

## Aldex Strong Base Anion Series

# SB-1 Strong Base Anion Exchange Resin

Aldex SB-1 is a **high capacity shock resistant, strongly basic Type 1 gel anion resin** supplied in the **chloride form** as moist, uniform spherical beads. Aldex SB-1 is intended for use in all types of deionization systems and chemical processing applications.

## Physical Chemical Properties

Polymer Structure:	Styrene crosslinked with divinylbenzene
Functional group:	R-N-(CH <sub>3</sub> ) <sub>3</sub>
Ionic Form as Shipped:	Chloride
Physical Form:	Tough, Spherical beads
Screen Size:	16 to 50 mesh
+16 mesh	<2%
-40 mesh	<2%
-50 mesh	<1%
pH Range:	0 to 14
Moisture Content:	43 to 47%
Solubility	Insoluble
Shipping Weight:	44 lbs per cubic foot
Total Capacity Cl <sup>-</sup> Form:	1.4 meq/ml minimum
Specific Gravity:	1.09
Sphericity:	90+% minimum

## Recommended Operating Conditions

Maximum Temperature:	
Hydroxide Form	120°F
Chloride Form	170°F
Bed Depth:	24 inches
Service Flow Rate:	1 to 5 US GPM per cubic foot
Backwash Flow Rate:	50 to 75% bed expansion
Regenerant Strength:	2 to 6%
Regenerant Flow Rate:	0.25 to 1.0 US GPM per cubic foot
Regenerant Contact Time:	60 minutes minimum
Regenerant Dosage Level:	4 to 10 lbs per cubic foot
Slow Rinse (Displacement)	0.25 to 1.0 US GPM per cubic foot
Slow Rinse Volume:	10 to 15 gallons per cubic foot
Fast Rinse Rate:	2 to 4 US GPM per cubic foot
Fast Rinse Volume:	35 to 60 gallons per cubic foot

## SB-1 Features

### Very low color, taste or odor

Aldex SB-1 meets the requirements for paragraph 173.25 of the Food Additive Regulation of the U.S. Food and Drug Administration.

### High Capacity

The high total capacity of Aldex SB-1 allows greater capacity in applications where high levels of regeneration are used, or in one time use applications such as precious metal recovery and cartridge deionization.

### Long Life

Strong and durable beads insure long service life.

### Superior Physical Stability

Over 90% sphericity combined with high crush strengths and uniform particle size provide greater resistance to bead breakage due to mechanical, thermal or osmotic stresses.

### Potable Water

For potable water applications the resin must be properly pretreated, usually multiple exhaustion and regeneration cycles, to insure compliance with extractable levels.

## Safety Information

A material safety data sheet is available for Aldex SB-1. Copies can be obtained from Aldex Chemical Co., LTD. Aldex SB-1 is not a hazardous product and is not WHMIS controlled.

Caution: Acidic and basic regenerant solutions are corrosive and should be handled in a manner that will prevent eye and skin contact. Before using strong oxidizing agents in contact with ion exchange resin, consult sources knowledgeable in the handling of these materials.



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## Pressure Drop

The graph below shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.

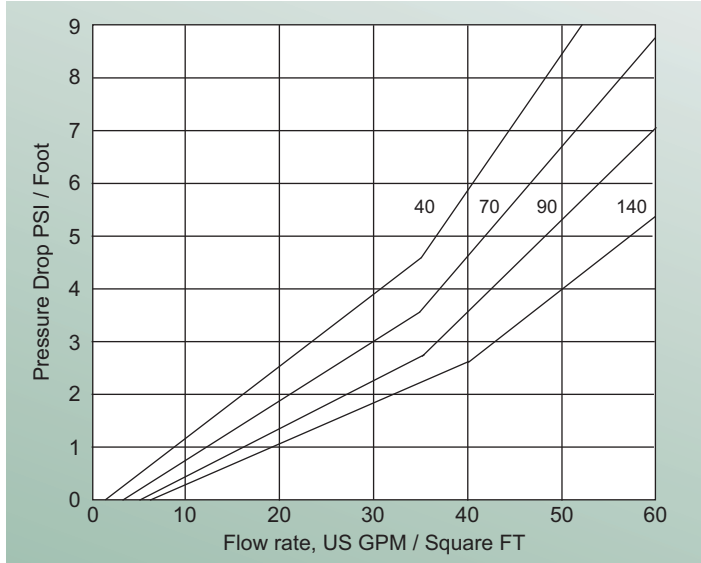


Fig. 1 Pressure Drop vs Flow Rate at various degrees Fahrenheit (F°)

## Backwash Characteristics

After each cycle the resin bed should be backwashed at a rate that expands the bed 50 to 75 percent. This will remove any foreign matter and reclassify the bed. Fig. 2 shows the expansion characteristics of Aldex SB-1 in the chloride form.

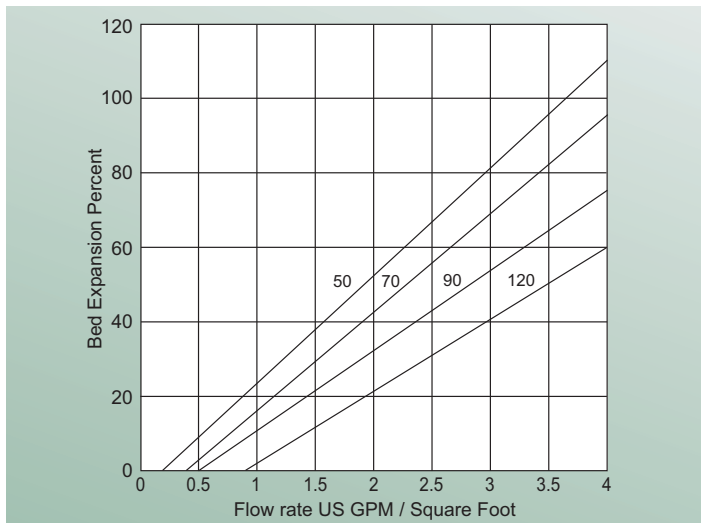


Fig. 2 Bed Expansion vs Flow Rate at various degrees Fahrenheit (F°)

## Operating Capacity

The operating capacity of Aldex SB-1 for acid removal at various regeneration levels when treating an influent with a concentration of 500 ppm, as CaCO<sub>3</sub> is shown in Fig. 3.

POUNDS NaOH per cubic foot	Capacity kilograins per cubic foot			
	HCl	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SiO <sub>3</sub>	H <sub>2</sub> CO <sub>3</sub>
4	11.3	14.0	14.7	18.6
6	12.8	16.3	17.3	19.8
8	14.3	13.3	19.5	21.6
10	15.5	20.0	22.2	22.2

Fig. 3 Operating Capacity for acid removal at various regeneration levels

## Applications

### Demineralization

Aldex SB-1 is highly recommended for use in multiple and mixed bed demineralizations, wherever complete ion removal and physical and osmotic stability are required.

The high total capacity of Aldex SB-1 makes it ideal for applications such as precious metal recovery, rad-water disposal and purification of toxic waste streams. The lower porosity also provides an increased resistance to osmotic and physical shock compared with more porous products such as Aldex SB-1P.

Type 1 anion exchangers have greater thermal and oxidation resistance than other types of strong base resins and can be operated at higher temperatures to insure low silica leakages. The lower porosity, high total capacity and Type 1 functionality of Aldex SB-1 make it the resin of choice where the water temperature is in excess of 85°F or where the combination of carbon dioxide plus silica exceed 40% of the total anion and where chlorides and organics represent only a small portion of the ions to be removed on a regeneration basis. At lower regeneration levels or where the removal and elution of organics is of concern Aldex SB-1P should be considered.

Aldex SB-1 and SB-1P are quite similar; the major difference between them being the degree of porosity. The choice between the two is not always clear cut. We suggest you consult our technical staff for specific recommendations.

### Desilicizers

Sometimes water supplied with low dissolved solids need only be treated for hardness and silica removal. C-800 operating in the sodium cycle followed by SB-1 operating in the hydrogen cycle is an effective way of providing low silica, and low hardness water for medium pressure boilers



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