DuPont™ AmberTec™ UP6150 H/OH Ion Exchange Resin

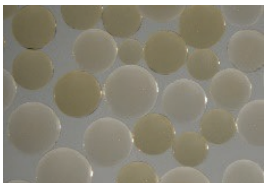
Final Polishing Mixed Bed Ion Exchange Resin for Ultrapure Water Applications

Key Features

- Separable, uniform particle size, high resistivity, and cleanliness.

Key Applications

- Ultrapure water in low-end semiconductor, display panel, solar photovoltaic cell industry.
- Medical water in pharmaceutical, biopharmaceutical, cosmetic and other similar life sciences industries.



AmberTec™ UP6150 H/OH Ion Exchange Resin is a fully regenerated mixed bed resin intended for use in ultrapure water systems. In properly designed ultrapure water systems. AmberTec™ UP6150 H/OH will deliver 18 MΩ•cm quality water with total organic carbon (TOC) levels well below 5 ppb on its first operating cycle as a polishing mixed bed. This mixed bed resin is particularly suitable for use in the polishing of high-purity water or ultrapure water in low-end semiconductor, display panel, solar photovoltaic cell, pharmaceutical, biopharmaceutical, cosmetic and other similar life sciences industries.

The components of AmberTec™ UP6150 H/OH are uniform particle size resins of a size selected to provide excellent first-cycle mixed bed performance, while allowing for future separation and regeneration of the resins in systems to which the resin is cascaded for further use. The resins are mixed to give a stoichiometric equivalent of cation and anion exchange capacity on a 1:1 equivalent basis, and the resin mixture exhibits no clumping. The uniform particle size of the resins maximizes kinetic performance in the service cycle of the mixed bed, while still allowing for later separation and regeneration. All these characteristics are essential to produce high-purity water with a minimum volume of rinsing.

Typical Properties

Physical Properties		
	Cation Resin	Anion Resin
Copolymer	Styrene-divinylbenzene	Styrene-divinylbenzene
Matrix	Gel	Gel
Type	Strong acid cation	Strong base anion, Type I
Functional Group	Sulfonic acid	Trimethylammonium
Physical Form	Dark amber, translucent, spherical beads	Yellow, translucent, spherical beads
Ionic Ratio	0.9 - 1.1	

Density	
Shipping Weight	730 g/L

AmberTec™ UP6150 H/OH	
Ultrapure Water Quality Test	
Resistivity at 10-min (UPW Rinse)	≥ 18 MΩ•cm ‡
Resistivity at 10-min (Salt Challenge)	≥ 18 MΩ•cm ‡
ΔTOC at 2h00 Rinse	≤ 10 ppb C

‡ Based on 18.2 MΩ•cm feedwater with in-house UPW quality test procedure.

Chemical Properties		
	Cation Resin	Anion Resin
Ionic Form as Shipped	H^+	OH^-
Total Exchange Capacity	≥ 1.80 eq/L	≥ 1.00 eq/L
Water Retention Capacity	49 – 55%	60 – 66%
Ionic Conversion		
H^+	≥ 99%	
OH^-		≥ 95.0%
CO_3^{2-}		≤ 5.0%
Cl^-		≤ 0.5%

Particle size §		
	Cation Resin	Anion Resin
Particle Diameter	630 ± 50 µm	730 ± 50 µm
Uniformity Coefficient	≤ 1.25	≤ 1.25
< 300 µm	≤ 0.1%	≤ 0.3%
> 850 µm	≤ 10.0%	≤ 10.0%

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

Suggested Operating Conditions

For additional information regarding recommended minimum bed depth, operating conditions, and regeneration conditions for mixed beds (Form No. 45-D01127-en) or separate beds (Form No. 45-D01131-en) in water treatment, please refer to our Tech Facts.

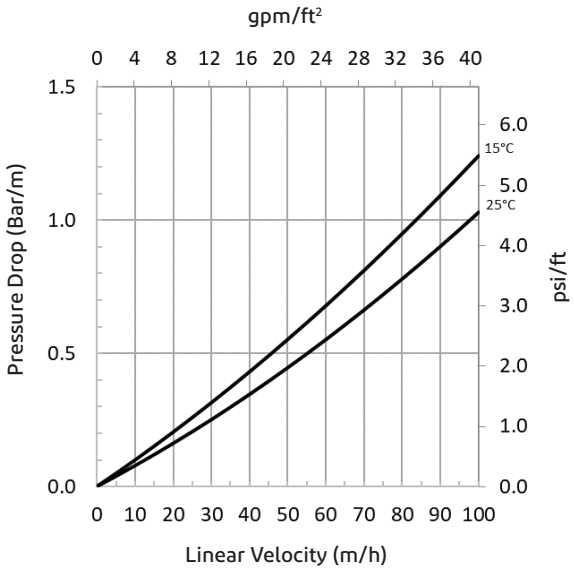
Temperature Range (OH^- form) ‡	15 – 25°C (59 – 77°F)
pH Range (Stable)	0 – 14

‡ Operating at elevated temperatures, for example above 60 – 70°C (140 – 158°F), may impact the purity of the loop and resin life. Contact our technical representative for details.

Hydraulic Characteristics

Estimated pressure drop for DuPont™ AmberTec™ UP6150 H/OH Ion Exchange Resin as a function of service flowrate and water temperature is shown in Figure 1. These pressure drop expectations are valid at the start of the service run with clean feed and a well-classified bed.

Figure 1: Pressure Drop

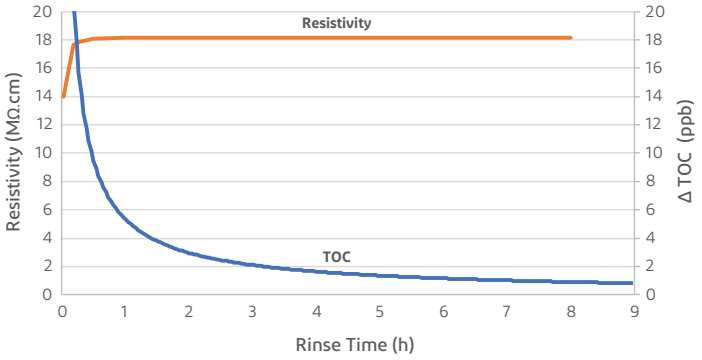


UPW Rinse Properties

AmberTec™ UP6150 H/OH Ion Exchange Resin is tested by DuPont for resistivity rinse, total organic carbon (TOC) and kinetic performance. This ensures that all batches of AmberTec™ UP6150 H/OH will meet stringent ultrapure water (UPW) performance requirements for ultrapure water systems on these most critical parameters.

Typical rinse curves for resistivity as a function of rinse time based on our quality control procedure for AmberTec™ UP6150 H/OH are shown in Figure 2.

Figure 2: Resistivity and TOC Rinse Performance



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

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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