



SIR-22P-HP

ANION EXCHANGE
ORGANIC TRAP

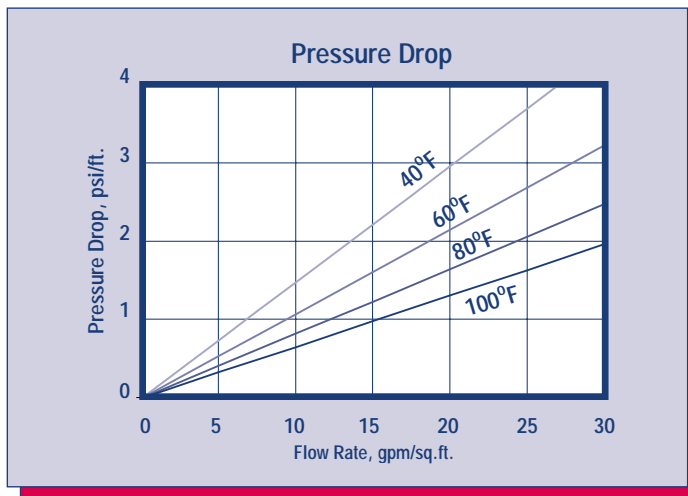
RESINTECH SIR-22P-HP is a special purpose ion exchanger specifically designed to remove tannins, organic color, and other naturally occurring organics including organo-metallic complexes (such as heme iron) from water. RESINTECH SIR-22P-HP is intended primarily for use as an organic trap in a stand-alone unit in conjunction with other ion exchange processes such as softening or demineralization. In certain situations RESINTECH SIR-22P-HP can be used in the same vessel as the softener resin, as a separate upper layer. It is supplied in the chloride form as moist, tough, uniform spherical beads.

FEATURES & BENEFITS

- **SPECIFICALLY DESIGNED TO REMOVE NATURALLY OCCURRING ORGANICS (NOM).**
- **COMPLIES WITH FDA REGULATIONS FOR POTABLE WATER APPLICATIONS.**
Conforms to paragraph 21CFR173.25 of the Food Additives Regulations of the F.D.A. *
- **REVERSIBLE EXCHANGE OF ORGANICS – LONG LIFE.**
Provides unequaled capability to reversibly remove naturally occurring organic matter. In this regard it is far superior to normal anion exchange resins, including porous gel and macroporous types such as RESINTECH SBG1P or RESINTECH SBMP1.
- **NO FISHY ODOR**
Gives very little or no fishy odors even in applications where other resin types such as acrylics fail because of odor.

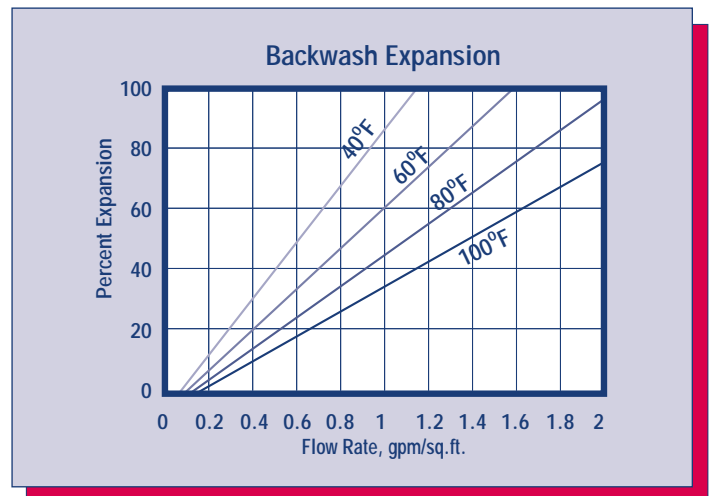
*For potable water applications, the resin must be properly pre-treated, usually by a single regeneration cycle, to ensure compliance with extractable levels.

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.

RESINTECH® SIR-22P-HP

TYPICAL PROPERTIES

Polymer Structure	Unique porous Styrene with DVB
Functional Group	R-N- (CH ₃) ₃ ⁺ Cl ⁻
Ionic Form, as shipped	Chloride
Physical Form	Tough, Spherical Beads
Screen Size Distribution	20 to 50 Nominal
+20 mesh (U.S. Std)	Less than 20 Percent.
- 50 mesh (U.S. Std)	Less than 1.0 Percent
pH Range	0 to 14
Water Retention	
Chloride Form	70 to 85 Percent
Solubility	Insoluble
Approximate Shipping Weight	
Chloride Form	41 lbs/cu.ft.
Swelling C1 ⁻ to OH ⁻ form	approx. 30 %*
*OH cycle operation not recommended	

SUGGESTED OPERATING CONDITIONS

Maximum Temperature	
Hydroxide Form	OH cycle operation not recommended
Salt form	170°F
Minimum Bed Depth	24 inches for stand-alone
	6 inches for layered beds*
Backwash Rate	50 to 75% Bed Expansion
Regenerant (3 choices)	1. 10% NaCl
	2. 10% NaCl plus 0.5% NaOH
	3. 5-10% NaCl plus 0.5% Na ₂ CO ₃
Regenerant Temperature	60 to 120° F
Regenerant Flow Rate	0.1 to 0.5 gpm / cu.ft.
Regenerant Level	At least 10 pounds NaCl/ cu.ft. plus a proportional amount of NaOH or Na ₂ CO ₃
Post Regenerant Soak Time	As necessary, at end of regenerant contact, to make total contact time reach at least 60 minutes.
Displacement Rinse Rate	Same as Regenerant 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.
Service Flow Rate	1 to 2 gpm /cu.ft. (for best performance)

* Layered beds (cation plus ResinTech SIR-22P-HP) require frequent regenerations and significantly lower flow rates during regeneration. Capacity is lower than stand alone systems and leakage is higher.

APPLICATIONS

ORGANIC REMOVAL – The unique structure and porosity of *RESINTECH SIR-22P-HP* provides the capability of reversibly sorbing naturally occurring organic substances that foul standard types of anion resins. Its unique structure also provides a higher operating capacity than standard resins like *RESINTECH SBG1P* or *RESINTECH SBMP1* for substances that exhibit either very slow diffusion rates or unusually high affinities for the anion exchange resins. Typical substances include, tannins, humic and fulvic substances and any organic substances that exhibit anionic behavior in water. acids such as citric acid.

RESINTECH SIR-22P-HP is not recommended for normal or routine ion exchange applications such as separate bed or mixed bed deionization, dealkalizers, desilicizers etc.

OPERATING CAPACITY AND REGENERANT CONTACT TIME.

The potential throughput capability is dependent on the water analysis and the level of both sulfate and TOC. However, the actual multiple cycle operating capacity is also limited by the amount of organics that can be regenerated from the resin. At regenerant levels above 10 lbs./cu. ft. the contact time is more important than the dose level for removing organics from the resin.

RESINTECH SIR-22P-HP Typical Volume Operating Capacities Gallons Per Cubic Foot Per Service Cycle			
	A	B	C
Single Use	1740	4475	900
Multiple Cycle	1425	1050	900
Above capacities based on salt regeneration, 60 minutes contact time plus 30 minutes post-regenerant soak, all at ambient temperatures. The three examples above are based on the following water analysis:			
Influent Water Analysis			
ppm as CaCO ₃	A	B	C
HCO ₃	65	100	10
Cl	38	85	35
SO ₄	51	17	100
TOC (As C)	3	4	3
These are typical values for the waters shown. For performance predictions treating other waters, fax or email the water analysis to ResinTech -Technical Support			

Above 10 lbs./cu.ft. dose, the amount of organics removed during regeneration will be proportional to the total contact time of the regenerant in the resin bed, including the displacement rinse (slow rinse) plus the post-regenerant soak time for up to 100 minutes. Longer contact times provide only marginal benefit. It is recommended that a minimum regenerant contact time of 60 minutes be used. If more capacity is needed, then a post-regenerant soak between the regenerant introduction and the displacement should be added.

Once the potential throughput capacity is determined, the regenerant contact time and dose required to remove the organics is determined. Comprehensive performance information is available for specific water analysis (bicarbonate, chlorides, sulfate, and TOC) from the ResinTech Technical Department.

In some cases the regeneration process will limit the throughput capacity.

$$\text{Gals/cu.ft.} = \frac{94000}{(\text{ppm SO}_4 \text{ as CaCO}_3) + (\text{TOC as C} \times .75)}$$

For example, the formula shows the maximum available throughput for a single cycle use: These levels can only be sustained if the regeneration removes the loaded organics otherwise a lesser throughput capacity will be realized.

***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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