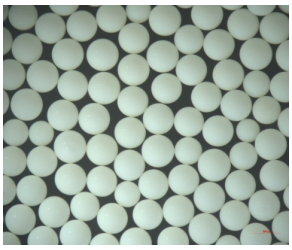
Product Data Sheet

DuPont™ AmberTec™ UP9600 Ion Exchange Resin

Semiconductor Grade Weak Base Anion Exchange Resin

Description



DuPont™ AmberTec™ UP9600 Ion Exchange Resin is a macroporous, weak base anion exchange resin developed specifically for use in producing ultrapure water for the semiconductor industry. It is intended for use in packed bed and floating bed demineralization systems prior to reverse osmosis.

AmberTec™ UP9600 receives extra cleaning steps during the manufacturing process in order to reduce the quantity of trace leachable organic materials that are present in the standard industrial version. Therefore, it can immediately produce high-quality water in the first operation cycle.

The chemical properties and particle size of AmberTec™ UP9600 have been optimized to help yield excellent operating capacity and rinse characteristics, while reducing chemical regenerant and water usage. The very stable structure and limited reversible swelling of the resin make it very resistant to osmotic shock. The high degree of porosity of this resin provides efficient adsorption of large organic molecules, as well as their desorption during regeneration, thus allowing excellent protection against organic fouling of the strong base anion exchange resin.

Applications

- Demineralization in Ultra Pure Water, ideally when treating water with:
  - High organic fouling potential
  - High percentage of mineral acidity (FMA)
- Partial demineralization when weak acid removal is not required

System Designs

Compatible with the following system technologies and bed configurations:

- Co-current
- Counter-current / Hold-down
- Layered beds

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Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Weak base anion
Functional Group	Tertiary amine
Physical Form	Off-white, opaque, spherical beads
Chemical Properties	
Ionic Form as Shipped	Free base (FB)
Total Exchange Capacity	≥ 1.25 eq/L
Water Retention Capacity	59.0 – 65.0%
Particle Size [§]	
Particle Diameter	440-590 µm
Uniformity Coefficient	≤ 1.6
< 300 µm	≤ 1.0%
> 710µm	≤ 5.0%
Stability	
Swelling	FB → HCl ≤ 15%
Density	
Shipping Weight	670 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

Temperature Range (FB form)	5 – 60°C (41 – 140°F)
pH Range	
Service Cycle	0 – 6
Stable	0 – 14

For additional information regarding recommended minimum bed depth, operating conditions, and regeneration conditions for separate beds (Form No. 45-D01131-en) in water treatment, please refer to our Tech Fact.

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Hydraulic Characteristics

Estimated bed expansion of DuPont™ AmberTec™ UP9600 Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberTec™ UP9600 as a function of service flowrate and temperature is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean water and a well-classified bed.

Figure 1: Backwash Exapansion

Temperature = 10 – 60°C (50 – 140°F)

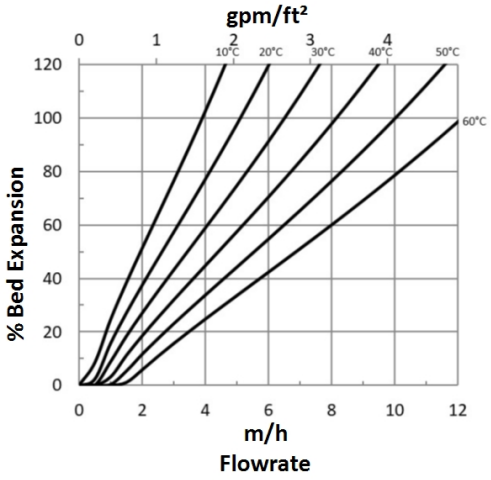
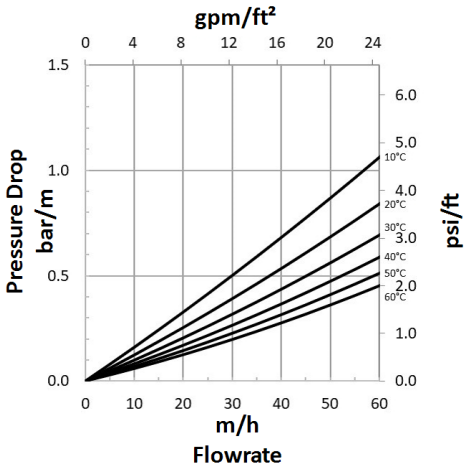


Figure 2: Pressure Drop

Temperature = 10 – 60°C (50 – 140°F)



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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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