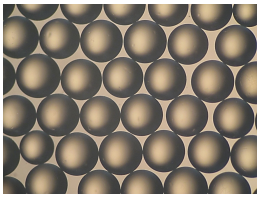
Product Data Sheet

AmberTec™ UP550 OH Ion Exchange Resin

Uniform Particle Size, Gel, Strong Base Anion Exchange Resin for Single Bed and Mixed Bed Demineralization Applications for the Semiconductor Industry

Description



AmberTec™ UP550 OH Ion Exchange Resin is a premium-quality, high-capacity, uniform particle size resin designed specifically for use in regenerable mixed beds when highest resin purity and water quality are required.

This resin provides exceptional bead integrity and rapid exchange kinetics due to its small average particle size, making it ideally suited to the high flowrate demands commonly encountered in mixed bed systems. The bead size uniformity and a distinguishable light color is tailored to complement the larger, denser, cationic, gel AmberTec™ UP650 H Ion Exchange Resin. The color distinction between this pair of resins allows easy visual confirmation of separation following backwash. Together, these resins offer exceptional separation in mixed beds, which combined with excellent water quality and resin purity, has made them known throughout the semiconductor industry as a premium mixed bed pairing.

Resin Pairings

Recommended pairing:

- AmberTec™ UP650 H Ion Exchange Resin (gel)

Applications

- Regenerable, single beds after reverse osmosis
- Regenerable, primary mixed beds after reverse osmosis
- Regenerable, polishing mixed beds
- Non-regenerable, polishing mixed beds

Historical Reference

AmberTec™ UP550 OH Ion Exchange Resin has previously been sold as DOWEX MONOSPHERE™ 550A UPW (OH) Ion Exchange Resin.

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February 2023

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong base anion
Functional Group	Trimethylammonium
Physical Form	White to yellow, translucent, spherical beads
Chemical Properties	
Ionic Form as Shipped	OH^-
Total Exchange Capacity	≥ 1.1 eq/L (OH^- form)
Water Retention Capacity	55.0 – 65.0% (OH^- form)
Ionic Conversion	
OH^-	≥ 95%
CO_3^{2-}	≤ 5%
Cl^-	≤ 0.5%
Particle Size [§]	
Particle Diameter	590 ± 50 µm
Uniformity Coefficient	≤ 1.10
< 300 µm	≤ 0.5%
> 850 µm	≤ 1.0%
Purity	
Metals, dry basis	
Na	≤ 25 mg/kg
Fe	≤ 25 mg/kg
Cu	≤ 15 mg/kg
Al	≤ 15 mg/kg
Stability	
Whole Uncracked Beads	≥ 95%
Friability	
Average	≥ 350 g/bead
> 200 g/bead	≥ 95%
Density	
Shipping Weight	660 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 (OH^- form) [‡]	5 – 60°C (41 – 140°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 bed expansion of AmberTec™ UP550 OH Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberTec™ UP550 OH 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.

Figure 1: Backwash Expansion

Temperature = 10 – 60°C (50 – 140°F)

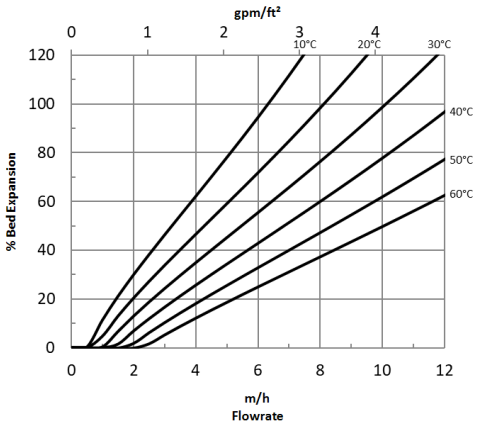
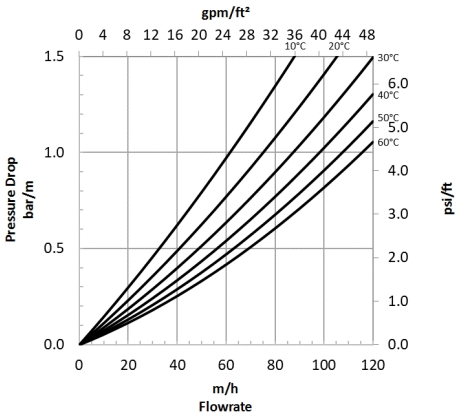


Figure 2: Pressure Drop

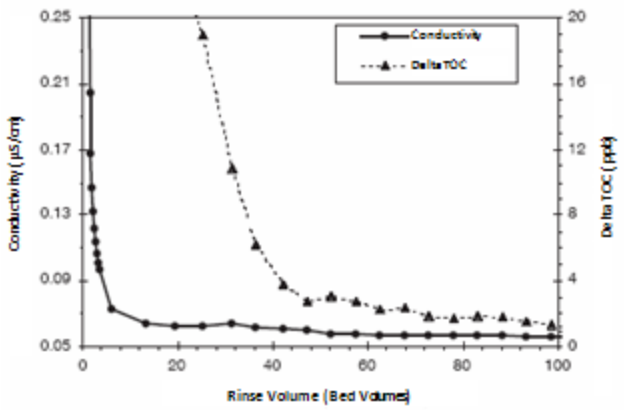
Temperature = 10 – 60°C (50 – 140°F)



UPW Rinse Properties

AmberTec™ UP Ion Exchange Resins are especially processed and controlled in Quality to ensure the purest treated water quality for semiconductor applications. Typical single bed rinse-down curves for conductivity and total organic carbon (TOC) to ΔTOC = 2 ppb as a function of rinse volume (in bed volumes) is shown in Figure 3.

Figure 3: Conductivity and TOC Rinse-down



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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