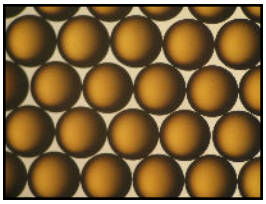
Product Data Sheet

# DuPont™ AmberLite™ HPR1300 H Ion Exchange Resin

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

## Description



DuPont™ AmberLite™ HPR1300 H Ion Exchange Resin is a high-quality resin for use in condensate polishing beds at fossil-fired electric generating stations and in industrial demineralization applications when a balance of operating performance, simple operation, long resin life, and cost-effective operation is required. The chemical properties and particle size of the resin have been optimized to help yield excellent operating capacity and rinse characteristics, reducing chemical regenerant and rinse water usage while maintaining a superior physical stability.

AmberLite™ HPR1300 H provides great mechanical strength and oxidative stability. It is ideally suited to the high flowrate demands of condensate polishing applications. The enhanced stability of this resin makes it suitable for the more challenging industrial applications or when more stringent water quality is required. In working and polishing mixed beds, it is a good choice when very low sodium leakage and conductivity is a chief concern.

In condensate polishing the bead size uniformity and dark color is tailored to complement the smaller, less dense, anionic, gel AmberLite™ HPR4700 OH Ion Exchange Resin. The color distinction between this pair of resins allows easy visual confirmation of separation following backwash in mixed bed operation. In systems where exceptional resistance to surface fouling is required, AmberLite™ HPR900 OH Ion Exchange Resin is the recommended pairing.

In industrial water applications AmberLite™ HPR1300 H is compatible with all system technologies and bed configurations and is designed to work with a variety of anion resins in mixed beds. AmberLite™ HPR8300 H Ion Exchange Resin is the weak acid cation resin best paired with AmberLite™ HPR1300 H for optimal performance in new and retrofitted layered beds.

AmberLite™ HPR1300 Na Ion Exchange Resin is available for industrial softening or demineralization applications when the sodium-form is preferred by the user.



Form No. 45-D01223-en, Rev. 2
February 2023

## Resin Pairings

Recommended pairing in condensate polishing:

- AmberLite™ HPR4700 OH Ion Exchange Resin (gel)
- AmberLite™ HPR900 OH Ion Exchange Resin (macroporous)

Recommended pairing in industrial demineralization applications:

- AmberLite™ HPR4200 OH Ion Exchange Resin (gel) – for mixed bed
- AmberLite™ HPR4800 OH Ion Exchange Resin (gel) – for mixed bed
- AmberLite™ HPR4700 OH Ion Exchange Resin (gel) – for mixed bed
- AmberLite™ HPR8300 H Ion Exchange Resin (gel) – for layered bed

Additional options in condensate polishing:

- AmberLite™ HPR4700 Cl Ion Exchange Resin (gel)
- AmberLite™ HPR900 $SO_4$ Ion Exchange Resin (macroporous)

Additional pairing in industrial demineralization applications:

- AmberLite™ HPR4200 Cl Ion Exchange Resin (gel) – for mixed bed
- AmberLite™ HPR4800 Cl Ion Exchange Resin (gel) – for mixed bed
- AmberLite™ HPR4700 Cl Ion Exchange Resin (gel) – for mixed bed
- AmberLite™ HPR9200 Cl Ion Exchange Resin (macroporous) – for mixed bed

## Applications

- Demineralization
  - Ideally when treating water with:
    - High oxidant level
    - High temperature on the cation resin
  - Single bed industrial demineralization requiring high water purity
- Condensate polishing
- Mixed bed polishing

## System Designs

Compatible with all system technologies:

- Co-current
- Counter-current / Hold-down
- Layered beds
- Packed beds
- Mixed beds

## Historical Reference

DuPont™ AmberLite™ HPR1300 H Ion Exchange Resin has previously been sold as DOWEX MARATHON™ 1300 H Ion Exchange Resin.



Form No. 45-D01223-en, Rev. 2
February 2023

## 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 | $H^+$ |
| Total Exchange Capacity | ≥ 2.0 eq/L ($H^+$ form) |
| Water Retention Capacity | 46.0 – 52.0% ($H^+$ form) |
| **Particle Size** [§] | |
| Particle Diameter | 650 ± 50 µm |
| Uniformity Coefficient | ≤ 1.10 |
| < 300 µm | ≤ 0.1% |
| > 850 µm | ≤ 5.0% |
| **Stability** | |
| Whole Uncracked Beads | ≥ 95% |
| Friability: | |
| Average | ≥ 350 g/bead |
| > 200 g/bead | ≥ 95% |
| Swelling | $Na^+ \rightarrow H^+$ : 7% |
| **Density** | |
| Particle Density | 1.22 g/mL |
| Shipping Weight | 785 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 ($H^+$ form) | 5 – 120°C (41 – 248°F) |
| pH Range | |
| Service Cycle | 1 – 14 |
| 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 DuPont™ AmberLite™ HPR1300 H Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLite™ HPR1300 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)

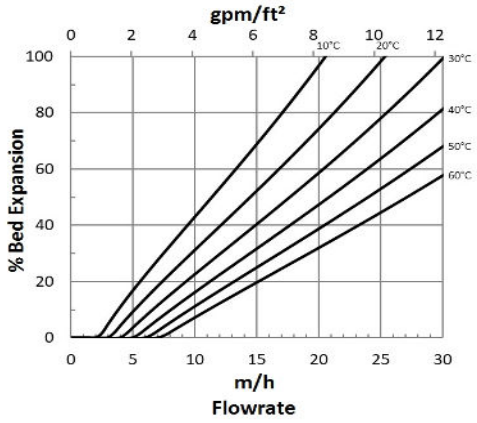
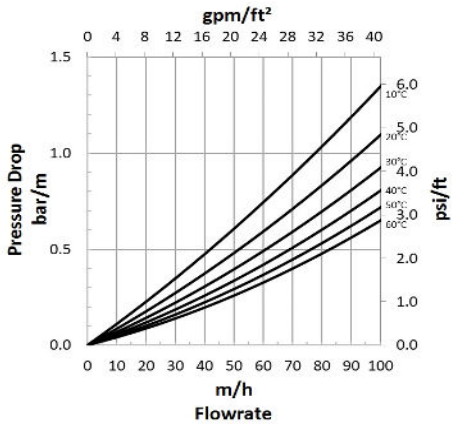



**Figure 2: Pressure Drop**

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.

## 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

All information set forth herein is for informational purposes only. This information is general information and may differ from that based on actual conditions. Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where DuPont is represented. The claims made may not have been approved for use in all countries. Please note that physical properties may vary depending on certain conditions and while operating conditions stated in this document are intended to lengthen product lifespan and/or improve product performance, it will ultimately depend on actual circumstances and is in no event a guarantee of achieving any specific results. DuPont assumes no obligation or liability for the information in this document. References to "DuPont" or the "Company" mean the DuPont legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. No freedom from infringement of any patent or trademark owned by DuPont or others is to be inferred.

© 2023 DuPont. DuPont™, the DuPont Oval Logo, and all trademarks and service marks denoted with ™, ℠ or ® are owned by affiliates of DuPont de Nemours Inc., unless otherwise noted.

DOWEX MARATHON™ is a trademark of The Dow Chemical Company.



Form No. 45-D01223-en, Rev. 2
February 2023