RESINTECH INC.
INNOVATIONS IN ION EXCHANGE

SBMP1-UPS

ANION EXCHANGE RESINN TYPE 1 MACROPOROUS CI OR OH FORM

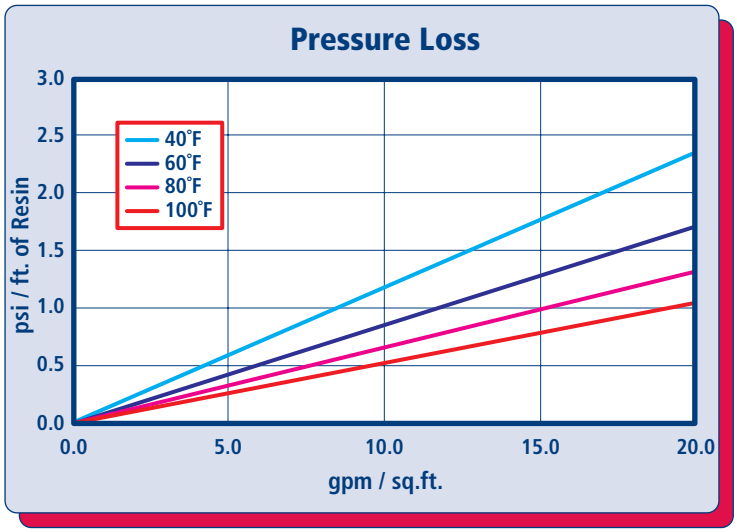
RESINTECH SBMP1-UPS is a narrowly graded chloride form type 1 macroporous strong base anion resin. *SBMP1-UPS* is a uniform particle size resin which results in increased void space and lower coefficient of drag. *RESINTECH SBMP1-UPS* is intended for use where resin uniformity is an important attribute to help reduce pressure loss or prevent strainer plugging. *SBMP1-UPS* is supplied in the chloride form or can be special ordered in the hydroxide form (when ordered as *SBMP1-OH-UPS*).

FEATURES & BENEFITS

- **HIGHLY UNIFORM PARTICLE SIZE**
  20 to 40 mesh size, provides low pressure drop and superior kinetics
- **MACROPOROUS STRUCTURE**
  Gives greatly increased life in stressful applications where resin degradation due to thermal and oxidative effects is anticipated
- **SUPERIOR PHYSICAL STABILITY**
  98% plus sphericity and high crush strengths together with carefully controlled particle distribution provides long life and low pressure drop
- **COMPLIES WITH US FDA REGULATIONS**
  Conforms to paragraph 21CFR173.25 of the Food Additives Regulations of the US FDA

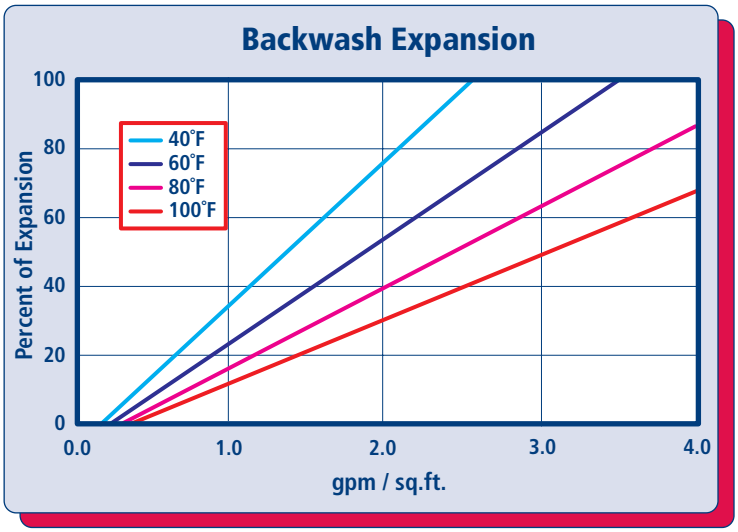
Prior to first use, resin should be backwashed for a minimum of 20 minutes, followed by 10 bed volumes of downflow rinse.

HYDRAULIC PROPERTIES



PRESSURE LOSS

The graph above shows the expected pressure loss of *ResinTech SBMP1-UPS* per foot of bed depth as a function of flow rate at various temperatures.



BACKWASH

The graph above shows the expansion characteristics of *ResinTech SBMP1-UPS* as a function of flow rate at various temperatures.

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RESINTECH® SBMP1-UPS

PHYSICAL PROPERTIES

Polymer Structure	Styrene/DVB
Polymer Type	Macroporous
Functional Group	Trimethylamine
Physical Form	Spherical beads
Ionic Form as shipped	Chloride or Hydroxide
Total Capacity	
Hydroxide form	>0.9 meq/mL
Chloride form	>1.1 meq/mL
Water Retention	
Hydroxide form	64 to 73 percent
Chloride form	56 to 60 percent
Approximate Shipping Weight	
Hydroxide form	40 lbs./cu.ft.
Chloride form	42 lbs./cu.ft.
Swelling, Cl to OH	18 to 25 percent
Screen Size Distribution (U.S. mesh)	20 to 40
Maximum Fines Content (<50 mesh)	0.5 percent
Minimum Sphericity	98 percent
Uniformity Coefficient	1.25 approx.
Resin Color	Tan to brown

Note: Physical properties can be certified on a per lot basis, available upon request

SUGGESTED OPERATING CONDITIONS

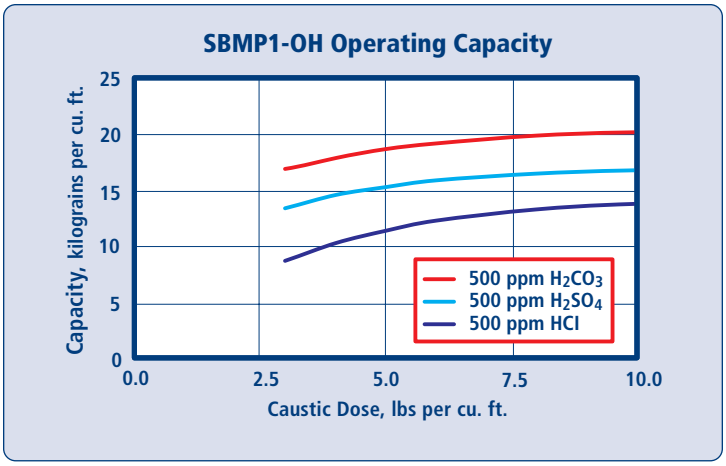
Maximum continuous temperature	
Hydroxide form	140˚F
Chloride form	170˚F
Minimum bed depth	24 inches
Backwash expansion	25 to 50 percent
Maximum pressure loss	20 psi
Operating pH range	0 to 14 SU
Regenerant Concentration	
Hydroxide cycle	2 to 6 percent NaOH
Salt cycle	2 to 10 percent NaCl
Regenerant level	4 to 10 lbs./cu.ft.
Regenerant flow rate	0.25 to 1.0 gpm/cu.ft.
Regenerant contact time	>40 minutes
Displacement flow rate	Same as dilution water
Displacement volume	10 to 15 gallons/cu.ft.
Rinse flow rate	Same as service flow
Rinse volume	35 to 60 gallons/cu.ft.
Service flow rate	1 to 10 gpm/cu.ft.

Note: These guidelines describe average low risk operating conditions. They are not intended to be absolute minimums or maximums.
For operation outside these guidelines, contact ResinTech Technical Support

APPLICATIONS

DEMINERALIZATION

RESINTECH SBMP1-OH-UPS can be used as the anion component in a variety of demineralization applications where a hydroxide form anion resin is coupled with a hydrogen form cation resin and the highest possible durability is desired. SBMP1-OH-UPS is ideal for high flow rate polishers and where high resistance to mechanical, thermal, and oxidative stresses is required.



Capacity based on 500 ppm of stated acid (as $CaCO_3$). Capacity based on 36 inch deep bed depth, flow rate of 2 to 4 gpm per cu. ft. and greater than 40 minute caustic injection time. No engineering downgrade has been applied.

PACKED BEDS

RESINTECH SBMP1-UPS has a very narrow particle size range. The uniformity allows a slightly smaller bead size to be used which results in faster exchange of ions, more efficient regeneration and lower leakage. SBMP1-UPS is ideal for packed beds and other types of countercurrent ion exchangers where consistent operation is important cycle after cycle. Higher void space and minimal fine mesh beads provides low pressure loss and helps prevents channeling and other distribution problems. Packed beds typically have limited freeboard (only a few inches with the resin in the swollen form).