Aldex Mixed Bed Series

MB-1 MP SC Mixed Bed Resin

*Aldex MB-1 MP SC is a **highly regenerated mixed bed of a Type 1 strong base, gel anion exchange resin** and a strong acid sulfonated polystyrene cation exchange resin, **designed to provide ultra-high purity water**. The special blend of Type 1 anion exchange resins with nuclear grade cation exchange resins ensure high resistance, low TOC extractables and excellent regenerable capacities for inorganic versus organic ions. Aldex MB-1 MP SC is provided in a 60:40 anion to cation ratio (by volume).*

Physical Chemical Properties

Polymer Structure:	Macroporous styrene divinylbenzene
Functional Group:	
Cation	Sulfonic Acid
Anion	Trimethylamine
Physical Form:	Spherical beads
Resin Color:	
Cation component	Tan to brown
Anion component	Yellow to brown
Ionic Form as Shipped:	Hydrogen / Hydroxide
Column Capacity:	>0.55 meq/mL
Volume Ratio:	
Cation	40%
Anion	60%
Moisture Content	51 to 68% maximum
Shipping Weight (approximate):	42 lbs per cubic foot
Screen Size:	16 to 50 mesh

Recommended Operating Conditions

Maximum Temperature (continuous):	140°F
Maximum Temperature (intermittent):	180°F
Bed Depth:	24 inches minimum
Backwash Flow Rate:	50 to 100% bed expansion
Pressure Loss:	25 psi maximum
pH Range:	2 to 12
Service Flow Rate:	
Working	1 to 5 US GPM per cubic foot
Polishing	3 to 15 US GPM per cubic foot

MB-1 MP SC Features

Very low color, taste or odor

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

Very Low TOC

Nonsolvent sulfonation and special manufacturing processes assure very low TOC leakage.

Superior Physical Stability

90% plus sphericity and high crush strengths together with a very uniform particle size provide greater resistance to bead breakage while maintaining low pressure drop.

Reliability

Aldex Chemical has over 40 years of field usage by thousands of customers demonstrate the reliability of Aldex ion exchange resins, zeolites and other water treatment media.

Safety Information

A material safety data sheet is available for Aldex MB-1 MP SC (SC). Copies can be obtained from Aldex Chemical Co., LTD. Aldex MB-1 MP SC 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.

Since 1976

ALDEX

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Pressure Drop

The graph below (Fig. 1) shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.

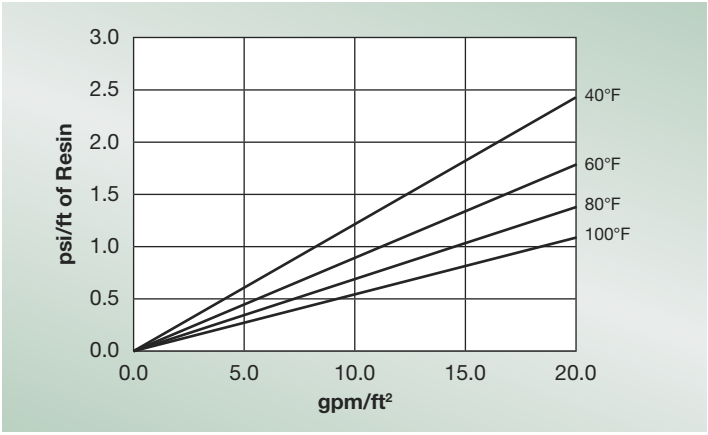

Fig. 1 Pressure Drop vs Flow Rate at various degrees Fahrenheit (F°)

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 MB-1 MP SC in the chloride form.

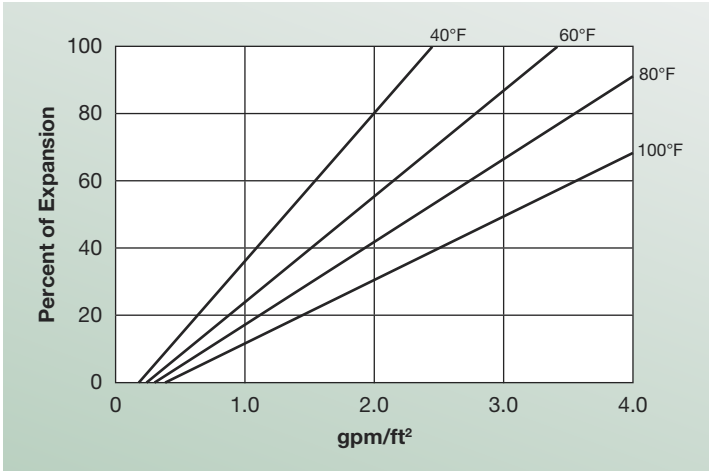

Fig. 2 Bed Expansion vs Flow Rate at various degrees Fahrenheit (F°)

Applications

Demineralization

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

The high total capacity of Aldex MB-1 MP SC makes it ideal for applications such as precious metal recovery, rad-water disposal and purification of toxic waste streams. The higher porosity also provides an increased resistance to osmotic and physical shock compared with its gel counterpart Aldex MB-1 SC.

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 ensure low silica leakages. The higher porosity, high total capacity and Type 1 functionality of Aldex MB-1 MP SC 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 MB-1 SC should be considered.

Aldex MB-1 MP SC and MB-1 SC are quite similar; the major difference between the two is the degree of porosity. The choice between them is not always clear cut. We suggest consulting our technical staff for specific recommendations.

Desilicizers

Sometimes water supplied with low dissolved solids need only be treated for hardness and silica removal. Aldex C-800 operating in the sodium cycle followed by Aldex MB-1 MP SC operating in the H^+ / OH^- cycle is an effective way of providing low silica, and low hardness water for medium pressure boilers.

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Applications *continued*

High Temperature

Reasonable life can be provided up to approximately 180º F. Both Aldex MB-1 MP SC (H+) and Aldex SB-1 MP SC (OH-) are the most thermally-stable resins available in the commercial market. They are able to operate well beyond temperature limits of other mixed bed resins.

Radwaste

Aldex MB-1 MP SC is ideally suited for radwaste applications requiring removal of radioactive anions, especially when the feed is highly radioactive. Due to its high cross-linked media, it has enhanced resistance to chemical damage caused by ionizing radiation. It is able to maintain its structural integrity up to 1 x 10^9 rads exposure.

Operating Capacity

The operating capacity of Aldex MB-1 MP SC is based on the anion component and is shown in Table 1. After first exhaustion and regeneration, the cycles will be shorter but that is dependant on how the resin is separated, regenerated and re-mixed. The data is based on the inlet conductivity of neutral pH waters, run to a 1 µS/cm end-point with sodium chloride (2.5 µS/cm/ppm as $CaCO_3$).

Conductivity µS/cm	No CO_2 or SiO_2	5 ppm CO_2 or SiO_2	10 ppm CO_2 or SiO_2
2/5	102,515	29,290	17,086
5/12.5	41,006	20,503	13,669
10/25	20,503	13,669	10,251
20/50	10,251	8,201	6,834
50/125	4,101	3,728	3,417
100/250	2,050	1,953	1,864
200/500	1025	1000	976
500/1,250	410	406	402
1,000/2,500	205	204	203

Table 1: Throughput Capacity at various ppm amounts.

Quality Assurance

Aldex MB-1 MP SC resin is tested by Aldex Chemical for resistivity, total organic carbon, and kinetic performance and will meet stringent UPW performance requirements on these most critical parameters. Aldex will fully support the quality and performance of Aldex MB-1 MP SC resin in UPW applications in order to assure full customer satisfaction with the product as delivered. Typical TOC and resistivity curves for Aldex MB-1 MP SC resin is shown in Fig. 3.

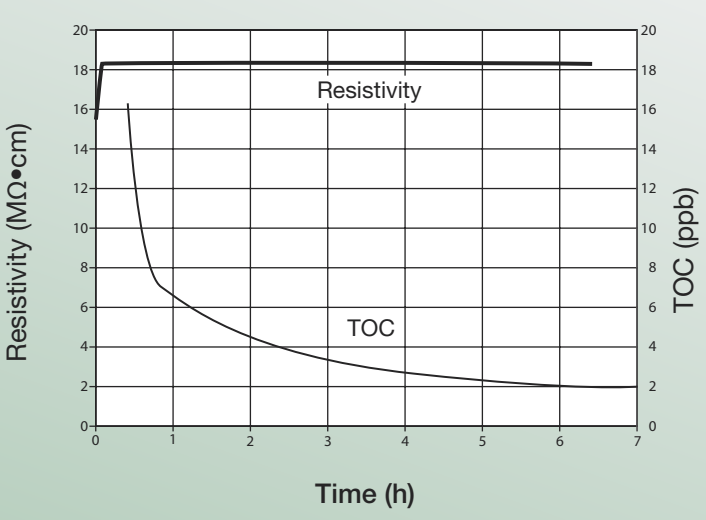

Fig. 3 Resistivity and TOC Rinse Performance

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