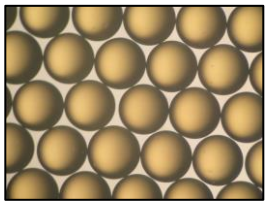
Product Data Sheet

AMBERLITE™ HPR650 H Ion Exchange Resin

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

Description



AMBERLITE™ HPR650 H Ion Exchange Resin is a premium-quality, high-capacity resin with uniform particle size designed specifically for use in nuclear condensate polishing mixed beds when highest resin purity and water quality are required.

This resin provides outstanding mechanical strength and very good oxidative stability. It is ideally suited to the high flowrate demands of condensate polishing applications. The bead size uniformity and dark color is tailored to complement the smaller, less dense, anionic, gel AMBERLITE™ HPR550 OH Ion Exchange Resin. The color distinction between this pair of resins allows easy visual confirmation of separation following backwash. Together, these resins offer exceptional separation in mixed beds, which combined with excellent water quality and resin purity, has made them known throughout the industry as a premium mixed bed pairing.

In systems where exceptional resistance to surface fouling is required, macroporous AMBERLITE™ HPR9000 OH Ion Exchange Resin is the recommended pairing.

Resin Pairings

Recommended pairing:

- AMBERLITE™ HPR550 OH Ion Exchange Resin (gel)
- AMBERLITE™ HPR9000 OH Ion Exchange Resin (macroporous)

Additional options:

- AMBERLITE™ HPR550 Cl Ion Exchange Resin (gel)
- AMBERLITE™ HPR9000 SO_4 Ion Exchange Resin (macroporous)

Applications

- Mixed bed condensate polishing in PWR nuclear power plants
- Mixed bed condensate polishing in fossil power plants
- Mixed bed polishing in industrial demineralization

Historical Reference

AMBERLITE™ HPR650 H Ion Exchange Resin has previously been sold as DOWEX MONOSPHERE™ 650C (H) Ion Exchange Resin.

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May 2018

Typical Physical and Chemical Properties**

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Dark amber, 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)
Ionic Conversion	
H^+	≥ 99%
Particle Size	
Particle Diameter §	650 ± 50 µm
Uniformity Coefficient	≤ 1.10
< 300 µm	≤ 0.5%
> 850 µm	≤ 5.0%
Purity	
Metals, dry basis:	
Na	≤ 50 mg/kg
Fe	≤ 50 mg/kg
Cu	≤ 10 mg/kg
Al	≤ 50 mg/kg
Heavy Metals (as Pb)	≤ 10 mg/kg
Stability	
Whole Uncracked Beads	≥ 95%
Friability:	
Average	≥ 500 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 – 150°C (41 – 302°F)
pH Range (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™ HPR650 H Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AMBERLITE HPR650 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)

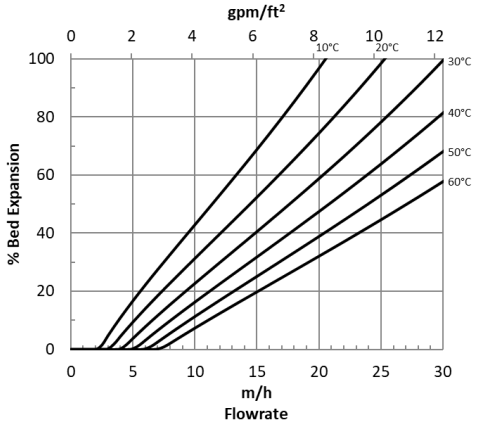
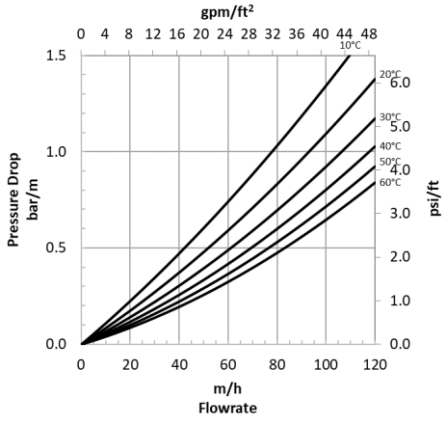


Figure 2: Pressure Drop

Temperature = 10 – 60°C (50 – 140°F)



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Customer Notice

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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.

**All information set forth herein is for informational purposes only. This information is general information and may differ from that based on actual conditions. 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. Nothing in this document should be treated as a warranty by Dow.

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