DuPont™ AmberLite™ resin

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Product Data Sheet | Ion Exchange Resin

DuPont™ AmberLite™ CR7300 Resin

Food Processing Grade, Gel, Strong Base Anion Resin Primarily Used for Organic Acid and Specialty Sugar Separations

Description

DuPont™ AmberLite™ CR7300 resin is a strong base anion resin manufactured in a process that produces an extremely uniform particle size. This resin was specifically developed for use in simulated moving bed (SMB) chromatographic systems for the separation of carboxylic acids (specifically mono- and dicarboxylic acids) and specialty sugars.

DuPont™ AmberLite™ CR7300 resin is specifically designed with the combination of particle size and rapid kinetics to improve separations performance and minimize product dilution. This extra performance helps to minimize water evaporation costs and is especially valuable in fractionation of mono- and dicarboxylic acids from residual dextrose and from other acids. For these applications, the resin is typically converted to the sulfate form for additional ionic stability.

Applications

- Organic acid chromatography
- Purification of organic acids from dextrose and other carbohydrates
- Chromatographic separation for specialty sugars
- Specialty separations ‡

‡ Refer to the DuPont Separability Advisor™ Bubble Chart (Form No. 45-D01069-en) as a guide regarding the feasibility to separate various binary combinations of organic acids and impurities.

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong base anion, Type I
Functional Group	Quaternary amine
Physical Form	Off-white or yellow, translucent, spherical beads

Stability	
Whole Uncracked Beads	≥ 95%
Swell	Cl --> SO_4: 6%

Density	
Particle Density	1.1 g/mL
Shipping Weight	720 g/L (45 lb/ft^3)

Chemical Properties	
Ionic Form as Shipped	Cl^-
Total Exchange Capacity	≥ 1.3 eq/L (Cl^- form)
Water Retention Capacity	46 – 52% (Cl^- form)

Particle Size §	Cl^-	
Particle Diameter	310 ± 30 µm	
Uniformity Coefficient	≤ 1.15	
Broad Range	280 – 350 µm	≥ 85%
Narrow Range	300 – 340 µm	≥ 60%
Fine Beads	< 280 µm	≤ 5%
Coarse Beads	> 340 µm	≤ 10%

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

Suggested Operating Conditions

Temperature Range	
OH^- form	5 – 35°C (41 – 95°F)
Cl^- and SO_4 form	5 – 80°C (41 – 176°F)
pH Range	Stable at 0 – 14
Dissolved Oxygen Concentration	
Recommended	< 0.1 ppm
Maximum	0.5 ppm
Simulated Moving Bed Operation	With optimized tuning (annually)

Note: It is strongly advised to remove oxygen from feed streams and elution water going into the chromatographic separation resin. Limiting the oxygen concentration to less than 0.1 ppm (0.25 ppm maximum) will help maximize resin life.

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Hydraulic Characteristics

Bed expansion of DuPont™ AmberLite™ CR7300 resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop data for DuPont™ AmberLite™ CR7300 resin as a function of service flowrate with fluids that have viscosities of 1 and 4 cP is shown in Figure 2.

Figure 1: Backwash Expansion

Temperature = 10 – 60°C (50 – 140°F)

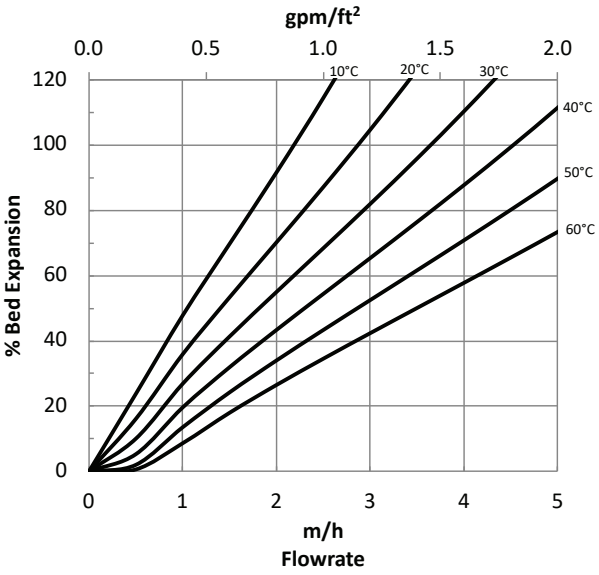
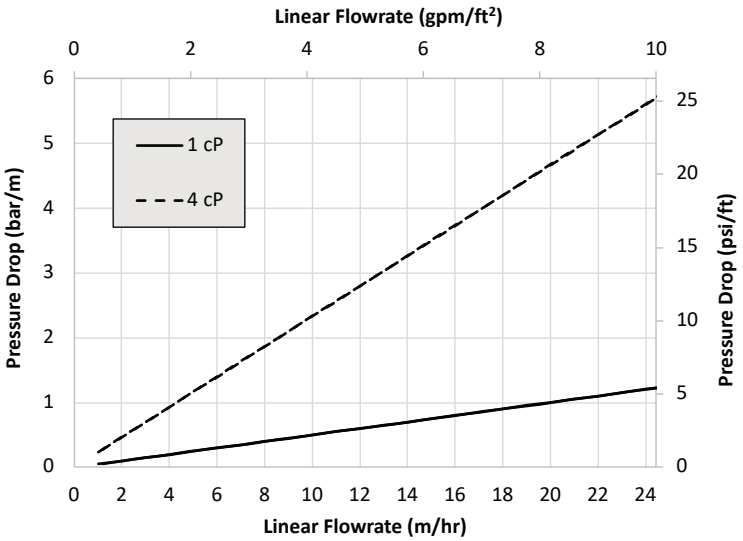


Figure 2: Pressure Drop

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 Package is available upon request. Please address your request to your sales team or the contact details provided in this Product Data Sheet.

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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