DuPont™ AmberLite™ SD-2 Polymeric Adsorbent

Food-grade, Macroporous, Adsorbent Resin for Sweetener Applications

Description

DuPont™ AmberLite™ SD-2 Polymeric Adsorbent has a high specific surface area and high porosity and exceptional mechanical, thermal, and chemical stability. It is specially designed for decolorization as well as taste and odor removal in sweetener applications. AmberLite™ SD-2 complies with the U.S. Food, Drug and Cosmetic Act as amended under Food Additive Regulation 21 CFR 173.25.

This adsorbent has similar pore size distribution and adsorption properties to activated carbon so that it can be used as a direct replacement for carbon in many sweetener applications. AmberLite™ SD-2 has the additional advantage of containing macropores which improve the bulk movement of solutions in and out of the bead. The resulting improvement in kinetics leads to faster production flowrates and smaller beds.

The adsorbent is lightly functionalized with weak base groups to provide a hydrophilic character that gives the adsorbent good wettability and compatibility with acid and base regenerants. Regeneration requires only dilute caustic, dilute acid, and hot water.

More detailed information on the use of AmberLite™ SD-2 adsorbent for a particular application can be obtained from your DuPont technical contact or sales representative.

Key Application

- Sweetener decolorization
- Taste and odor removal

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Adsorbent
Functional Group	Tertiary amine
Physical Form	Tan to reddish brown, opaque, spherical beads

Nitrogen BET	
Surface Area	~800 m^2/g
Average Pore Diameter	~50 Å

Chemical Properties	
Ionic Form as Shipped	Free base (FB)
Dry Weight Capacity	0.8 eq/kg
Water Retention Capacity	50 – 62%

Particle Size §	
< 105 µm	≤ 0.05%
< 210 µm	≤ 0.3%
< 300 µm	≤ 1%
> 1180	≤ 2%

Stability	
Swelling	FB → HCl ≤ 5%

Density	
Particle Density	1.04 g/mL
Shipping Weight	670 g/L (42 lb/ft^3)

§ 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

Operating Temperature Range	50 – 85°C (122 – 185°F)
pH Range	3 – 8.5
Flowrates Service Regeneration	 2 – 6 BV*/h 2 – 6 BV*/h
Regenerants	• NaOH • HCl • H_2SO_4

* 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™ SD-2 Polymeric Adsorbent as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for DuPont™ AmberLite™ SD-2 Polymeric Adsorbent 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
= 10 - 60°C (50 - 140°F)

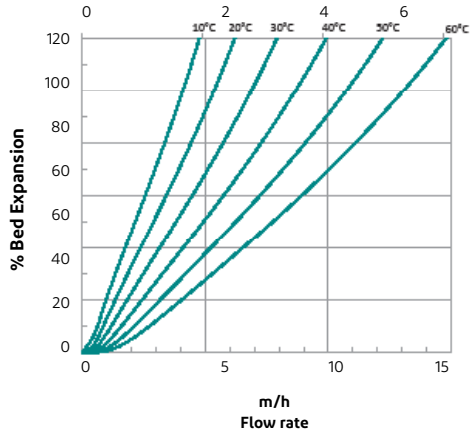
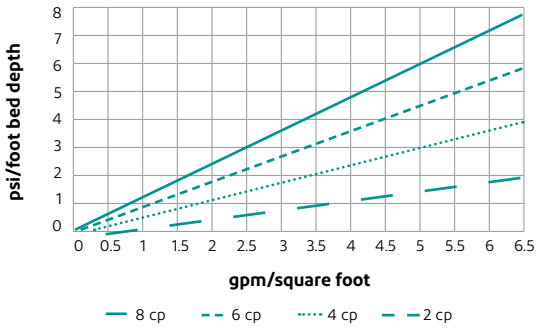


Figure 2. Pressure Drop
Viscosity = 2 – 8 cP



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.

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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Have a question? Contact us at:
dupont.com/water/contact-us

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