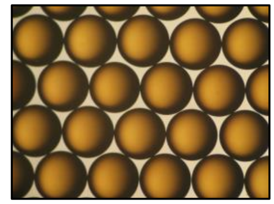
Product Data Sheet

AMBERLITE™ HPR1300 H Ion Exchange Resin

Uniform Particle Size, Gel, Strong Acid Cation Exchange Resin for Condensate Polishing in the Power Industry and Industrial Demineralization Applications

Description



AMBERLITE™ HPR1300 H Ion Exchange Resin is a high-quality resin for use in condensate polishing beds at fossil-fired electric generating stations and in industrial demineralization applications when a balance of operating performance, simple operation, long resin life, 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, reducing chemical regenerant and rinse water usage while maintaining a superior physical stability.

AMBERLITE HPR1300 H provides great mechanical strength and oxidative stability. It is ideally suited to the high flowrate demands of condensate polishing applications. The enhanced stability of this resin makes it suitable for the more challenging industrial applications or when more stringent water quality is required. In working and polishing mixed beds, it is a good choice when very low sodium leakage and conductivity is a chief concern.

In condensate polishing the bead size uniformity and dark color is tailored to complement the smaller, less dense, anionic, gel AMBERLITE™ HPR4700 OH Ion Exchange Resin. The color distinction between this pair of resins allows easy visual confirmation of separation following backwash in mixed bed operation. In systems where exceptional resistance to surface fouling is required, AMBERLITE™ HPR900 OH Ion Exchange Resin is the recommended pairing.

In industrial water applications AMBERLITE HPR1300 H is compatible with all system technologies and bed configurations and is designed to work with a variety of anion resins in mixed beds. AMBERLITE™ HPR8300 H Ion Exchange Resin is the weak acid cation resin best paired with AMBERLITE HPR1300 H for optimal performance in new and retrofitted layered beds.

AMBERLITE™ HPR1300 Na Ion Exchange Resin is available for industrial softening or demineralization applications when the sodium-form is preferred by the user.

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Resin Pairings

Recommended pairing in condensate polishing:
- AMBERLITE™ HPR4700 OH Ion Exchange Resin (gel)
- AMBERLITE™ HPR900 OH Ion Exchange Resin (macroporous)

Recommended pairing in industrial demineralization applications:
- AMBERLITE™ HPR4200 OH Ion Exchange Resin (gel) – for mixed bed
- AMBERLITE™ HPR4800 OH Ion Exchange Resin (gel) – for mixed bed
- AMBERLITE™ HPR4700 OH Ion Exchange Resin (gel) – for mixed bed
- AMBERLITE™ HPR8300 H Ion Exchange Resin (gel) – for layered bed

Additional options in condensate polishing:
- AMBERLITE™ HPR4700 Cl Ion Exchange Resin (gel)
- AMBERLITE™ HPR900 SO_4 Ion Exchange Resin (macroporous)

Additional pairing in industrial demineralization applications:
- AMBERLITE™ HPR4200 Cl Ion Exchange Resin (gel) – for mixed bed
- AMBERLITE™ HPR4800 Cl Ion Exchange Resin (gel) – for mixed bed
- AMBERLITE™ HPR4700 Cl Ion Exchange Resin (gel) – for mixed bed
- AMBERLITE™ HPR9200 Cl Ion Exchange Resin (macroporous) – for mixed bed

Applications

- Demineralization
  - Ideally when treating water with:
    - High oxidant level
    - High temperature on the cation resin
  - Single bed industrial demineralization requiring high water purity
- Condensate polishing
- Mixed bed polishing

System Designs

Compatible with all system technologies:
- Co-current
- Counter-current / Hold-down
- Layered beds
- Packed beds
- Mixed beds

Historical Reference

AMBERLITE™ HPR1300 H Ion Exchange Resin has previously been sold as DOWEX MARATHON™ 1300 H Ion Exchange Resin.

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Typical Physical and Chemical Properties**

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Dark brown, translucent, spherical beads
Chemical Properties	
Ionic Form as Shipped	H^+
Total Exchange Capacity	≥ 2.0 eq/L (H^+ form)
Water Retention Capacity	46.0 – 52.0% (H^+ form)
Particle Size	
Particle Diameter §	650 ± 50 µm
Uniformity Coefficient	≤ 1.10
< 300 µm	≤ 0.1%
> 850 µm	≤ 5.0%
Stability	
Whole Uncracked Beads	≥ 95%
Friability:	
Average	≥ 350 g/bead
> 200 g/bead	≥ 95%
Swelling	$Na^+ \rightarrow H^+$: 7%
Density	
Particle Density	1.22 g/mL
Shipping Weight	785 g/L

§ For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).

Suggested Operating Conditions**

Temperature Range (H^+ form)	5 – 120°C (41 – 248°F)
pH Range	
Service Cycle	1 – 14
Stable	0 – 14

For additional information regarding recommended minimum bed depth, operating conditions, and regeneration conditions for mixed beds (Form No. 177-03705) or separate beds (Form No. 177-03729) in water treatment, please refer to our Tech Facts.

Hydraulic Characteristics

Estimated bed expansion of AMBERLITE™ HPR1300 H Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AMBERLITE HPR1300 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.

Figure 1: Backwash Expansion

Temperature = 10 – 60°C (50 – 140°F)

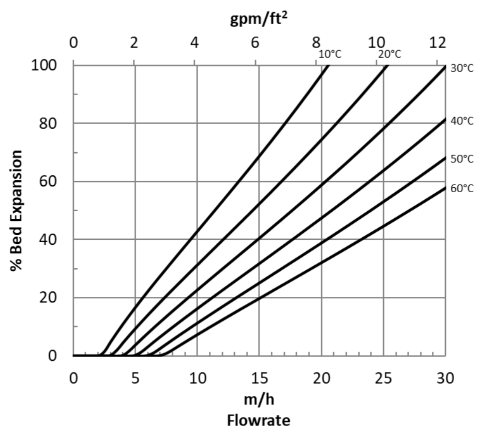
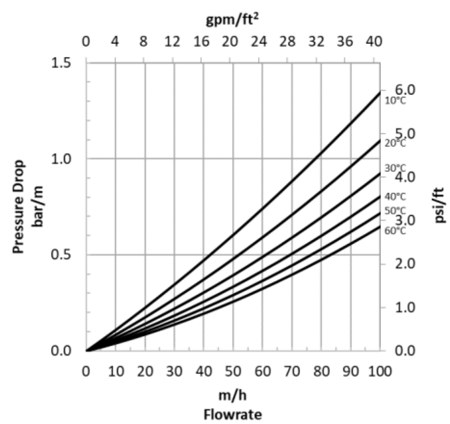


Figure 2: Pressure Drop

Temperature = 10 – 60°C (50 – 140°F)



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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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