 – 4 BV*/h
Backwash	See Figure 1
Fast Rinse (if applicable)	2 – 10 BV/h

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

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Hydraulic Characteristics

Bed expansion of DuPont™ AmberLite™ ESR-1 ion exchange resin as a function of backwash flowrate and temperature is shown in Figure 1. These curves are for resin without immobilized enzyme.

Pressure drop data for DuPont™ AmberLite™ ESR-1 resin as a function of service flowrate and temperature is shown in Figure 2. These pressure drop curves are for water (1 cp viscosity at 20°C or 70°F) as the fluid flowing through the resin bed. These curves are for the resin beads without immobilization enzyme.

Figure 1: Backwash Expansion

Temperature = 10 – 60°C (50 – 140°F)

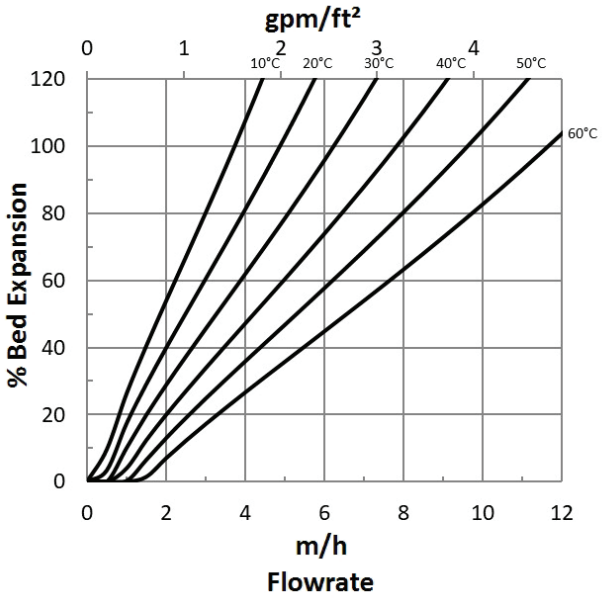
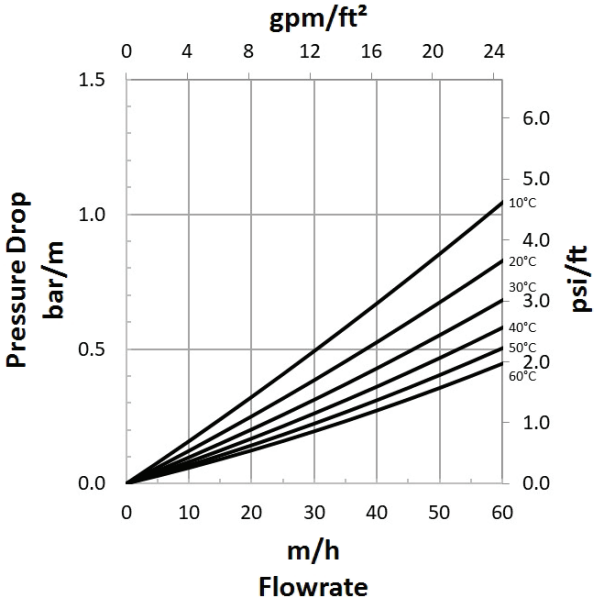


Figure 2: Pressure Drop

Temperature = 10 – 60°C (50 – 140°F)



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Regulatory Note

This product may be used in applications that need to comply with relevant regulations. In support of these applications, a Regulatory Information Packet is available on request. Please address your request to your sales team or the contact details provided in this Product Data Sheet.

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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Have a question? Contact us at:
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