DuPont™ AmberTec™ UP6040 H/OH Ion Exchange Resin

Final Polishing Mixed Bed Ion Exchange Resin for Ultrapure Water Applications

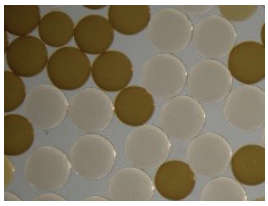
Key Features

- Non-Separable, uniform particle size, higher resistivity, cleanliness and purity

Key Applications

- Ultrapure water in semiconductor and other similar demanding applications.

AmberTec™ UP6040 H/OH Ion Exchange Resin is a specifically designed final polishing mixed bed resin for ultrapure water (UPW) systems in semiconductor industry and similar demanding applications. The leakage of all ionic species, silica, boron, total organic carbon (TOC), and sub-micron particles has all been driven to a low level with AmberTec™ UP6040 H/OH resin. AmberTec™ UP6040 H/OH will deliver 18.2 MΩ•cm quality water with total organic carbon levels well below 1 ppb in well-designed UPW systems.



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	710 g/L

AmberTec™ UP6040 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	≤ 3 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	≥ 2.00 eq/L	≥ 1.10 eq/L
Water Retention Capacity	45 – 51%	54 – 60%
Ionic Conversion		
H^+	≥ 99%	
OH^-		≥ 95.0%
CO_3^{2-}		≤ 5.0%
Cl^-		≤ 0.5%

Particle size §		
	Cation Resin	Anion Resin
Particle Diameter	525 ± 50 µm	630 ± 50 µm
Uniformity Coefficient	≤ 1.20	≤ 1.20
< 300 µm	≤ 0.1%	
< 425 µm		≤ 0.5%
> 850 µm	≤ 5.0%	
> 1180 µm		≤ 2.0%

§ 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.

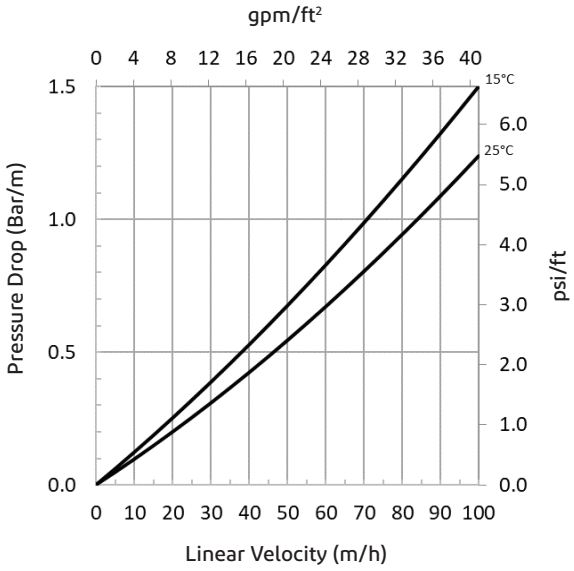
Temperature Range (OH^- form) ‡	15 – 25°C (59 – 77°F)
pH Range (Stable)	0 – 14

‡ 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™ UP6040 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

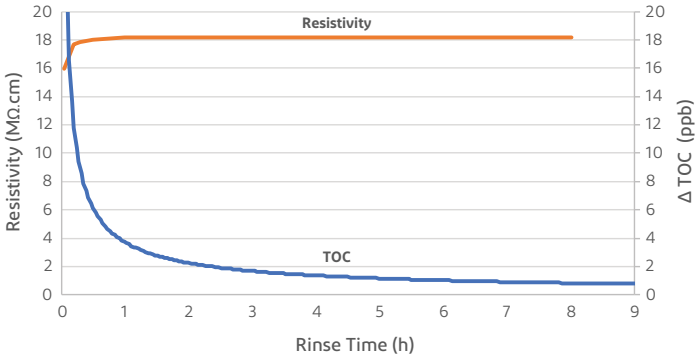


Quality Assurance

AmberTec™ UP6040 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™ UP6040 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™ UP6040 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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