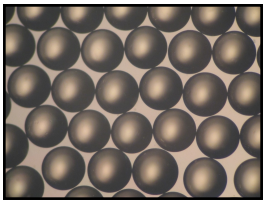
Product Data Sheet

# 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## Historical Reference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.



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## 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 | $Cl^- \rightarrow OH^-$: 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.



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## 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)

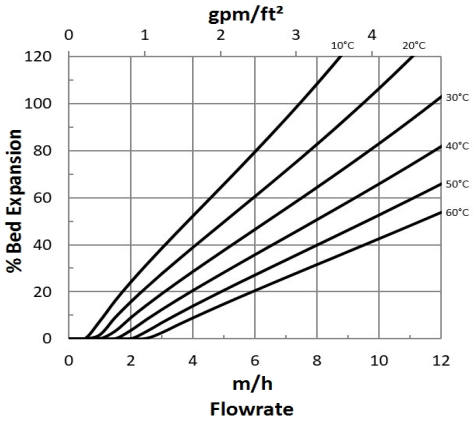
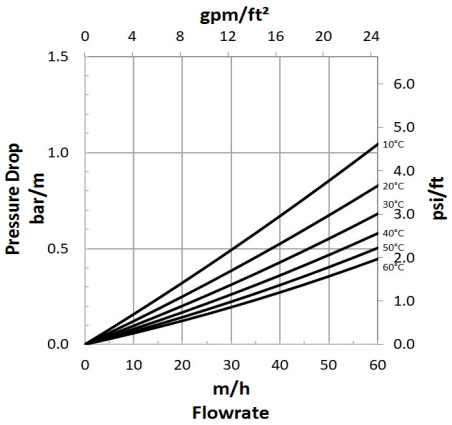



**Figure 2: Pressure Drop**

Temperature = 10 – 60°C (50 – 140°F)

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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





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