SOFTENING RESIN

PROSOFT™ ER10011-MP

ProSoft ER10011-MP (P/N ER10011-MP) is a premium grade, weak acid, macroporous, cation resin supplied in the hydrogen form (also available in the sodium form) as moist, tough, uniform, spherical beads. Its ion exchange functionality is derived from the carboxylic group, which is easily converted to the hydrogen form and has a high affinity for divalent ions. It is intended for use in hydrogen cycle dealkalization, deionization, and chemical processing applications.

FEATURES & BENEFITS

- **Metals Removal**—Useful as a scavenger for copper, nickel, hardness, and most multivalent ions.
- **Carboxylic functional groups**—Gives extremely high regeneration efficiencies and high operating capacities.
- **Highly uniform particle size**—16 to plus 50 mesh range; gives a lower pressure drop while maintaining superior kinetics.
- **Superior physical stability**—95% plus sphericity and low swelling together with a macroporous structure and a very uniform particle size provide greater resistance to bead breakage.

Applications

Softening—ER10011-MPcan be operated as a softener in the sodium cycle. This requires a two stage regeneration process using a strong acid first and then a neutralization rinse to put the resin into the sodium form. It is especially effective in high solids softening applications.

Metal Removal—ER10011-MP can be operated in the sodium or hydrogen cycle to remove heavy metals from waste streams with a pH above 5.5 in the absence of hardness. Operation in the sodium form provides a neutral pH effluent but requires a two stage regeneration as described above.

Dealkalization—Bicarbonate alkalinity associated with multivalent cations such as hardness can be effectively removed using ER10011-MP in the hydrogen form. When operated in this manner both hardness and alkalinity are removed. The reaction is limited by the amount of alkalinity and the ratio of hardness (multivalent cations) to alkalinity.

(See "Alkalinity" at the bottom of the reverse side of this page.)

Suggested Operating Conditions

Maximum Temperature	250° F
Minimum Bed Depth	30 inches
Service Flow Rate	2 to 5 gpm/cu.ft.
Backwash Rate	50 to 75% Bed Expansion
Regenerant Concentration	
HCl	5 to 10 percent
H_2SO_4	0.8 percent
Regenerant Flow Rate	0.3 to 0.75 gpm/cu.ft.
Regenerant Contact Time	At least 30 minutes
Regenerant Level	Depends on Alkalinity
Displacement Rinse Rate	Same as Regen Flow Rate
Displacement Rinse Volume	10 to 15 gal/cu.ft.
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	35 to 60 gal/cu.ft.

Typical Properties

Polymer Structure	Acrylic/Divinylbenzene
Functional Group	$R^-(COOH)^-$
Ionic Form, as shipped	Hydrogen or Sodium
Physical Form	Tough, Spherical Beads
Screen Size Distribution	16 to 50
+16 mesh (U.S. Std.)	< 10 percent
– 50 mesh (U.S. Std.)	< 1 percent
pH Range	0 to 14
Sphericity	90+ percent
Water Retention	
Hydrogen Form	46 to 56 percent
Sodium Form	57 to 67 percent
Solubility	Insoluble
Approximate Shipping Weight	
Hydrogen Form	47 lb/cu.ft.
Sodium Form	50 lb/cu.ft.
Swelling	
H^+ to Na^+	Approx. 80 percent
Ca^{+2} to Na^+	Approx. 30 percent
Total Capacity	
Hydrogen Form	> 3.8 meq/mL
Sodium Form	> 2.0 meq/mL

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FORM 1380
EFFECTIVE
APRIL 2014

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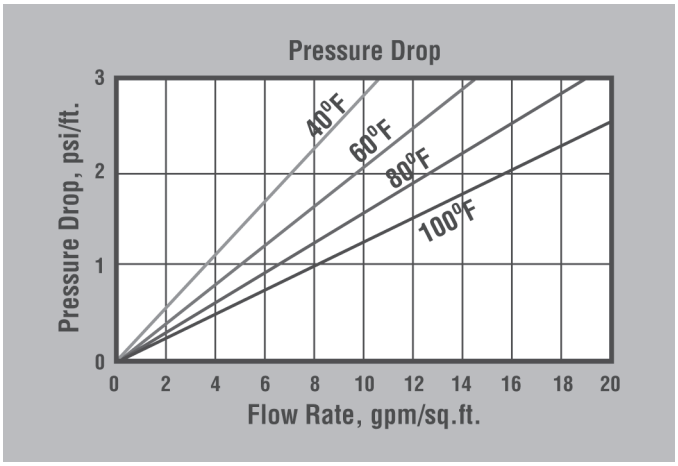
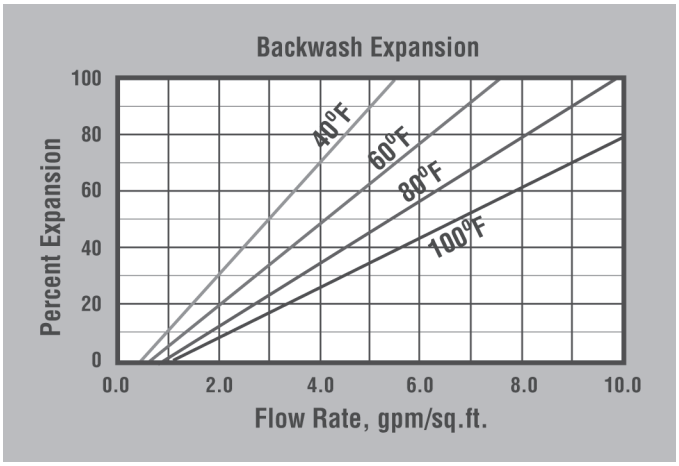
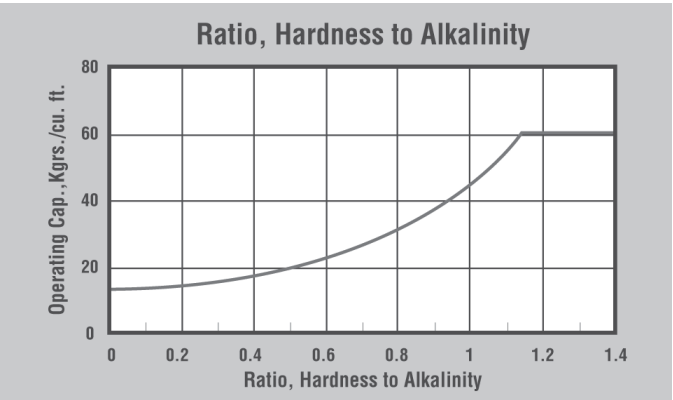


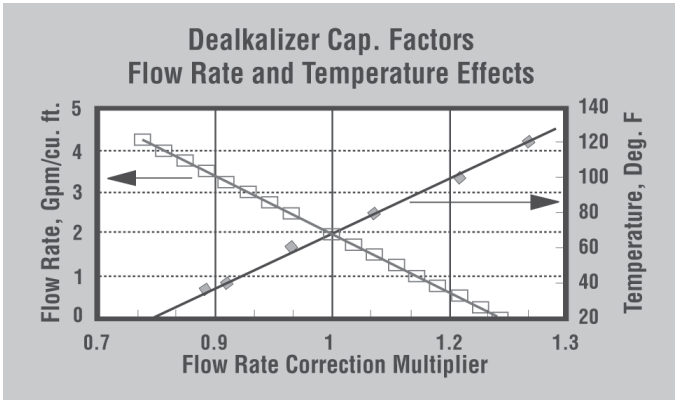


PRESSURE DROP — The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.

BACKWASH — 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.

ALKALINITY — These graphs show the base operating capacity according to the ratio of hardness to alkalinity and the effects of exhaustion flow rate and temperature. When the hardness to alkalinity ratio is greater than 1.0, ER10011-MP will produce some free mineral acidity during the first 10% of the service exchange. Alkalinity leakage will occur after approximately 60 to 70% of the run. The operating capacity is based on 10% alkalinity leakage at the end of the run.





CAUTION: DO NOT MIX ION EXCHANGE RESINS WITH STRONG OXIDIZING AGENTS. Nitric acid and other strong oxidizing agents can cause explosive reactions when mixed with organic materials such as ion exchange resins.

Note: These suggestions and data are based on information we believe to be reliable. However, we do not make any guarantee or warranty. We caution against using these products in any unsafe manner or in violation of any patents. Further, we assume no liability for the consequences of any such actions.

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