



DuPont™ AmberLite™ XAD™16N Polymeric Adsorbent

Macroporous, Adsorbent Resin

Key Features

- White insoluble beads, nonionic and hydrophobic.
- Crosslinked polymer with a macroporous structure.
- High surface area.

Key Applications

- Recovery and purification of antibiotics, water-soluble steroids, enzymes, amino acids, and proteins.
- Removal of non-polar compounds, such as phenol, from polar solvents.
- Adsorption of hydrophobic molecules from polar solvents and volatile organic compounds from vapor streams.

Typical Properties

Physical Properties	
Copolymer	Crosslinked DVB
Matrix	Macroporous
Type	Adsorbent
Physical Form	White, opaque, spherical beads
Nitrogen BET	
Surface Area	940 m ² /g
Average Pore Diameter	150 Å
Total Pore Volume	1.7cc/g
Chemical Properties	
Water Retention Capacity	62 – 70%
Particle Size [§]	
Particle Diameter	560 – 710 µm
< 300 µm	≤ 2.0%
> 1180 µm	≤ 2.0%
Swelling (in solvent)	
Methanol	15%
2-Propanol	15%
Acetone	20%
p-Xylene (via methanol)	25%
Density	
Particle Density	1.015 – 1.025 g/mL
Shipping Weight	650 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	150°C (302°F)
Bed Depth, min.	
Capture	760 mm (2.5 ft)
Flowrates	
Loading	2 – 16 BV*/h
Elution/Desorption	1 – 4 BV/h
Regeneration	1 – 4 BV/h
Rinse	2 – 16 BV/h
Regenerants or Eluting Agents	<ul style="list-style-type: none"> • Water-miscible organic solvents (methanol, ethanol, isopropanol, acetone, etc.) for hydrophobic compounds • Pure solvents for regenerating resin fouled by oils and antifoams • Dilute bases (0.1 – 0.5% NaOH) for eluting weakly acidic compounds • Concentrated bases (2 – 4% NaOH) for regenerating resins fouled with proteins, peptides • Dilute acids (0.1 – 0.5% HCl) for weakly basic compounds • Dilute oxidizing agents (< 0.5%) such as peroxide to enhance the removal of protein fouling • Buffer elution for pH-sensitive compounds • Water when adsorption is from an ionic solution • Hot nitrogen or steam for volatile materials

* 1 BV (Bed Volume) = 1 m³ solution per m³ resin or 7.5 gal per ft³ resin

Hydraulic Characteristics

Estimated bed expansion of DuPont™ AmberLite™ XAD™16N Polymeric Adsorbent as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLite™ XAD™16N as a function of service flowrate and water temperature 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 – 50°C (50 – 122°F)

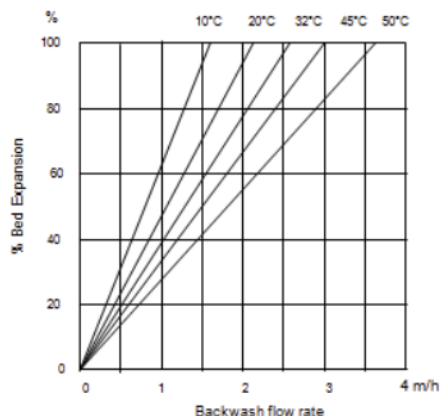
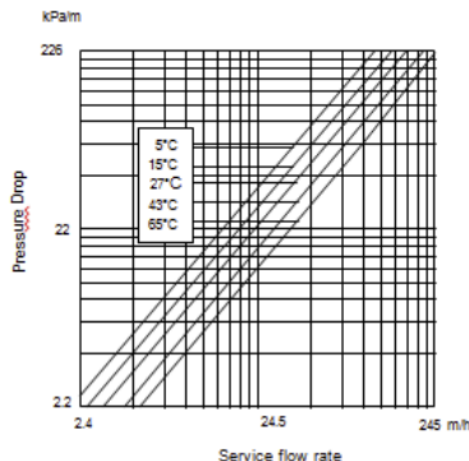


Figure 2: Pressure Drop

Temperature = 5 – 65°C (41 – 149°F)



General Information

Pretreatment

DuPont™ AmberLite™ XAD™16N Polymeric Adsorbent is shipped as a water-wet product imbibed with sodium chloride (NaCl) and sodium carbonate (Na₂CO₃) salts to inhibit bacterial growth. These salts must be washed from the adsorbent prior to use and it is suggested that this be achieved by washing with water at a linear flowrate of 5 – 10 m/h until the required level is achieved. In some sensitive applications, residual monomeric or oligomeric compounds may be required to be removed from the adsorbent. A regeneration with the proposed regenerant is also recommended prior to beginning the first service cycle. If the regenerant is an alcohol, it must be displaced with water prior to beginning the first loading cycle.

Important Information

- Polymeric adsorbents, as produced, contain by-products resulting from the manufacturing process. The user must determine the extent to which organic by-product must be removed for any particular use and establish techniques to assure that the appropriate level of purity is achieved for that use.
- **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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