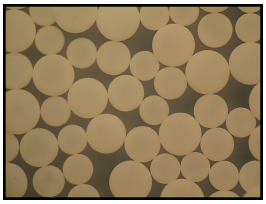
Product Data Sheet

AmberLite™ HPR8400 H Ion Exchange Resin

Acrylic, Macroporous, Weak Acid Cation Exchange Resin for Industrial Demineralization, Softening, and Dealkalization Applications

Description



AmberLite™ HPR8400 H Ion Exchange Resin is a high-quality resin for use in industrial demineralization and softening applications when high performance and cost-effective operation is required. The exceptionally high total capacity and the larger particle size of the resin help yield excellent operating capacity with low pressure drop, while reducing chemical regenerant and water usage.

When operated in the H-form, it will remove only the hardness associated with alkalinity—a weak acid cation resin operated in the H-form is well-suited for use with strong acid cation resins to improve overall efficiency and throughput of a demineralization system by reducing the hardness exposure on the strong acid cation resin.

AmberLite™ HPR8400 H offers increased total capacity compared to the existing WAC resins available, which could allow users to simultaneously minimize operating costs and environmental impacts while also preserving precious raw water resources under the right operating conditions.

When AmberLite™ HPR8400 H is operated in the Na-form, it will remove total hardness even in high salinity waters.

In Na-form softening operation, AmberLite™ HPR8400 H enables improved operating capacity for total hardness versus other weak acid cation resins currently available, which allows more competitive vessel design or extended production capacity when installed in existing systems.

In reverse osmosis pretreatment, AmberLite™ HPR8400 H can protect the membrane from hardness scaling, which can improve system recovery and operational reliability and can eliminate the use of chemicals such as antiscalants or acids for RO feedwater pH control. The resin's ability to soften high-salinity feedwaters enables the RO to reliably operate under extremely variable and/or harsh conditions, such as with wastewater reuse or minimal liquid discharge.

Applications

- Demineralization, ideally when treating water with:
  - High oxidant level (among WAC resins)
  - Total hardness to alkalinity ratio > 0.8
- Industrial softening
- High-salinity softening (operated in the Na-form)
- Dealkalization
- Reverse osmosis pretreatment

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System Designs

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

Typical Properties

Physical Properties	
Copolymer	Crosslinked acrylic
Matrix	Macroporous
Type	Weak acid cation
Functional Group	Carboxylic acid
Physical Form	Off-white, opaque, spherical beads
Chemical Properties	
Ionic Form as Shipped	H^+
Total Exchange Capacity	≥ 4.7 eq/L (H^+ form)
Water Retention Capacity	40.0 – 50.0% (H^+ form)
Particle Size [§]	
Particle Diameter	600 – 800 µm
Uniformity Coefficient	≤ 1.5
< 300 µm	≤ 0.1%
Stability	
Whole Uncracked Beads	≥ 95%
Swelling	$H^+ \rightarrow Na^+$: 60%
Density	
Particle Density	1.21 g/mL
Shipping Weight	760 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	
H^+ form	5 – 120°C (41 – 248°F)
Na^+ form	5 – 120°C (41 – 248°F)
pH Range	
Service Cycle	6 – 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™ HPR8400 H Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLite™ HPR8400 H 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 and a well-classified bed.

Figure 1: Backwash Expansion

Temperature = 10 – 60°C (50 – 140°F)

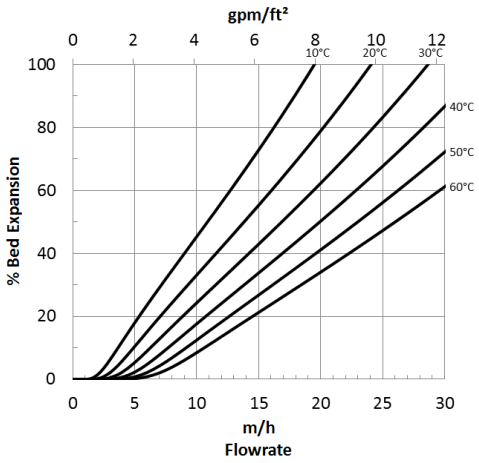
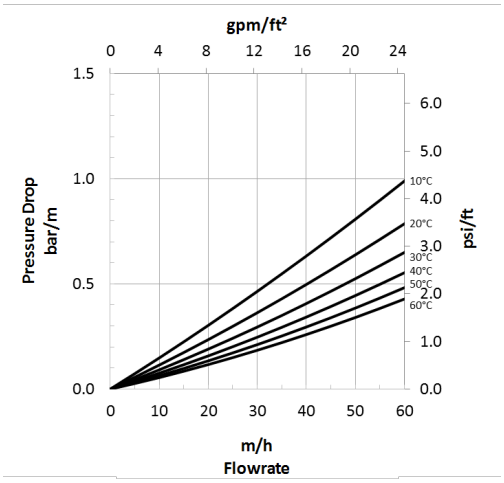


Figure 2: Pressure Drop

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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Have a question? Contact us at:

www.dupont.com/water/contact-us

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