Product Data Sheet

AmberLite™ HPR4700 Cl Ion Exchange Resin

Uniform Particle Size, Gel, Strong Base Anion Exchange Resin for Condensate Polishing for the Power Industry and Industrial Demineralization Applications

Description

AmberLite™ HPR4700 Cl Ion Exchange Resin is specifically designed for use in industrial demineralization applications and can be used as an alternative to OH^- form resin for condensate polishing beds at fossil-fired electric generating stations when a balance of operating performance, simple operation, long resin life, and cost-effective operation is required.

This resin provides good 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 power plant condensate polishing systems. The bead size uniformity and a distinguishable light color is tailored to complement the larger, denser, cationic, gel AmberLite™ HPR1300 H Ion Exchange Resin, offering exceptional separation in mixed beds. The color distinction between this pair of resins allows easy visual confirmation of separation following backwash.

For post-RO mixed bed polishing with a strict silica specification and/or the need to maximize silica removal capacity, AmberLite™ HRP4700 Cl is an alternative to the OH^- form.

AmberLite™ HPR4700 Cl can also be used in single-bed demineralization applications when organic loading is not a limiting factor.

Resin Pairings

Recommended pairing in industrial demineralization applications:

- AmberLite™ HPR1300 H Ion Exchange Resin (gel)

Additional pairing in industrial demineralization applications:

- AmberLite™ HPR1200 H Ion Exchange Resin (gel)

Additional pairing in condensate polishing:

- AmberLite™ HPR1300 H Ion Exchange Resin (gel)

Applications

- Demineralization
  - Ideally when treating water with:
    - High percentage of silica
  - When the treatment goal is:
    - Removal of strong and weak acids
    - Lowest silica leakage
  - Single bed industrial demineralization requiring high water purity
- Condensate polishing
- Mixed bed polishing

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System Designs

Compatible with all system technologies:

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

Historical Reference

AmberLite™ HPR4700 Cl Ion Exchange Resin has previously been sold as DOWEX MARATHON™ 550A Cl Ion Exchange Resin.

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong base anion, Type I
Functional Group	Trimethylammonium
Physical Form	White to amber, translucent, spherical beads
Chemical Properties	
Ionic Form as Shipped	Cl^-
Total Exchange Capacity	≥ 1.35 eq/L (Cl^- form)
Water Retention Capacity	42.0 – 49.0% (Cl^- form)
Particle Size [§]	
Particle Diameter	550 ± 50 µm
Uniformity Coefficient	≤ 1.1
< 300 µm	≤ 0.5%
> 850 µm	≤ 1.0%
Stability	
Whole Uncracked Beads	≥ 95%
Swelling	$Cl^- \rightarrow OH^-$: 25%
Density	
Particle Density	1.09 g/mL
Shipping Weight	690 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	
OH^- form [‡]	5 – 60°C (41 – 140°F)
Cl^- form	5 – 100°C (41 – 212°F)
pH Range	
Service Cycle	1 – 14
Stable	0 – 14

[‡] Operating at elevated temperatures, for example above 60 – 70°C (140 – 158°F), may impact 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 AmberLite™ HPR4700 Cl Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLite™ HPR4700 Cl 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)

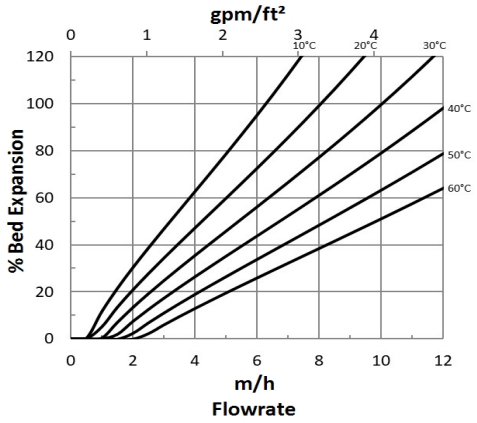
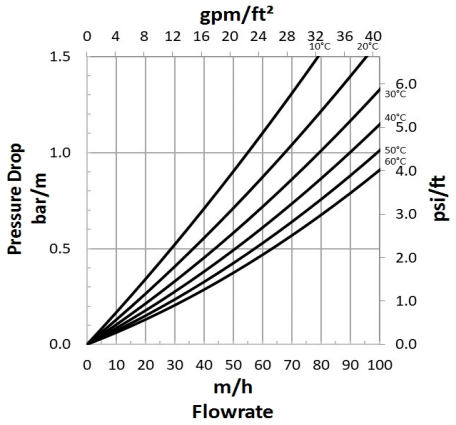


Figure 2: Pressure Drop

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.

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Have a question? Contact us at:

www.dupont.com/water/contact-us

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