

RESINTECH SIR-100-HP is a strong base anion exchange resin supplied in the chloride form as moist, tough, uniform spherical beads. It is especially useful in nitrate removal applications due to its ability to remove nitrates preferentially in the presence of sulfates and other divalent ions. The use of *RESINTECH SIR-100-HP* eliminates nitrate dumping and retains a greater degree of its operating capacity in the presence of high levels of sulfates where standard anion resins such as ResinTech SBG1, SBG1P, or SBG2, would suffer loss in operating efficiencies and exhibit nitrate dumping in the presence of sulfates.

**RESINTECH SIR-100-HP* is also intended for use in applications involving monovalent and divalent ions where the monovalent ion must be removed preferentially, such as in removing perchlorates from ground waters.

FEATURES & BENEFITS

- **HIGHEST OPERATING CAPACITY OF ANY NITRATE SELECTIVE RESIN**

The unique amine functional group has been optimized to retain the highest operating capacity for a selective resin.

- **NSF/ANSI 61 CERTIFIED FOR MATERIAL SAFETY**



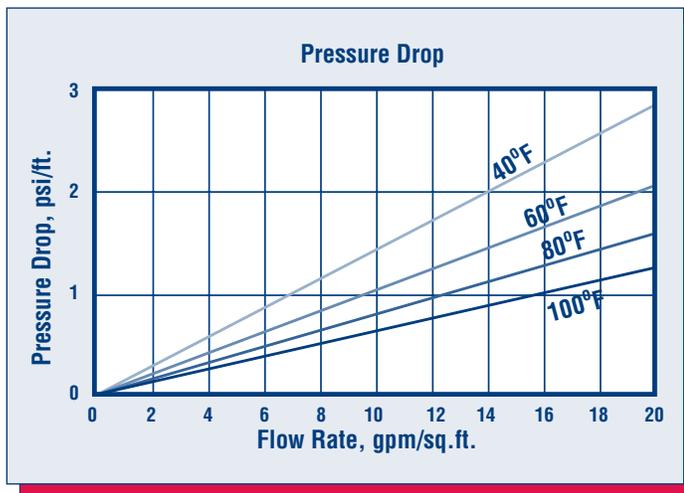
- **HIGHLY UNIFORM PARTICLE SIZE, LOW PRESSURE DROP**

16 to plus 50 mesh range; giving a LOWER PRESSURE DROP while maintaining SUPERIOR KINETICS.

- **SUPERIOR PHYSICAL STABILITY**

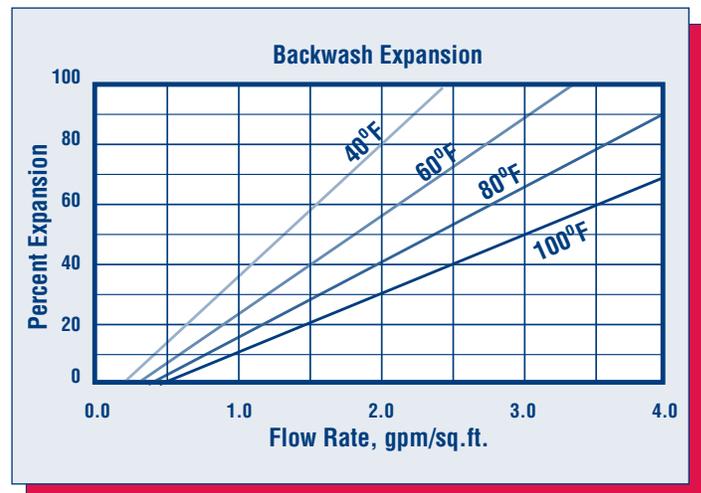
93 percent plus sphericity and high crush strengths together with a very uniform particle size provide greater resistance to bead breakage.

HYDRAULIC PROPERTIES



PRESSURE DROP

The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various water 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 or fines and reclassify the bed.

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RESINTECH® SIR-100-HP

TYPICAL PROPERTIES

| | |
|-----------------------------|---|
| Polymer Structure | Styrene with DVB |
| Functional Group | R-N-R ₃ ⁺ Cl ⁻ |
| Ionic Form, as shipped | Chloride |
| Physical Form | Tough, Spherical Beads |
| Screen Size Distribution | 16 -50 Nominal |
| +16 mesh (U.S. Std) | Less than 5 percent |
| - 40 mesh " " | Less than 2 percent |
| - 50 mesh " " | Less than 1 percent |
| pH Range | 0 to 14 |
| Water Retention | |
| Chloride Form | 52 to 60 percent |
| Solubility | Insoluble |
| Approximate Shipping Weight | |
| Chloride Form | 42 lbs./cu. ft. |
| Swelling Cl- to OH- Form | Approx. 12 percent |
| Total Capacity | 0.85 meq / mL |

SUGGESTED OPERATING CONDITIONS

| | |
|---------------------------|------------------------------|
| Maximum Temperature | |
| Salt form | 170°F |
| Minimum Bed Depth | 24 inches |
| Backwash Rate | 50 to 75 % Bed Expansion |
| Regenerant Concentration* | 4 percent |
| Regenerant Flow Rate | 0.25 to 1.0 gpm / cu. ft. |
| Regenerant Contact Time | At least 30 Minutes |
| Regenerant Level | 2 to 15 pounds / cu. ft. |
| Displacement Rinse Rate | Same as Regenerant Flow Rate |
| Displacement Rinse Volume | 10 to 15 Gallons / cu. ft. |
| Fast Rinse Rate | Same as Service Flow Rate |
| Fast Rinse Volume | 35 to 60 gal. / cu. ft. |
| Service Flow Rate | 2 to 4 gpm / cu. ft. |

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OPERATING CAPACITY

The operating capacity of *RESINTECH SIR-100-HP* for nitrate removal at various regeneration levels when treating an influent with a concentration of 500 ppm, as CaCO₃, is shown in the following table:

| Pounds of NaCl per cu.ft. | Capacity, Kgrs./cu.ft. as CaCO ₃ | | | |
|---------------------------|--|------|------|-----|
| | Water Analyses: Cl ⁻ /HCO ₃ = 1:1 NO ₃ = 100ppm as CaCO ₃ | | | |
| | Percent Sulfate | | | |
| | 0 | 25 | 50 | 75 |
| 5 | 9.2 | 8.4 | 7.7 | 7.1 |
| 10 | 11.2 | 10.2 | 9.4 | 8.7 |
| 15 | 12.1 | 11.0 | 10.1 | 9.4 |
| 20 | 12.6 | 11.5 | 10.5 | 9.8 |

APPLICATIONS

The unique functional group gives *RESINTECH SIR-100-HP* over 25 times greater affinity for absorbing monovalent ions against multivalent ions than standard Type 1 or Type 2 strong base anion resins at 500 ppm TDS.

Nitrate Removal from Potable Waters -

RESINTECH SIR-100-HP removes nitrates efficiently with low leakage. Its unique amine functional group eliminates the possibility of nitrate dumping, which can occur with other standard types of resins. Also, *RESINTECH SIR-100-HP* meets potable water requirements for all major European agencies.

Perchlorate in ground waters has been identified as a nuisance and potential health hazard. The perchlorate ion is so strongly attracted to anion exchange resins that in some cases it makes regeneration impractical. However, perchlorate concentration is usually so low that multivalent ions such as sulfate can dramatically reduce the loading for perchlorate by normal resins. *RESINTECH SIR-100-HP* can be used in these applications to maintain high loading and favorable economics. When used in conjunction with other exchangers it can become part of a superior process offering a high kinetic rate to make otherwise slow processes operate at a faster rate.

Chemical Processing and Resource Recovery -

RESINTECH SIR-100-HP can be used to remove certain monovalent ions like nitrates, bromides, iodides, etc. from streams containing multivalent ions. Consult your ResinTech technical representative for recommendations for specific applications.

***CAUTION:DO NOT MIX ION EXCHANGE RESIN 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.

Material Safety Data Sheets (MSDS) are available for all ResinTech Inc. products. To obtain a copy, contact your local ResinTech sales representative or our corporate headquarters. They contain important health and safety information. That information may be needed to protect your employees and customers from any known health and safety hazards associated with our products. We recommend that you secure and study the pertinent MSDS for our products and any other products being used. These suggestions and data are based on information we believe to be reliable. They are offered in good faith. However we do not make any guarantee or warranty. We caution against using these products in an unsafe manner or in violation of any patents; further we assume no liability for the consequences of any such actions.

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SIR-100-HPserv091704