SIR-150

Grade: Standard

Borate selective, weak base anion resin, styrenic/DVB macroporous, free base form

ResinTech SIR-150 is a borate selective macroporous chelating weak base anion resin. Its unique functionality provides exceedingly high selectivity for boron in almost any aqueous solution, yet can be regenerated with acid and then neutralized with various alkaline salts prior to reuse. SIR-150 is intended for all borate removal applications including potable water, agriculture, ultrapure water, and boron removal from concentrated brines.

FEATURES & BENEFITS

- Highly Selective For Boron
- Suitable For Regenerable Applications
- Superior Physical Stability
- Controlled Particle Size

APPLICATIONS

- Boron Removal
- Cartridge Applications
- Groundwater
- Potable Water

PHYSICAL PROPERTIES

Polymer Matrix	Styrene/DVB
Polymer Type	Macroporous
Ionic Form (as shipped)	Free Base (FB)
Functional Group	Methylglucamine
Physical Form	Spherical Beads
Uniformity Coefficient	1.60
Particle Size	16-50 US mesh (297-1190µm)
< 50 mesh (300 µm) %	< 1
Minimum Sphericity (%)	95
Reversible Swelling	10 to 15% (Free Base → Cl)
Capacity (meq/mL)	0.60
Moisture Retention (%)	46 to 60
Shipping Weight	41 - 43 lbs/cu.ft. (657 - 689 g/L)
Color	White to Tan
Regenerable	Regenerable

SUGGESTED OPERATING CONDITIONS

Maximum Temperature	170°F (77°C)
Minimum Bed Depth	24 in. (61.0 cm)
Maximum Pressure Loss	20 psi (138 kPa)
Backwash Expansion (%)	25 to 50
Operating pH Range	4.0 to 10.0
Flow Rate	
Working Service	1-2 gpm/cu.ft. (8-16 BV/h)

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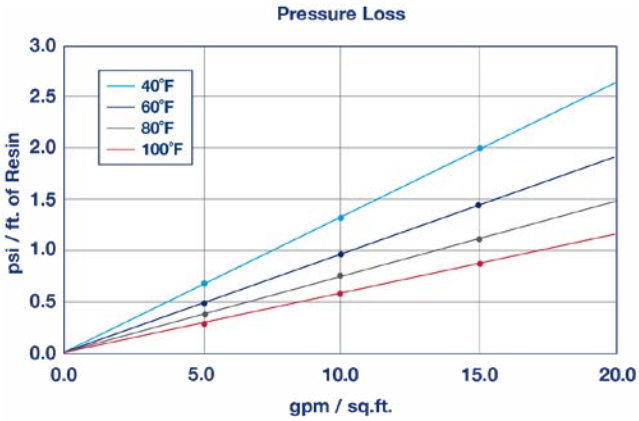
REGENERATION DETAILS

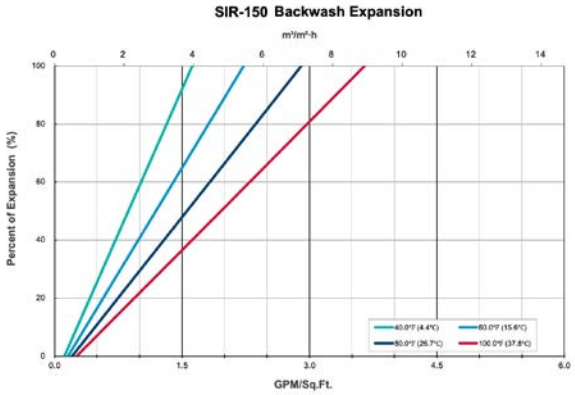
Salt Cycle (NaCl)	10 to 15%	Regenerant Contact Time	> 30 minutes
Acid Strip (HCl)	0.5 to 6%	Displacement Flow Rate	Same as dilution water
Caustic Neutralization (NaOH)	1 to 4%	Displacement Volume	10-15 gals/cu.ft. (1-2 BV)
Regenerant Level	3-10 lbs/cu.ft. (48.1-160.2 g/L)	Rinse Flow Rate	Same as service flow
Regenerant Flow Rate	0.25-1.0 gpm/cu.ft. (2-8 BV/h)	Rinse Volume	35-60 gals/cu.ft. (5-8 BV)

PRESSURE LOSS



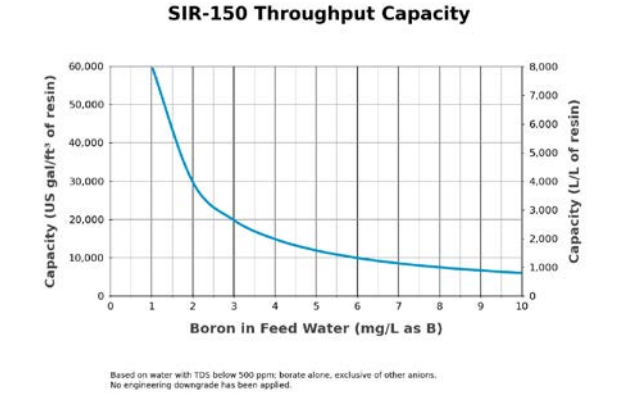
The graph above shows the expected pressure loss of ResinTech SIR-150 per foot of bed depth as a function of flow rate at various temperatures.

BACKWASH EXPANSION



The graph above shows the expansion characteristics of ResinTech SIR-150 as a function of flow rate at various temperatures.

CAPACITY



Capacity and leakage data are based on the following: 2:1 Ca:Mg ratio, 500 ppm TDS as CaCO3, 0.2% hardness in the salt and 10% brine concentration applied co-currently through the resin over 30 minutes. No engineering downgrade has been applied.

BORON REMOVAL FROM POTABLE WATER

ResinTech **SIR-150** can be used to remove boron from potable waters of any type. **SIR-150** selectivity for boron is so high that the concentration of common bulk ions such as chloride, sulfate, and bicarbonate are unimportant. **SIR-150** is kinetically limited and cannot be operated at a high flow rate without experiencing increased leakage and decreased throughput capacity. Regeneration is accomplished with acid to strip the boron, followed by caustic to remove the acidity. The regenerated resin should be buffered into the potable water range to prevent possible pH excursions when first returned to service and also to prevent possible calcium carbonate scaling.

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BORON REMOVAL FROM BRINE

ResinTech **SIR-150** can be used to remove boron from almost any brine stream, even when the brine is fully saturated. The brine pH must not be lower than approximately 4 or the chelating exchange groups will be destabilized and may not work properly. Ion exchange in any concentrated salt solution is kinetically hindered by high TDS, therefore flow rates are necessarily low.

BORON REMOVAL FROM ULTRAPURE WATER

ResinTech **SIR-150** can be used to remove boron from ultrapure water to sub-ppb levels provided that certain precautions are taken. The resin must be completely regenerated to remove bulk ions such as chloride and sulfate, and then rinsed thoroughly with ultrapure water to reduce cation contaminants such as sodium. Resin must be ordered as HP grade and pretreated to reduce TOC leaching. The location of the boron removal resin should be in front of the polishing mixed beds so that trace levels of ionic leachables can be removed.

PACKAGING

Standard

1 cu.ft. Bag | 7 cu.ft. Drum
200L Drum | 25L Bag

Metric

42 cu.ft. Supersack | 5 cu.ft. Drum
1000L Supersack | 140L Drum

Shipping Weight

41 - 43 lbs/cu.ft. (657 - 689 g/L)

MATERIAL SAFETY DATA SHEETS (MSDS)

Material Safety Data Sheets (MSDS) are available for all products on the ResinTech website. They contain important health and safety information that 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.

Safety Data Sheets (SDS) are available at resintech.com

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