



AMBERLITE® IRN170

Nuclear Grade Mixed Bed Resin

PRELIMINARY PRODUCT DATA SHEET

AMBERLITE IRN170 is a fully regenerated nuclear grade mixed bed resin designed for the ultimate performance in non-regenerable nuclear applications. The cation component of this mixed bed product is Amberlite IRN99, which delivers the highest total capacity and the best oxidative stability of any available cation exchange resin. This revolutionary highly cross-linked gel cation resin is combined in a 1 to 1 equivalent ratio with the proven anion exchange resin, Amberlite IRN78, to make Amberlite IRN170. This new mixed bed is now the resin of choice for nuclear applications which demand the highest effluent purity, highest operating capacity, and longest resin life.

Amberlite IRN170 was originally developed for use in BWR condensate polishers to help achieve the lowest possible sulfate levels in reactor water. This is accomplished through a combination of the extraordinary oxidative stability of the cation resin, and a particle size balance between the cation and anion resins, which minimizes the formation of a re-separated cation resin

layer on the bottom of the service vessels. The purchase of Amberlite IRN170 as a pre-mixed resin also allows for faster initial rinse-up prior to service, which minimizes rinse waste water volume.

The exceptionally high total capacity of Amberlite IRN170 delivers an important benefit, for many other nuclear applications including PWR steam generator blowdown treatment, PWR primary system CVCS resin beds, fuel pool demineralizers, and radioactive waste treatment. Since the nuclear grade resins from all these applications are generally disposed of as rad waste, high capacity and long resin bed life are critical to minimizing rad waste disposal cost and volume. For most users, rad waste disposal cost will exceed resin purchase cost, so higher resin capacity directly translates into lower costs in these non-regenerable nuclear applications. Longer bed life also brings significant operational benefits such as fewer bed change-outs, less resin handling, and fewer chances for radiation exposure.

PROPERTIES

Matrix _____
Functional Groups _____
Physical Form _____
Chemical Form _____
Shipping Weight _____
Retained on 20 mesh (850 μm) _____
Through 50 mesh (300 μm) _____
Friability Average _____
Friability > 200 g/bead _____
Na _____
Al _____
Fe _____
Cu _____
Heavy Metals as Pb _____

Polystyrene divinylbenzene copolymer
Sulfonic Acid / Quaternary ammonium
Mixture of dark and light amber translucent beads
1 to 1 equivalent mixture of H⁺ and OH⁻ form resins
43 lb/ft³ (690 g/L)
5.0 % maximum
0.1 % maximum
350 g/bead minimum
95% minimum
50 mg/kg dry, maximum
50 mg/kg dry, maximum
50 mg/kg dry, maximum
10 mg/kg dry, maximum
10 mg/kg dry, maximum

Component Resin Properties _____
Total Capacity _____
Moisture Content _____
% Regenerated Sites _____
% Cl form sites _____

Cation Resin
2.4 meq/ml, minimum
37 to 43 %
99% H, minimum
-

Anion Resin
1.1 meq/ml, minimum
54 to 60 %
95% OH, minimum
0.1%, maximum

SUGGESTED OPERATING CONDITIONS

Operating Temperature _____
Minimum Bed Depth _____
Service Flow Rate for Condensate Polishing (LV) _____
Service Flow Rate Other Applications (SV) _____

60 to 140° F (15 to 60 °C)
36 inches
50 gpm/ft² maximum
1 to 6 gpm/ft³ (8 to 50 BV/h)

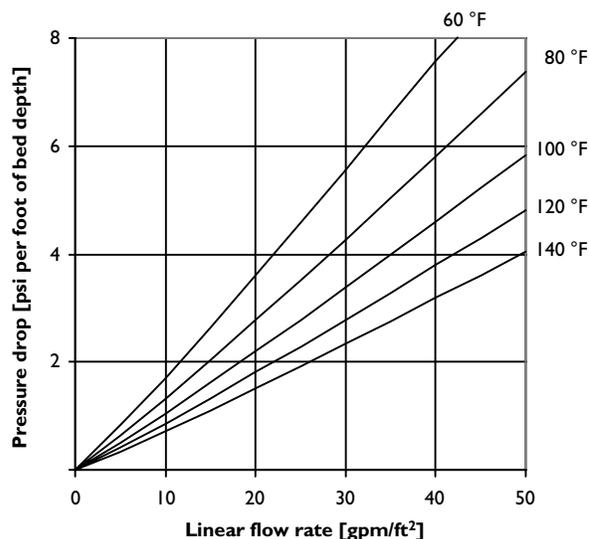
HYDRAULIC CHARACTERISTICS

The figure shows the pressure drop data for Amberlite IRN170 resin, as a function of service flow rate and water temperature. Pressure drop data are for clean beds which have not accumulated solids during the service run. If the bed accumulates solids, the pressure drop would increase.

LIMITS OF USE

Amberlite IRN170 is suitable for industrial uses. For other specific applications such as pharmaceutical, food processing or potable water applications, it is recommended that all potential users seek advice from Rohm and Haas in order to determine the best resin choice and optimum operating conditions.

Amberlite IRN170 Pressure Drop



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Ion exchange resins and polymeric adsorbents, as produced, contain by-products resulting from the manufacturing process. The user must determine the extent to which organic by-products must be removed for any particular use and establish techniques to assure that the appropriate level of purity is achieved for that use. The user must ensure compliance with all prudent safety standards and regulatory requirements governing the application. Except where specifically otherwise stated, Rohm and Haas Company does not recommend its ion exchange resins or polymeric adsorbents, as supplied, as being suitable or appropriately pure for any particular use. Consult your Rohm and Haas technical representative for further information. Acidic and basic regenerant solutions are corrosive and should be handled in a manner that will prevent eye and skin contact. Nitric acid and other strong oxidising agents can cause explosive type reactions when mixed with Ion Exchange resins. Proper design of process equipment to prevent rapid buildup of pressure is necessary if use of an oxidising agent such as nitric acid is contemplated. Before using strong oxidising agents in contact with Ion Exchange Resins, consult sources knowledgeable in the handling of these materials.

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