Product Data Sheet

AmberLite™ XAD™761 Polymeric Adsorbent

Food-grade, Phenolic Polymeric Adsorbent

Description

AmberLite™ XAD™761 Polymeric Adsorbent is a highly porous, granular, phenolic adsorbent resin designed to remove organic impurities from solution by adsorption. It is used to decolorize liquid products in a variety of industries, such syrup, organic acids, and glycerol. It is also used to remove large polar or non-polarizable species, depending on the type of solvent, in the bioprocessing industry.

The resin exhibits hydrophilic properties due to its phenolic hydroxyl and methylol groups. Its large active surface and defined pore size distribution is achieved by a unique method of synthesis.

Applications

- Starch hydrolysates
  - Syrup decolorization (for syrup storage stability)
  - Syrup purification (removal of off-flavors)
- Pharmaceutical
  - Amino acid hydrolysates decolorization
  - Protein debittering
  - Enzyme immobilization
- Organic acid decolorization
- Fruit juice
  - Clarity and color uniformity
  - Anthocyanin extraction
- Glycerol decolorization and odor removal

Form No. 45-D02314-en, Rev. 0
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Typical Properties

Physical Properties	
Copolymer	Crosslinked phenol-formaldehyde polycondensate
Matrix	Highly porous
Type	Polymeric adsorbent
Functional Group	Principally phenol
Physical Form	Yellow to dark red to brown, opaque, granules
Nitrogen BET	
Surface Area	150 – 250 m2/g
Average Pore Diameter	0.95 – 1.18 mL/g
Total Pore Volume	600 Å
Chemical Properties	
Water Retention Capacity	62 – 70%
Particle Size [§]	
Particle Diameter	560 – 760 µm
< 300 µm	≤ 2.5%
Density	
Particle Density	1.07 – 1.13 g/mL
Shipping Weight	615 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

Maximum Operating Temperature	180°C (176°F) in neutral or acidic non-oxidizing media 40°C (104°F) in highly alkaline media with or without oxidants		
pH Range	≤ 8		
Bed Depth, min.	900 mm (3.0 ft)		
Flowrates			
Service	≤ 12 BV*/h (1.5 gpm/ft3)		
Regenerant	NaOH	HCl	H_2SO_4
Concentration	2%	0.5 – 2%	0.5 – 2%
Level, 100% basis	30 – 60 kg/m^3 (1.9 – 3.8 lb/ft^3)	20 kg/m^3 (1.3 lb/ft^3)	26 kg/m^3 (1.6 lb/ft^3)

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

Application Information

In general, high molecular weight water soluble organic compounds containing highly polar substitutes are well adsorbed by AmberLite™ XAD™761 Polymeric Adsorbent. The degree of adsorption tends to increase with molecular weight in a given homologous series. Traube's rule may be used as a rough guide. Acids are generally more effectively adsorbed than bases and AmberLite™ XAD™761 has more affinity for aromatic than aliphatic compounds. Acids and bases tend to be most completely removed when they are least ionized. Non-polar compounds and neutral salts are not affected in most instances.

Pharmaceutical Applications

AmberLite™ XAD™761 Polymeric Adsorbent is useful for decolorizing amino acid hydrolysates and solutions of alkaloids. It also removes bitter flavor components from proteins which have been solubilized by enzymatic hydrolysis (casein, soy).

AmberLite™ XAD™761 is particularly recommended as an enzyme carrier for a wide range of enzymes such as lactase and pectinase.

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Application Information (Cont.)

Starch Hydrolysates
AmberLite™ XAD™761 Polymeric Adsorbent removes color, protein, iron complexes, tannins, hydroxymethyl furfural and other ingredients responsible for off-flavors.

Organic Acids
AmberLite™ XAD™761 Polymeric Adsorbent removes color from organic acids manufactured by fermentation (citric acid, lactic acid).

Fruit Juices
AmberLite™ XAD™761 Polymeric Adsorbent improves clarity and color uniformity of various fruit juices such as apple, grape, pineapple, date, etc. AmberLite™ XAD™761 extracts and purifies anthocyanins obtained from products of the wine industry.

Glycerol
AmberLite™ XAD™761 Polymeric Adsorbent is used to enhance the effect of ion exchange resins in removing color and odor from crude glycerol solutions.

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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