

TRAMFLOC, INC.

Water & Wastewater Treatment Chemicals for Industry & Mines

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POLYMER TESTING PROCEDURES FOR CLARIFICATION APPLICATIONS “polytestclar”

1. It is advantageous to perform bench scale evaluations in order to reduce the number of potentially successful Tramfloc® Flocculant/Coagulant candidates as much as possible. Our emulsion flocculants are numbered 100-399. Our solution coagulants are numbered 500-899. For the Tramfloc® emulsion flocculants charge 0.25 ml of neat formulation from a *1 cc plastic syringe* to 100 mls of warm tap water. Return the excess polymer to the sample bottle. If you are testing the Tramfloc® 500, 600, 700 or 800 series of coagulants, charge 10 mls neat coagulant with the *3 cc plastic syringe* to 90 ml of tap water and mix. You must make a dilute polymer solution to obtain accurate testing results. Do not dose neat polymer to your substrate sample.
2. It would be well to use 7 to 12 oz. clear plastic cups to contain the polymer testing solutions which you will be making. For flocculant testing solutions add 100 mls of warm tap water to each container, one for each Tramfloc® flocculant to be evaluated and then charge 0.25 ml of neat flocculant with the *1 cc syringe*.
3. For Tramfloc® coagulants, add 90 ml of warm tap water to each container, one for each Tramfloc® coagulant to be evaluated and then charge 10 mls of neat coagulant to be evaluated with the *3 cc syringe*. Mark each plastic cup with the appropriate Tramfloc® product number. Mix the neat polymer and water for about 20 seconds until the polymer has been well dispersed into the solution and it has become homogenized. You will have produced a 0.25 % flocculant solution or a 10% coagulant solution. We suggest that the samples stand quiescently for 10 minutes in order to allow the tightly wound polymer chains in Tramfloc polymers to uncoil before they reach their full effectiveness.
3. If you are evaluating Tramfloc® granular polymers, our Tramfloc® 100 and 400 series, weigh 250 mg of polymer and charge very slowly with 100 mls of warm tap water to initially wet the granules. Add the granules almost singly so that they fall into the vortex of the water which is being stirred rapidly, if none of the aforementioned solvents are available. That ratio will produce a 0.25 % polymer solution. Place the beaker on a heated magnetic stirrer for optimum results. Mix until all the granules have disappeared into a homogeneous solution without lumps or fish eyes. Reduce the speed to 50 rpm and after as much as 10-20 minutes of stirring, a clear, viscous and homogeneous solution should have been formed. The water and granules may be mixed vigorously in a stoppered flask for several minutes before quiescence. Each particle of dry polymer must be wetted with water to insure that a reliable testing solution has been prepared. Allow the solution to uncoil fully by causing the solution to stand quiescently for 10 minutes. Each solution container should be marked with the Tramfloc® polymer product number.
4. Charge 1000 mls of untreated substrate sample into a beaker and place in a jar tester or place it on your bench. Be sure that the sample you have selected is representative of the plant process, especially with respect to pH, temperature, TSS, homogeneity, biological activity etc. A standard gang stirrer works effectively. Stir samples at high speed while charging the polymer solutions to be tested. Set the stirrer speed at 100-150 rpm and after 1-2 minutes, rapidly charge the desired amount of polymer solution. Then reduce the stirrer speed to 40-50 rpm for 30

seconds. Stop the stirrer and observe results for up to 10 minutes. One ml of 0.25% polymer solution charged to 1.0 L of sample yields a 2.5 ppm polymer feed rate. See the dosage chart on the testing protocol page of our web site to calculate your dosage or call our product specialists who will perform the calculation for you. A wooden paint stirrer works effectively if no laboratory stirrer is available.

5. Initially apply dosages of 10-50 ppm of flocculant and 100-500 ppm of coagulant. If no performance is observed, increase the dosages by 100 ppm up to 1000 ppm. It is sometimes necessary to adjust pH, as in the case of MeOH precipitation. Tramfloc® coagulants may also be required when the flocculant dosages do not reveal desired settling.

6. Continue testing samples until you have applied all Tramfloc® polymer solutions in all the appropriate dosage ranges.

7. Observe which sample(s) had the fastest solids' settling rate, largest floc, densest floc mass, clearest supernatant. Congratulations! You have just selected the Tramfloc® polymer which should be used to clarify your waste stream. You may now schedule a trial application of the new polymer.

8. Call us with any questions which may arise and please advise us of your final testing results.