

AmberLite™ HPR4700 OH Ion Exchange Resin

Uniform Particle Size, Gel, Strong Base Anion Exchange Resin for Condensate Polishing for the Power Industry and Industrial Demineralization Applications

Description

AmberLite™ HPR4700 OH Ion Exchange Resin is specifically designed for use in condensate polishing beds at fossil-fired electric generating stations and industrial demineralization applications when a balance of operating performance, simple operation, long resin life, and cost-effective operation is required. A faster startup can be achieved with a strong base anion exchange resin delivered in the OH⁻ form by providing higher water quality combined with lower TOC throw from startup, compared to the Cl⁻ form.

This resin provides good bead integrity and rapid exchange kinetics due to its small average particle size, making it ideally suited to the high flowrate demands commonly encountered in power plant condensate polishing systems. The bead size uniformity and a distinguishable light color is tailored to complement the larger, denser, cationic, gel AmberLite™ HPR1300 H Ion Exchange Resin, offering exceptional separation in mixed beds. The color distinction between this pair of resins allows easy visual confirmation of separation following backwash.

For post-RO mixed bed polishing with a strict silica specification and/or the need to maximize silica removal capacity, AmberLite™ HPR4700 OH is an ideal choice.

AmberLite™ HPR4700 OH can also be used in single-bed demineralization applications when organic loading is not a limiting factor.

Resin Pairings

Recommended pairing in condensate polishing:

- AmberLite™ HPR1300 H Ion Exchange Resin (gel)

Recommended pairing in industrial demineralization applications:

- AmberLite™ HPR1300 H Ion Exchange Resin (gel)

Additional pairing in industrial demineralization applications:

- AmberLite™ HPR1200 H Ion Exchange Resin (gel)

Applications

- Demineralization
 - Ideally when treating water with:
 - High percentage of silica
 - When the treatment goal is:
 - Removal of strong and weak acids
 - Lowest silica leakage
 - 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
- Packed beds
- Mixed beds

Historical Reference

AmberLite™ HPR4700 OH Ion Exchange Resin has previously been sold as DOWEX MARATHON™ 550A OH Ion Exchange Resin.

Typical Properties

Physical Properties

Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong base anion, Type I
Functional Group	Trimethylammonium
Physical Form	White to amber, translucent, spherical beads

Chemical Properties

Ionic Form as Shipped	OH ⁻
Total Exchange Capacity	≥ 1.1 eq/L (OH ⁻ form)
Water Retention Capacity	55.0 – 65.0% (OH ⁻ form)
Ionic Conversion	
OH ⁻	≥ 93%
Cl ⁻	≤ 0.5%

Particle Size §

Particle Diameter	590 ± 50 µm
Uniformity Coefficient	≤ 1.10
< 300 µm	≤ 0.5%
> 850 µm	≤ 1.0%

Stability

Whole Uncracked Beads	≥ 95%
Swelling	Cl ⁻ → OH ⁻ : 25%

Density

Particle Density	1.08 g/mL
Shipping Weight	660 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 – 60°C (41 – 140°F)
Cl ⁻ form	5 – 100°C (41 – 212°F)

pH Range

Service Cycle	1 – 14
Stable	0 – 14

‡ 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 [mixed beds](#) (Form No. 45-D01127-en) or [separate beds](#) (Form No. 45-D01131-en) in water treatment, please refer to our Tech Facts.

Hydraulic Characteristics

Estimated bed expansion of AmberLite™ HPR4700 OH Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLite™ HPR4700 OH 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)

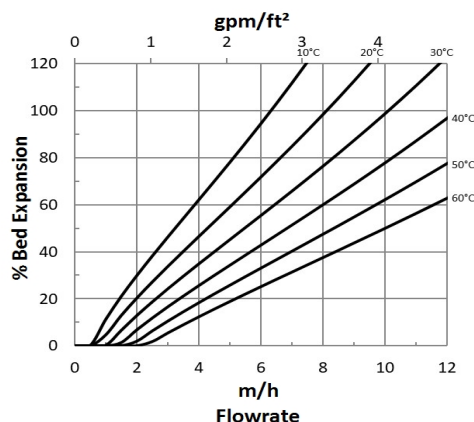
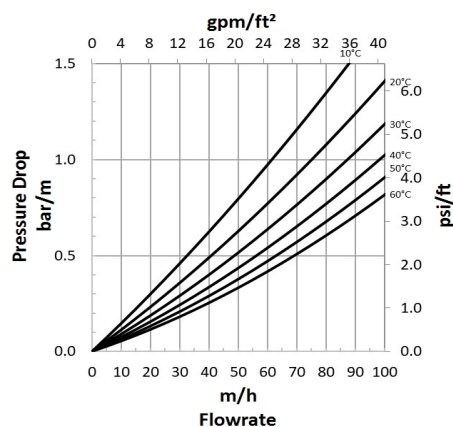


Figure 2: Pressure Drop

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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