Product Data Sheet

AmberLite™ HPR4811 Cl Ion Exchange Resin

Uniform Particle Size, Gel, Strong Base Anion Exchange Resin for Industrial Demineralization Applications

Description

AmberLite™ HPR4811 Cl Ion Exchange Resin is a high-quality resin for use in industrial demineralization applications when high performance 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, while reducing chemical regenerant and rinse water usage.

AmberLite™ HPR4811 Cl provides high capacity with excellent kinetics and very good resistance to organic fouling. It also has excellent resistance to osmotic shock and good physical and chemical stability. Its unique resistance to organic fouling enables this resin to be used in Cl^- form as an organic scavenger with great success in a single bed unit.

Applications

- Demineralization
  - Ideally when treating water with:
    - High organic fouling potential
    - High percentage of silica
  - When the treatment goal is:
    - Removal of strong and weak acids
    - Lowest silica leakage
- Scavenging

System Designs

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

Historical Reference

AmberLite™ HPR4811 Cl Ion Exchange Resin has previously been sold as DOWEX MARATHON™ 11 Ion Exchange Resin.

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Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong base anion, Type I
Functional Group	Trimethylammonium
Physical Form	Amber, translucent, spherical beads
Chemical Properties	
Ionic Form as Shipped	Cl^-
Total Exchange Capacity	≥ 1.3 eq/L (Cl^- form)
Water Retention Capacity	50.0 – 60.0% (Cl^- form)
Particle Size [§]	
Particle Diameter	550 ± 50 µm
Uniformity Coefficient	≤ 1.10
< 300 µm	≤ 0.3%
> 850 µm	≤ 1.0%
Stability	
Whole Uncracked Beads	≥ 95%
Swelling	$Cl^- \rightarrow OH^-$: 20%
Density	
Particle Density	1.08 g/mL
Shipping Weight	675 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 (demineralization)	1 – 14
Service Cycle (scavenging)	2 – 10
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 separate beds (Form No. 45-D01131-en) in water treatment, please refer to our Tech Fact.

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Hydraulic Characteristics

Estimated bed expansion of AmberLite™ HPR4811 Cl Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLite™ HPR4811 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)

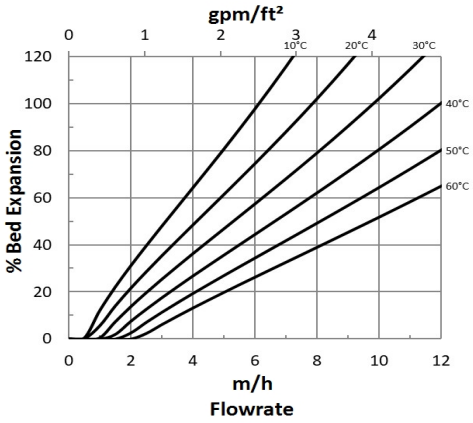
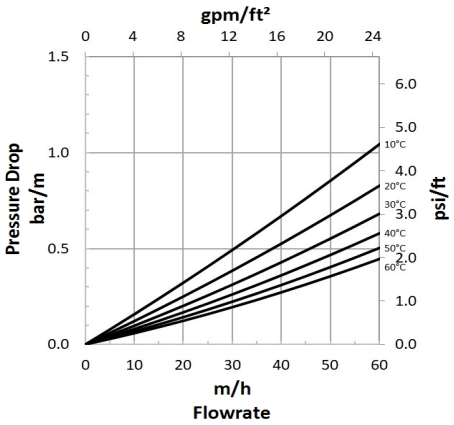


Figure 2: Pressure Drop

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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