

AMBERJET™ 4500 (OH)

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

Description

AMBERJET 4500 OH is a uniform particle size, gel type 1 strong base anion exchange resin. Due to its uniform particle size distribution, AMBERJET 4500 OH has an excellent rinse performance and outstanding physical stability, illustrated by its very high bead integrity, resistance to osmotic shock and mechanical stress.

The resin is delivered in the fully regenerated OH⁻ form which makes it particularly suitable for use in applications where initial regeneration is not feasible or not desired. This includes condensate polishing, where the high capacity and outstanding stability of AMBERJET 4500 OH make it an excellent choice as a combination with AMBERJET 1600 H or AMBERJET 1500 H strong acid cation resins in mixed beds. The combination of these high capacity, uniform particle size resins will result in long service runs with excellent treated water quality and minimal pressure drop.

Typical Properties

Physical form		White to amber uniform translucent spherical beads
Matrix		Styrene-DVB gel
		Anion resin
Functional group		Quaternary amine
Ionic form as shipped		OH⁻ form
Total exchange capacity, min. ^[2]	eq/L kgr/ft ³ as CaCO ₃	1.1 24.0
Moisture retention capacity ^[1]	%	55–65
Bead size distribution†		
Mean particle size ^[1]	μm	590 ± 50
Uniformity coefficient, max. ^[1]		1.1
> 850 μm, max. ^[1]	%	5
< 300 μm, max. ^[1]	%	0.5
Whole uncracked beads, min.	%	95
Crush strength Average, min. > 200 g/bead, min.	g/bead %	350 95
Ionic conversion ^[1] OH ⁻ Cl ⁻ CO ₃ ⁻	% % %	94 min. 0.5 max 6 max
Trace metals, dry resin, max. ^[1]	ppm	Na(50); Fe(80); Cu(40); Al(40); Heavy metals [as Pb](20)
Total swelling (Cl ⁻ → OH ⁻)	%	25

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Particle density	g/mL	1.08
Shipping weight**	g/L lbs/ft ³	657 41

[1] Contractual value

[2] Average value calculated from statistical quality control

Test methods are available on request.

† For additional particle size information, please refer to Particle Size Distribution Cross Reference Chart (Form No. 177-01775).

**As per the backwashed and settled density of the resin, determined by ASTM D-2187

Suggested Operating Conditions

Maximum operating temperature OH ⁻ form Cl ⁻ form	60°C (140°F) 100°C (212°F)
pH range	0–14
Bed depth, min.	450 mm (1.5 ft)
Flow rates: Service/fast rinse Service/condensate polishing Backwash Co-current regeneration/displacement rinse	5–60 m/h (2–24 gpm/ft ²) 40–150 m/h (16–60 gpm/ft ²) See figure 1 1–10 m/h (0.4–4 gpm/ft ²)
Total rinse requirement	2–5 BV*
Regenerant: Type Temperature	4–8% NaOH Ambient or up to 60°C (140°F) for silica removal

*1 BV (Bed Volume) = 1 m³ solution per m³ resin or 7.5 gals per ft³ resin

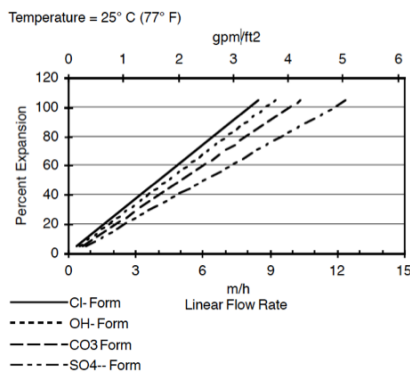
Packaging

25 liter bags or 5 cubic feet fiber drums

Hydraulic Characteristics

Figure 1 shows the bed expansion of AMBERJET 4500 OH as a function of backwash flow rate and water temperature. Figure 2 shows the pressure drop data for AMBERJET 4500 OH as a function of service flow rate and water temperature. Pressure drop data are valid at the start of the service run with clear water and a correctly classified bed.

Figure 1. Backwash Expansion Data

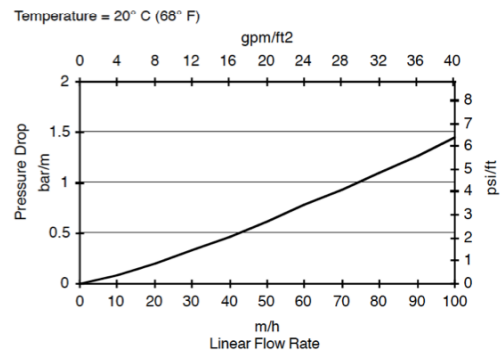


For other temperatures use:

$$F_T = F_{77°F} [1 + 0.008 (T_{°F} - 77)], \text{ where } F = \text{gpm/ft}^2$$

$$F_T = F_{25°C} [1 + 0.008 (1.8T_{°C} - 45)], \text{ where } F = \text{m/h}$$

Figure 2. Pressure Drop Data



For other temperatures use:

$$P_T = P_{20°C} / (0.026 T_{°C} + 0.48), \text{ where } P = \text{bar/m}$$

$$P_T = P_{68°F} / (0.014 T_{°F} + 0.05), \text{ where } P = \text{psi/ft}$$

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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.

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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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