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ROHM AND HAAS | Ion Exchange Resins

PRODUCT DATA SHEET

AMBERJET™ 1600 H

Industrial Grade High Capacity Gel Cation Exchange Resin

AMBERJET 1600 H resin is a uniform particle size, gel type, strong acid cation exchange resin with a combination of very high capacity and stability that enables a completely new level of performance in ion exchange applications. It is intended for use in separable mixed bed systems which demand the ultimate in effluent purity, operating capacity, and resin life.

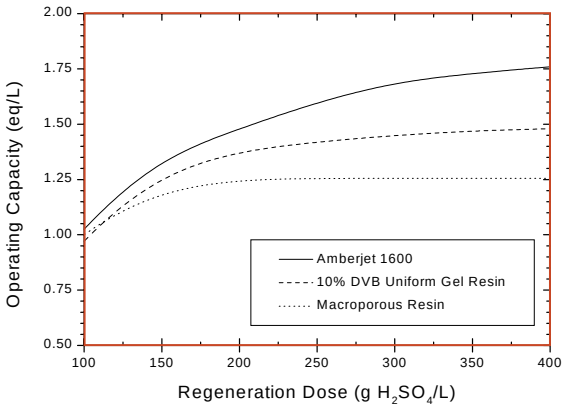
With a total capacity near **2.5 eq/L** in the H^+ form, AMBERJET 1600 H resin is especially well suited for condensate polishing in PWR nuclear or high pressure fossil electric generating plants. In this application, cation resin capacity controls the cycle throughput of the beds, and therefore the regeneration frequency. AMBERJET 1600 H resin can extend the hydrogen cycle run length by as much as 20% beyond any currently available resin, and this proportionally reduces the number of regenerations and effort needed to operate the condensate polishing plant. The exceptionally good backwash separation characteristics of AMBERJET 1600 H resin further simplify the regeneration process.

Due to its very high level of DVB crosslinker, AMBERJET 1600 H resin possesses the best physical stability and oxidative stability of any commercially available cation resin, either gel or macroporous. This allows for maximum useful life of the cation resin, while at the same time minimising the release of organic sulfonate leachables.

The low leachables characteristic of AMBERJET 1600 H resin helps to preserve the kinetic response of the anion exchange resin in the mixed bed, thus allowing for reduced levels of sulphate in the steam generator or boiler, which is especially critical in PWR plants where organic amines are used.

HIGH OPERATING CAPACITY

Figure 1 shows the expected hydrogen cycle operating capacity for AMBERJET 1600 H resin compared to other cation resins which have been widely used in condensate polishing applications. Due to its exceptionally high available capacity, the operating capacity of AMBERJET 1600 H resin increases dramatically compared to conventional cation resins, when more regenerant acid is applied.



PROPERTIES

Physical form	Dark amber translucent spherical beads
Matrix	Polystyrene divinylbenzene copolymer
Functional group	Sulfonic acid
Ionic form as shipped	H^+ form
Conversion to H^+ form [1]	99 % minimum
Total exchange capacity [1]	≥ 2.40 eq/L (H^+ form)
Moisture holding capacity [1]	37 to 43 % (H^+ form)
Shipping weight	840 g/L
Specific gravity	1.28 (H^+ form)
Particle size	
Uniformity coefficient [1]	≤ 1.2
Harmonic mean size [1]	0.60 to 0.70 mm
< 0.425 mm [1]	0.5% max
Maximum reversible swelling	$Na^+ \rightarrow H^+ \leq 4$ %

[1] *Contractual value*

Test methods are available on request.

SUGGESTED OPERATING CONDITIONS

Maximum operation temperature	135 °C
Minimum bed depth	800 mm
Service flow rate (Linear Velocity)	10 to 120 BV*/h
Regeneration	
Regenerant	**H_2SO_4 or HCl**
Level (100% basis)	120 to 320 g/L
Concentration	4 to 8 %
Minimum contact time	30 minutes
Slow rinse volume	1 to 2 BV at regeneration flow rate
Fast rinse	4 to 8 BV

** 1 BV (Bed Volume) = 1 m^3 solution per m^3 resin*

Transfer of mixed beds in condensate polishers: Take steps to minimise re-separation of mixed beds, including minimising the volume of free water or transfer water used. A remix is recommended in the service vessel before use.

HYDRAULIC CHARACTERISTICS

Figure 2 shows the bed expansion of AMBERJET 1600 H resin, as a function of backwash flow rate and water temperature. Figure 3 shows the pressure drop data for AMBERJET 1600 H 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: Bed Expansion

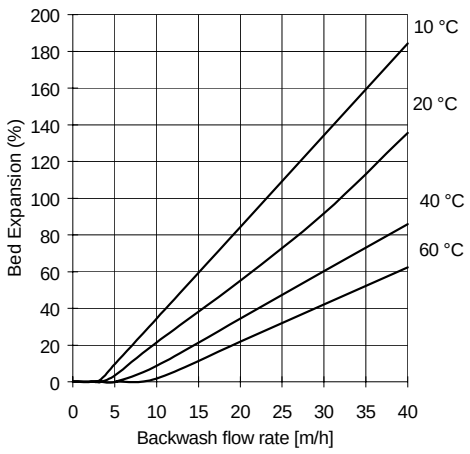
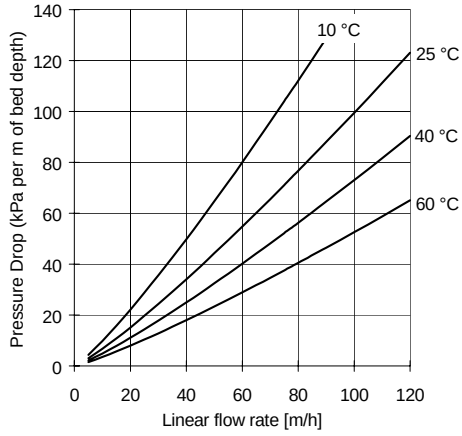


Figure 3 : Pressure Drop



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