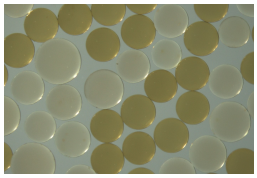
Product Data Sheet

AmberTec™ UP6150 H/OH Ion Exchange Resin

Separable, Uniform Particle Size, Mixed Bed Ion Exchange Resin for Demineralization Applications and Final Polishing for the Semiconductor Industry

Description



AmberTec™ UP6150 H/OH Ion Exchange Resin is a fully-regenerated mixed bed of cation and anion exchange resins intended for use in high-purity water systems after reverse osmosis. 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 product is particularly suitable for use in the polishing of high-purity water for specialty electronics applications such as the manufacturing of disk drives, display devices, CD-ROMs, discrete semiconductor devices, lower-density IC chips, or in the backend chip dicing and mounting operations. Because of its high level of regeneration, AmberTec™ UP6150 H/OH is also suited for any general-purpose mixed bed applications for the economical production of high-purity water.

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.

Applications

- Polishing mixed beds

Historical Reference

AmberTec™ UP6150 H/OH Ion Exchange Resin has previously been sold as AMBERJET™ UP6150 Ion Exchange Resin.

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Typical Properties

	Cation Resin	Anion Resin
Physical Properties		
Copolymer	Styrene-divinylbenzene	Styrene-divinylbenzene
Matrix	Gel	Gel
Type	Strong acid cation	Strong base anion
Functional Group	Sulfonic acid	Trimethylammonium
Physical Form	Dark amber, translucent, spherical beads	White to yellow, translucent, spherical beads
Ionic Ratio	**1:1**	**1:1**
Chemical Properties		
Ionic Form as Shipped	H^+	OH^-
Total Exchange Capacity	≥ 1.80 eq/L (H^+ form)	≥ 1.00 eq/L (OH^- form)
Water Retention Capacity	49.0 – 55.0% (H^+ form)	58.0 – 72.0% (OH^- form)
Ionic Conversion		
H^+	≥ 99%	
OH^-		≥ 95.0%
CO_3^{2-}		≤ 5.0%
Cl^-		≤ 0.5%
Particle Size [§]		
Particle Diameter	630 ± 50 µm	750 ± 110 µm
Uniformity Coefficient	≤ 1.20	≤ 1.25
< 300 µm	≤ 0.1%	
< 425 µm		≤ 0.5%
> 850 µm	≤ 10.0%	
> 1180 µm		≤ 1.0%

	AmberTec™ UP6150 H/OH
Ultrapure Water Performance	
Resistivity at 10-min UPW Rinse	> 17.9 MΩ · cm [‡]
Resistivity at 10-min Salt Challenge	> 17.8 MΩ · cm [‡]
ΔTOC at 2h00 Rinse	≤ 10 ppb C
Density	
Shipping Weight	730 g/L

[§] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 45-D00954-en).
[‡] Based on 18.2-MΩ · cm feedwater

Suggested Operating Conditions

Temperature Range [‡]	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.

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.

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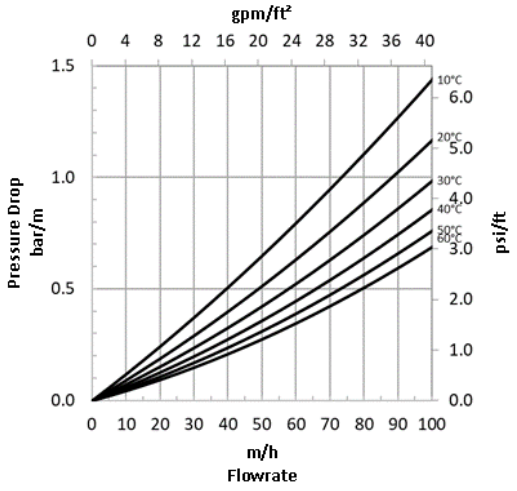
Hydraulic Characteristics

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

Figure 1: Pressure Drop

Temperature = 10 – 60°C (50 – 140°F)



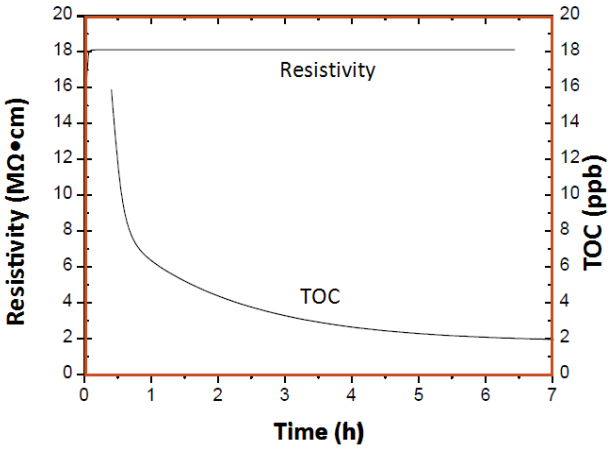
Quality Assurance

AmberTec™ UP6150 H/OH Ion Exchange Resin is tested by DuPont for resistivity, 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 on these most critical parameters.

DuPont Water Solutions will fully support the quality and performance of AmberTec™ UP6150 H/OH in UPW applications to assure full customer satisfaction with the product as delivered.

Typical rinse curves for resistivity and total organic carbon (TOC) 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



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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.

Have a question? Contact us at:

www.dupont.com/water/contact-us

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