



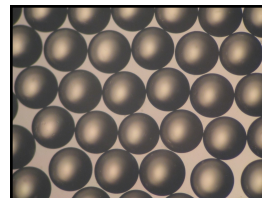
Product Data Sheet

AmberLite™ HPR4100 Cl Ion Exchange Resin

Uniform Particle Size, Gel, Strong Base Anion (Type II) Exchange Resin for Industrial Demineralization Applications

Description

AmberLite™ HPR4100 Cl Ion Exchange Resin is a high-quality resin for use in industrial demineralization applications when a balance of operating performance and simple, 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.



Compared to a Type I strong base anion resin, a Type II resin will yield greater operating capacity due to more complete regeneration. It is best-suited to treat water in which silica and carbon dioxide do not exceed 30% of the total anions and the service and caustic regeneration temperature does not consistently exceed 35°C (95°F).

For systems that require low silica in the effluent or that operate in higher temperatures, a Type I strong base anion resin is recommended, such as:

- AmberLite™ HPR4200 Cl or OH Ion Exchange Resin
- AmberLite™ HPR4800 Cl or OH Ion Exchange Resin

Applications

- Demineralization, when the treatment goal is:
 - Removal of strong and weak acids
- Dealkalization

System Designs

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

Historical Reference

AmberLite™ HPR4100 Cl Ion Exchange Resin has previously been sold as DOWEX MARATHON™ A2 Ion Exchange Resin.

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong base anion, Type II
Functional Group	Dimethylethanolammonium
Physical Form	White to amber, translucent, spherical beads
Chemical Properties	
Ionic Form as Shipped	Cl ⁻
Total Exchange Capacity	≥ 1.2 eq/L (Cl ⁻ form)
Water Retention Capacity	45.0 – 54.0% (Cl ⁻ form)
Particle Size [§]	
Particle Diameter	550 ± 50 µm
Uniformity Coefficient	≤ 1.1
< 300 µm	≤ 0.3%
> 850 µm	≤ 1.0%
Stability	
Whole Uncracked Beads	≥ 95%
Swelling	Cl ⁻ → OH ⁻ : 15%
Density	
Particle Density	1.10 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 – 35°C (41 – 95°F)
Cl ⁻ form	5 – 80°C (41 – 176°F)
pH Range	
Service Cycle	1 – 14
Stable	0 – 14

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.

Hydraulic Characteristics

Estimated bed expansion of AmberLite™ HPR4100 Cl Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLite™ HPR4100 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)

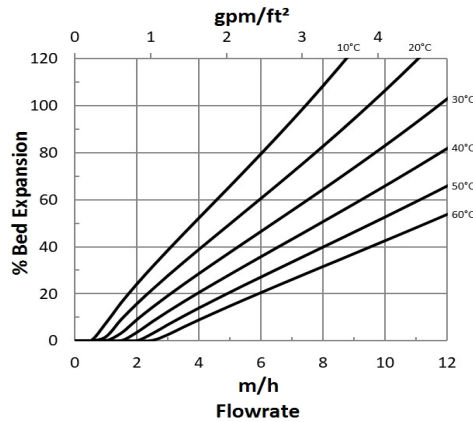
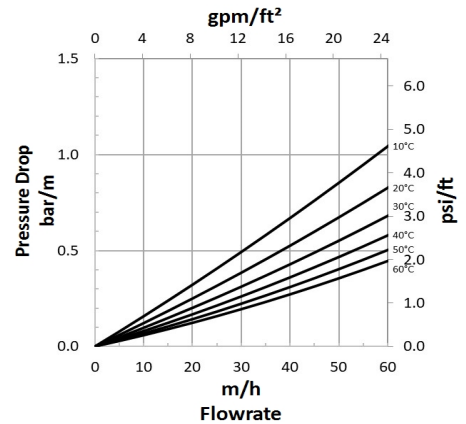


Figure 2: Pressure Drop
Temperature = 10 – 60°C (50 – 140°F)



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.

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.

©2019 DuPont. DuPont™, the DuPont Oval Logo, and all trademarks and service marks denoted with ™, SM or © are owned by affiliates of DuPont de Nemours Inc., unless otherwise noted.

DOWEX MARATHON™ is a trademark of The Dow Chemical Company used under license by DuPont.

