

DuPont™ AmberLite™ HPR1600 H Ion Exchange Resin

Uniform Particle Size, Gel, Strong Acid Cation Exchange Resin for Condensate Polishing and Mixed Bed Demineralization Applications for the Power Industry

Key Features

- Uniform particle size, high exchange capacity and very high resistance to thermal & oxidative conditions in demanding condensate polishing applications.

Key Applications

- Regenerable single bed and mixed bed systems in condensate polishing in the nuclear and fossil power industries.

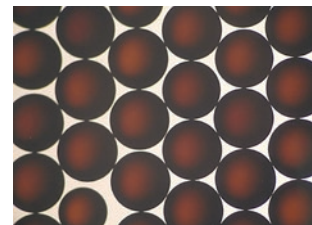
Description

DuPont™ AmberLite™ HPR1600 H Ion Exchange Resin is designed specifically for use in nuclear condensate polishing mixed beds when highest resin purity and water quality are required. This resin is our highest-capacity cation resin with exceptional physical and oxidative stability due to its very high level of DVB crosslinker.

The exceptional physical and oxidative stability minimizes the release of organic sulfonate leachables (TOC), helping to preserve the kinetic response of the anion exchange resin in the mixed bed, enabling lower levels of sulfate in the steam generator or boiler, which is especially critical in PWR plants where organic amines are used. The chemical stability also makes it especially suitable for high-temperature operation, as in air-cooled condenser systems.

The high capacity of AmberLite™ HPR1600 H can extend the hydrogen cycle run length by as much as 20% compared to a standard condensate polishing cation resin, and this proportionally reduces the number of regenerations and effort needed to operate the condensate polishing plant.

The exceptionally good backwash separation characteristics of AmberLite™ HPR1600 H further simplify the regeneration process, and the black color of the resin allows easy visual confirmation of separation from the light-colored AmberLite™ HPR9000 OH Ion Exchange Resin.



Resin Pairings

Recommended pairing:

- AmberLite™ HPR9000 OH Ion Exchange Resin (macroporous)

Additional options:

- AmberLite™ HPR550 OH Ion Exchange Resin (gel)
- AmberLite™ HPR9000 SO4 Ion Exchange Resin (macroporous)

Typical Properties

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

Chemical Properties	
Ionic Form as Shipped	H ⁺
Total Exchange Capacity	≥ 2.40 eq/L (H ⁺ form)
Water Retention Capacity	36.0 – 43.0% (H ⁺ form)
Ionic Conversion	
H ⁺	≥ 99%

Density	
Shipping Weight	840 g/L
Particle Density	1.27 g/mL

Stability	
Whole Uncracked Beads	≥ 95%
Friability:	
Average	≥ 1000 g/bead
> 200 g/bead	≥ 95%
Swelling	Na ⁺ → H ⁺ ≤ 4%

Purity	
Metals, dry basis	
Na	≤ 25 mg/kg
Fe	≤ 50 mg/kg

Particle Size §	
Particle Diameter	650 ± 50 µm
Uniformity Coefficient	≤ 1.1
< 425 µm	≤ 0.5%
> 850 µm	≤ 10%

§ 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 (H ⁺ form)	5 – 150°C (41 – 302°F)
pH Range (Stable)	0 – 14

Hydraulic Characteristics

Estimated bed expansion of DuPont™ AmberLite™ HPR1600 H Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLite™ HPR1600 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)

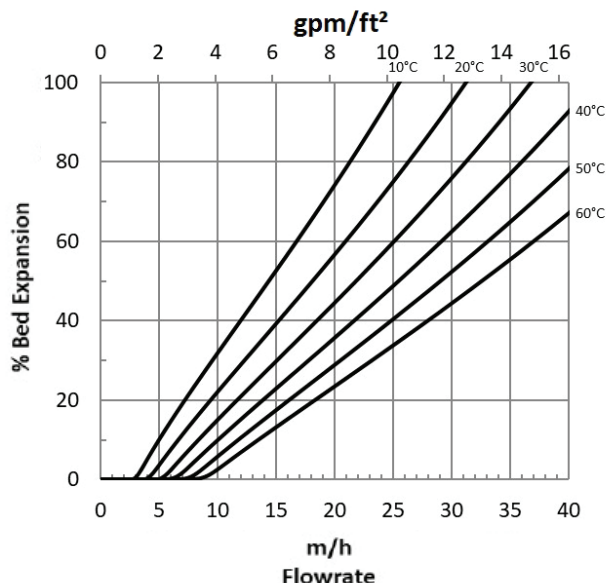
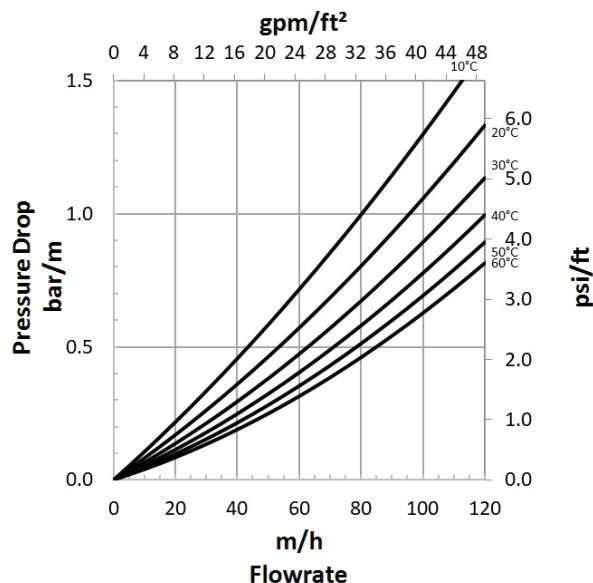


Figure 2: Pressure Drop

Temperature = 10 – 60°C (50 – 140°F)



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

This product may be used in applications that need to comply with relevant regulations. In support of these applications, a Regulatory Information Package is available upon request. Please address your request to your sales team or the contact details provided in this Product Data Sheet.

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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