# INITIA® 910T
## Fluorescent Tagged Polymer

### overview

**INITIA® 910T** is a sulfonated copolymer which covalently incorporates a fluorescent monomer that can be readily measured along with PTSA. **INITIA® 910T** has been extensively evaluated using Radical Polymers best-in-class pilot testing allowing the user to have confidence in its efficacy. **INITIA® 910T** is highly effective for controlling mineral scales and deposits such as calcium phosphate, calcium carbonate, hydroxy-apatite, general solids and sludge, and transition metals such as iron, zinc, and manganese. **INITIA® 910T** is designed to be utilized in conjunction with new in-line and hand-held devices. Dual measurement of **INITIA® 910T** and PTSA provides the water treatment professional with a powerful tool to analyze ongoing operations and troubleshoot upset conditions. **INITIA® 910T** is designed for process water applications and closed loop systems operating under 100°C. **INITIA® 910T** can be used for deposit control in boilers and other applications operating at up to 600 psi.

### typical properties

| | |
|---|---|
| appearance | Slightly hazy, orange / yellow liquid |
| total solid content | 38.0-42.0% |
| pH (as is) | 2.0 – 4.0 |
| Brookfield viscosity at 25° C | < 750 cPs |

### INITIA® 910T DELIVERS

instant measurement of active polymer concentration up to 20 ppm

powerful combination with PTSA for dual measurement

unique production method for highly accurate measurement

exceptional performance for a wide range of mineral scales and foulants

performance backed by extensive pilot and lab evaluation data

### SUGGESTED APPLICATIONS

- cooling towers
- process water applications
- boilers (<600 psi)*
- mining
- oilfield and natural gas
- geothermal

*feedwater monitoring only

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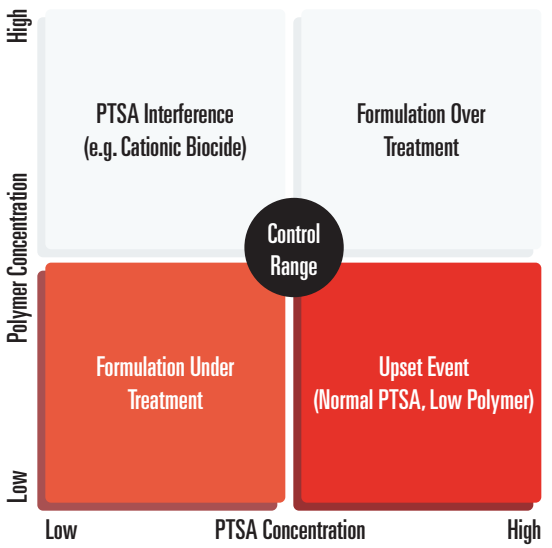
## how to use INITIA® 910T and PTSA

The power of active **INITIA® 910T** polymer measurement technology is amplified when used along with PTSA dye. **Figure 1** shows a simple illustration of how the water treatment professional may trouble shoot applications using these two measurements. In this illustration, a typical treatment scenario is shown where measured PTSA is listed on the x-axis along a spectrum of low to high versus the intended concentration. Similarly, the **INITIA® 910T** concentration is listed on the y-axis along a spectrum of low to high versus the intended concentration. The center circle illustrates an intended control rage for the two materials. It is important to remember that PTSA is an inert tracer which is agnostic to scaling events and **INITIA® 910T** is an active ingredient that is readily adsorbed and diminished from measurement when an upset event occurs.

figure 1. polymer - PTSA delta - simplistic treatment analysis




| | |
|---|---|
| **PTSA and INITIA® 910T in control range** | formulation is being fed properly and no significant events are observed. |
| **PTSA and INITIA® 910T both read high** | formulation over treatment. |
| **PTSA and INITIA® 910T both read low** | formulation under treatment. |
| **INITIA® 910T in control range PTSA reading low** | interference exists with the PTSA. |
| **PTSA in control range INITIA® 910T reading low** | indicates an event or upset that is consumptive of the polymer. |

## pilot example - calcium phosphate stabilization

The evaluation of the interaction of in-situ calcium phosphate precipitation and **INITIA® 910T** concentration versus PTSA is the best representation of how the technology functions. **INITIA® 910T** (upset indicator) can be observed versus PTSA (treatment level indicator), Δ phosphate (performance-based monitoring) and turbidity (solids dispersion indicator). In this evaluation, 10 ppm active **INITIA® 910T** was added to a water containing 200 ppm $Ca^{2+}$ (500 ppm as $CaCO_3$) and 10 ppm phosphate. The system operated at pH 8.8-9.0 and bulk water temperature was maintained at 99°F with an estimated skin temperature of at least 129° F. The experiment was conducted over 10 days. On day 9 an additional 5 ppm of orthophosphate was added to induce precipitation.

figure 2. delta phosphate/turbidity

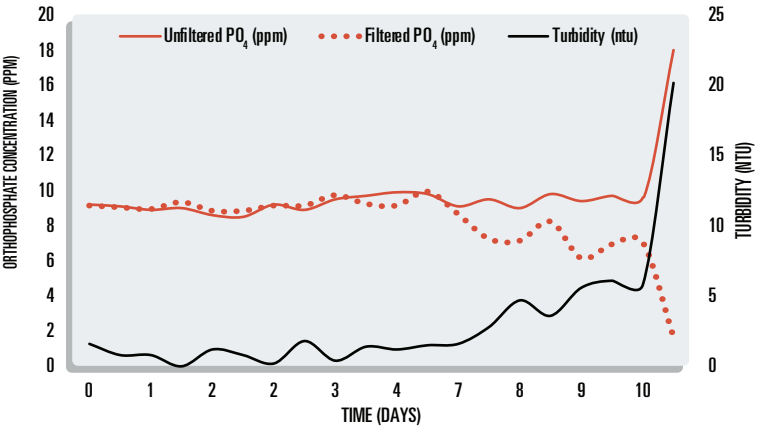
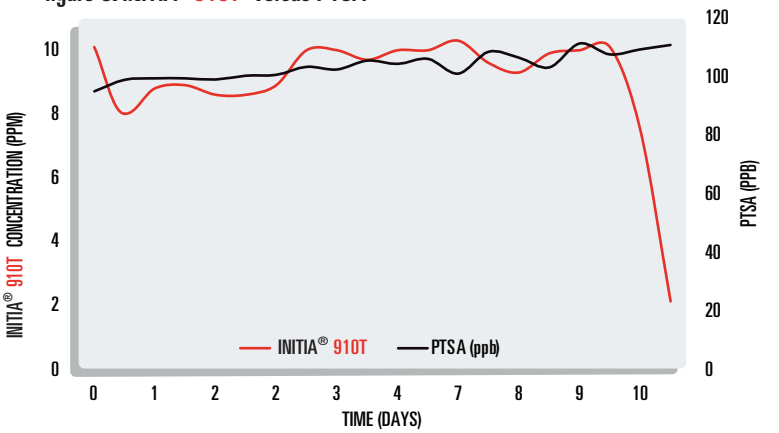



**Figure 2** shows filtered and unfiltered phosphate and turbidity where there is very little difference between the two for the first 7 days. These data indicate that **INITIA® 910T** has properly stabilized calcium phosphate. The Δ between filtered and unfiltered phosphate is readily observed once the additional 5 ppm orthophosphate is added to the system. This Δ indicates precipitation of calcium phosphate in the pilot test system. One important observation is turbidity. The correlation of increasing turbidity with the increase in unfiltered phosphate (total phosphate) demonstrates that, despite precipitation, **INITIA® 910T** continues to function as a particulate dispersant. **Figure 3** shows the true power of measurement of **INITIA® 910T** and PTSA where the formula feed is maintained at ~ 100ppb PTSA and **INITIA® 910T** concentration is decreased relative to calcium phosphate precipitation.

figure 3. INITIA® 910T versus PTSA




## safety use and handling

Consult the Safety Data Sheet (SDS) for further information regarding the safe handling and use of **INITIA® 910T**. This product should be stored in a cool/dry place and must be protected from freezing. Avoid storage at high temperatures (>90°F), direct sunlight, and exposure to surface, airborne or other common environmental contaminants such as debris, bacteria, yeast, and mold.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