



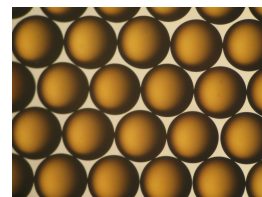
## Product Data Sheet

### **AmberTec™ UP1400 H Ion Exchange Resin**

Uniform Particle Size, Gel, Strong Acid Cation Exchange Resin for Mixed Bed  
Demineralization Applications for the Semiconductor Industry

#### **Description**

AmberTec™ UP1400 H Ion Exchange Resin is a semiconductor-grade, uniform particle size, gel, strong acid cation resin developed specifically for use in producing ultrapure water for the semiconductor industry.



It is intended for use in regenerable primary or polishing mixed beds, and it is sold in the fully-regenerated hydrogen form to ensure minimum impurity leakage. AmberTec™ UP1400 H is designed to be paired with anionic AmberTec™ UP4000 OH Ion Exchange Resin or AmberTec™ UP900 OH Ion Exchange Resin for mixed bed applications.

AmberTec™ UP1400 H can also be used as the cation exchange resin component of a non-regenerable polishing mixed bed to achieve the lowest possible leakage of ionic species, silica, total organic carbon (TOC), and sub-micron particles.

#### **Resin Pairings**

Recommended pairing:

- AmberTec™ UP4000 OH Ion Exchange Resin (gel)
- AmberTec™ UP900 OH Ion Exchange Resin (macroporous)

#### **Applications**

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

#### **Historical Reference**

AmberTec™ UP1400 H Ion Exchange Resin has previously been sold as AMBERJET™ UP1400 H Ion Exchange Resin.

## Typical Properties

### Physical Properties

Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Dark brown, translucent, spherical beads

### Chemical Properties

Ionic Form as Shipped	H <sup>+</sup>
Total Exchange Capacity	≥ 2.00 eq/L (H <sup>+</sup> form)
Water Retention Capacity	45.0 – 51.0% (H <sup>+</sup> form)

### Particle Size §

Particle Diameter	650 ± 50 µm
Uniformity Coefficient	≤ 1.20
< 425 µm	≤ 0.5%
> 850 µm	≤ 10.0%

### Density

Shipping Weight	817 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 (H <sup>+</sup> form)	5 – 60°C (41 – 140°F)
pH Range (Stable)	0 – 14

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.

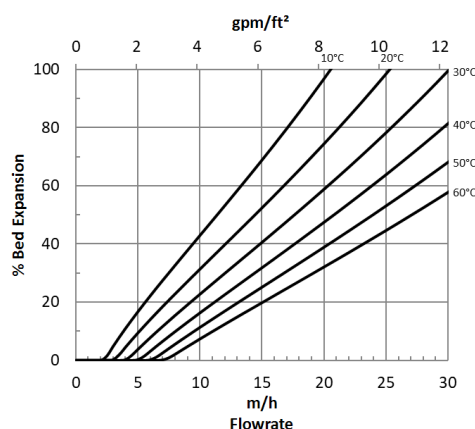
## Hydraulic Characteristics

Estimated bed expansion of AmberTec™ UP1400 H Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberTec™ UP1400 H 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.

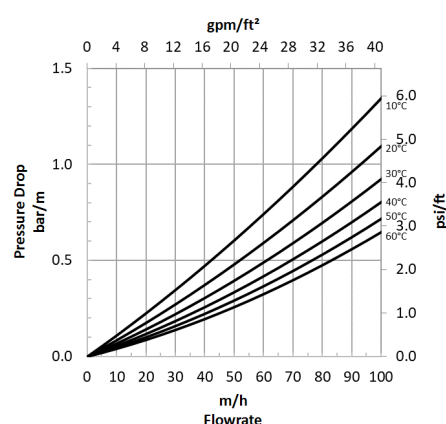
**Figure 1: Backwash Expansion**

Temperature = 10 – 60°C (50 – 140°F)



**Figure 2: Pressure Drop**

Temperature = 10 – 60°C (50 – 140°F)

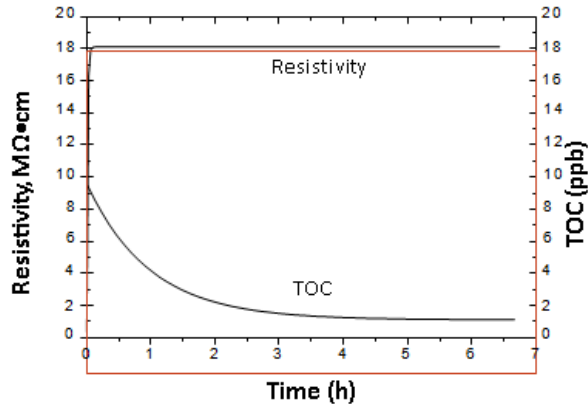


## Quality Assurance

AmberTec™ UP1400 H Ion Exchange Resin is tested by DuPont for resistivity, total organic carbon (TOC), and kinetic performance in a mixed bed with AmberTec™ UP4000 OH Ion Exchange Resin. This ensures that all batches will meet stringent ultrapure water (UPW) performance requirements on these most critical parameters.

Typical rinse curves for resistivity and total organic carbon (TOC) as a function of rinse time based on our quality control procedure for AmberTec™ UP1400 H are shown in Figure 3.

Figure 3: 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.

## 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.

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