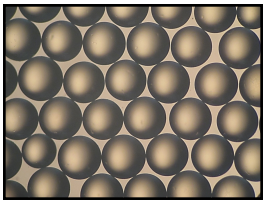
Product Data Sheet

# AmberLite™ HPR550 OH Ion Exchange Resin

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

## Description



AmberLite™ HPR550 OH Ion Exchange Resin is a premium-quality, high-capacity resin designed specifically for use in nuclear condensate polishing mixed beds when highest resin purity and water quality are required.

This resin provides exceptional 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™ HPR650 H 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.

## Resin Pairings

Recommended pairing:

- AmberLite™ HPR650 H Ion Exchange Resin (gel)

Additional options:

- AmberLite™ HPR1600 H Ion Exchange Resin (gel)
- AmberLite™ HPR2000 H Ion Exchange Resin (macroporous) – in external regeneration systems

## Applications

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

## Historical Reference

AmberLite™ HPR550 OH Ion Exchange Resin has previously been sold as DOWEX MONOSPHERE™ 550A (OH) Ion Exchange Resin.



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## Typical Properties

| | |
|---|---|
| **Physical Properties** | |
| Copolymer | Styrene-divinylbenzene |
| Matrix | Gel |
| Type | Strong base anion |
| Functional Group | Trimethylammonium |
| Physical Form | White to yellow, 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 | |
| $OH^-$ | ≥ 95% |
| $CO_3^{2-}$ | ≤ 5% |
| $Cl^-$ | ≤ 0.5% |
| **Particle Size** [§] | |
| Particle Diameter | 590 ± 50 µm |
| Uniformity Coefficient | ≤ 1.10 |
| < 300 µm | ≤ 0.5% |
| > 850 µm | ≤ 1.0% |
| **Purity** | |
| Metals, dry basis: | |
| Na | ≤ 50 mg/kg |
| K | ≤ 50 mg/kg |
| Fe | ≤ 50 mg/kg |
| Cu | ≤ 10 mg/kg |
| Ca | ≤ 50 mg/kg |
| Mg | ≤ 50 mg/kg |
| Al | ≤ 50 mg/kg |
| Heavy Metals (as Pb) | ≤ 10 mg/kg |
| **Stability** | |
| Whole Uncracked Beads | ≥ 95% |
| Friability: | |
| Average | ≥ 350 g/bead |
| > 200 g/bead | ≥ 95% |
| Swelling | $Cl^- \rightarrow OH^-$ ≤ 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 – 100°C (41 – 212°F) |
| pH Range (Stable) | 0 – 14 |

[‡] Operating at elevated temperatures, for example above 60 – 70°C (140 – 158°F), may impact the purity of the loop and 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™ HPR550 OH Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLite™ HPR550 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)

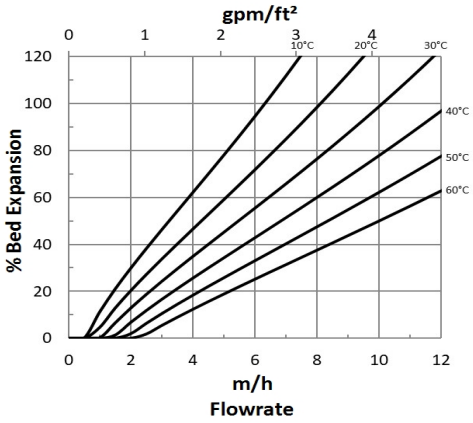
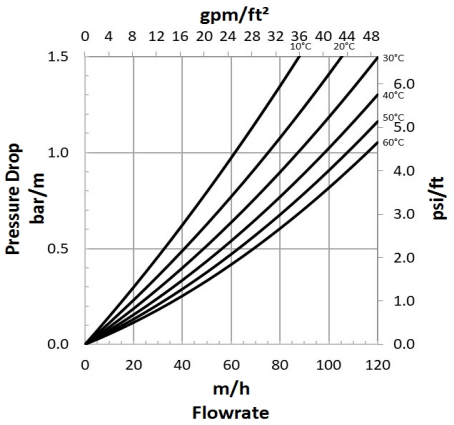



**Figure 2: Pressure Drop**

Temperature = 10 – 60°C (50 – 140°F)

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DuPont has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with DuPont products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

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DuPont strongly encourages its customers to review both their manufacturing processes and their applications of DuPont products from the standpoint of human health and environmental quality to ensure that DuPont products are not used in ways for which they are not intended or tested. DuPont personnel are available to answer your questions and to provide reasonable technical support. DuPont product literature, including safety data sheets, should be consulted prior to use of DuPont products. Current safety data sheets are available from DuPont.

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:**

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