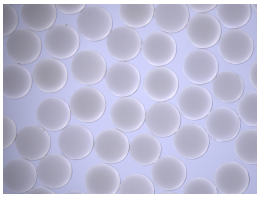
Product Data Sheet

DuPont™ AmberTec™ UP4000Pd OH Ion Exchange Resin

Semiconductor Grade, Uniform Particle Size, Palladium-doped Strong Base Anion Exchange Resin

Description



DuPont™ AmberTec™ UP4000Pd OH Ion Exchange Resin is a semiconductor-grade, uniform particle size, palladium-doped strong base anion exchange resin. It is specifically designed for the reduction of trace H_2O_2 which is generated as by-product by UV oxidation at polishing loop of ultrapure water (UPW) systems in semiconductor manufacturing plants. This resin provides exceptional high space velocity (SV) thanks to the rapid kinetics for reduction reaction.

AmberTec™ UP4000Pd OH has higher purity which helps enable the shorter stabilization time which is critical for UPW application.

Applications

- H_2O_2 reduction in UPW polishing loop
- With H_2 injection, reduction of O_2 in process water or UPW polishing loop
- With membrane degasification (MDG), reduction of O_2 in UPW polishing loop

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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	≥ 1.10 eq/L (OH^- form)
Water Retention Capacity	54.0 – 60.0% (OH^- form)
Ionic Conversion	
OH^-	≥ 95%
Cl^-	≤ 0.5%
Particle Size [§]	
Particle Diameter	630 ± 50 µm
Uniformity Coefficient	≤ 1.20
< 425 µm	≤ 0.5%
> 1180 µm	≤ 2.0%
Stability	
Whole Uncracked Beads	≥ 95%
Density	
Shipping Weight	689 g/L
Purity	
Metals, dry basis	
Na	≤ 20 mg/kg
K	≤ 20 mg/kg
Fe	≤ 20 mg/kg
Cu	≤ 5 mg/kg
Ca	≤ 10 mg/kg
Mg	≤ 10 mg/kg
Al	≤ 10 mg/kg
Heavy metals (as Pb)	≤ 10 mg/kg

* 1 BV (Bed Volume) = 1 m3 solution per m3 resin or 7.5 gal per ft3 resin.

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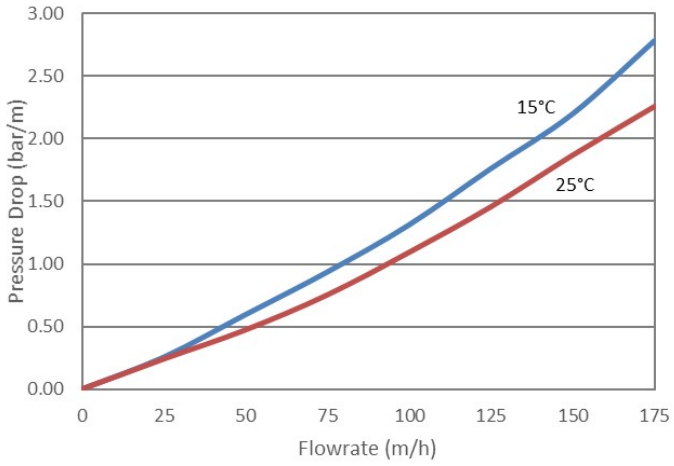
Hydraulic Characteristics

Pressure drop data for DuPont™ AmberTec™ UP4000Pd OH resin in water as a function of service flowrate is shown in Figure 1. Pressure drop data are valid for clean, classified beds which have not been contaminated with suspended solids during the service run; if the bed accumulates solids, the pressure drop will increase.

Figure 1: Pressure Drop

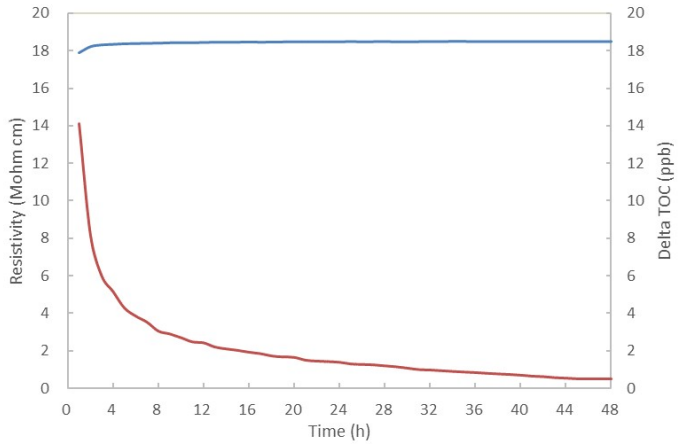


Quality Assurance

DuPont™ AmberTec™ UP4000Pd OH ion exchange resin is tested by DuPont for resistivity, total organic carbon (TOC), and kinetic performance. This ensures that all batches of AmberTec™ UP4000Pd OH will meet stringent UPW performance requirements on these most critical parameters. DuPont Water Solutions supports the quality performance of AmberTec™ UP4000Pd 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™ UP4000Pd 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.

Regulatory Note

This product may be subject to drinking water application restrictions in some countries; please check the application status before use and sale.

Have a question? Contact us at:

www.dupont.com/water/contact-us

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