

## PRELIMINARY PRODUCT DATA SHEET

# AMBERJET™ 9000 OH

## Macroreticular Strong Base Anion Exchange Resin

AMBERJET 9000 OH resin is a uniform particle size, MR type, strong base anion exchange resin specifically designed for use in regenerable mixed bed condensate demineralizer systems. Amberjet 9000 OH resin now combines a proven MR (macroreticular) structure with the hydraulic and kinetic benefits of uniform particle size to deliver the best possible condensate polishing performance and resin life in both PWR nuclear and high pressure fossil power plants. One of the most critical parameters for an anion exchange resin in mixed bed polishing applications is fast kinetics for sulfate removal. In condensate polishing plants the anion resin is often exposed to materials which can foul the resin surface and dramatically reduce its capability to remove sulfate at high flow rates. In many power stations, loss of sulfate mass transfer kinetics is the most frequent cause of water chemistry problems, and the leading

cause of polisher resin replacement. As compared to gel type uniform size anion resins which are commonly used, the unique MR structure of Amberjet 9000 OH resin is specifically designed to provide improved resistance to surface fouling and the resulting loss of sulfate mass transfer coefficient.

Amberjet 9000 OH resin is best paired with Amberjet 1600 H resin, for the ultimate in polisher performance. Amberjet 1600 H resin is a highly crosslinked uniform size gel cation exchange resin with exceptional resistance to release of polystyrene sulfonate leachables, which can foul anion resins. The combination of a low leachables cation resin, with a fouling resistant anion resin delivers the lowest possible sulfate levels in steam generators and the longest possible resin life. This is especially critical in PWR plants where organic amines are used.

## PROPERTIES

|                                                     |                                                 |
|-----------------------------------------------------|-------------------------------------------------|
| Physical Form _____                                 | Light tan opaque spherical beads                |
| Matrix _____                                        | Macroreticular styrene-divinylbenzene copolymer |
| Functional Group _____                              | Quaternary ammonium                             |
| Conversion to OH form <sup>[1]</sup> _____          | 93% minimum                                     |
| Total Exchange Capacity <sup>[1]</sup> _____        | 0.80 meq/ml minimum (OH form)                   |
| Moisture Holding Capacity <sup>[1]</sup> _____      | 66 to 75% (OH form)                             |
| Shipping Weight _____                               | 41.2 lb/ft <sup>3</sup> (660 g/L)               |
| Particle size                                       |                                                 |
| Uniformity Coefficient _____                        | 1.25 maximum                                    |
| Harmonic Mean Size _____                            | 0.58 to 0.70 mm                                 |
| Retained on 20 mesh (0.850 mm) <sup>[1]</sup> _____ | 5% maximum                                      |
| Through 45 mesh (0.425 mm) <sup>[1]</sup> _____     | 1% maximum                                      |

<sup>[1]</sup> Contractual value

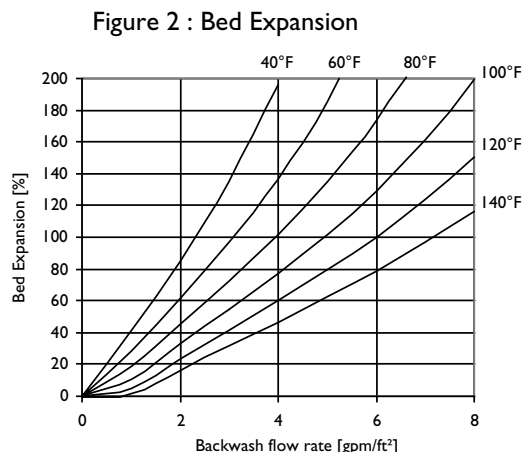
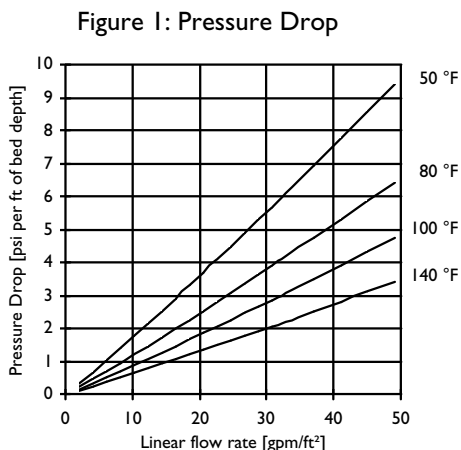
## SUGGESTED OPERATING CONDITIONS

|                                                      |                                                                                                                                                                                    |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Operating Temperature _____                  | 60 to 140° F (15 to 60 °C)                                                                                                                                                         |
| Service Flow Rate (Linear Velocity) _____            | 50 gpm/ft <sup>2</sup> , maximum                                                                                                                                                   |
| Regeneration                                         |                                                                                                                                                                                    |
| Regenerant _____                                     | NaOH                                                                                                                                                                               |
| Level (100% basis) _____                             | 8 to 15 lbs/ft <sup>3</sup>                                                                                                                                                        |
| Flow Rate _____                                      | 0.25 to 0.5 gpm/ft <sup>3</sup>                                                                                                                                                    |
| Concentration _____                                  | 4 to 6%                                                                                                                                                                            |
| Slow Rinse Volume (at regeneration flow rate) _____  | 8 to 15 gal/ft <sup>3</sup>                                                                                                                                                        |
| Fast Rinse _____                                     | 30 to 60 gal/ft <sup>3</sup>                                                                                                                                                       |
| Transfer of Mixed Beds in Condensate Polishers _____ | Take steps to minimize re-separation of mixed beds, including minimizing the volume of free water or transfer water used. A remix is recommended in the service vessel before use. |

## HYDRAULIC CHARACTERISTICS

Figure 1 shows the pressure drop data for AMBERJET 9000 OH resin, as a function of service flow rate and water temperature. Pressure drop data are for clean, classified beds which have not accumulated solids during the service run. If the bed accumulates solids, the

pressure drop would increase. The pressure drop of a mixed bed can be approximated by summing the component pressure drops. Figure 2 shows the bed expansion of AMBERJET 9000 OH resin, as a function of backwash flow rate and water temperature.



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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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