



## **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<sup>-</sup> 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### **Historical Reference**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.

## 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 <sup>-</sup>
Total Exchange Capacity	≥ 1.3 eq/L (Cl <sup>-</sup> form)
Water Retention Capacity	50.0 – 60.0% (Cl <sup>-</sup> form)
Particle Size <sup>§</sup>	
Particle Diameter	550 ± 50 µm
Uniformity Coefficient	≤ 1.10
< 300 µm	≤ 0.3%
> 850 µm	≤ 1.0%
Stability	
Whole Uncracked Beads	≥ 95%
Swelling	Cl <sup>-</sup> → OH <sup>-</sup> : 20%
Density	
Particle Density	1.08 g/mL
Shipping Weight	675 g/L

<sup>§</sup> 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 <sup>-</sup> form <sup>‡</sup>	5 – 60°C (41 – 140°F)
Cl <sup>-</sup> form	5 – 100°C (41 – 212°F)
pH Range	
Service Cycle (demineralization)	1 – 14
Service Cycle (scavenging)	2 – 10
Stable	0 – 14

<sup>‡</sup> Operating at elevated temperatures, for example above 60 – 70°C (140 – 158°F), may impact resin life. Contact our technical representative for details.

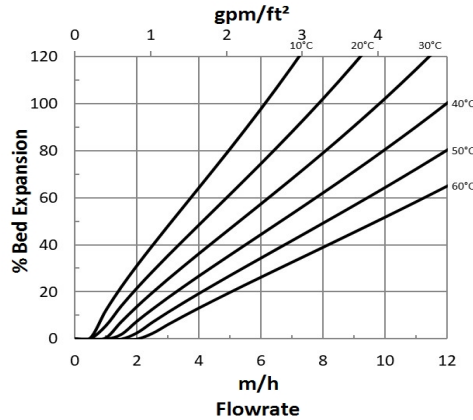
For additional information regarding recommended minimum bed depth, operating conditions, and regeneration conditions for [separate beds](#) (Form No. 45-D01131-en) in water treatment, please refer to our Tech Fact.

## Hydraulic Characteristics

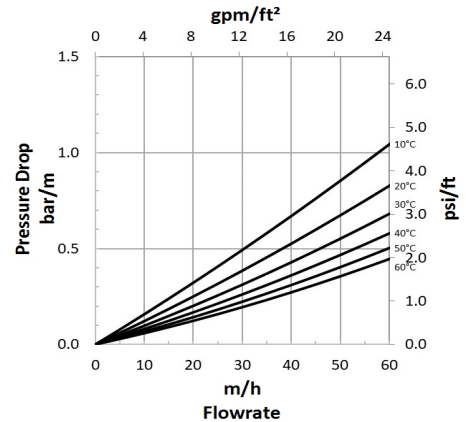
Estimated bed expansion of AmberLite™ HPR4811 Cl Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

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)



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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.

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