

SPECIALTY RESIN



PROSELECT™ TANNIN

ProSelect™ Tannin (P/N ER20001) is the choice for color, organics, and tannin contaminated waters. It works as an organic screen, either as a stand-alone prefilter for a softener, or in some applications as a media which is simply added to an existing softener. ProSelect Tannin will sit on top of the existing softening bed to protect it and remove organic (heme) iron as well. ProSelect Tannin is iron resistant, regenerates with salt, and is the resin of choice for heme iron applications.

FEATURES

- Complies with USDA & FDA regulations (paragraph 21 CFR173.25) for potable water applications *
- Reversible exchange of organics
- Superior physical stability
- Certified to NSF/ANSI Standard 61

* For potable water applications, the resin must be properly pre-treated, usually by multiple exhaustion and regeneration cycles, to insure compliance with extractable levels.

Physical 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.)	.20% maximum
-50 mesh (U.S. Std.)	.1% maximum
pH Range	.0 to 14
Sphericity	.95% minimum
Water Retention	
Chloride Form	.70 to 85%
Solubility	Insoluble
Approximate Shipping Weight	
Chloride Form	.41 lbs/cu.ft.
Swelling Cl ⁻ to OH ⁻ Form	.30% approx. **

** OH cycle operation not recommended.

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.

Suggested Operating Conditions

Maximum Temperature	
Chloride Form	170°F (77°C)
Minimum Bed Depth	.24" for stand-alone 6" for layered beds †
Backwash Rate (see next page)	
50% Bed Expansion @ 60°F	.0.85 gpm/sq.ft.
Regenerant ††	
Option 1	10% NaCl
Option 2	10% NaCl plus 0.5% NaOH
Option 3	.5 to 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	10 lbs NaCl/cu.ft. plus a proportional amount of NaOH or Na ₂ CO ₃
Post Regenerant Soak Time	60 minutes minimum for best performance
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
Pressure Drop	See next page

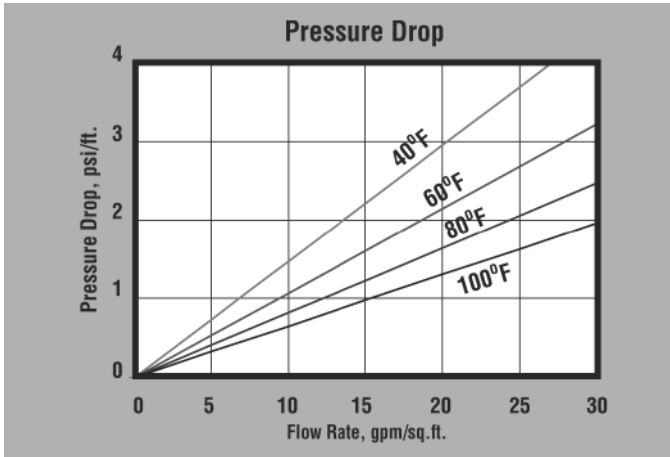
† Layered beds (cation resin plus ProSelect Tannin) require frequent regenerations and significantly lower flow rates during regeneration. Capacity is lower than stand-alone systems and leakage is higher.

†† **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.

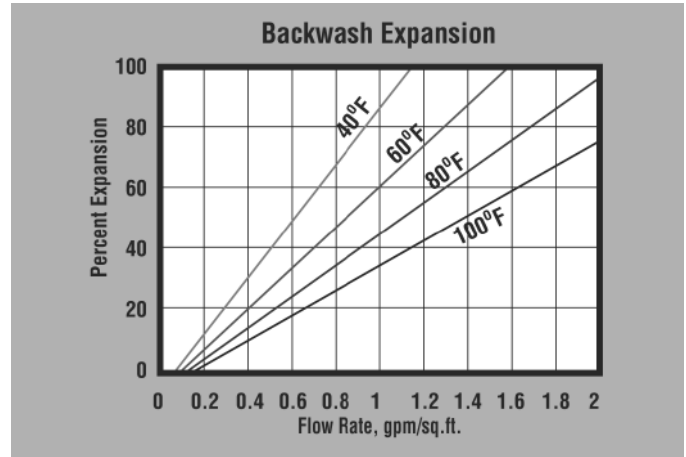
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PRESSURE DROP — The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.



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. The graph above shows the expansion characteristics of ProSelect™ Tannin in the chloride form.

OPERATING CAPACITY & 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.

Typical Volume Operating Capacity

(Gallons per Cubic Foot, per Service Cycle)

	A	B	C
Single Use	1740	4475	900
Multiple Cycle	1425	1050	900

The above capacities are based on salt regeneration, 60 minutes contact time, plus 30 minutes post-regeneration soak, all at ambient temperatures. The three examples above are based on the following water analyses:

Influent Water Analysis (ppm as CaCO₃)

	A	B	C
TOC (as C)	3	4	3
SO ₄	51	17	100
Cl	38	85	35
HCO ₃	65	100	10

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 (dwell) 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 manufacturer.

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

$$\text{Gallons/cu.ft.} = \frac{94,000}{(\text{ppm SO}_4 \text{ as CaCO}_3) + (\text{TOC as C} \times 0.75)}$$

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.