



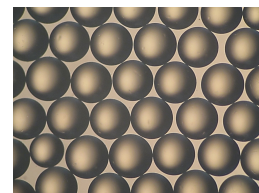
## Product Data Sheet

### **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#### **Historical Reference**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.

## 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 <sup>-</sup>
Total Exchange Capacity	≥ 1.1 eq/L (OH <sup>-</sup> form)
Water Retention Capacity	55.0 – 65.0% (OH <sup>-</sup> form)
Ionic Conversion	
OH <sup>-</sup>	≥ 95%
CO <sub>3</sub> <sup>2-</sup>	≤ 5%
Cl <sup>-</sup>	≤ 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
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§ 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 <sup>-</sup> 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.

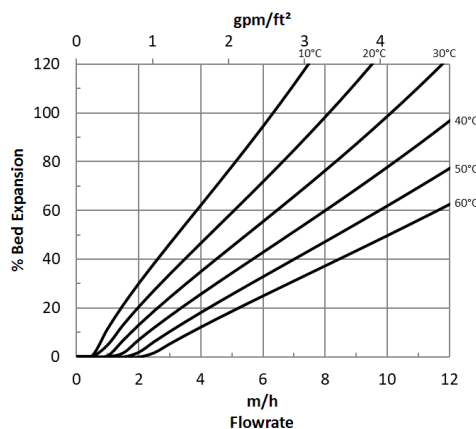
## Hydraulic Characteristics

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.

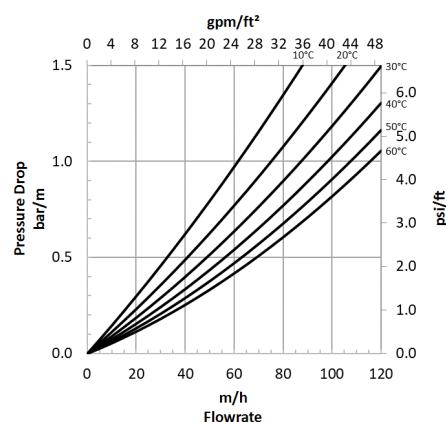
**Figure 1: Backwash Expansion**

Temperature = 10 – 60°C (50 – 140°F)



**Figure 2: Pressure Drop**

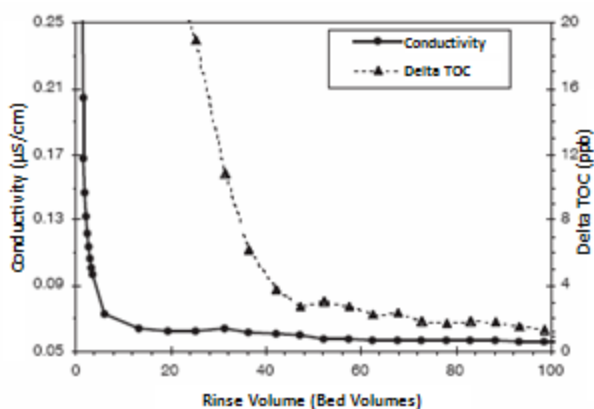
Temperature = 10 – 60°C (50 – 140°F)



## 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  $\Delta$ TOC = 2 ppb as a function of rinse volume (in bed volumes) is shown in Figure 3.

**Figure 3: Conductivity and TOC Rinse-down**



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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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