Product Data Sheet

AMBERLITE™ HPR4580 Cl Ion Exchange Resin

Acrylic, Gel, Strong Base Anion Exchange Resin for Industrial Demineralization Applications

Description

AMBERLITE™ HPR4580 Cl Ion Exchange Resin is a high-quality resin for use in industrial demineralization applications when high performance and cost-effective operation is required. The chemical properties and particle size of the resin have been balanced to combine a high operating capacity with low pressure drop, while reducing chemical regenerant and water usage.

Acrylic anion resins have a hydrophilic structure providing unique chemical and physical properties allowing for easy release of the accumulated natural organic compounds during the regeneration step. The properties of the acrylic structure also enables it to withstand high osmotic or mechanical stress. The resin has been optimized to yield excellent operating capacity and efficient regeneration. Acrylic resins can be used effectively when temperatures do not consistently exceed 35°C (95°F).

Compared to a Type I styrenic strong base anion resin, AMBERLITE HPR4580 Cl will yield greater operating capacity due to more complete regeneration and exhibits higher organic fouling resistance.

AMBERLITE HPR4580 Cl is designed for use in single bed or layered bed systems. When used in a layered bed, it should be paired with AMBERLITE™ HPR9600 Ion Exchange Resin or AMBERLITE™ HPR9500 Ion Exchange Resin.

Applications

- Demineralization
  - Ideally when treating water with:
    - High organic fouling potential
  - When the treatment goal is:
    - Removal of strong and weak acids

System Designs

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

Historical Reference

AMBERLITE™ HPR4580 Cl Ion Exchange Resin has previously been sold as AMBERLITE™ IRA458RF Ion Exchange Resin.

Form No. 177-03786, Rev. 0
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Typical Physical and Chemical Properties**

Physical Properties	
Copolymer	Crosslinked acrylic
Matrix	Gel
Type	Strong base anion, Type I
Functional Group	Quaternary ammonium
Physical Form	White, translucent, spherical beads
Chemical Properties	
Ionic Form as Shipped	Cl^-
Total Exchange Capacity	≥ 1.25 eq/L (Cl^- form)
Water Retention Capacity	58.0 – 62.0% (Cl^- form)
Particle Size ‡	
Particle Diameter §	700 – 950 µm
Uniformity Coefficient	≤ 1.70
< 300 µm	≤ 0.2%
> 1180 µm	≤ 15.0%
Stability	
Whole Uncracked Beads	≥ 95%
Swelling	$Cl^- \rightarrow OH^-$ ≤ 25%
Density	
Particle Density	1.08 g/mL
Shipping Weight	730 g/L

‡ Particle size distribution is tailored for packed bed operation.
§ For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).

Suggested Operating Conditions**

Temperature Range	
OH^- form	5 – 35°C (41 – 95°F)
Cl^- form	5 – 80°C (41 – 176°F)
pH Range	
Service Cycle	1 – 14
Stable	0 – 14

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

Hydraulic Characteristics

Estimated bed expansion of AMBERLITE™ HPR4580 Cl Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AMBERLITE HPR4580 Cl 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)

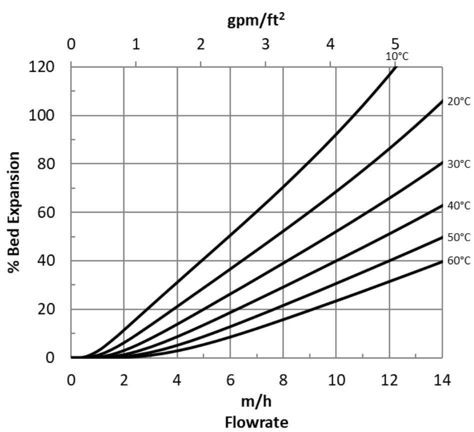
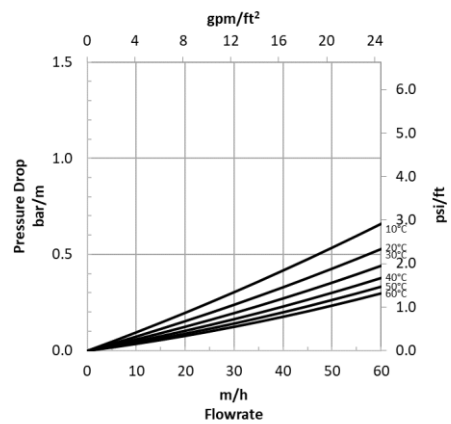


Figure 2: Pressure Drop

Temperature = 10 – 60°C (50 – 140°F)



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Product Stewardship

Dow 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 Dow products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

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

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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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